THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78
NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXII #1, MARCH 2006

Fellow Horologists:

This issue of the Journal of the Electrical Society will complete the material on the Telephone Manufacturing Company, Ltd. We will continue the material from the 1940's on the Cincinnati-Landis Clocks and catalogue from the Stromberg Time Corporation.

Our next issue of the Journal will begin a series on Warren Telechron Clocks with the reprint of an early catalog describing these very significant clocks. It is easy to overlook Henry Ellis Warren's contributions to time keeping and his part in making accurate time available to all. Perhaps this information will get you started in a closer look at 110 VAC synchronous time keeping.

The following is a quick update on the Symposium planned for 2008 in Springfield, Illinois - home of the Sangamo Clocks. Initial contacts of Springfield hotels are in progress and we have begun making arrangements to put together an exhibit of Sangamo clocks. We are still looking for proposed papers on electrical horology. Please let me know if you are interested in presenting a paper. Papers covering history, theory, and repair are needed.

By the time that you receive this issue of the Journal, the NAWCC National in Cleveland will be over. I hope that you were able to attend the Electrical Horology meeting and that you had the opportunity to meet fellow electrical enthusiasts.

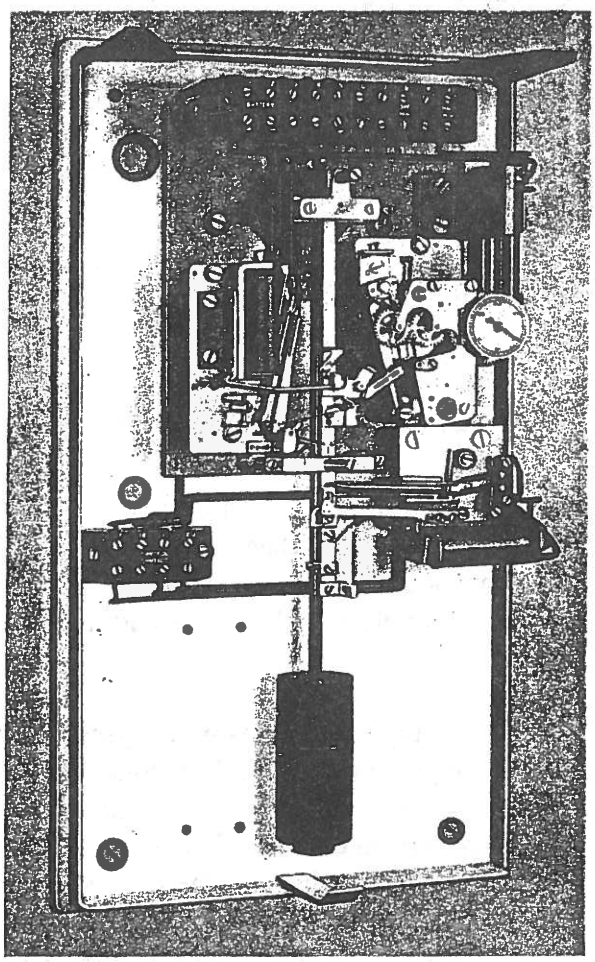
Yours very truly,

Bill Ellison.....President
Harvey Schmidt, FNAWCC,.....Secretary-Treasurer) Co-Editors
Dr. George Feinstein, FNAWCC..Chapter Historian)

Continued from December, 2005 issue.

ELECTRIC CLOCK SYSTEMS

MASTER CLOCK
IMPULSE CONTROLLED



This Master Clock has a half-second beat pendulum synchronized by periodic impulses transmitted from an extraneous source of control. The cover and standard comparator dial have been removed to display the impulsing, sustaining and synchronizing mechanisms.

DIMENSIONS

Height : 16 in. (40·64 cm)
Width : 8½ in. (21·59 cm)
Depth : 4½ in. (11·43 cm)

THIS Master Clock is electrically operated by dry cells or accumulators. It is controlled by a magnetic synchronizer operated by periodic impulses supplied from some extraneous source, for example, signals transmitted by land-line from an Observatory, a Radio Station or a time announcing system, such as the British Post Office Speaking Clock.

Signals transmitted by radio, or over land line, or a combination of both, can be received on auxiliary electronic equipment and the pulses passed to the magnetic synchronizer. This auxiliary equipment is contained in an all-metal case of the same size and design as that which houses the clock.

The various units which comprise the clock mechanism, are mounted on a substantial panel; each individual unit is interchangeable for servicing purposes, and replacement is a simple matter.

MASTER CLOCK
D.C. Type

ELECTRIC CLOCK SYSTEMS

THE PENDULUM

The gravity-sustained pendulum has a periodicity of 1-second. The type-metal bob is attached to an Invar rod by a temperature-compensated support. A calibrated adjusting nut facilitates rating the pendulum.

SUSTAINING

Every half-minute an arm, mounted on the gathering-wheel spindle, releases an impulse pallet which, by means of a pivoted gravity-sustaining lever, imparts a thrust to the pendulum. The arm is restored to its position of rest by an electro-magnet.

CONTACT UNIT

Impulses are transmitted at 30-second intervals by a gravity switch, the contacts being operated by an arm integral with the pivoted gravity-sustaining lever. A series resistance is fitted for balancing the current in the secondary circuits.

CABLING

The battery leads, and wiring to and from the clock are terminated on a row of terminals mounted above the clock mechanism.

THE CASE

The clock is housed in a hardwood case, it is extremely durable and arranged for wall-mounting and is suitable for hot and dry climatic conditions. The front of the case is fitted with a glazed and dust-proof door.

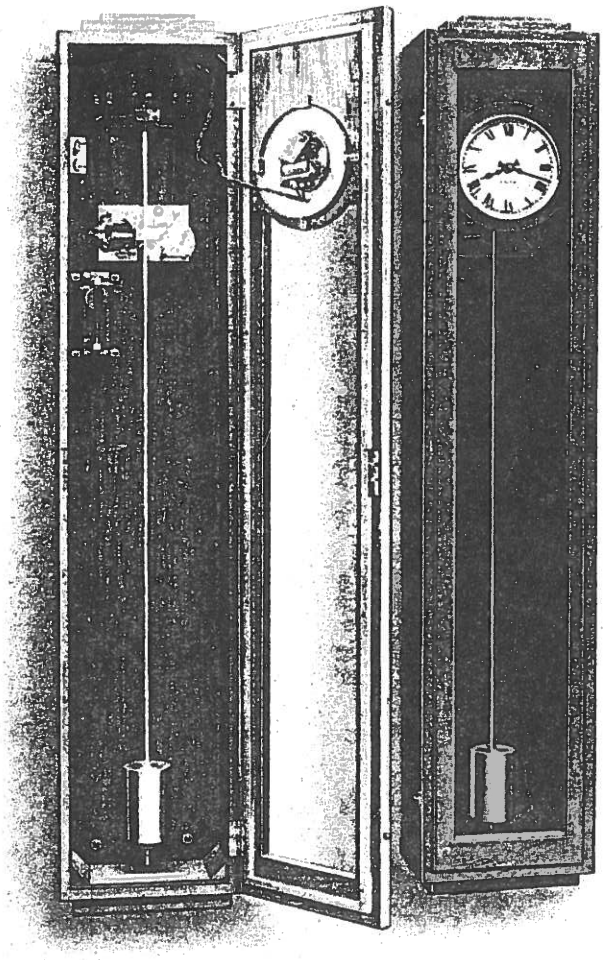
FIXING

Full instructions for the installation and testing of the clock are given in the appropriate Technical Specification supplied with each order.

ELECTRIC CLOCK SYSTEMS

MASTER CLOCK
D.C. TYPE

The T.M.C. Master Clock in its simplest form but capable of maintaining a comprehensive time service in any class of building. The clock has a gravity sustained one-second pendulum performing as a half-minute impulse transmitter.



DIMENSIONS

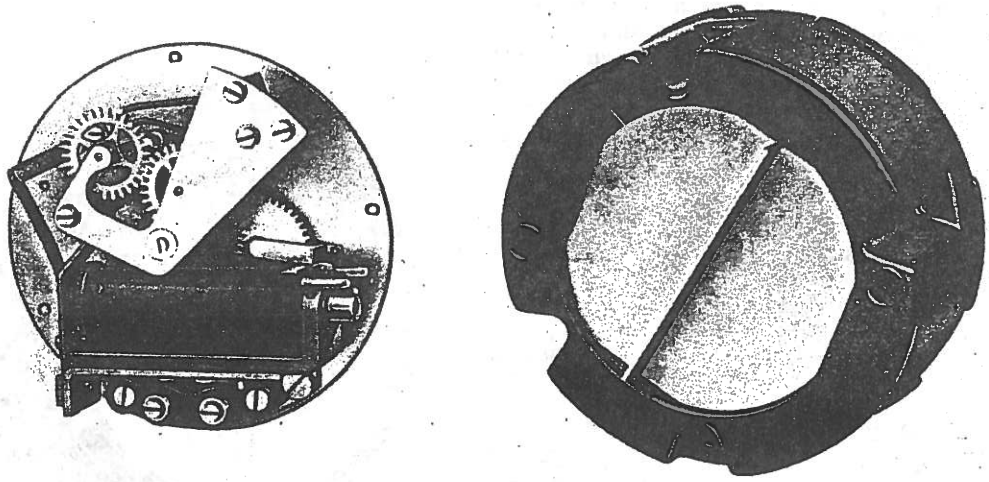
Height : 51 in. (129·54 cm)
Width : 10 in. (25·40 cm)
Depth : 6 in. (15·24 cm)

THIS T.M.C. Master Clock, electrically operated either from a battery of dry cells or accumulators, distributes impulses at 30-second intervals. It is suitable for controlling any system of electrical apparatus and dials dependent on ½-minute impulses, in public, educational, commercial or industrial buildings. If it is required to control staff and workmen's time recorders, etc., the clock can be arranged to transmit 1-minute impulses by the addition of an Impulse Converter at an extra charge.

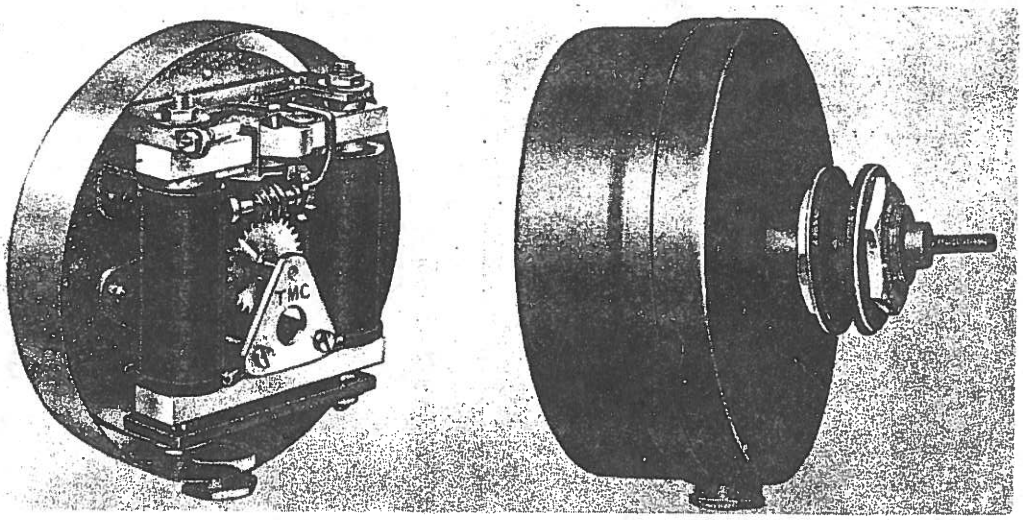
To ensure maximum stability and to permit easy access to the working parts, the movement is mounted as a complete unit on a substantial cast foundation and pendulum bracket. This unit is quickly detachable and the replacement of individual parts—if accidentally damaged—is a simple matter; thus, installation and maintenance are reduced to the utmost simplicity.

A comparator dial (6 in. diameter), fitted with a T.M.C. single-pallet drive impulse movement, is mounted in the glass-fronted door of the clock.

IMPULSE OPERATED DIALS



PALLET DRIVE MOVEMENT: This movement is electro-magnetically operated by impulses transmitted at half-minute intervals by a Master Clock. The hands are progressed half a minute at each impulse, by the two-step action of a *D*-shaped pallet driving a train of gears. The pallet prevents the hands from being over-driven throughout the duration of the impulse, and double back-stop pawls securely lock them in all positions. The movement is enclosed in a dust-proof case with an easily detachable inspection cover.

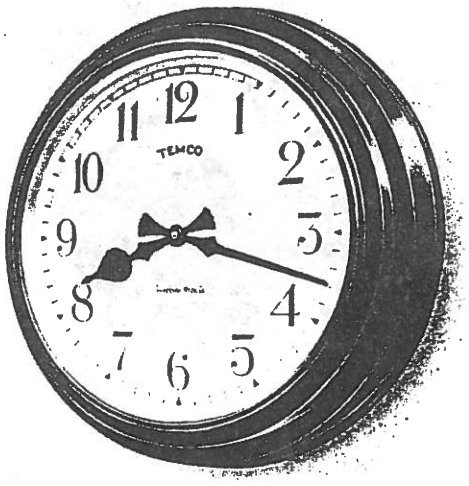


WORM DRIVE MOVEMENT: This is used for the 24 in. diameter dials, and is operated by half-minute impulses transmitted from a Master Clock. The operating pawls are a special feature of the mechanism; they are not dependent on springs but are magnetically controlled. The hands cannot be over-driven and are securely locked in all positions. They settle gently after they are moved and do not impose heavy stresses on the driving mechanism, the inertia loads being taken by the end thrust of the worm on its substantial supporting bracket. The movement is enclosed in a cover proof against dust and damp.

TMC ELECTRIC CLOCK SYSTEMS

IMPULSE OPERATED DIALS

STANDARD T.M.C. impulse-operated Dials are available with dial diameters ranging from 6 inches up to 24 inches, in moulded, spun-metal, and cast aluminium cases. The dial markings and the hands have been designed for maximum visibility. Dials up to 16 inches diameter have a pallet-drive movement; above that size a worm-drive movement is fitted: both types of movement are illustrated overleaf.



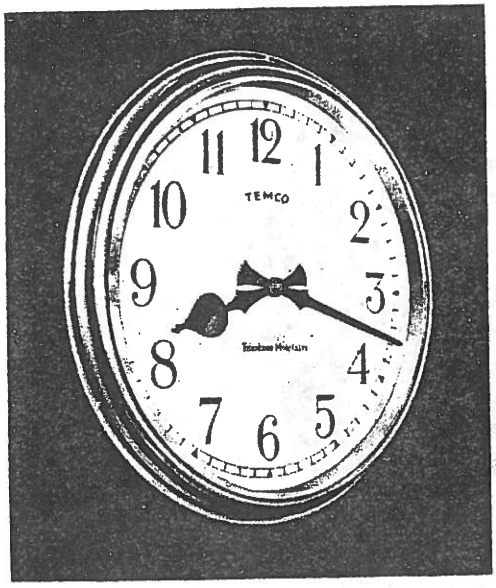
MOULDED and SPUN-METAL CASES

These cases are designed for surface-mounting on walls, but two dials can be arranged back-to-back, to hang from the ceiling as a double-faced unit in halls, workshops, etc. A moulded case is shown on the right; spun-metal cases resemble the moulded cases in appearance.

DIMENSIONS (dial diameters)

Moulded Cases ... ... (*Brown finish*)	6 in. (15·24 cm) 9 in. (22·86 cm) 12 in. (30·5 cm)
Spun-metal Cases ... (*Bronze or white enamel finish*)	8 in. (20·32 cm) 10 in. (25·4 cm) 12 in. (30·5 cm) 16 in. (40·64 cm) 24 in. (60·96 cm)

Alternative finishes can be supplied to order.

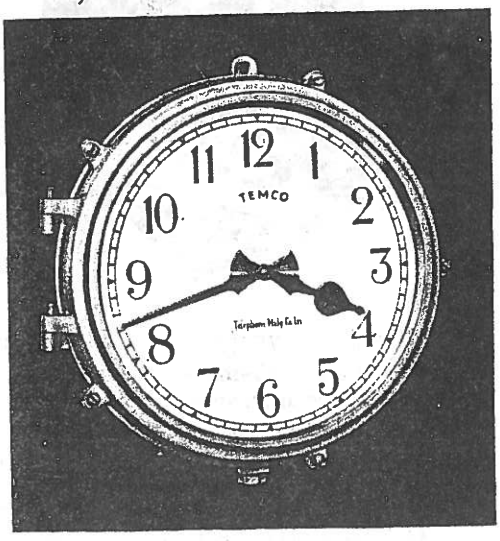


FLUSH MOUNTING DIALS

This type of dial is designed for flush mounting into panels and walls. The bezel is solid brass, finished in polished chrome, satin chrome, polished brass, coinage bronze, etc., with a bevelled plate glass cover.

DIMENSIONS (dial diameter)

6 in. (15·24 cm)
8 in. (20·32 cm)
9 in. (22·86 cm)
10 in. (25·4 cm)
12 in. (30·5 cm)



FLAME and WATERPROOF CASE

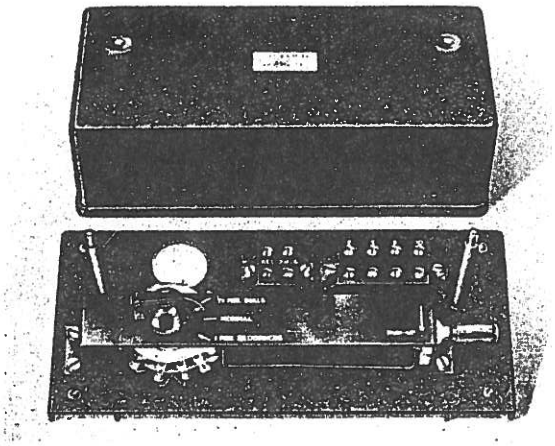
This type of case, in cast aluminium, is available in the following dial sizes:

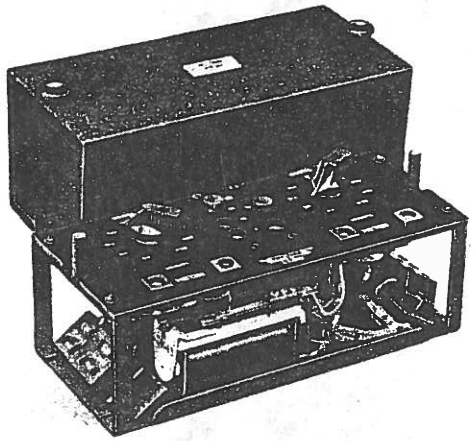
6 in. (15·24 cm)
12 in. (30·5 cm)

AUXILIARY EQUIPMENT

ADVANCE & RETARD SWITCHING UNIT

This unit, shown on the right, provides a simple means for manually advancing or stopping a system of time-service equipment, independently of the Master Clock, from the central control panel. A switch is set over from normal to either the half-minute or one-minute circuits controlling impulse dials or time recorders respectively; this disconnects the circuit from the Master Clock, and a pivoted lever key is used manually to "pump" impulses through the system; when the necessary adjustment has been made, the setting switch is turned back to normal. This facility is particularly useful in locations where Summer and Winter Time schedules are in operation.





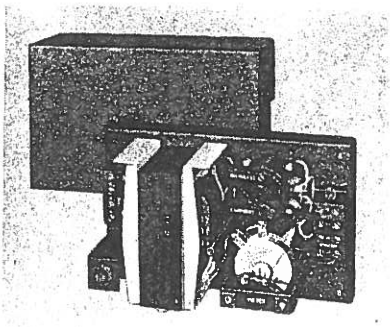
SINGLE & DOUBLE CIRCUIT RELAY UNITS

Relay units transmit operating impulses to the various sub-circuits and simultaneously balance the total resistance in these circuits. Their inclusion is recommended in large systems, or in situations where an installation is spread over several storeys, because they facilitate tracing local faults and ensure the maintenance of steady operating conditions in the dependent circuits.

Single and double relay units for controlling one or two sub-circuits, are available; the double relay unit is illustrated on the left.

ACCUMULATOR TRICKLE CHARGERS

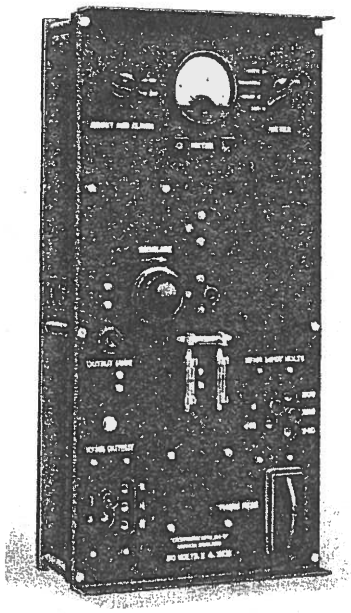
The "P.W.D." Trickle Charger shown on the right, for use with alternating current supply, incorporates an automatic "weak battery" alarm, a charge booster (to compensate for abnormal current consumption), and internal and external metering facilities.



The "Standard" type (not illustrated) resembles the "P.W.D." model but is not equipped with charge booster or weak battery alarm.

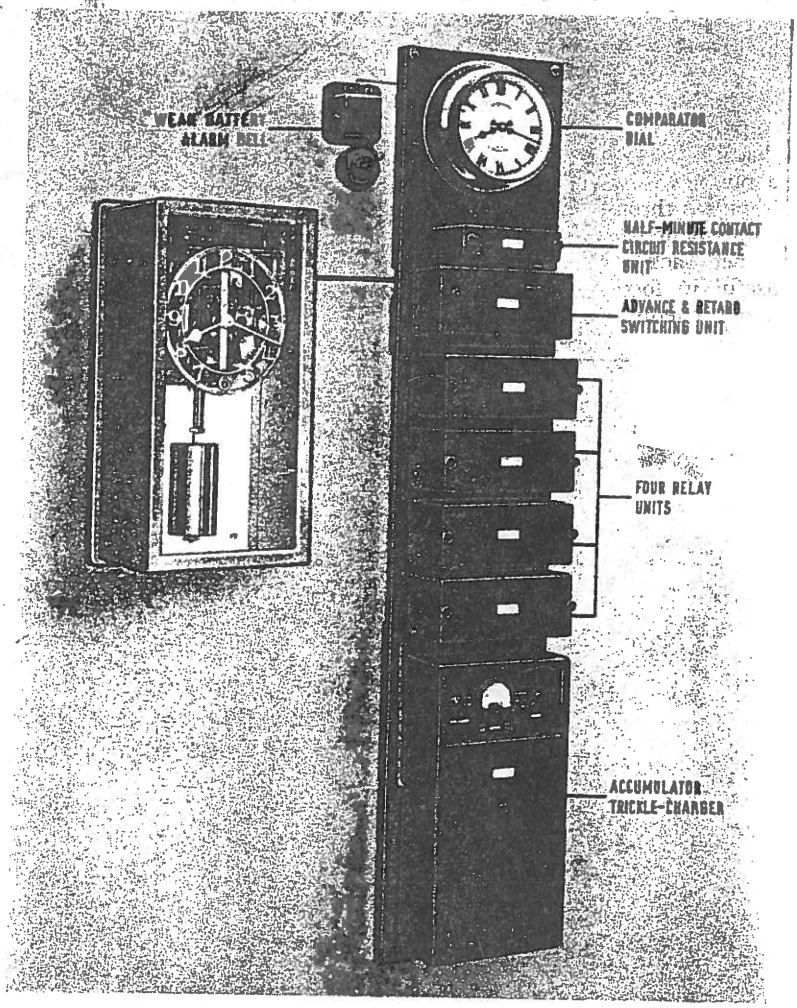
The "Junior Standard" model is illustrated on the left. This is a simpler design than the others and meters are not included.

Voltage Rating: 6V, 12V, 18V, 24V, 30V, 36V, 48V.



AUXILIARY EQUIPMENT

The illustration shows a T.M.C. Master Clock in association with an equipment panel on which are mounted auxiliary units for operating a comprehensive time service.



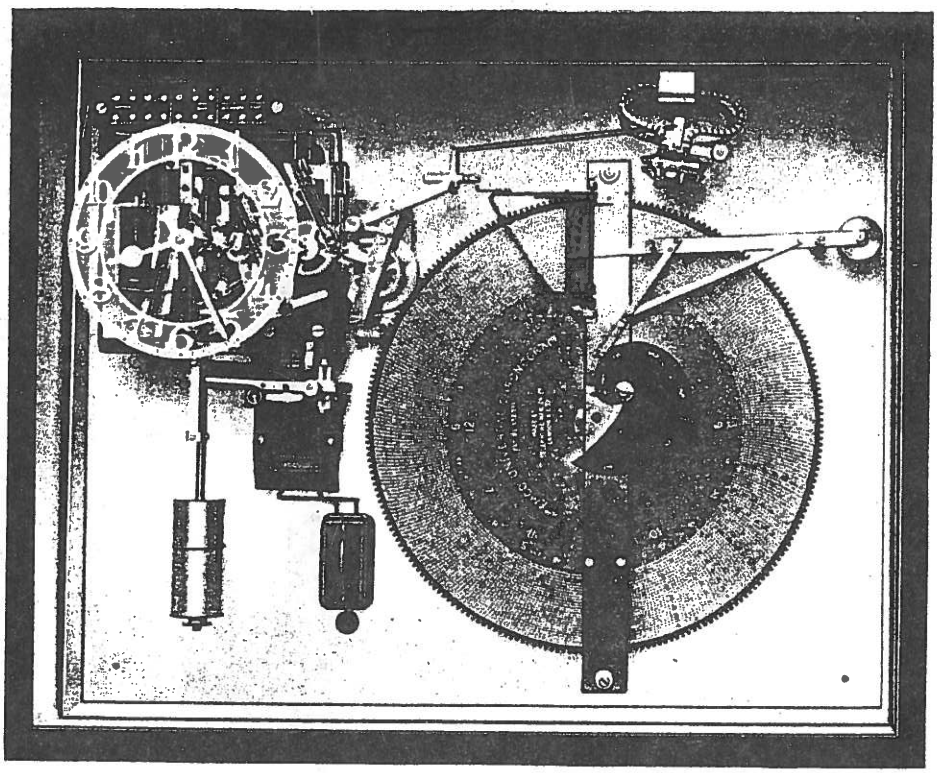
IN large and complex systems, impulses from T.M.C. Master Clocks are distributed by means of relay units, which transmit impulses of varying duration and periodicity for the operation of impulse dials, process timers, staff time recorders, etc.

This method greatly facilitates servicing, as the main wiring is brought to a central point and grouped for each section of an installation. It is, therefore, a simple matter to isolate any chosen section when it becomes necessary to carry out alterations or maintenance.

The number of auxiliary units required depends on the size of installation, but a typical panel of auxiliary equipment is shown in the illustration of a Master Clock supplying impulses to an installation comprising 210 T.M.C. Impulse-operated Dials.

Each unit is self-contained. The apparatus is mounted on a panel framework and protected by quickly detachable metal covers.

UNIVERSAL CHRONOGRAM



THE T.M.C. Universal Chronogram will operate warning signals at predetermined times according to fixed weekly programmes, in Factories, Public Buildings, etc.

The standard Chronogram illustrated provides facilities for the employment of a wide variety of signalling apparatus. It can control one, two or three signalling circuits, operated either jointly or on independent programmes.

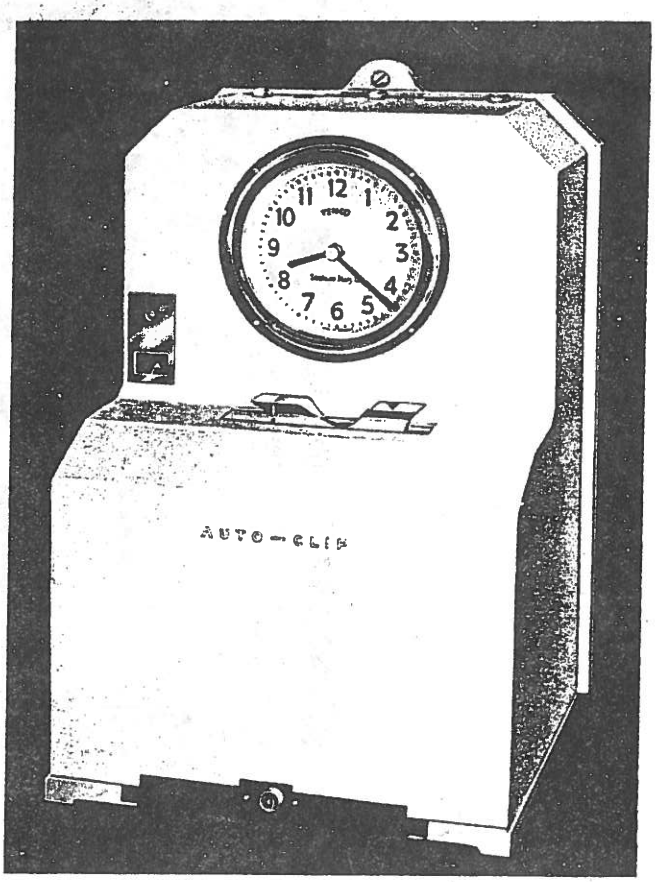
A signal can be operated at *any* minute of *any* hour of *any* day, and be repeated automatically each week as the selected minute recurs. The duration of the signal on any circuit is flexible, therefore the period of ringing can be made short, long, or intermittent, at option.

Output contacts are made via mercury switches which will carry loads up to 6 amps.

The driving unit consists of a Master Clock, the mechanism of which may be varied to suit the individual requirements of any particular installation. The Master Clock in the Chronogram illustrated includes a pendulum controlled by a synchronizer unit operated direct from the a.c. mains supply. Alternatives can, however, be provided in which the mechanism operates as an independent battery-driven type of Master Clock, or includes an electromagnetic synchronizer operated at any convenient periodic interval by impulses derived from a remote standard time source. Signalling programmes are normally set up to customers' requirements and tested before despatch from the Factory, but spare operating pins are provided for insertion in the chronogram disc to permit variation of signal schedules if required.

ELECTRIC CLOCK SYSTEMS

STAFF TIME RECORDER



The Staff Time Recorder illustrated is an automatic model, but manually-operated Recorders can also be supplied.

THE T.M.C. Staff Time Recorders can be supplied for either single or two-colour printing. Automatic column-change controlling the lateral position of recordings is incorporated. Over-printing is made impossible by automatically clipping the edge of the card on each registration. The mechanisms are designed to permit easy maintenance and service. In the automatic type the power supply for printing is derived from the a.c. mains, while the drive for the shift mechanism can be operated either by one-minute impulses from a Master Clock, or synchronous motor. Important features embodied in the design are :—

(a) The Recorder can be arranged to enable workers to clock on and off at frequent intervals during the day. A special long card can be supplied with space for 40 recordings.

(b) No exposed contacts to get dirty and immobilize the mechanism—electrical contact is controlled through a mercury switch.

(c) All numerals and figures of the printing mechanism are engraved in solid gun-metal, thus completely eliminating defacement troubles due to excessive wear.

STROMBERG Time Stamp Imprints

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

Time imprints made with any model Stromberg Stamp include in proper sequence—year, month, date, a.m. or p.m. hour and minute—in a straight line as shown in this facsimile:

1946 FEB 9 AM 11 56

When necessary, an Autospeed registration can also include tenths of minutes (six seconds) which is illustrated in the following fractional minute recording expressed decimally:

1946 NOV 6 AM 9 23 .7

Continental hours from 1 to 24 or 0 to 23 can be substituted for a.m. and p.m. hours on any Stromberg Autospeed Time Stamp.

All Stromberg Stamps in addition to the time imprint have space for both permanent and changeable inscriptions.

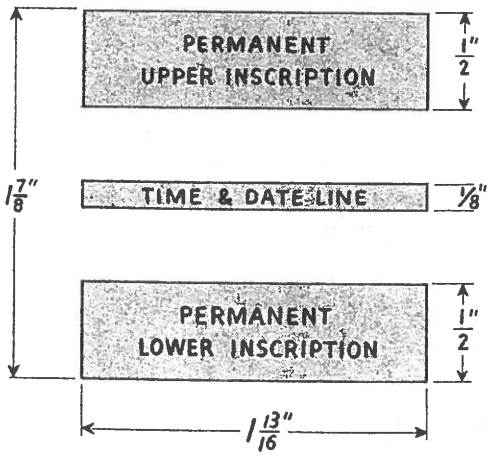


DIAGRAM No. 1

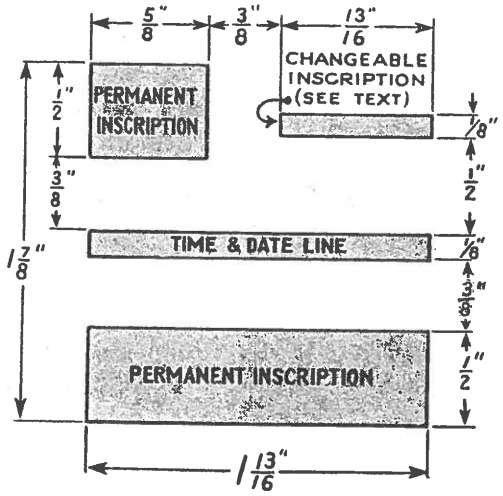


DIAGRAM No. 2

The above diagrams show the exact measurements of the time and date line as well as the space available for permanent and changeable inscrip-

tion plates. In diagram No. 1, either or both spaces may be used to accommodate permanent inscriptions within the limits of the specifications that follow. These plates may either be installed at the factory or after the stamp is in service, and may be changed at any time. Diagram No. 2, illustrates the inscription space available when a changeable inscription is required. Here it is possible to include with the changeable inscription, a small permanent upper inscription and a full sized lower inscription when needed. Changeable inscription plates must be installed on the stamp at the factory.

The four facsimiles reproduced below illustrate the wide variety of data it is possible to record along with the all important time imprint on a Stromberg Stamp:

FILED 1946 JAN 27 AM 9 30 THE MUNICIPAL COURT OF CHICAGO .....CLERK	HOTEL WESTWARD-HO 1946 FEB 10 AM 8 35 KITCHEN
PAID 1946 AUG 7 AM 10 21 STROMBERG TIME CORPORATION	U.S. CUSTOM HOUSE ANSWERED 1946 FEB 9 PM 12 32 OFFICE OF COLLECTOR OF CUSTOMS LOS ANGELES, CALIF.

Four sizes of type are available for inscriptions. The number of words or letters is, of course, governed by the type size and the number of spaces in the line. These types are listed:

TYPE NO. 1 MODERN TIME SYSTEMS

TYPE NO. 2 ENGRAVING MACHINE

TYPE NO. 3 CAMERA DEPT.

TYPE NO. 4 RECEIVED

On the upper and lower permanent inscription plates illustrated in Diagram No. 1, the following type specifications apply:

No. 1 Type — Up to 3 lines of not more than 22 letters or spaces in each line
No. 2 Type — Up to 2 lines of not more than 18 letters or spaces in each line
No. 3 Type — 1 line of not more than 13 letters or spaces
No. 4 Type — 1 line of not more than 10 letters or spaces

The short upper permanent inscription plate illustrated in Diagram No. 2 is limited to type as follows:

No. 1 Type — 3 lines of not more than 7 letters or spaces in each line
No. 2 Type — 2 lines of not more than 6 letters or spaces in each line
No. 3 Type — 1 line of not more than 4 letters or spaces
No. 4 Type — 1 line of not more than 3 letters or spaces

With a changeable inscription it is possible to stamp a letter or form with such words as "RECEIVED", "ANSWERED", or "FILED". Changeable inscriptions are simply operated by turning a knob to the proper point for the desired word, as shown by an indicator. The changeable inscription stays in the indicated position until the knob is again turned. The number of words is limited to four, with each word of not more than 9 letters in the No. 1 type, or 8 letters in the No. 2 type. A blank or dashes may be substituted for any one word.

Symbols designating specific individuals or departments may be incorporated in any Stromberg Time Stamp on the time and date line. The symbol replaces the year wheel and may include one or two letters or figures. For example:

KX AUG 12 AM 10 31

Any Stromberg No. 12 or No. 3 Time Stamp can be furnished with a slug holder which permits identification slugs to be inserted and withdrawn at will. When the slug or small inscription plate is inserted, a corresponding imprint appears just above or below the time and date line on either the right or left side, as illustrated:

1946 FEB 9 PM 12 14
LO

Slugs may include up to four letters or numerals of No. 1 size type, up to three letters or numerals of No. 2 size type, or two letters or numerals of No. 3 size type. The removable slug feature is invaluable in hotels, banks, cashier booths, etc., where each clerk retains his own slug bearing his identifying numerals or letters, inserting it into the holder when he goes on duty and withdrawing it when going off duty. Thus,

each registration made provides a printed record as to just which individual did the stamping.

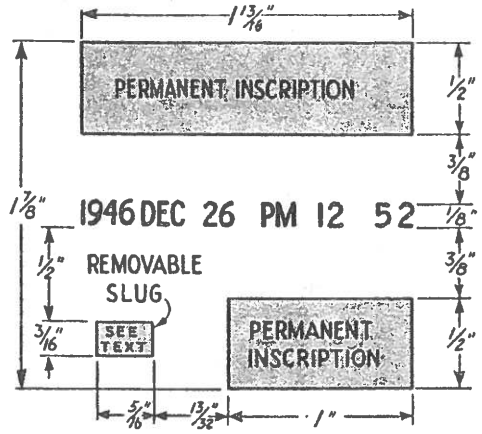


DIAGRAM No. 3

When removable slugs are used the following type specifications apply to the short lower permanent inscription appearing in Diagram No. 3:

No. 1 Type — Up to 3 lines of not more than 12 letters or spaces in each line
No. 2 Type — 2 lines of not more than 9 letters or spaces in each line
No. 3 Type — 1 line of not more than 7 letters or spaces
No. 4 Type — 1 line of not more than 5 letters or spaces

Stromberg Time Stamps may be equipped with guides so that imprints are always made in a fixed location on a document. This feature is especially valuable when printed forms such as telegraph blanks or orders are to be stamped, since it insures that the imprint will always be properly located on the form.

STROMBERG *Time Stamp Users*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN SU-2

Time Stamp Users

Stromberg Time Stamps are widely used to control the flow of paper work and fix responsibility for delays. Just a few of the nation-wide list of users are given below:

All American Cables and Radio, Inc.
New York, New York

Allis-Chalmers Mfg. Company
Milwaukee, Wisconsin

Allright Auto Parts
Houston, Texas

American Airlines, Inc.
Nationally used

American Steel and Wire Company
Cleveland, Ohio

American Telephone and Telegraph Co.
Nationally used

Anheuser-Busch, Inc.
St. Louis, Missouri

Armstrong Cork Company
Los Angeles, Calif.

The Atchison, Topeka and Santa Fe Railway Co.
Throughout System

Baltimore & Ohio R.R. Company
Baltimore, Maryland

Bell Telephone Laboratories, Inc.
New York, New York

The Biltmore Hotel
Los Angeles, Calif.

Burroughs Adding Machine Company
Detroit, Michigan

The Carborundum Company
Niagara Falls, New York

Carnegie-Illinois Steel Corporation
Pittsburgh, Pennsylvania

Chase Brass & Copper Company, Inc.
Cleveland, Ohio

Chase National Bank of New York City
New York, New York

Chicago Stock Exchange
Chicago, Illinois

Chrysler Corporation
Detroit, Michigan

Cluett-Peabody & Company, Inc.
Troy, New York

Commercial Cable Company
New York, New York

Commercial Steel Treating Corporation
Detroit, Michigan

Commonwealth Edison Company
Chicago, Illinois

Delta Air Corporation
Atlanta, Ga.

Dictaphone Corporation
New York, New York

Drake Hotel
Chicago, Illinois

Eastman Kodak Company
Rochester, New York

Edgewater Beach Hotel
Chicago, Illinois

Egry Register Company
Dayton, Ohio

Equitable Life Assurance Company
New York City, New York

Federal Reserve Banks
Various Branches

The Firestone Tire & Rubber Company
Akron, Ohio

Fisher Body Division of General Motors Corp.
Lansing, Michigan

Ford Motor Company
Dearborn, Michigan

General Electric Company
Bridgeport, Connecticut

The General Tire & Rubber Company
Akron, Ohio

Globe Wireless, Ltd.
Various Branches

Great Lakes Terminal Warehouse Co.
Toledo, Ohio

Higgins Industries
New Orleans, La.

Humble Oil and Refining Company
Houston, Texas

Industrial Rayon Corporation
Cleveland, Ohio

Lehn & Fink Products
Bloomfield, New Jersey

Mackay Radio and Telegraph Company
Various Branches

Merrill Lynch, Pierce, Fenner & Beane
New York, New York

Missouri Pacific Railroad
St. Louis, Missouri

Montgomery Ward and Company
Chicago, Illinois

Nash Kelvinator Corporation
Detroit, Michigan

New York Public Library
New York, New York

New York Stock Exchange
New York, New York

The New York Times
New York, New York

Norfolk Navy Yard
Portsmouth, Virginia

Northwestern Mutual Life Insurance Co.
Milwaukee, Wisconsin

The Ohio Yellow Cab Company
Dayton, Ohio

Owens-Illinois Glass Company
Toledo, Ohio

Pacific Fruit Express Company
San Francisco, Calif.

Pennsylvania Railroad Company
Various Branches

Port of N. Y. Authority
New York, New York

Radio Corporation of America
New York, New York

City of St. Louis
St. Louis, Mo.

Seaboard Airline Railway
Hamlet, N. C.

Sears-Roebuck & Company
Chicago, Illinois

South Bend Lathe Works
South Bend, Indiana

Spicer Manufacturing Co.
Toledo, Ohio

Standard Oil Company of Calif.
San Francisco, Calif.

Standard Register Corporation
Dayton, Ohio

Hotel Statler
Various Locations

Stevens Hotel Corporation
Chicago, Illinois

Technicolor Motion Picture Corporation
Hollywood, Calif.

Tennessee Eastman Corporation
Oak Ridge, Tenn.

Thompson Products, Inc.
Cleveland, Ohio

Union Pacific Railroad Company
Throughout System

United Airlines Transport Corporation
Los Angeles, Calif.

United Drug Company
Boston, Massachusetts

United States Gypsum Company
Chicago, Illinois

U. S. Government
Various Departments

Universal Transcontinental Corp.
New York, New York

Veeder-Root, Inc.
Hartford, Connecticut

Waldorf-Astoria
New York, New York

Washburn Crosby Company
Buffalo, New York

The Western Union Telegraph Company
Nationally Used

To be continued.

PRINTED IN U.S.A.

Continued from December, 2005 issue.

CINCINNATI
TIME RECORDING EQUIPMENT

EMPLOYES' ATTENDANCE RECORDERS
JOB TIME RECORDERS
TIME STAMPS

Universities, colleges and large schools have numbers of employes who are not faculty members, and for efficiency and to keep down labor costs need to control the attendance and hours-at-work of such employes just as much as business and industrial concerns need to keep time on their employes. The use of one or more Time Recorders (time printing clocks) is both a necessity and an economy.

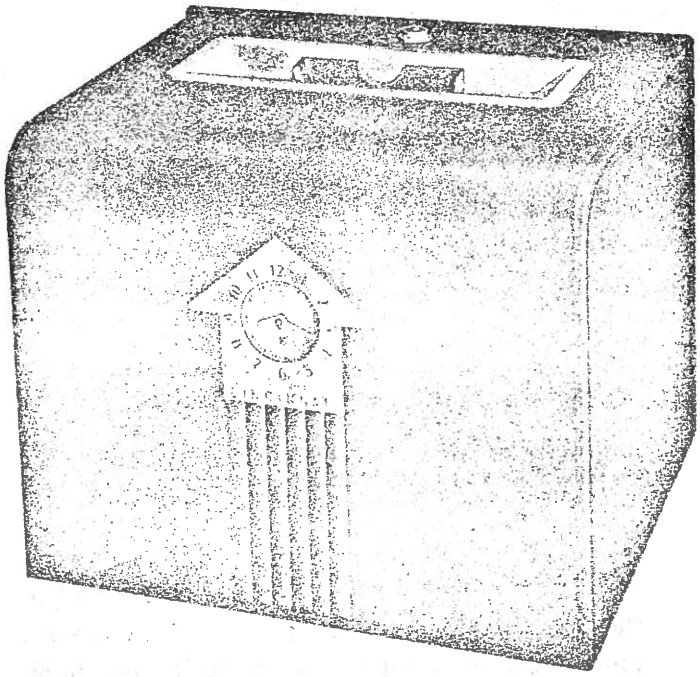
CINCINNATI Time Recorders are made in many different models and capacities to meet the various needs of institutions large and small and businesses of whatever character. There are recorders with manual setting and tripping; semi-automatic; and fully automatic.

A CINCINNATI Electric Time Recorder can be arranged for Master Clock control, including automatic hourly time correction, and be hooked up in circuit with other secondary time instruments (clocks, program machines, etc.). Such a hook up insures the time shown or printed by the recorder or stamp agreeing always with the time shown by all other clocks and time instruments in the same establishment or clock system.

A Time Stamp, for printing the time on papers or cards of any shape or thickness, is practically a "*must*" for every institution and business regardless of size or character. "Time is of the essence" in the receipt and forwarding of mail, telegrams, orders, reports, and it is of inestimable value to an office permanently to print-record the time of handling on written communications and documents.

NATIONAL Time Stamps and TYManDATERS (combination time stamp and job time recorder) are the best engineered, most dependable, durable, trouble-free time machines of their kind, and are amazingly inexpensive. Be sure to see and specify them when planning a new or revised time system installation.

TIME RECORDERS



THE CINCINNATI "FP 800"

Employes' Time Recorder.

Fully Automatic Time Progression — no manual setting.

Automatic Contact Trip Print — no lever, bar or button to press.

Automatic UP-THE-CARD Positioning of Successive Time Registrations.

The last word in the evolution from the old fashioned "punch clock".

For wall or table mounting.

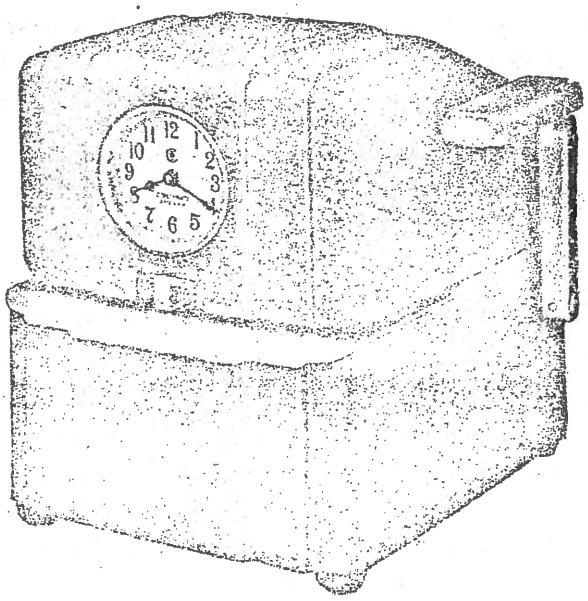
Metal case, 11½" high, 14½" wide, 12¼" deep.

TYMANDATER

Combination Time Stamp and Job Recorder (right) Manual lever trip, Series 3000. Automatic contact trip, Series 4000 (not shown).

Up to six date and time indications printed, e. g. Year, Month, Date, A. M. or P. M., Hour, Minute, or any desired combination. Removable legend-printing plates, one above, one below the time print line, with capacity of 3 lines of not more than 13 letters or numerals each, may be mounted when the TYManDATER is to be used as a time stamp. Without the legend plates the machine will serve as an Employes' Time Recorder (where the number of employes is too small to justify a regular recorder), or as a Job Recorder (beginning and finishing time of a specific piece of work), or as a Time Stamp.

Quiet, portable, stands anywhere. Handsome metal case, Oxford-gray enamel mat finish, polished nickel trim. 7½" high, 6½" wide, 8½" deep.

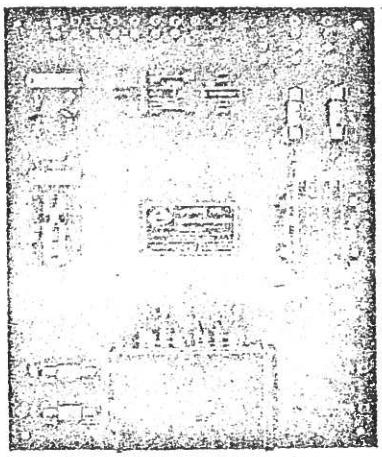


CINCINNATI-LANDIS
CONTROL EQUIPMENT

CINCINNATI-LANDIS Master Clock Systems commonly are arranged to operate on the ordinary commercial lighting circuit, i. e. 110 volt A.C.

Some type of equipment for relaying the power must always be provided when SECONDARY INSTRUMENTS (program machines, clocks, recorders, etc.) are to be controlled by the Master Clock. For such purposes, we provide a Relay Control for operating each circuit of clocks. The control consists of transformer and copper oxide rectifier (usually with a 24 volt D.C. output) together with necessary relays. One or more relay controls are used depending on the number of circuits required.

Usual practice is to install the relay control, if not more than two circuits, together with transformer and rectifier in the Master Clock case. In large systems, and when so specified, the Relay Control, with transformers and rectifiers will be furnished in metal cabinet.



RELAY CONTROL
AND RECTIFIER PANEL

CINCINNATI-LANDIS Master Clock Systems, no matter how many circuits and secondary instruments, with all necessary control equipment, are included, operate with unusual quietness. You will never be conscious of the machinery.

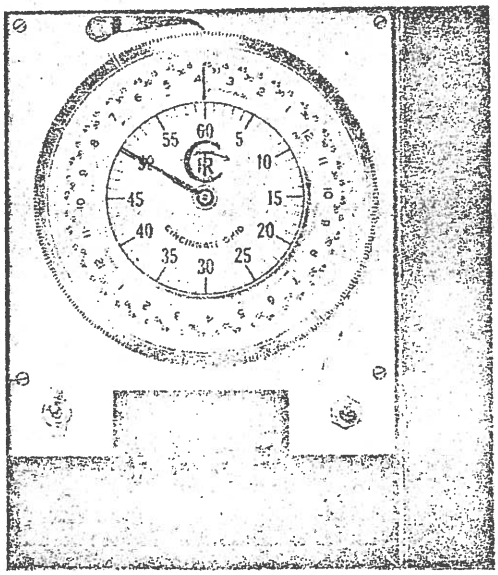
C. T. R. PROGRAM TIMER

For ringing bells, sounding signals or closing electrical circuits at predetermined periods.

Time Signals or Reminders

FOR

FACTORIES
SCHOOLS
HOTELS
AIR PORTS
RAILROADS



Pat. Pending

Features

SYNCHRONOUS MOTORED FOR ACCURACY

AUTOMATIC - ELECTRIC ACCURATE

NO TOOLS REQUIRED FOR CHANGING SCHEDULE

The C. T. R. PROGRAM TIMER is an automatic switch which can be set to close an electrical circuit at any desired 5 minute interval of 24 hours or 2½ minute interval of 12 hours. This circuit closure can be from 5 to 60 seconds as specified and occurs precisely at the times selected.

DISTINCTIVE FEATURES

1. COMPACT STEEL CASE 8" wide, 12" high, 4" deep.
2. PROGRAM MECHANISM IS SET AUTOMATICALLY by turning minute hand as with ordinary clock.
3. PROGRAM SCHEDULE EASILY CHANGED without use of tools.
4. TOGGLE SWITCH AND PUSH BUTTON provided to cut out automatic operation and for special operations.

PROGRAM MECHANISM

Small spring brass lips are inserted and lock securely in numbered slots of program disc according to the desired schedule. These pins select the operating times while the actual operation is accurately performed by a set of cam operated contacts. The silver contacts are completely enclosed and operate with a snap action. Ratings are 10 amps. at 110 volts AC.

Model BR 5-24—Any five minute interval in 24 hours.
Model BR 2½-12—Any 2½ minute interval in 12 hours.
Model BR 2 cir 5-24—Two circuits 5 minute interval in 24 hours. Relay installed in any model for greater amperage.

WHEN ORDERING PLEASE SPECIFY:

If normally open or normally closed contacts are desired.
Voltage and frequency (cycles) of current supply.

THE CINCINNATI TIME RECORDER COMPANY
CINCINNATI 14, OHIO
DISTRIBUTED BY

PARTS PRICE LIST

THE CINCINNATI TIME RECORDER CO.

CINCINNATI, OHIO

GENERAL LETTER #4710

TO ALL DISTRIBUTORS:

August sales honors are as follows:

1. G. T. Fredstrom, Chicago
2. Houston Time Clock Exchange, Houston
3. Cincinnati Time Recorder Distributor, New York

We again extend our congratulations to Mr. Fredstrom and his staff as well as those who have won second and third position.

Honorable Mention:

1. Messrs. Blum and Hooper, Cincinnati
2. L. J. Saunders Co., Columbus
3. Vernon M. Scott, Indianapolis
4. W. F. Hullings, Pittsburgh
5. McGhee Time Service, Inc., Nashville
6. B. F. Saunders, Louisville
7. A. Manganello, Boston
8. Los Angeles Stamp & Stationery Co., Los Angeles
9. L. E. Otte, Philadelphia
10. Calvin G. Baker, Inc., Cleveland

August sales have shown an improvement over July and we again thank all of those who have made this possible.

Vacations are now over and every effort should be made this month to close those prospects which have been held up due to someone being away on a vacation. Industry statistics show Building Construction, Employment, Payroll and Retail Sales are higher by 6 to 21% over last year.

Many of our distributos have heeded our past suggestion of contacting schools for Master Clock Systems and Program Instruments. Quite a number of nice orders have been received during the past month. One distributor has sent orders for ten systems and advised at least that many more will be coming through.

We are making a special offer for a limited time only to reduce our inventory on C.T.R. Wall Clocks of $6.00 each in lots of twenty-five or more, F.O.B. Cincinnati. This is less than cost. Send your order in at once as you cannot go wrong at such an attractive price.

Some distributors have requested new copies of the distributors price list. We are attaching a copy for your use. Please destroy all previous copies and keep the attached confidential.

What progress has been made by you on the Traffic Eye unit? Have you contacted the bus and trucking companies in your territory? A new circular is herewith attached. Advise us of your requirements.

A sample copy of the new Tymandator circular has been mailed. A supply is going forward under separate cover.

C. F. Steinmetz

September 4, 1917

To be continued.

Electronic "master clock" for old slave dials: $50. "Governor" makes Eureka clocks keep quartz-accurate time with no change to the clock: $95. Voltage regulators: $35 to $55.
Bryan Mumford, 3933 Antone Road, Santa Barbara, CA 93110; (805) 687-5116; www.bmumford .com

New publication: 60-page booklet with facsimiles of instructions and drawings re: **FAVAG** clocks with Hipp-toggle, period 1930-1960 (all in French). $25 including postage. Rare French book on CD-Rom, easily printable (in .tif format: "Horlogerie electrique-1ere partie-Horloges-meres et installation horaires" by **Ch. Poncet**, Cluses, 1905, 227 pages. 25 USD or 25 EUR. Order email, viredazepal @bluewin.ch, or address Michel Viredaz, Chemin du Raidillon 48, CH-1066 Epalinges, Switzerland.
Send money in banknotes, no checks please.

50 - **1908 SELF-WINDING CLOCK CO. CATALOGUES** reprinted in 1979 by Dr. Bengt E. Honning. New old stock. $35.00 ea. Including shipping. Roy Crowe, 9257Appleby St., Downey, CA, 90240, (562) 861-8788, email dcrowe2259@ AOL.com

BULLE Insulating (Shoulder) Washers: these special washers are starting to deteriorate. The clock requires 4 of these washers. I had an exact replacement manufactured. A set of 4 is $5 postpaid.
Mel Kaye, FNAWCC, Box 322, Basking Ridge, NJ 07920

New **Tower & Street Clocks**, replacement movements for Telechron large clocks. Manufactured by Electric Time Co., Inc., 45 West Street, Medfield, MA, USA 508-359-4396/800-531-2562/FAX 508-359-4482
www .electrictime.com - E-mail - sales @electrictime.com

Stromberg Master clock movement and correct seconds beat pendulum, plus rectifier unit. $150 + shipping. Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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Requests for reprints of previously published material should be directed to the Chapter Historian:
Dr. George Feinstein 75-19 195th Street Flushing, NY 11366

MUSEUM WANDERINGS

Royal Observatory, Greenwich

The Shepherd 24-Hour Gate Clock

This is one of the earliest electrically driven public clocks and was installed here in 1852. The dial always shows Greenwich Mean Time (GMT) or Universal Time (UT). In summer Britain converts to British Summer Time (BST), which is an hour ahead of GMT, and the clock then appears one hour 'slow'.

Being a 24-hour clock, the hour hand marks noon (XII) at the bottom of the dial and midnight (0) at the top. The time shown is accurate to 0.5 of a second.

--- MART ---

All MART Ads are FREE, Send copy to the attention of the Editor:
Harvey Schmidt, 75-80 179th St., Flushing, NY 11366. Limit 3 lines.

WANTED: HOROLOGICAL LITERATURE, Repair info, Catalogs, etc. for the Journal
PORTESCAP Secticon Clock or Movement. Antique Watch & Clockmaker's Tools & Machinery.
(718) 969-0847 Harvey Schmidt, 75-80 179th St., Flushing, NY 11366

Information on **Frank Hope-Jones, Synchronome** and their products. Details of any clocks or products of the company and also trade literature are needed for a forthcoming book. If you have anything which you think could be of value please e-mail details to robert_miles.t21@ btinternet.com .

Pendulum for **Standard** Master 2 ½ " D. x 3" Long, nickle plated, there are generally 2 of these on this particular clock and I have only one and need the other.
Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

HARD TO FIND PARTS AVAILABILITY:
BULLE suspension assemblies, fabric type, just like the originals. **TIFFANY** Single Contact suspension springs (0.004") The Horolovar Co., Box 264, St. Clair Shores, MI 48080 (313)882-9380

TIFFANY Double Contact Suspension Springs: Use a **Hamilton** Ladies Watch Mainspring, Specification: **HAMILTON** 6/0 #2521, 1.40 mm x 0.12 mm x 11¼". Available from:
Bill Schroeder @ $3.00 each + postage. 6033 N. Sheridan Rd., #31H, Chicago, IL 60660,
(773)275-2563. Also available from most Watch Parts Suppliers.

FOR SALE: Replacement Field Coils for **SESSIONS** and **HAMMOND** synchronous clock movements.
Wining's Clock Service, 2910 Farmdale Rd., Akron, OH 44312 (330) 628-9655

"Synchronome Brisbane 1903-1991" The story of the Jackson family of electrical clock makers. An Historical Project by Chapter 104. A 32 page booklet about the operation of the Synchronome Elec. Co. of Australasia. $5.00 Norman Heckenberg, 60 Orchard Tce., St. Lucia, 4067, Australia

Just arrived glass dome for the large **Bulle** clock. We also have glass domes for the **Tiffany Never Wind, Barr, Poole, & Kundo** clocks. If I don't have it in stock I'll try to get it. E-mail www.glassdomes.com
Ben Bowen, 3194 West Capps, Monticello FL 32344, (850) 997-3797 phone & fax.

CD containing over 100 electric clock systems, such as **ATO, Brillie, Bulle, Campiche, Eureka, Garnier, Gent, Hipp, Holden, Magneta, Poole, Scott, Shortt, Synchronome, Tiffany, Vaucanson, Wagner, Warren** & many more. Price $30, includes shipping. J.E. Bosschieter, contact me at BoscoClocks @Zonnet.nl

"A Guide to Electrical Horology" by Martin Swetsky, FNAWCC. Includes Chapters on History, Electrical Principles, Repair Methods, Tips, plus Repair References. Price $42.00 Post Paid. Mitchell Swetsky,
10 Chelsea Way, Fairport, NY 11450. E-mail MSwetsky@ Rochester.rr.com.

BANGOR Electric Clock Parts, New Factory original parts too many to list separately. Call or e-mail with your needs. Elmer Crum, (727)868-0181, electrichorology@juno.com

Poole, Barr cylindrical Pendulums. $15 + $3 shipping.
Call or E-mail S. Cabibbo (201) 489-8176, TimeandTreasures@ MSN.com

THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78

NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXII #1, MARCH 2006

INDEX OF THE JOURNAL OF THE ELECTRICAL HOROLOGICAL SOCIETY
March, 1972 through December 2005

Introduction

The following pages contain the Index of the "Journal of the Electrical Society." This Index was developed primarily for the use of collectors of electric clocks and the intended purpose of the Index is to locate information concerning a particular clock. This Index covers all articles published in the "Newsletter" (predecessor of the "Journal") and "The Journal of the Electrical Horology Society." In order to make the Index easier to use, the following information is provided for each article.

Subject
Topic (Form of the information as it was originally presented.)
Author or Comments (i.e. Bennett, W.O. or the Jewelers Keystone)
Date (as shown on the Newsletter or Journal)
Volume Number (See attached listing)
Issue Number (See attached listing)
Page Number
Number of Pages in the Article

Judicious use of the above information will make it easier to identify the most useful articles. For example, a four page reprint concerning a particular clock taken from a trade publication will probably provide more information than a mention about the same clock contained in a single page article. Clocks are identified in this Index the same way that they are identified in the referenced article. Thus, as an example, when researching a clock with ITR on the dial, it may be helpful to check the Index under International Time Recorder, ITR, International Business Machines, and IBM.

Attached is also a listing of the "Newsletters" and "Journals" that have been published over the 34 years that NAWCC Chapter #78 has been in operation. This listing will help identify the proper location for the desired information.

Continued on page 22.

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Brillie	Master Clock from Bell Labs.	Photographs	Feb. 84	X	1	9	1
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Brit. Pat. # 14,873/1909	Holden, Frank	Holden Battery Clock	Sept. 00	XXV	3	14 - 20	7
Brit. Pat. # 14,126/1910	Holden, Frank	Improvements	Dec. 00	XXVI	4	10 - 12	3
Brit. Pat. # 286,701	Hatot, Leon; 1927	ATO Clock	June 01	XXVII	2	15 - 23	9
Bulle	Suspension Repair	Technical	Feb. 73	0	4	4	1
Bulle	Repair Hints	Technical	Sept. 74	0	10	3	1
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Bulle	Description	Electric Time Machine	Aug. 76	II	4	8 - 9	2
Bulle	Clock Construction & Repair	Lloyd, G.E.	Apr. 78	IV	2	3 - 5	3
Bulle	Detaied Assembly View	Model A	Dec. 88	XIV	2 - 4	25	1
Bulle	Use of Contact Cleaner	Hint by Ellison, H.W.	Dec. 88	XIV	2 - 4	28	1
Bulle	La Bulle Clock Book, Translation	Mills, Robert	June 96	XXII	2	Not Avail.	
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Campiche	Master Clock	Photograph	June 78	IV	3	11	1
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Chronos	See Aron,Herman		June 81	VII	3	13 - 19	7
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Watch, Electric	Electrical Experiments Leading to	Wise, S.J.	Feb. 84	X	1	6 - 8	3
Western Union TC	Time & Messenger Service Technology	Singer, J.J.	Feb. 81	VII	1	2 - 7	6
Western Union TC	History of Time Service		Dec. 81	VII	6	2 - 4	3
Western Union TC	History of Time Service		Dec. 98	XXIV	4	2 - 5	4
WWV	Timer for Checking El. Clocks	Part 1, Hopkins, P.	Apr. 79	V	2	2 - 5	4
WWV	Timer for Checking El. Clocks	Part 2, Hopkins, P.	June 79	V	3	2 - 9	6
WWV	Rating Pend. Electronically	Hopkins, P.	Aug. 79	V	4	3 - 6	4
Zenith "Calora"	Clock Manual, Part 1	Trans.by Feinstein, G.	Feb. 82	VIII	1	2 - 9	8
Zenith "Calora"	Clock Manual, Part 2	Not published	Apr. 82	VIII	2	3	1

Continued from page 1.

This Index is based on earlier indexes of the "Journal of the Electrical Horology Society" prepared by Marty Feldman, the original editor of the "Journal" who served in this capacity for 15 years. Particular thanks are extended to Marty for all of his efforts on behalf of electrical horology. In 1999, Bill Ellison prepared an Index covering articles through that date. Special thanks are due to Dr. George Feinstein who prepared this latest comprehensive Index of the "Journal." Special thanks are also due to the editorial committee of Messrs. Martin Swetsky and Harvey Schmidt, and Dr. George Feinstein who have kept the technical and interest level of the "Journal" consistently high. Information regarding corrections and/or additions are always welcome.

Yours very truly, Bill Ellison.....President
Harvey Schmidt, FNAWCC,.....Secretary-Treasurer) Co-Editors
Dr. George Feinstein, FNAWCC..Chapter Historian)

MUSEUM WANDERINGS

Science Museum

Rudd's Free Pendulum Clock

This experimental clock, constructed by its inventor, R. J. Rudd, of Croydon, in 1899, was the first to embody the principle of the Free Pendulum and Slave Clock. Rudd's actual mechanisms are very delicate and difficult to keep in adjustment and have therefore been superseded, but his idea has led to the modern Shortt clock, whose accuracy over long periods exceeds that of any other mechanical timekeeper.

The best mechanical timekeeper known is a pendulum swinging freely under gravity, but in order to convert such a pendulum into a practical clock the pendulum must be sustained in motion so that its oscillations do not die down, and the swings must be counted. In ordinary clocks the sustaining and counting functions are both carried out by the escapement and clock mechanism, but the free motion of the pendulum is considerably interfered with thereby.

In the Rudd clock the two functions are carried out by a subsidiary or "slave" clock. This clock gives an impulse every minute to the free pendulum and the rate of the slave clock is automatically regulated by the free pendulum so that the impulses always arrive at the correct moment in the middle of a swing. If an impulse from the slave arrives too early the regulator of the slave clock is set "slow" for the ensuing minute, if too late it is set "fast". The slave soon settles down so that its rate is equal to that of the free pendulum, and any subsequent variations of its rate are automatically corrected.

Presented by F. Hope-Jones, Esq.
Inv. 1930-665

Electronic "master clock" for old slave dials: $50. "Governor" makes Eureka clocks keep quartz-accurate time with no change to the clock: $95. Voltage regulators: $35 to $55.
Bryan Mumford, 3933 Antone Road, Santa Barbara, CA 93110; (805) 687-5116; www.bmumford .com

New publication: 60-page booklet with facsimiles of instructions and drawings re: **FAVAG** clocks with Hipp-toggle, period 1930-1960 (all in French). $25 including postage. Rare French book on CD-Rom, easily printable (in .tif format: "Horlogerie electrique-1ere partie-Horloges-meres et installation horaires" by **Ch. Poncet**, Cluses, 1905, 227 pages. 25 USD or 25 EUR. Order email, viredazepal @bluewin.ch, or address Michel Viredaz, Chemin du Raidillon 48, CH-1066 Epalinges, Switzerland.
Send money in banknotes, no checks please.

50 - **1908 SELF-WINDING CLOCK CO. CATALOGUES** reprinted in 1979 by Dr. Bengt E. Honning. New old stock. $35.00 ea. Including shipping. Roy Crowe, 9257Appleby St., Downey, CA, 90240, (562) 861-8788, email dcrowe2259@ AOL.com

BULLE Insulating (Shoulder) Washers: these special washers are starting to deteriorate. The clock requires 4 of these washers. I had an exact replacement manufactured. A set of 4 is $5 postpaid.
Mel Kaye, FNAWCC, Box 322, Basking Ridge, NJ 07920

New **Tower & Street Clocks**, replacement movements for Telechron large clocks. Manufactured by Electric Time Co., Inc., 45 West Street, Medfield, MA, USA 508-359-4396/800-531-2562/FAX 508-359-4482
www .electrictime.com - E-mail - sales @electrictime.com

Stromberg Master clock movement and correct seconds beat pendulum, plus rectifier unit. $150 + shipping. Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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Requests for reprints of previously published material should be directed to the Chapter Historian:
Dr. George Feinstein 75-19 195th Street Flushing, NY 11366

President's Message:

Fellow Horologists

This issue of the Journal has a single subject - a comprehensive index of past Journal articles. This latest Index was prepared by Dr. George Feinstein and special thanks to George are extended. Over the 34 years that the Journal has been published, a wealth of information has been made available. This information was gathered and/or written by our members and thanks are due to all who have contributed. Future articles are always solicited and are greatly appreciated. Please take the time to submit proposed articles to our editors so that all members of Chapter #78 can share this information.

Please put this Index to good use and study the clocks in your collection.

Bill Ellison, President

--- MART ---

All MART Ads are FREE, Send copy to the attention of the Editor:
Harvey Schmidt, 75-80 179th St., Flushing, NY 11366. Limit 3 lines.

WANTED: HOROLOGICAL LITERATURE, Repair info, Catalogs, etc. for the Journal
PORTESCAP Secticon Clock or Movement. Antique Watch & Clockmaker's Tools & Machinery.
(718) 969-0847 Harvey Schmidt, 75-80 179th St., Flushing, NY 11366

Information on **Frank Hope-Jones, Synchronome** and their products. Details of any clocks or products of the company and also trade literature are needed for a forthcoming book. If you have anything which you think could be of value please e-mail details to robert_miles.t21@ btinternet.com .

Pendulum for **Standard** Master 2 ½ " D. x 3" Long, nickle plated, there are generally 2 of these on this particular clock and I have only one and need the other.
Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

HARD TO FIND PARTS AVAILABILITY:

BULLE suspension assemblies, fabric type, just like the originals. **TIFFANY** Single Contact suspension springs (0.004") The Horolovar Co., Box 264, St. Clair Shores, MI 48080 (313)882-9380

TIFFANY Double Contact Suspension Springs: Use a **Hamilton** Ladies Watch Mainspring, Specification: **HAMILTON** 6/0 #2521, 1.40 mm x 0.12 mm x 11¼". Available from:
Bill Schroeder @ $3.00 each + postage. 6033 N. Sheridan Rd., #31H, Chicago, IL 60660,
(773)275-2563. Also available from most Watch Parts Suppliers.

FOR SALE: Replacement Field Coils for **SESSIONS** and **HAMMOND** synchronous clock movements.
Wining's Clock Service, 2910 Farmdale Rd., Akron, OH 44312 (330) 628-9655

"Synchronome Brisbane 1903-1991" The story of the Jackson family of electrical clock makers. An Historical Project by Chapter 104. A 32 page booklet about the operation of the Synchronome Elec. Co. of Australasia. $5.00 Norman Heckenberg, 60 Orchard Tce., St. Lucia, 4067, Australia

Just arrived glass dome for the large **Bulle** clock. We also have glass domes for the **Tiffany Never Wind, Barr, Poole, & Kundo** clocks. If I don't have it in stock I'll try to get it. E-mail www.glassdomes.com
Ben Bowen, 3194 West Capps, Monticello FL 32344, (850) 997-3797 phone & fax.

CD containing over 100 electric clock systems, such as **ATO, Brillie, Bulle, Campiche, Eureka, Garnier, Gent, Hipp, Holden, Magneta, Poole, Scott, Shortt, Synchronome, Tiffany, Vaucanson, Wagner, Warren** & many more. Price $30, includes shipping. J.E. Bosschieter, contact me at BoscoClocks @Zonnet.nl

"A Guide to Electrical Horology" by Martin Swetsky, FNAWCC. Includes Chapters on History, Electrical Principles, Repair Methods, Tips, plus Repair References. Price $42.00 Post Paid. Mitchell Swetsky, 10 Chelsea Way, Fairport, NY 11450. E-mail MSwetsky@ Rochester.rr.com.

BANGOR Electric Clock Parts, New Factory original parts too many to list separately. Call or e-mail with your needs. Elmer Crum, (727)868-0181, electrichorology@juno.com

Poole, Barr cylindrical Pendulums. $15 + $3 shipping.
Call or E-mail S. Cabibbo (201) 489-8176, TimeandTreasures@ MSN.com

THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78
NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

2 June
VOLUME XXXII #~~1~~, MARCH 2006

Fellow Horologists:

This issue of the Journal of the Electrical Society will complete the material on the Telephone Manufacturing Company, Ltd. We will continue the material from the 1940's on the Cincinnati-Landis Clocks and catalogue from the Stromberg Time Corporation.

Our next issue of the Journal will begin a series on Warren Telechron Clocks with the reprint of an early catalog describing these very significant clocks. It is easy to overlook Henry Ellis Warren's contributions to time keeping and his part in making accurate time available to all. Perhaps this information will get you started in a closer look at 110 VAC synchronous time keeping.

The following is a quick update on the Symposium planned for 2008 in Springfield, Illinois - home of the Sangamo Clocks. Initial contacts of Springfield hotels are in progress and we have begun making arrangements to put together an exhibit of Sangamo clocks. We are still looking for proposed papers on electrical horology. Please let me know if you are interested in presenting a paper. Papers covering history, theory, and repair are needed.

By the time that you receive this issue of the Journal, the NAWCC National in Cleveland will be over. I hope that you were able to attend the Electrical Horology meeting and that you had the opportunity to meet fellow electrical enthusiasts.

Yours very truly,

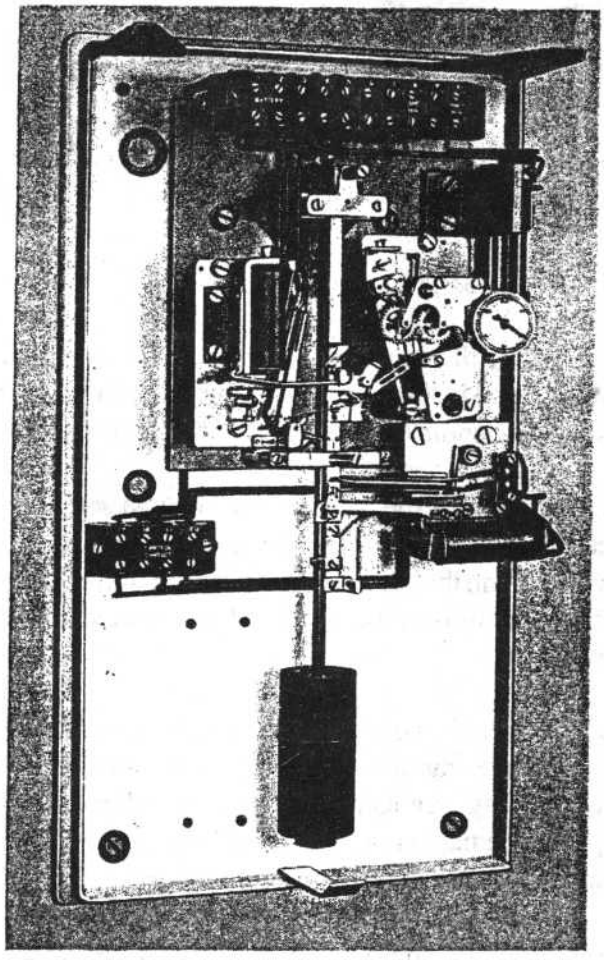
Bill Ellison.....President
Harvey Schmidt, FNAWCC,.....Secretary-Treasurer) Co-Editors
Dr. George Feinstein, FNAWCC..Chapter Historian)

HARVEY SCHMIDT, FNAWCC, Secretary-Treasurer, 75-80 179th ST. FLUSHING NY 11366

Continued from December, 2005 issue.

TMC ELECTRIC CLOCK SYSTEMS

MASTER CLOCK
IMPULSE CONTROLLED



This Master Clock has a half-second beat pendulum synchronized by periodic impulses transmitted from an extraneous source of control. The cover and standard comparator dial have been removed to display the impulsing, sustaining and synchronizing mechanisms.

DIMENSIONS

Height : 16 in. (40·64 cm)
Width : 8½ in. (21·59 cm)
Depth : 4½ in. (11·43 cm)

THIS Master Clock is electrically operated by dry cells or accumulators. It is controlled by a magnetic synchronizer operated by periodic impulses supplied from some extraneous source, for example, signals transmitted by land-line from an Observatory, a Radio Station or a time announcing system, such as the British Post Office Speaking Clock.

Signals transmitted by radio, or over land line, or a combination of both, can be received on auxiliary electronic equipment and the pulses passed to the magnetic synchronizer. This auxiliary equipment is contained in an all-metal case of the same size and design as that which houses the clock.

The various units which comprise the clock mechanism, are mounted on a substantial panel; each individual unit is interchangeable for servicing purposes, and replacement is a simple matter.

MASTER CLOCK
D.C. Type

ELECTRIC CLOCK SYSTEMS

THE PENDULUM

The gravity-sustained pendulum has a periodicity of 1-second. The type-metal bob is attached to an Invar rod by a temperature-compensated support. A calibrated adjusting nut facilitates rating the pendulum.

SUSTAINING

Every half-minute an arm, mounted on the gathering-wheel spindle, releases an impulse pallet which, by means of a pivoted gravity-sustaining lever, imparts a thrust to the pendulum. The arm is restored to its position of rest by an electro-magnet.

CONTACT UNIT

Impulses are transmitted at 30-second intervals by a gravity switch, the contacts being operated by an arm integral with the pivoted gravity-sustaining lever. A series resistance is fitted for balancing the current in the secondary circuits.

CABLING

The battery leads, and wiring to and from the clock are terminated on a row of terminals mounted above the clock mechanism.

THE CASE

The clock is housed in a hardwood case, it is extremely durable and arranged for wall-mounting and is suitable for hot and dry climatic conditions. The front of the case is fitted with a glazed and dust-proof door.

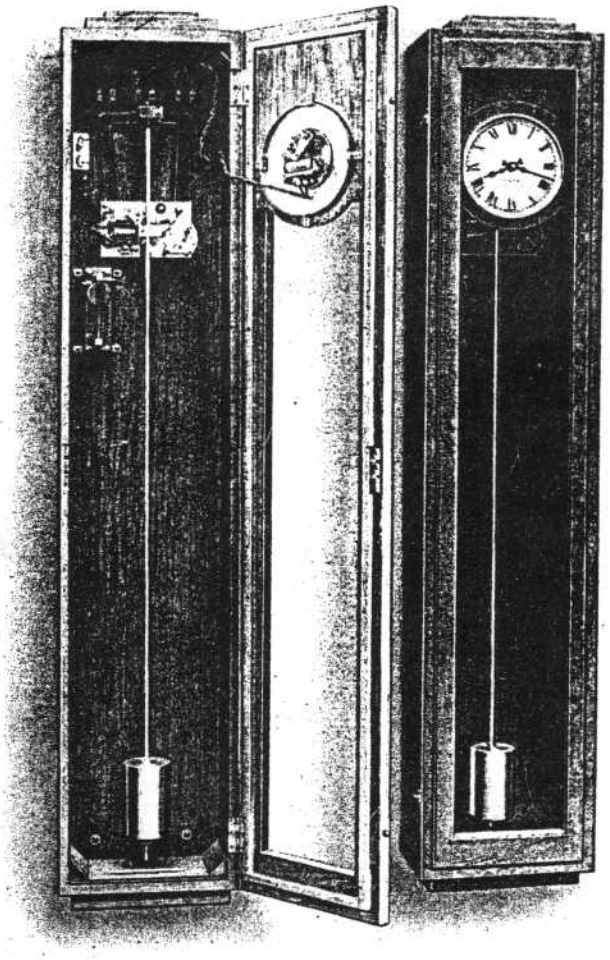
FIXING

Full instructions for the installation and testing of the clock are given in the appropriate Technical Specification supplied with each order.

ELECTRIC CLOCK SYSTEMS

MASTER CLOCK
D.C. TYPE

The T.M.C. Master Clock in its simplest form but capable of maintaining a comprehensive time service in any class of building. The clock has a gravity sustained one-second pendulum performing as a half-minute impulse transmitter.



DIMENSIONS

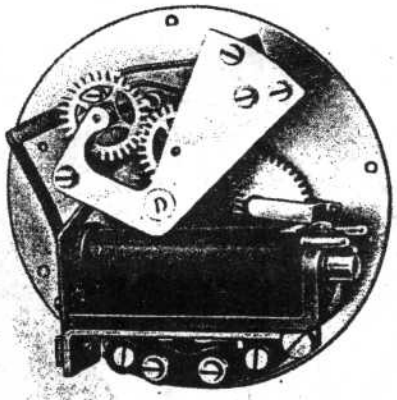
Height : 51 in. (129·54 cm)
Width : 10 in. (25·40 cm)
Depth : 6 in. (15·24 cm)

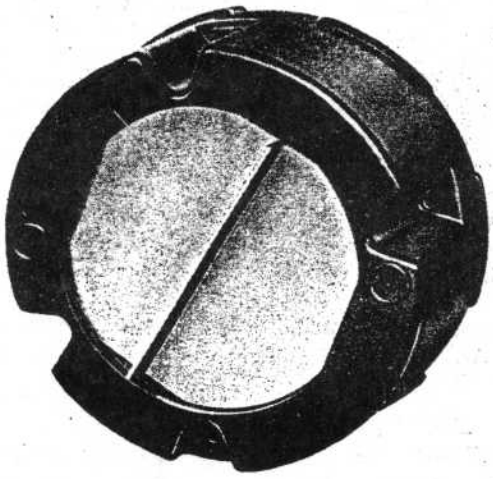
THIS T.M.C. Master Clock, electrically operated either from a battery of dry cells or accumulators, distributes impulses at 30-second intervals. It is suitable for controlling any system of electrical apparatus and dials dependent on ½-minute impulses, in public, educational, commercial or industrial buildings. If it is required to control staff and workmen's time recorders, etc., the clock can be arranged to transmit 1-minute impulses by the addition of an Impulse Converter at an extra charge.

To ensure maximum stability and to permit easy access to the working parts, the movement is mounted as a complete unit on a substantial cast foundation and pendulum bracket. This unit is quickly detachable and the replacement of individual parts—if accidentally damaged—is a simple matter; thus, installation and maintenance are reduced to the utmost simplicity.

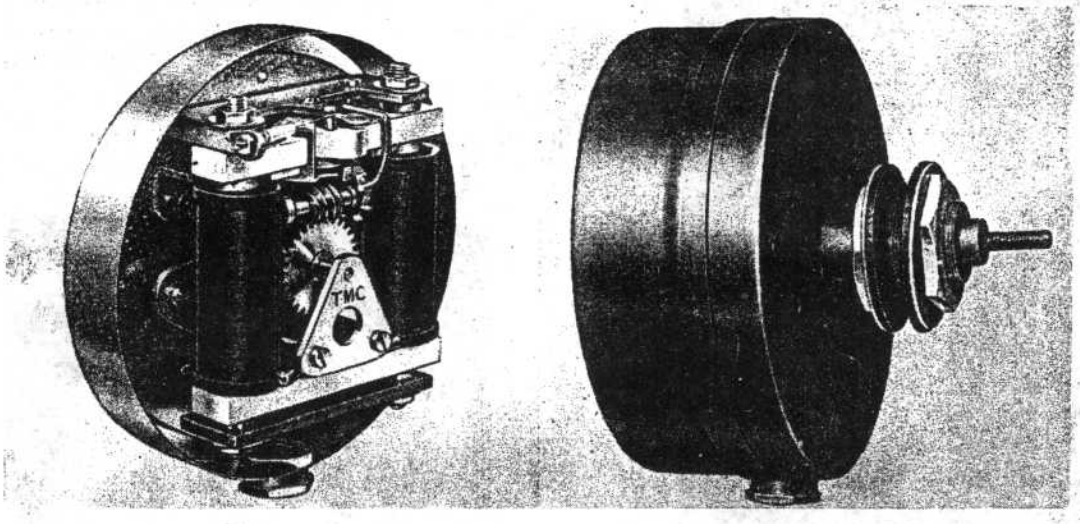
A comparator dial (6 in. diameter), fitted with a T.M.C. single-pallet drive impulse movement, is mounted in the glass-fronted door of the clock.

IMPULSE OPERATED DIALS





PALLET DRIVE MOVEMENT: This movement is electro-magnetically operated by impulses transmitted at half-minute intervals by a Master Clock. The hands are progressed half a minute at each impulse, by the two-step action of a *D*-shaped pallet driving a train of gears. The pallet prevents the hands from being over-driven throughout the duration of the impulse, and double back-stop pawls securely lock them in all positions. The movement is enclosed in a dust-proof case with an easily detachable inspection cover.



WORM DRIVE MOVEMENT: This is used for the 24 in. diameter dials, and is operated by half-minute impulses transmitted from a Master Clock. The operating pawls are a special feature of the mechanism; they are not dependent on springs but are magnetically controlled. The hands cannot be over-driven and are securely locked in all positions. They settle gently after they are moved and do not impose heavy stresses on the driving mechanism, the inertia loads being taken by the end thrust of the worm on its substantial supporting bracket. The movement is enclosed in a cover proof against dust and damp.

IMPULSE OPERATED DIALS

STANDARD T.M.C. impulse-operated Dials are available with dial diameters ranging from 6 inches up to 24 inches, in moulded, spun-metal, and cast aluminium cases. The dial markings and the hands have been designed for maximum visibility. Dials up to 16 inches diameter have a pallet-drive movement; above that size a worm-drive movement is fitted: both types of movement are illustrated overleaf.

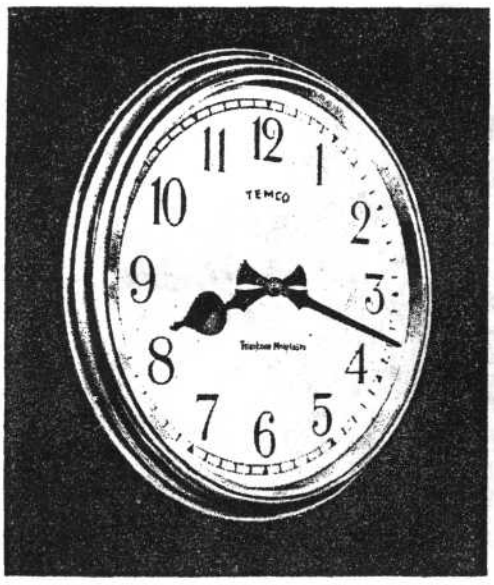
MOULDED and SPUN-METAL CASES

These cases are designed for surface-mounting on walls, but two dials can be arranged back-to-back, to hang from the ceiling as a double-faced unit in halls, workshops, etc. A moulded case is shown on the right; spun-metal cases resemble the moulded cases in appearance.

DIMENSIONS (dial diameters)

Moulded Cases ... ... (*Brown finish*)	6 in. (15·24 cm) 9 in. (22·86 cm) 12 in. (30·5 cm)
Spun-metal Cases ... (*Bronze or white enamel finish*)	8 in. (20·32 cm) 10 in. (25·4 cm) 12 in. (30·5 cm) 16 in. (40·64 cm) 24 in. (60·96 cm)

Alternative finishes can be supplied to order.

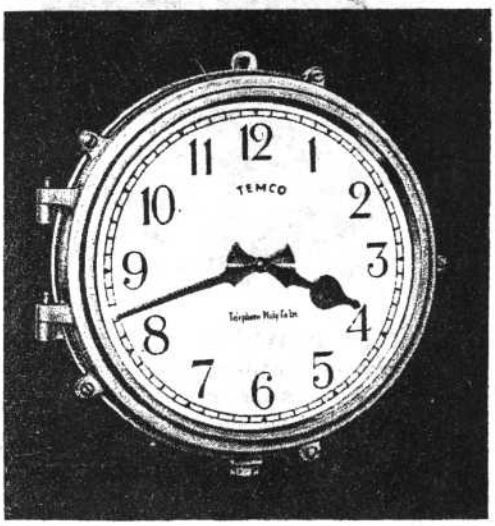


FLUSH MOUNTING DIALS

This type of dial is designed for flush mounting into panels and walls. The bezel is solid brass, finished in polished chrome, satin chrome, polished brass, coinage bronze, etc., with a bevelled plate glass cover.

DIMENSIONS (dial diameter)

6 in. (15·24 cm)
8 in. (20·32 cm)
9 in. (22·86 cm)
10 in. (25·4 cm)
12 in. (30·5 cm)



FLAME and WATERPROOF CASE

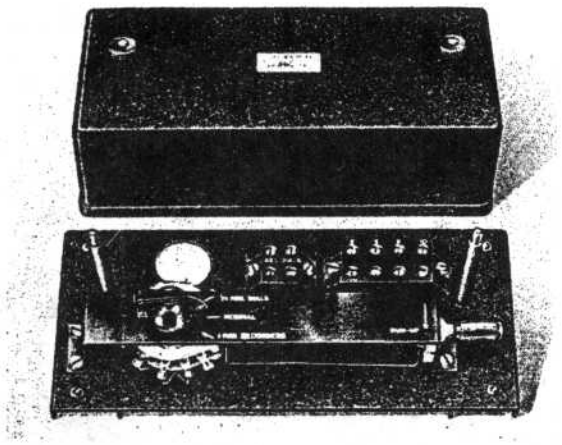
This type of case, in cast aluminium, is available in the following dial sizes:

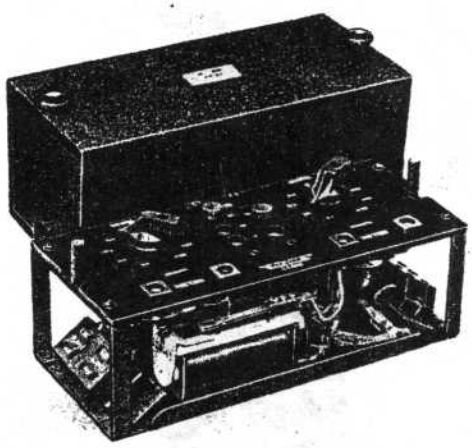
6 in. (15·24 cm)
12 in. (30·5 cm)

AUXILIARY EQUIPMENT

ADVANCE & RETARD SWITCHING UNIT

This unit, shown on the right, provides a simple means for manually advancing or stopping a system of time-service equipment, independently of the Master Clock, from the central control panel. A switch is set over from normal to either the half-minute or one-minute circuits controlling impulse dials or time recorders respectively; this disconnects the circuit from the Master Clock, and a pivoted lever key is used manually to "pump" impulses through the system; when the necessary adjustment has been made, the setting switch is turned back to normal. This facility is particularly useful in locations where Summer and Winter Time schedules are in operation.





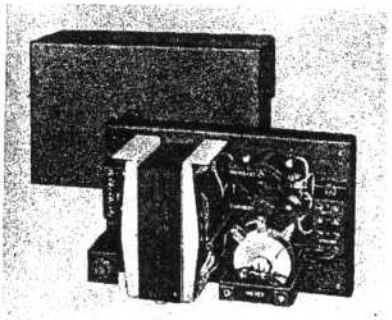
SINGLE & DOUBLE CIRCUIT RELAY UNITS

Relay units transmit operating impulses to the various sub-circuits and simultaneously balance the total resistance in these circuits. Their inclusion is recommended in large systems, or in situations where an installation is spread over several storeys, because they facilitate tracing local faults and ensure the maintenance of steady operating conditions in the dependent circuits.

Single and double relay units for controlling one or two sub-circuits, are available; the double relay unit is illustrated on the left.

ACCUMULATOR TRICKLE CHARGERS

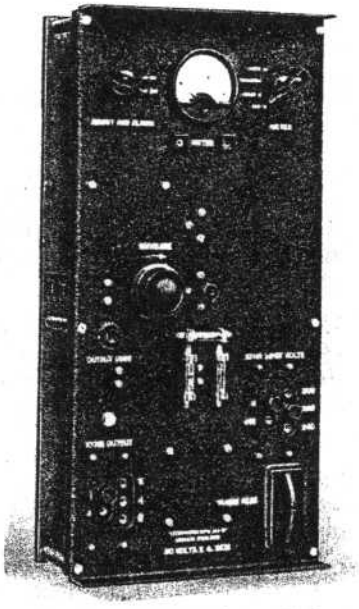
The "P.W.D." Trickle Charger shown on the right, for use with alternating current supply, incorporates an automatic "weak battery" alarm, a charge booster (to compensate for abnormal current consumption), and internal and external metering facilities.



The "Standard" type (not illustrated) resembles the "P.W.D." model but is not equipped with charge booster or weak battery alarm.

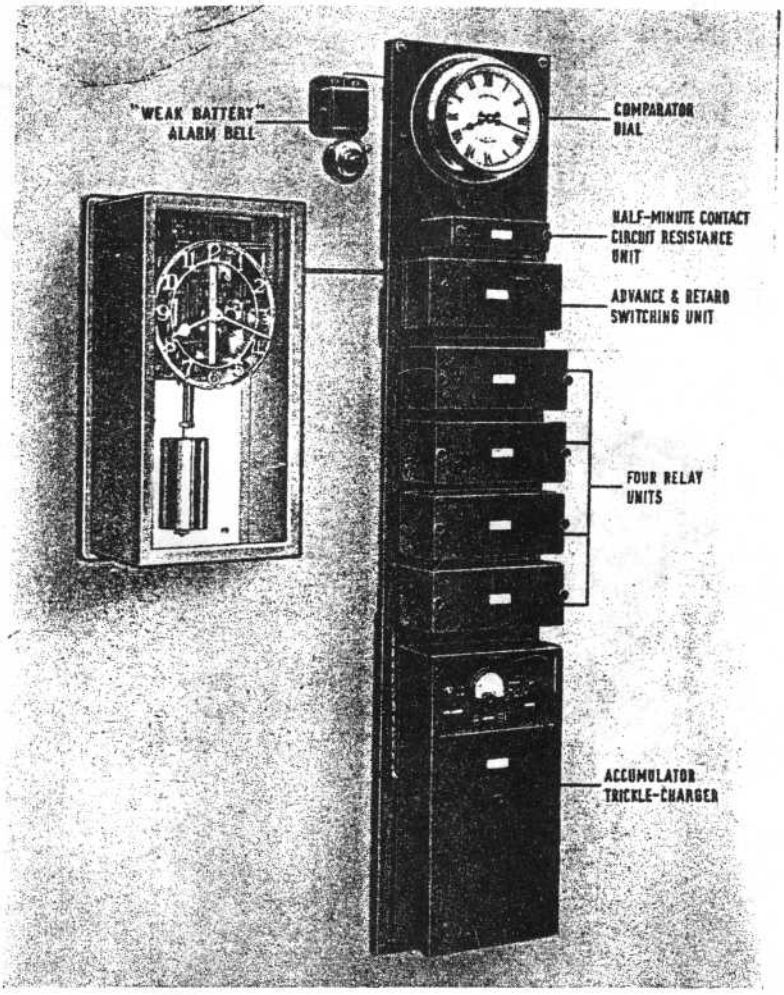
The "Junior Standard" model is illustrated on the left. This is a simpler design than the others and meters are not included.

Voltage Rating: 6V, 12V, 18V, 24V, 30V, 36V, 48V.



AUXILIARY EQUIPMENT

The illustration shows a T.M.C. Master Clock in association with an equipment panel on which are mounted auxiliary units for operating a comprehensive time service.



IN large and complex systems, impulses from T.M.C. Master Clocks are distributed by means of relay units, which transmit impulses of varying duration and periodicity for the operation of impulse dials, process timers, staff time recorders, etc.

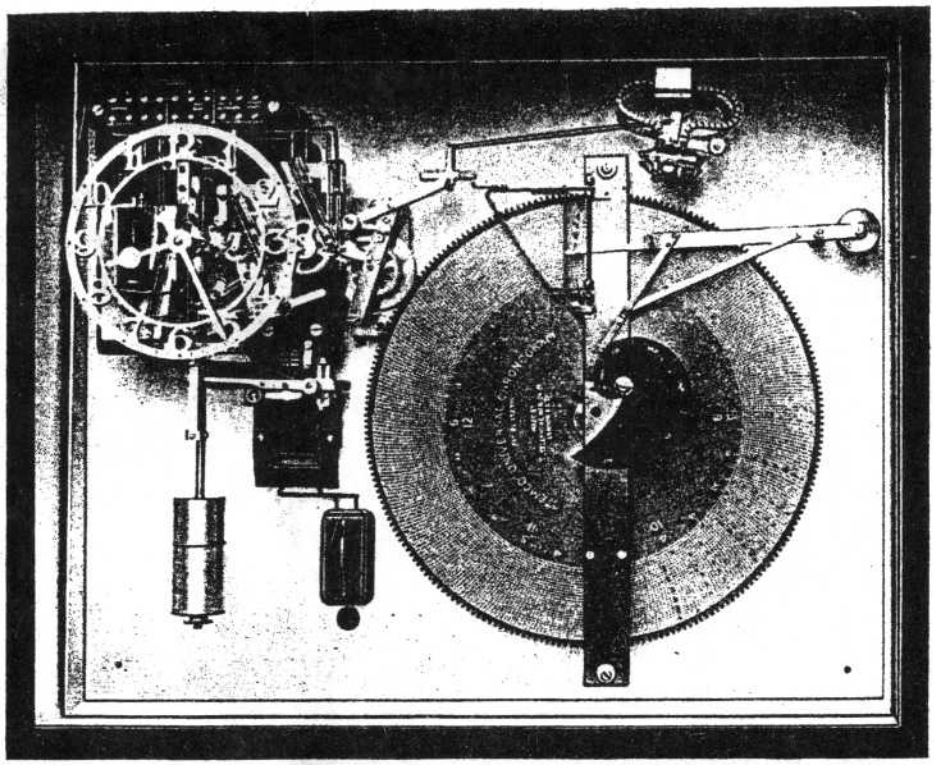
This method greatly facilitates servicing, as the main wiring is brought to a central point and grouped for each section of an installation. It is, therefore, a simple matter to isolate any chosen section when it becomes necessary to carry out alterations or maintenance.

The number of auxiliary units required depends on the size of installation, but a typical panel of auxiliary equipment is shown in the illustration of a Master Clock supplying impulses to an installation comprising 210 T.M.C. Impulse-operated Dials.

Each unit is self-contained. The apparatus is mounted on a panel framework and protected by quickly detachable metal covers.

TMC ELECTRIC CLOCK SYSTEMS

UNIVERSAL CHRONOGRAM



THE T.M.C. Universal Chronogram will operate warning signals at predetermined times according to fixed weekly programmes, in Factories, Public Buildings, etc.

The standard Chronogram illustrated provides facilities for the employment of a wide variety of signalling apparatus. It can control one, two or three signalling circuits, operated either jointly or on independent programmes.

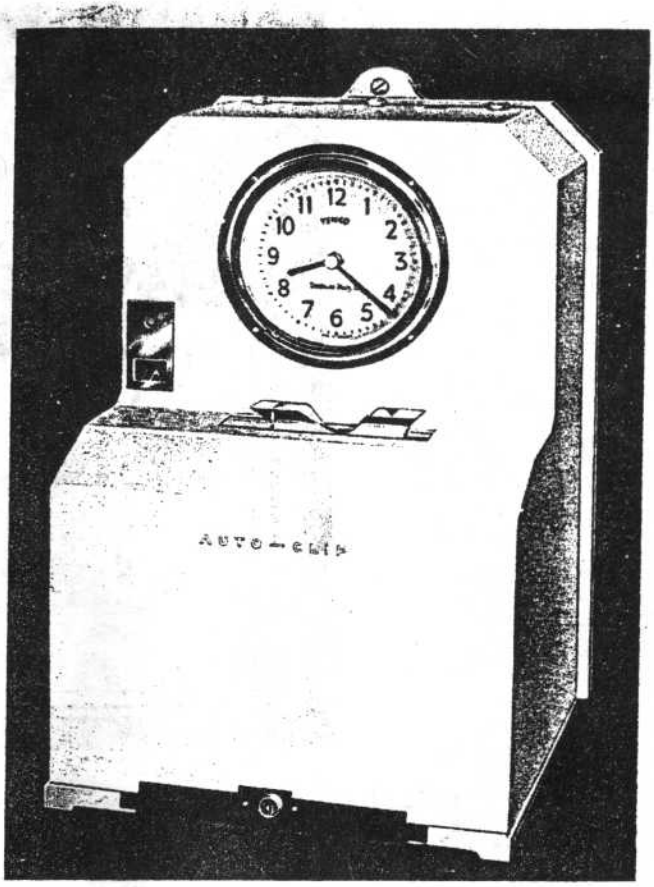
A signal can be operated at *any* minute of *any* hour of *any* day, and be repeated automatically each week as the selected minute recurs. The duration of the signal on any circuit is flexible, therefore the period of ringing can be made short, long, or intermittent, at option.

Output contacts are made via mercury switches which will carry loads up to 6 amps.

The driving unit consists of a Master Clock, the mechanism of which may be varied to suit the individual requirements of any particular installation. The Master Clock in the Chronogram illustrated includes a pendulum controlled by a synchronizer unit operated direct from the a.c. mains supply. Alternatives can, however, be provided in which the mechanism operates as an independent battery-driven type of Master Clock, or includes an electromagnetic synchronizer operated at any convenient periodic interval by impulses derived from a remote standard time source. Signalling programmes are normally set up to customers' requirements and tested before despatch from the Factory, but spare operating pins are provided for insertion in the chronogram disc to permit variation of signal schedules if required.

ELECTRIC CLOCK SYSTEMS

STAFF TIME RECORDER



The Staff Time Recorder illustrated is an automatic model, but manually-operated Recorders can also be supplied.

THE T.M.C. Staff Time Recorders can be supplied for either single or two-colour printing. Automatic column-change controlling the lateral position of recordings is incorporated. Over-printing is made impossible by automatically clipping the edge of the card on each registration. The mechanisms are designed to permit easy maintenance and service. In the automatic type the power supply for printing is derived from the a.c. mains, while the drive for the shift mechanism can be operated either by one-minute impulses from a Master Clock, or synchronous motor. Important features embodied in the design are :—

(a) The Recorder can be arranged to enable workers to clock on and off at frequent intervals during the day. A special long card can be supplied with space for 40 recordings.

(b) No exposed contacts to get dirty and immobilize the mechanism—electrical contact is controlled through a mercury switch.

(c) All numerals and figures of the printing mechanism are engraved in solid gun-metal, thus completely eliminating defacement troubles due to excessive wear.

Continued from December, 2005 issue.

STROMBERG Time Stamp Imprints

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN SI-1

Time imprints made with any model Stromberg Stamp include in proper sequence—year, month, date, a.m. or p.m. hour and minute—in a straight line as shown in this facsimile:

1946 FEB 9 AM 11 56

When necessary, an Autospeed registration can also include tenths of minutes (six seconds) which is illustrated in the following fractional minute recording expressed decimally:

1946 NOV 6 AM 9 23 .7

Continental hours from 1 to 24 or 0 to 23 can be substituted for a.m. and p.m. hours on any Stromberg Autospeed Time Stamp.

All Stromberg Stamps in addition to the time imprint have space for both permanent and changeable inscriptions.

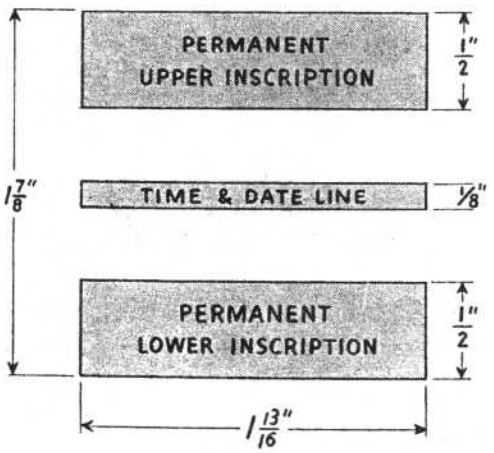


DIAGRAM No. 1

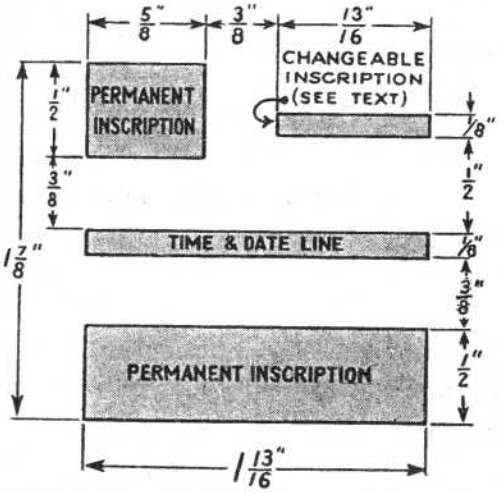


DIAGRAM No. 2

The above diagrams show the exact measurements of the time and date line as well as the space available for permanent and changeable inscrip-

tion plates. In diagram No. 1, either or both spaces may be used to accommodate permanent inscriptions within the limits of the specifications that follow. These plates may either be installed at the factory or after the stamp is in service, and may be changed at any time. Diagram No. 2, illustrates the inscription space available when a changeable inscription is required. Here it is possible to include with the changeable inscription, a small permanent upper inscription and a full sized lower inscription when needed. Changeable inscription plates must be installed on the stamp at the factory.

The four facsimiles reproduced below illustrate the wide variety of data it is possible to record along with the all important time imprint on a Stromberg Stamp:

FILED 1946 JAN 27 AM 9 30 THE MUNICIPAL COURT OF CHICAGO .....CLERK	HOTEL WESTWARD-HO 1946 FEB 10 AM 8 35 KITCHEN
PAID 1946 AUG 7 AM 10 21 STROMBERG TIME CORPORATION	U.S. CUSTOM HOUSE ANSWERED 1946 FEB 9 PM 12 32 OFFICE OF COLLECTOR OF CUSTOMS LOS ANGELES, CALIF.

Four sizes of type are available for inscriptions. The number of words or letters is, of course, governed by the type size and the number of spaces in the line. These types are listed:

TYPE NO. 1 MODERN TIME SYSTEMS

TYPE NO. 2 ENGRAVING MACHINE

TYPE NO. 3 CAMERA DEPT.

TYPE NO. 4 RECEIVED

On the upper and lower permanent inscription plates illustrated in Diagram No. 1, the following type specifications apply:

No. 1 Type — Up to 3 lines of not more than 22 letters or spaces in each line
No. 2 Type — Up to 2 lines of not more than 18 letters or spaces in each line
No. 3 Type — 1 line of not more than 13 letters or spaces
No. 4 Type — 1 line of not more than 10 letters or spaces

The short upper permanent inscription plate illustrated in Diagram No. 2 is limited to type as follows:

No. 1 Type — 3 lines of not more than 7 letters or spaces in each line
No. 2 Type — 2 lines of not more than 6 letters or spaces in each line
No. 3 Type — 1 line of not more than 4 letters or spaces
No. 4 Type — 1 line of not more than 3 letters or spaces

With a changeable inscription it is possible to stamp a letter or form with such words as "RECEIVED", "ANSWERED", or "FILED". Changeable inscriptions are simply operated by turning a knob to the proper point for the desired word, as shown by an indicator. The changeable inscription stays in the indicated position until the knob is again turned. The number of words is limited to four, with each word of not more than 9 letters in the No. 1 type, or 8 letters in the No. 2 type. A blank or dashes may be substituted for any one word.

Symbols designating specific individuals or departments may be incorporated in any Stromberg Time Stamp on the time and date line. The symbol replaces the year wheel and may include one or two letters or figures. For example:

KX AUG 12 AM 10 31

Any Stromberg No. 12 or No. 3 Time Stamp can be furnished with a slug holder which permits identification slugs to be inserted and withdrawn at will. When the slug or small inscription plate is inserted, a corresponding imprint appears just above or below the time and date line on either the right or left side, as illustrated:

1946 FEB 9 PM 12 14
LO

Slugs may include up to four letters or numerals of No. 1 size type, up to three letters or numerals of No. 2 size type, or two letters or numerals of No. 3 size type. The removable slug feature is invaluable in hotels, banks, cashier booths, etc., where each clerk retains his own slug bearing his identifying numerals or letters, inserting it into the holder when he goes on duty and withdrawing it when going off duty. Thus,

each registration made provides a printed record as to just which individual did the stamping.

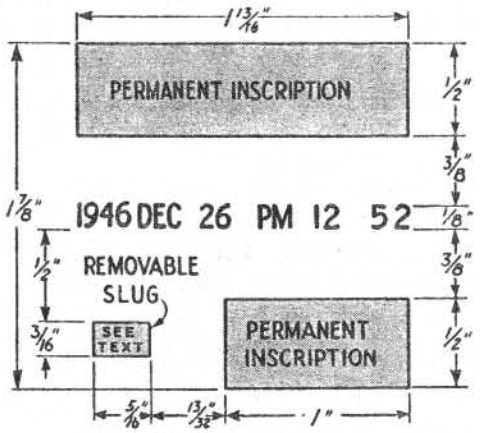


DIAGRAM No. 3

When removable slugs are used the following type specifications apply to the short lower permanent inscription appearing in Diagram No. 3:

No. 1 Type — Up to 3 lines of not more than 12 letters or spaces in each line
No. 2 Type — 2 lines of not more than 9 letters or spaces in each line
No. 3 Type — 1 line of not more than 7 letters or spaces
No. 4 Type — 1 line of not more than 5 letters or spaces

Stromberg Time Stamps may be equipped with guides so that imprints are always made in a fixed location on a document. This feature is especially valuable when printed forms such as telegraph blanks or orders are to be stamped, since it insures that the imprint will always be properly located on the form.

STROMBERG *Time Stamp Users*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN SU-2

Time Stamp Users

Stromberg Time Stamps are widely used to control the flow of paper work and fix responsibility for delays. Just a few of the nation-wide list of users are given below:

All American Cables and Radio, Inc.
New York, New York

Allis-Chalmers Mfg. Company
Milwaukee, Wisconsin

Allright Auto Parts
Houston, Texas

American Airlines, Inc.
Nationally used

American Steel and Wire Company
Cleveland, Ohio

American Telephone and Telegraph Co.
Nationally used

Anheuser-Busch, Inc.
St. Louis, Missouri

Armstrong Cork Company
Los Angeles, Calif.

The Atchison, Topeka and Santa Fe Railway Co.
Throughout System

Baltimore & Ohio R.R. Company
Baltimore, Maryland

Bell Telephone Laboratories, Inc.
New York, New York

The Biltmore Hotel
Los Angeles, Calif.

Burroughs Adding Machine Company
Detroit, Michigan

The Carborundum Company
Niagara Falls, New York

Carnegie-Illinois Steel Corporation
Pittsburgh, Pennsylvania

Chase Brass & Copper Company, Inc.
Cleveland, Ohio

Chase National Bank of New York City
New York, New York

Chicago Stock Exchange
Chicago, Illinois

Chrysler Corporation
Detroit, Michigan

Cluett-Peabody & Company, Inc.
Troy, New York

Commercial Cable Company
New York, New York

Commercial Steel Treating Corporation
Detroit, Michigan

Commonwealth Edison Company
Chicago, Illinois

Delta Air Corporation
Atlanta, Ga.

Dictaphone Corporation
New York, New York

Drake Hotel
Chicago, Illinois

Eastman Kodak Company
Rochester, New York

Edgewater Beach Hotel
Chicago, Illinois

Egry Register Company
Dayton, Ohio

Equitable Life Assurance Company
New York City, New York

Federal Reserve Banks
Various Branches

The Firestone Tire & Rubber Company
Akron, Ohio

Fisher Body Division of General Motors Corp.
Lansing, Michigan

Ford Motor Company
Dearborn, Michigan

General Electric Company
Bridgeport, Connecticut

The General Tire & Rubber Company
Akron, Ohio

Globe Wireless, Ltd.
Various Branches

Great Lakes Terminal Warehouse Co.
Toledo, Ohio

Higgins Industries
New Orleans, La.

Humble Oil and Refining Company
Houston, Texas

Industrial Rayon Corporation
Cleveland, Ohio

Lehn & Fink Products
Bloomfield, New Jersey

Mackay Radio and Telegraph Company
Various Branches

Merrill Lynch, Pierce, Fenner & Beane
New York, New York

Missouri Pacific Railroad
St. Louis, Missouri

Montgomery Ward and Company
Chicago, Illinois

Nash Kelvinator Corporation
Detroit, Michigan

New York Public Library
New York, New York

New York Stock Exchange
New York, New York

The New York Times
New York, New York

Norfolk Navy Yard
Portsmouth, Virginia

Northwestern Mutual Life Insurance Co.
Milwaukee, Wisconsin

The Ohio Yellow Cab Company
Dayton, Ohio

Owens-Illinois Glass Company
Toledo, Ohio

Pacific Fruit Express Company
San Francisco, Calif.

Pennsylvania Railroad Company
Various Branches

Port of N. Y. Authority
New York, New York

Radio Corporation of America
New York, New York

City of St. Louis
St. Louis, Mo.

Seaboard Airline Railway
Hamlet, N. C.

Sears-Roebuck & Company
Chicago, Illinois

South Bend Lathe Works
South Bend, Indiana

Spicer Manufacturing Co.
Toledo, Ohio

Standard Oil Company of Calif.
San Francisco, Calif.

Standard Register Corporation
Dayton, Ohio

Hotel Statler
Various Locations

Stevens Hotel Corporation
Chicago, Illinois

Technicolor Motion Picture Corporation
Hollywood, Calif.

Tennessee Eastman Corporation
Oak Ridge, Tenn.

Thompson Products, Inc.
Cleveland, Ohio

Union Pacific Railroad Company
Throughout System

United Airlines Transport Corporation
Los Angeles, Calif.

United Drug Company
Boston, Massachusetts

United States Gypsum Company
Chicago, Illinois

U. S. Government
Various Departments

Universal Transcontinental Corp.
New York, New York

Veeder-Root, Inc.
Hartford, Connecticut

Waldorf-Astoria
New York, New York

Washburn Crosby Company
Buffalo, New York

The Western Union Telegraph Company
Nationally Used

To be continued.

PRINTED IN U.S.A.

Continued from December, 2005 issue.

CINCINNATI
TIME RECORDING EQUIPMENT

EMPLOYES' ATTENDANCE RECORDERS
JOB TIME RECORDERS
TIME STAMPS

Universities, colleges and large schools have numbers of employes who are not faculty members, and for efficiency and to keep down labor costs need to control the attendance and hours-at-work of such employes just as much as business and industrial concerns need to keep time on their employes. The use of one or more Time Recorders (time printing clocks) is both a necessity and an economy.

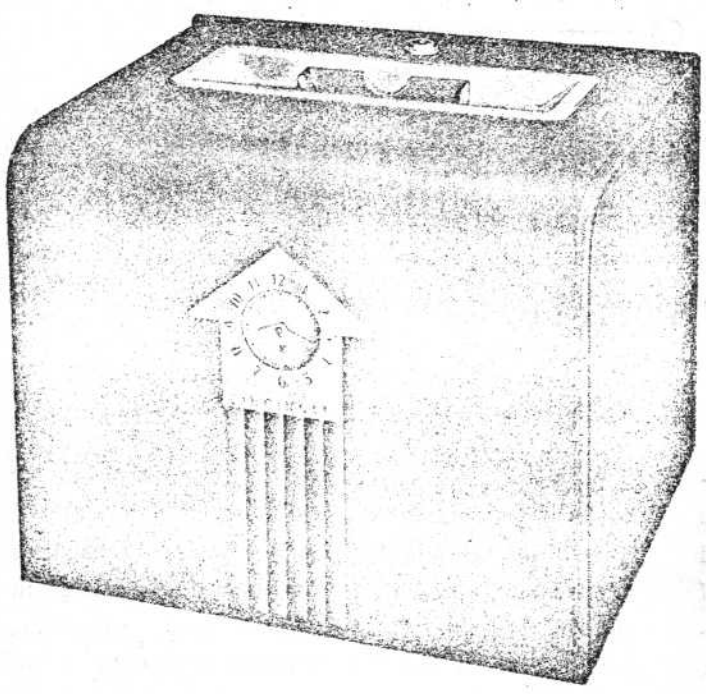
CINCINNATI Time Recorders are made in many different models and capacities to meet the various needs of institutions large and small and businesses of whatever character. There are recorders with manual setting and tripping; semi-automatic; and fully automatic.

A CINCINNATI Electric Time Recorder can be arranged for Master Clock control, including automatic hourly time correction, and be hooked up in circuit with other secondary time instruments (clocks, program machines, etc.). Such a hook up insures the time shown or printed by the recorder or stamp agreeing always with the time shown by all other clocks and time instruments in the same establishment or clock system.

A Time Stamp, for printing the time on papers or cards of any shape or thickness, is practically a "*must*" for every institution and business regardless of size or character. "Time is of the essence" in the receipt and forwarding of mail, telegrams, orders, reports, and it is of inestimable value to an office permanently to print-record the time of handling on written communications and documents.

NATIONAL Time Stamps and TYManDATERS (combination time stamp and job time recorder) are the best engineered, most dependable, durable, trouble-free time machines of their kind, and are amazingly inexpensive. Be sure to see and specify them when planning a new or revised time system installation.

TIME RECORDERS



THE CINCINNATI "FP 800"

Employes' Time Recorder.

Fully Automatic Time Progression — no manual setting.

Automatic Contact Trip Print — no lever, bar or button to press.

Automatic UP-THE-CARD Positioning of Successive Time Registrations.

The last word in the evolution from the old fashioned "punch clock".

For wall or table mounting.

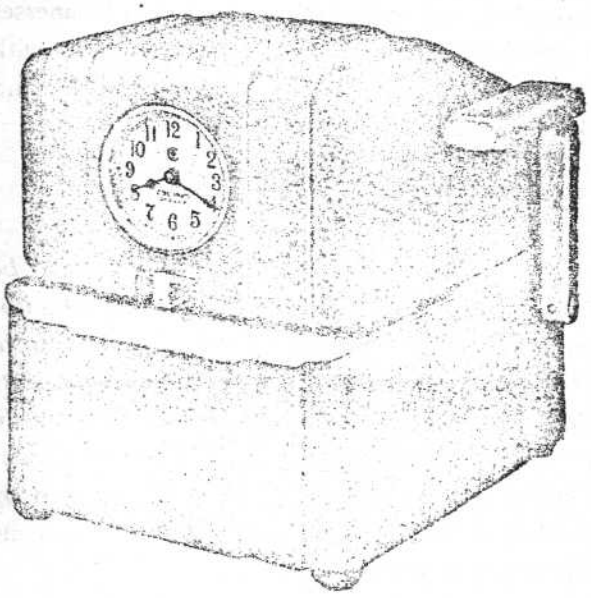
Metal case, 11½" high, 14½" wide, 12¼" deep.

TYMANDATER

Combination Time Stamp and Job Recorder (right) Manual lever trip, Series 3000. Automatic contact trip, Series 4000 (not shown).

Up to six date and time indications printed, e. g. Year, Month, Date, A. M. or P. M., Hour, Minute, or any desired combination. Removable legend-printing plates, one above, one below the time print line, with capacity of 3 lines of not more than 13 letters or numerals each, may be mounted when the TYManDATER is to be used as a time stamp. Without the legend plates the machine will serve as an Employes' Time Recorder (where the number of employes is too small to justify a regular recorder), or as a Job Recorder (beginning and finishing time of a specific piece of work), or as a Time Stamp.

Quiet, portable, stands anywhere. Handsome metal case, Oxford-gray enamel mat finish, polished nickel trim. 7½" high, 6½" wide, 8½" deep.



CINCINNATI-LANDIS
CONTROL EQUIPMENT

CINCINNATI-LANDIS Master Clock Systems commonly are arranged to operate on the ordinary commercial lighting circuit, i. e. 110 volt A.C.

Some type of equipment for relaying the power must always be provided when SECONDARY INSTRUMENTS (program machines, clocks, recorders, etc.) are to be controlled by the Master Clock. For such purposes, we provide a Relay Control for operating each circuit of clocks. The control consists of transformer and copper oxide rectifier (usually with a 24 volt D.C. output) together with necessary relays. One or more relay controls are used depending on the number of circuits required.

Usual practice is to install the relay control, if not more than two circuits, together with transformer and rectifier in the Master Clock case. In large systems, and when so specified, the Relay Control, with transformers and rectifiers will be furnished in metal cabinet.

RELAY CONTROL
AND RECTIFIER PANEL

CINCINNATI-LANDIS Master Clock Systems, no matter how many circuits and secondary instruments, with all necessary control equipment, are included, operate with unusual quietness. You will never be conscious of the machinery.

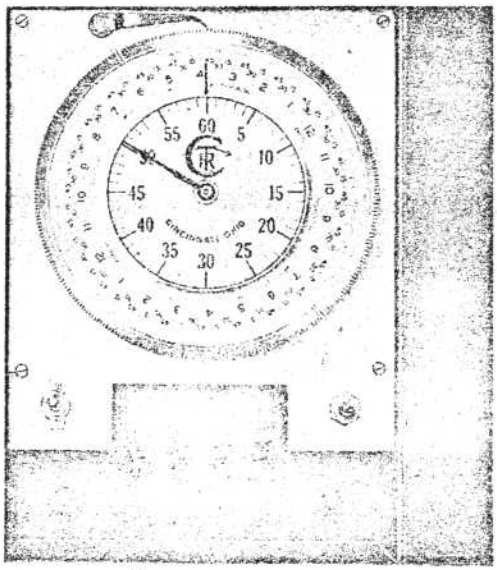
C. T. R. PROGRAM TIMER

For ringing bells, sounding signals or closing electrical circuits at predetermined periods.

Time Signals or Reminders

FOR

FACTORIES
SCHOOLS
HOTELS
AIR PORTS
RAILROADS



Pat. Pending

Features

SYNCHRONOUS MOTORED FOR ACCURACY

AUTOMATIC - ELECTRIC ACCURATE

NO TOOLS REQUIRED FOR CHANGING SCHEDULE

The C. T. R. PROGRAM TIMER is an automatic switch which can be set to close an electrical circuit at any desired 5 minute interval of 24 hours or 2½ minute interval of 12 hours. This circuit closure can be from 5 to 60 seconds as specified and occurs precisely at the times selected.

DISTINCTIVE FEATURES

1. COMPACT STEEL CASE 8" wide, 12" high, 4" deep.
2. PROGRAM MECHANISM IS SET AUTOMATICALLY by turning minute hand as with ordinary clock.
3. PROGRAM SCHEDULE EASILY CHANGED without use of tools.
4. TOGGLE SWITCH AND PUSH BUTTON provided to cut out automatic operation and for special operations.

PROGRAM MECHANISM

Small spring brass lips are inserted and lock securely in numbered slots of program disc according to the desired schedule. These pins select the operating times while the actual operation is accurately performed by a set of cam operated contacts. The silver contacts are completely enclosed and operate with a snap action. Ratings are 10 amps. at 110 volts AC.

Model BR 5-24—Any five minute interval in 24 hours.
Model BR 2½-12—Any 2½ minute interval in 12 hours.
Model BR 2 cir 5-24—Two circuits 5 minute interval in 24 hours. Relay installed in any model for greater amperage.

WHEN ORDERING PLEASE SPECIFY:

If normally open or normally closed contacts are desired.
Voltage and frequency (cycles) of current supply.

THE CINCINNATI TIME RECORDER COMPANY
CINCINNATI 14, OHIO

DISTRIBUTED BY

PARTS PRICE LIST

THE CINCINNATI TIME RECORDER CO.

CINCINNATI, OHIO

GENERAL LETTER #4710

TO ALL DISTRIBUTORS:

August sales honors are as follows:

1. G. T. Fredstrom, Chicago
2. Houston Time Clock Exchange, Houston
3. Cincinnati Time Recorder Distributor, New York

We again extend our congratulations to Mr. Fredstrom and his staff as well as those who have won second and third position.

Honorable Mention:

1. Messrs. Blum and Hooper, Cincinnati
2. L. J. Saunders Co., Columbus
3. Vernon M. Scott, Indianapolis
4. W. F. Hullings, Pittsburgh
5. McGhee Time Service, Inc., Nashville
6. B. F. Saunders, Louisville
7. A. Manganello, Boston
8. Los Angeles Stamp & Stationery Co., Los Angeles
9. L. E. Otte, Philadelphia
10. Calvin G. Baker, Inc., Cleveland

August sales have shown an improvement over July and we again thank all of those who have made this possible.

Vacations are now over and every effort should be made this month to close those prospects which have been held up due to someone being away on a vacation. Industry statistics show Building Construction, Employment, Payroll and Retail Sales are higher by 6 to 21% over last year.

Many of our distributos have heeded our past suggestion of contacting schools for Master Clock Systems and Program Instruments. Quite a number of nice orders have been received during the past month. One distributor has sent orders for ten systems and advised at least that many more will be coming through.

We are making a special offer for a limited time only to reduce our inventory on C.T.R. Wall Clocks of $6.00 each in lots of twenty-five or more, F.O.B. Cincinnati. This is less than cost. Send your order in at once as you cannot go wrong at such an attractive price.

Some distributors have requested new copies of the distributors price list. We are attaching a copy for your use. Please destroy all previous copies and keep the attached confidential.

What progress has been made by you on the Traffic Eye unit? Have you contacted the bus and trucking companies in your territory? A new circular is herewith attached. Advise us of your requirements.

A sample copy of the new Tymandator circular has been mailed. A supply is going forward under separate cover.

C. F. Steinmetz

September 4, 1947

To be continued.

Electronic "master clock" for old slave dials: $50. "Governor" makes Eureka clocks keep quartz-accurate time with no change to the clock: $95. Voltage regulators: $35 to $55.
Bryan Mumford, 3933 Antone Road, Santa Barbara, CA 93110; (805) 687-5116; www.bmumford .com

New publication: 60-page booklet with facsimiles of instructions and drawings re: **FAVAG** clocks with Hipp-toggle, period 1930-1960 (all in French). $25 including postage. Rare French book on CD-Rom, easily printable (in .tif format: "Horlogerie electrique-1ere partie-Horloges-meres et installation horaires" by **Ch. Poncet**, Cluses, 1905, 227 pages. 25 USD or 25 EUR. Order email, viredazepal @bluewin.ch, or address Michel Viredaz, Chemin du Raidillon 48, CH-1066 Epalinges, Switzerland.
Send money in banknotes, no checks please.

50 - **1908 SELF-WINDING CLOCK CO. CATALOGUES** reprinted in 1979 by Dr. Bengt E. Honning. New old stock. $35.00 ea. Including shipping. Roy Crowe, 9257Appleby St., Downey, CA, 90240, (562) 861-8788, email dcrowe2259@ AOL.com

BULLE Insulating (Shoulder) Washers: these special washers are starting to deteriorate. The clock requires 4 of these washers. I had an exact replacement manufactured. A set of 4 is $5 postpaid.
Mel Kaye, FNAWCC, Box 322, Basking Ridge, NJ 07920

New **Tower & Street Clocks**, replacement movements for Telechron large clocks. Manufactured by Electric Time Co., Inc., 45 West Street, Medfield, MA, USA 508-359-4396/800-531-2562/FAX 508-359-4482
www .electrictime.com - E-mail - sales @electrictime.com

Stromberg Master clock movement and correct seconds beat pendulum, plus rectifier unit. $150 + shipping. Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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Requests for reprints of previously published material should be directed to the Chapter Historian:
Dr. George Feinstein 75-19 195th Street Flushing, NY 11366

MUSEUM WANDERINGS

Royal Observatory, Greenwich

The Shepherd 24-Hour Gate Clock

This is one of the earliest electrically driven public clocks and was installed here in 1852. The dial always shows Greenwich Mean Time (GMT) or Universal Time (UT). In summer Britain converts to British Summer Time (BST), which is an hour ahead of GMT, and the clock then appears one hour 'slow'.

Being a 24-hour clock, the hour hand marks noon (XII) at the bottom of the dial and midnight (0) at the top. The time shown is accurate to 0.5 of a second.

--- MART ---

All MART Ads are FREE, Send copy to the attention of the Editor:
Harvey Schmidt, 75-80 179th St., Flushing, NY 11366. Limit 3 lines.

WANTED: HOROLOGICAL LITERATURE, Repair info, Catalogs, etc. for the Journal
PORTESCAP Secticon Clock or Movement. Antique Watch & Clockmaker's Tools & Machinery.
(718) 969-0847 Harvey Schmidt, 75-80 179th St., Flushing, NY 11366

Information on **Frank Hope-Jones, Synchronome** and their products. Details of any clocks or products of the company and also trade literature are needed for a forthcoming book. If you have anything which you think could be of value please e-mail details to robert_miles.t21@ btinternet.com .

Pendulum for **Standard** Master 2 ½ " D. x 3" Long, nickle plated, there are generally 2 of these on this particular clock and I have only one and need the other.
Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

HARD TO FIND PARTS AVAILABILITY:

BULLE suspension assemblies, fabric type, just like the originals. **TIFFANY** Single Contact suspension springs (0.004") The Horolovar Co., Box 264, St. Clair Shores, MI 48080 (313)882-9380

TIFFANY Double Contact Suspension Springs: Use a **Hamilton** Ladies Watch Mainspring, Specification: **HAMILTON** 6/0 #2521, 1.40 mm x 0.12 mm x 11¼". Available from:
Bill Schroeder @ $3.00 each + postage. 6033 N. Sheridan Rd., #31H, Chicago, IL 60660,
(773)275-2563. Also available from most Watch Parts Suppliers.

FOR SALE: Replacement Field Coils for **SESSIONS** and **HAMMOND** synchronous clock movements. Wining's Clock Service, 2910 Farmdale Rd., Akron, OH 44312 (330) 628-9655

"Synchronome Brisbane 1903-1991" The story of the Jackson family of electrical clock makers. An Historical Project by Chapter 104. A 32 page booklet about the operation of the Synchronome Elec. Co. of Australasia. $5.00 Norman Heckenberg, 60 Orchard Tce., St. Lucia, 4067, Australia

Just arrived glass dome for the large **Bulle** clock. We also have glass domes for the **Tiffany Never Wind, Barr, Poole, & Kundo** clocks. If I don't have it in stock I'll try to get it. E-mail www.glassdomes.com
Ben Bowen, 3194 West Capps, Monticello FL 32344, (850) 997-3797 phone & fax.

CD containing over 100 electric clock systems, such as **ATO, Brillie, Bulle, Campiche, Eureka, Garnier, Gent, Hipp, Holden, Magneta, Poole, Scott, Shortt, Synchronome, Tiffany, Vaucanson, Wagner, Warren** & many more. Price $30, includes shipping. J.E. Bosschieter, contact me at BoscoClocks @Zonnet.nl

"A Guide to Electrical Horology" by Martin Swetsky, FNAWCC. Includes Chapters on History, Electrical Principles, Repair Methods, Tips, plus Repair References. Price $42.00 Post Paid. Mitchell Swetsky, 10 Chelsea Way, Fairport, NY 11450. E-mail MSwetsky@ Rochester.rr.com.

BANGOR Electric Clock Parts, New Factory original parts too many to list separately. Call or e-mail with your needs. Elmer Crum, (727)868-0181, electrichorology@juno.com

Poole, Barr cylindrical Pendulums. $15 + $3 shipping.
Call or E-mail S. Cabibbo (201) 489-8176, TimeandTreasures@ MSN.com

THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78

NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXII #3, SEPTEMBER 2006

Fellow Horologists:

This issue of the Journal of the Electrical Horology Society includes a reprint of an early catalog of the Warren Clock Company showing its offerings of wall and table clocks using Telechron motors. The Warren Clock Company developed the self-starting, alternating current clock motor and also convinced the electrical power companies to control line frequency in the power distributed to their customers so that the Warren clocks could provide accurate time. The Warren Clock Company started a revolution in domestic time keeping and Warren clocks deserve a place in your electrical clock collections. Incidentally, this catalog was loaned by your President and loans of similar material are always needed and are greatly appreciated by the editorial committee who put together the Journal.

This issue of the Journal also continues the coverage of the Cincinnati-Landis Clock Company and of the Stromberg Time Corporation.

There is a correction to be made to the identification of the June 2006 issue of the Journal. Please correct the June issue to read **VOLUME XXXII #2, JUNE 2006** (it was marked in error as "#1, March 2006").

We are continuing to look for papers for the Time Symposium on Electrical Time keeping to be given in October, 2008 in Springfield, Illinois. We have some good papers lined-up but we are always looking for more. Please help to make this Symposium a success.

Finally, enjoy the fall of 2006. The Detroit Tigers are in the baseball playoffs, the leaves are turning, and all is right with the world. Good reading and enjoy this issue.

Yours very truly,

Bill Ellison.....President
Harvey Schmidt, FNAWCC,.....Secretary-Treasurer) Co-Editors
Dr. George Feinstein, FNAWCC..Chapter Historian)

Continued from June, 2006 issue.

NATIONAL ACCOUNTS

PRICES AND DISCOUNTS

We are giving you this schedule that all distributors quote the same prices on National Accounts and thus eliminate confusion. It is important that we have a list at this office of your National Accounts to whom you have quoted or expect to quote. These prices and orders are to be so marked when sent to the factory that they are National Accounts.

The distributos cost is shown in the second last column providing the purchase is made in the distributor's territory and delivered in the distributor's territory. The last column marked "Plus" indicated the amount that will be added to the distributors territory to cover the cost of installation and years guarantee.

	Price	Dist. Cost	Plus
FP 810	199.75	156.75	21.50
FP 810X	242.25	184.25	29.00
FP 810XR	267.75	200.75	33.50
FP 813	221.00	173.25	23.88
FP 813X	263.50	200.75	31.38
FP 813XR	289.00	217.25	35.88
FM 810	178.50	143.00	17.75
FP 27FA	199.75	156.75	21.50
FP 27FAX	242.25	184.25	29.00
FP 27FAXR	267.75	200.75	33.50
FP 273FA	221.00	173.25	23.88
FP 273FAX	263.50	200.75	31.38
FP 273FAXR	289.00	217.25	35.88
FM 27FA	178.50	143.00	17.75
FP 500	136.00	114.00	11.00
FM 500	121.00	99.00	11.00
FP 500A	136.00	114.00	11.00
FM 500A	121.00	99.00	11.00
1000	99.00	76.50	11.25
3000	119.00	84.00	17.50
5000	119.00	84.00	17.50
6000	119.00	84.00	17.50
All Racks	4.95	3.85	None

Plus Federal Excise Tax at 10% of distributor's cost.

Very truly yours,

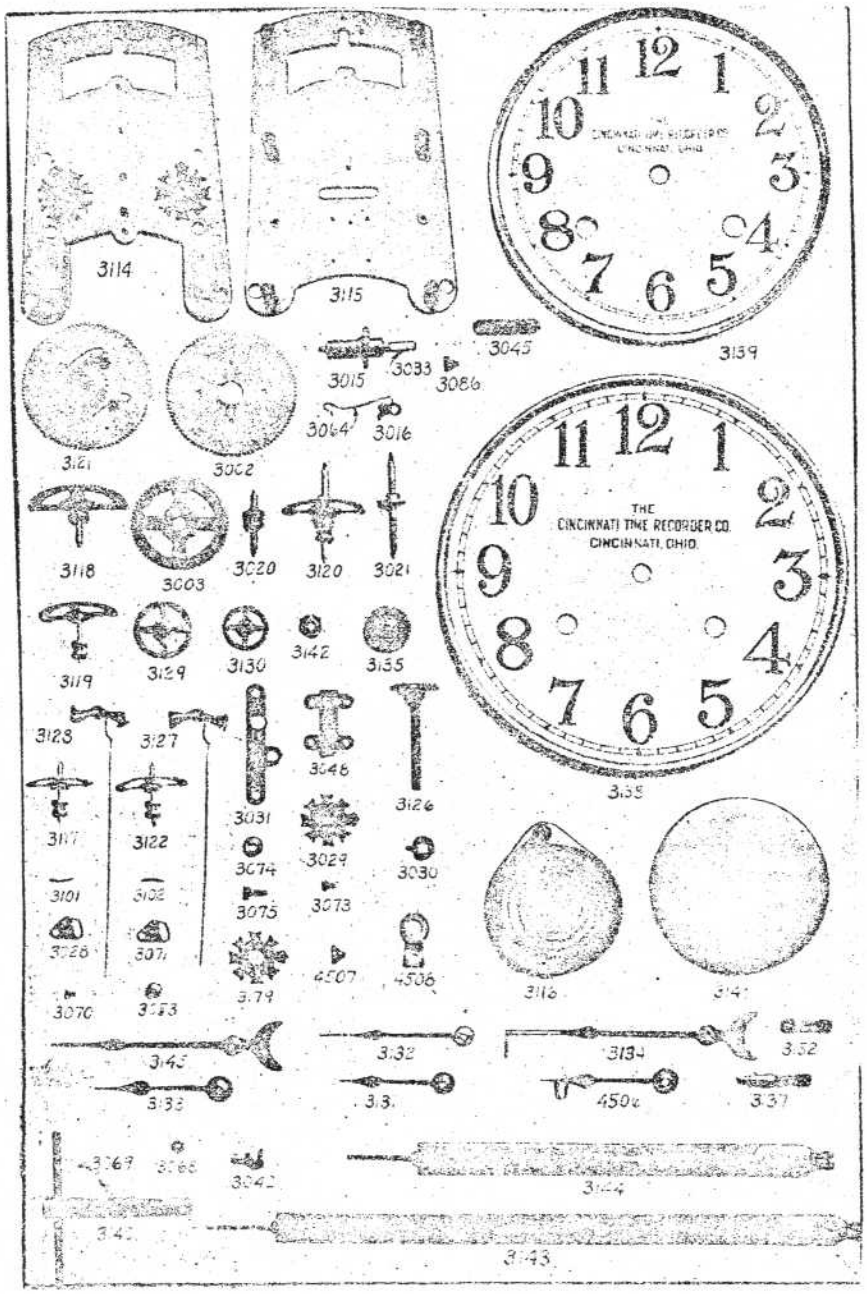
C. F. Steinmetz
Sales Manager

September 2, 1947

T I M E M O V E M E N T

100 BEAT and 120 BEAT

PENDULUM DRIVEN

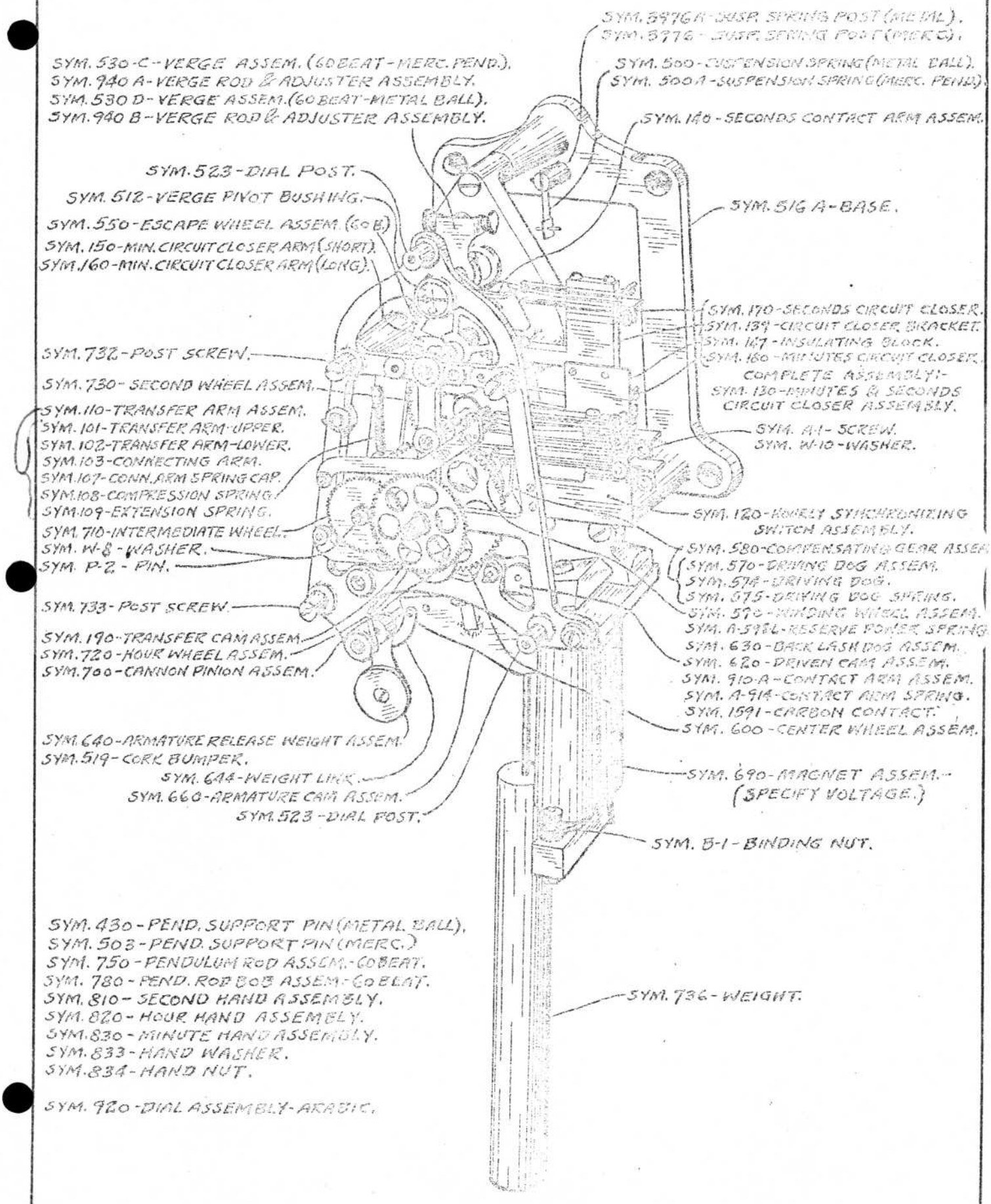


TIME RECORDER MOVEMENT

2- First Wheel.....$ 1.25
3- Second Wheel ..... .75
6- Escape Wheel only, 100 B..... 2.25
7- Escape Wheel only, 120 B..... 2.25
5- Ratchet Hub $2.00)
3- Winding Arbor 1.00)Unit 738... 3.00
6- Ratchet Click)
4- Click Spring) Unit 736..... .40
5- Click Rivet)
0- Second Wheel Staff ..... .60
1- Center Arbor Unit 737 ..... .75
3- Front Verge Bracket.....2 for .25
9- Large Overwind Stop Gear ..... .25
0- Small Overwind Stop.....2 for .25
1- Overwind Bracket..... .25
1- Pendulum Screw Bracket..... .25
2- Pendulum Nut ..... .25
5- Frame Post .....2 for .25
7- Suspension Spring Post ..... .50
8- Spur Gear Bracket ..... .25
3- Center Arbor Nut .....2 for .25
3- Int. Post Washer.....5 for .25
9- Int. Post Ring .....5 for .25
0- Verge Bracket Screw.....2 for .25
1- Back Verge Bracket.....2 for .25
3- Overwind Stop Stud.....2 for .25
4- Overwind Bracket Washer....2 for .25
5- Overwind Bracket Screw.....2 for .25
8- Front Plate Bushing .....2 for .25
0- Verge Wire Stirrup ..... .25
1- Back Plate Bushing.....2 for .25
2- Pendulum Screw .....2 for .25
6- Frame Post Screw .....2 for .25
1- Center Arbor Spring ..... .25
5- Winding Arbor Spring Pin...5 for .25
0- Escape Wheel Shaft ..... .60
1- Verge Pallet - Left .....2 for .25
2- Verge Pallet - Right .....2 for .25
7- Center Arbor Washer .....5 for .25
4- Front Plate Unit 7.00
5- Back Plate Unit 7.00
6- Main Spring 2.00
7- Escape Wheel Unit, 100 B..... 2.85
8- Second Wheel Unit 1.50

3119- Fourth Wheel Unit.....$ 1.50
3120- Third Wheel Unit 1.90
3121- First Wheel Unit 5.00
3122- Escape Wheel Unit, 120 B..... 2.85
3126- Spur Gear Unit 1.50
3127- Verge Unit, 120 B..... 1.90
3128- Verge Unit, 100 B..... 1.90
3129- Hour Wheel Unit ..... .75
3130- Intermediate Wheel Unit ..... .75
3131- 8" Hour Hand Unit ..... .25
3132- 8" Minute Hand Unit ..... .25
3133- 10" Hour Hand Unit ..... .25
3134- 10" Alarm Minute Hand Unit... .85
U-435- 8" Alarm Minute Hand ..... .85
3135- Drive Gear Unit ..... .75
3137- Suspension Spring Unit ..... .85
3138- 10" Dial Unit Dial & Bezel... 3.85
3139- 8" Dial Unit Dial & Bezel... 3.25
3140- Winding Key Unit ..... .50
3141- Pendulum Bob Unit 1.85
3142- Cannon Pinion Unit..... .50
3143- Pendulum Rod Unit, 100 B..... 1.30
3144- Pendulum Rod Unit, 120 B..... 1.30
3145- 10" Minute Hand Unit..... .25
**3151- S.T. Winding Key ..... .50
3152- Suspension Spring ..... .60
3176- Friction Washer Fibre..... .01
3179- Large Overwind Stop Gear..... .25
3553- Movement Base 6.00
3931- Pendulum Stirrup ..... .25
4506- 10" Alarm Hour Hand Unit .... .65
U-434- 8" Alarm Hour Hand ..... .65
4507- Overwind Stop Rivet.....2 for .25
4508- Overwind Stop Bracket ..... .25
**4695- S.T. Center Arbor Nut ....2 for .25
**4696- S.T. Center Arbor 1.25
**4697- S.T. Winding Arbor 1.25
6783- Dial Plugs .....2 for .25
**Verge Unit S.T. 2.90
Verge Unit Master Clock (Old CTR).. 3.00
8" Litho Dial Only 1.85
10" Litho Dial Only 2.50
Complete Movement 35.00
100 and 120 beat

**Refers to parts for old Seth-Thomas movement, stamped ST.



SYM. 530-C—VERGE ASSEM. (60 BEAT-MERC. PEND.).
SYM. 940 A-VERGE ROD & ADJUSTER ASSEMBLY.
SYM. 530 D-VERGE ASSEM. (60 BEAT-METAL BALL).
SYM. 940 B-VERGE ROD & ADJUSTER ASSEMBLY.

SYM. 523-DIAL POST.
SYM. 512-VERGE PIVOT BUSHING.
SYM. 550-ESCAPE WHEEL ASSEM. (60 B)
SYM. 150-MIN. CIRCUIT CLOSER ARM (SHORT).
SYM. 160-MIN. CIRCUIT CLOSER ARM (LONG).

SYM. 732-POST SCREW.
SYM. 730-SECOND WHEEL ASSEM.
SYM. 110-TRANSFER ARM ASSEM.
SYM. 101-TRANSFER ARM-UPPER.
SYM. 102-TRANSFER ARM-LOWER.
SYM. 103-CONNECTING ARM.
SYM. 107-CONN. ARM SPRING CAP.
SYM. 108-COMPRESSION SPRING.
SYM. 109-EXTENSION SPRING.
SYM. 710-INTERMEDIATE WHEEL.
SYM. W-8-WASHER.
SYM. P-2-PIN.

SYM. 733-POST SCREW.

SYM. 190-TRANSFER CAM ASSEM.
SYM. 720-HOUR WHEEL ASSEM.
SYM. 700-CANNON PINION ASSEM.

SYM. 640-ARMATURE RELEASE WEIGHT ASSEM.
SYM. 519-CORK BUMPER.
SYM. 644-WEIGHT LINK.
SYM. 660-ARMATURE CAM ASSEM.
SYM. 523-DIAL POST.

SYM. 430-PEND. SUPPORT PIN (METAL BALL).
SYM. 503-PEND. SUPPORT PIN (MERC.)
SYM. 750-PENDULUM ROD ASSEM.-60 BEAT.
SYM. 780-PEND. ROD 803 ASSEM.-60 BEAT.
SYM. 810-SECOND HAND ASSEMBLY.
SYM. 820-HOUR HAND ASSEMBLY.
SYM. 830-MINUTE HAND ASSEMBLY.
SYM. 833-HAND WASHER.
SYM. 834-HAND NUT.

SYM. 920-DIAL ASSEMBLY-ARABIC.

SYM. 5976 A-SUSP. SPRING POST (METAL).
SYM. 5976-SUSP. SPRING POST (MERC.).

SYM. 500-SUSPENSION SPRING (METAL BALL).
SYM. 500 A-SUSPENSION SPRING (MERC. PEND.).

SYM. 140-SECONDS CONTACT ARM ASSEM.

SYM. 516 A-BASE.

SYM. 170-SECONDS CIRCUIT CLOSER.
SYM. 139-CIRCUIT CLOSER BRACKET.
SYM. 147-INSULATING BLOCK.
SYM. 160-MINUTES CIRCUIT CLOSER.
COMPLETE ASSEMBLY:-
SYM. 130-MINUTES & SECONDS CIRCUIT CLOSER ASSEMBLY.

SYM. A-1-SCREW.
SYM. W-10-WASHER.

SYM. 120-HOWLEY SYNCHRONIZING SWITCH ASSEMBLY.

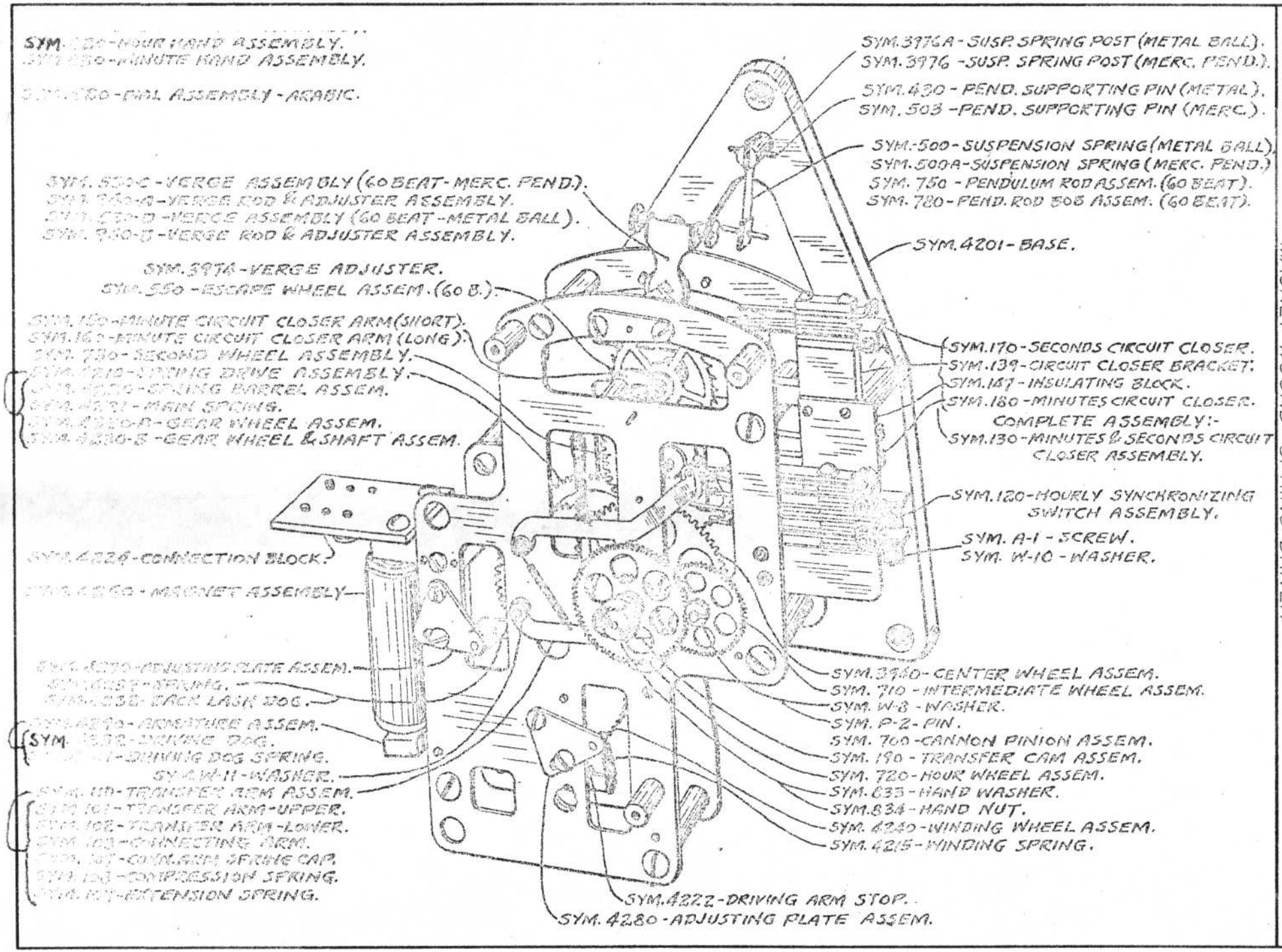
SYM. 580-COMPENSATING GEAR ASSEM.
SYM. 570-DRIVING DOG ASSEM.
SYM. 574-DRIVING DOG.
SYM. 575-DRIVING DOG SPRING.
SYM. 576-winding WHEEL ASSEM.
SYM. A-598L-RESERVE POWER SPRING.
SYM. 630-BACK LASH DOG ASSEM.
SYM. 620-DRIVEN CAM ASSEM.
SYM. 910-A-CONTACT ARM ASSEM.
SYM. A-914-CONTACT ARM SPRING.
SYM. 1591-CARBON CONTACT.
SYM. 600-CENTER WHEEL ASSEM.

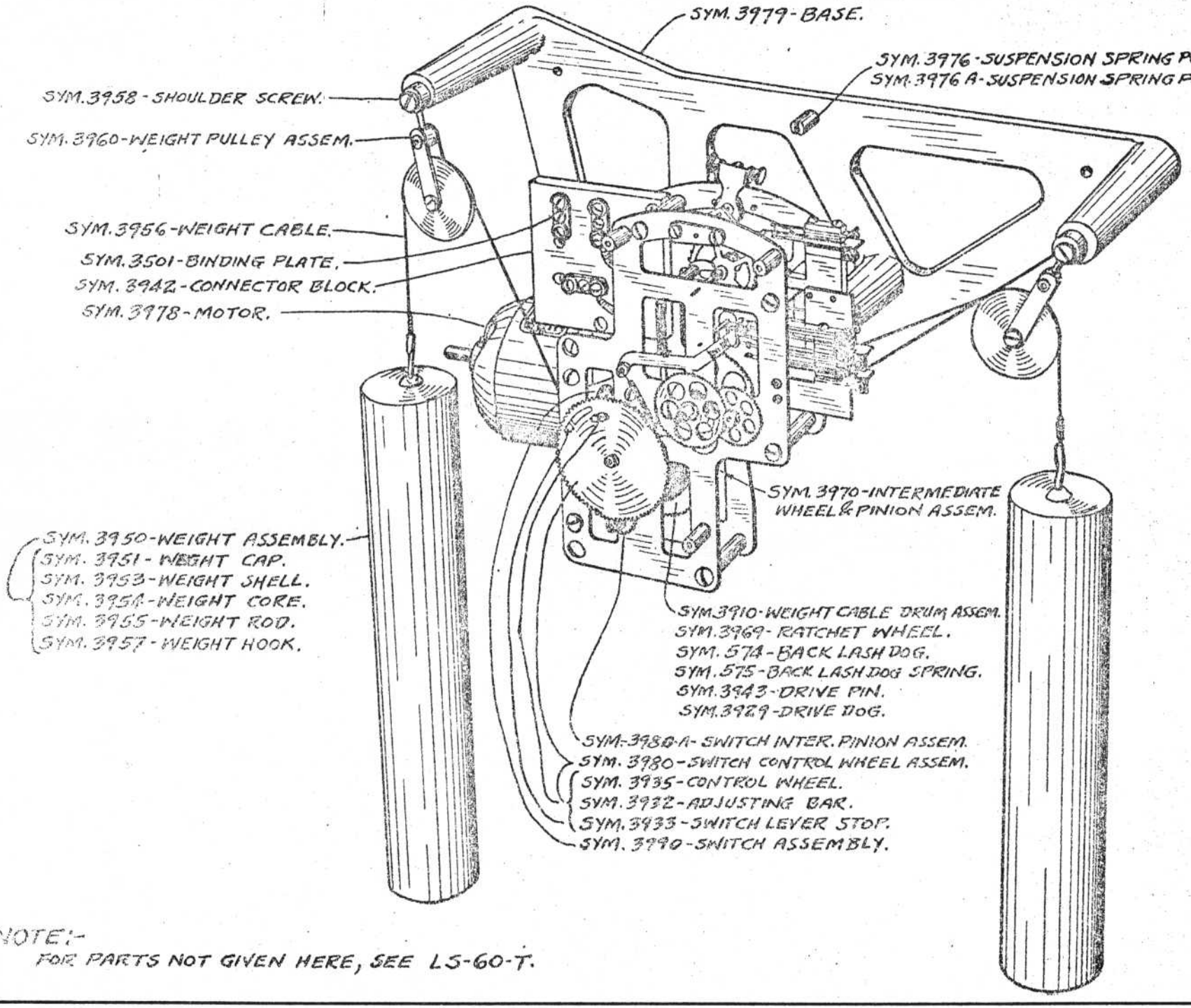
SYM. 690-MAGNET ASSEM.-
(SPECIFY VOLTAGE.)

SYM. B-1-BINDING NUT.

SYM. 736-WEIGHT.

1943


SYM. 3976A - SUSP. SPRING POST (METAL BALL).
SYM. 3976 - SUSP. SPRING POST (MERC. PEND.).
SYM. 430 - PEND. SUPPORTING PIN (METAL).
SYM. 503 - PEND. SUPPORTING PIN (MERC.).
SYM. 500 - SUSPENSION SPRING (METAL BALL).
SYM. 500A - SUSPENSION SPRING (MERC. PEND.)
SYM. 750 - PENDULUM ROD ASSEM. (60 BEAT).
SYM. 780 - PEND. ROD BOB ASSEM. (60 BEAT).
SYM. 4201 - BASE.
SYM. 550C - VERGE ASSEMBLY (60 BEAT - MERC. PEND.).
SYM. 930-A - VERGE ROD & ADJUSTER ASSEMBLY.
SYM. 550-D - VERGE ASSEMBLY (60 BEAT - METAL BALL).
SYM. 930-D - VERGE ROD & ADJUSTER ASSEMBLY.
SYM. 397A - VERGE ADJUSTER.
SYM. 550 - ESCAPE WHEEL ASSEM. (60 B.).
SYM. 150 - MINUTE CIRCUIT CLOSER ARM (SHORT).
SYM. 160 - MINUTE CIRCUIT CLOSER ARM (LONG).
SYM. 730 - SECOND WHEEL ASSEMBLY.
SYM. 4210 - SPRING DRIVE ASSEMBLY.
SYM. 4220 - SPRING BARREL ASSEM.
SYM. 4221 - MAIN SPRING.
SYM. 4230-B - GEAR WHEEL ASSEM.
SYM. 4230-S - GEAR WHEEL & SHAFT ASSEM.
SYM. 4226 - CONNECTION BLOCK.
SYM. 4260 - MAGNET ASSEMBLY
SYM. 4270 - ADJUSTING PLATE ASSEM.
SYM. 4222 - SPRING.
SYM. 835 - BACK LASH 20C.
SYM. 4240 - ARMATURE ASSEM.
SYM. 1212 - DRIVING DOG.
SYM. 1211 - DRIVING DOG SPRING.
SYM. W-11 - WASHER.
SYM. 110 - TRANSFER ARM ASSEM.
SYM. 101 - TRANSFER ARM - UPPER.
SYM. 102 - TRANSFER ARM - LOWER.
SYM. 103 - CONNECTING ARM.
SYM. 107 - CONN. ARM SPRING CAP.
SYM. 105 - COMPRESSION SPRING.
SYM. 104 - EXTENSION SPRING.
SYM. 4222 - DRIVING ARM STOP.
SYM. 4280 - ADJUSTING PLATE ASSEM.
SYM. 170 - SECONDS CIRCUIT CLOSER.
SYM. 139 - CIRCUIT CLOSER BRACKET.
SYM. 147 - INSULATING BLOCK.
SYM. 180 - MINUTES CIRCUIT CLOSER.
COMPLETE ASSEMBLY:-
SYM. 130 - MINUTES & SECONDS CIRCUIT CLOSER ASSEMBLY.
SYM. 120 - HOURLY SYNCHRONIZING SWITCH ASSEMBLY.
SYM. A-1 - SCREW.
SYM. W-10 - WASHER.
SYM. 3940 - CENTER WHEEL ASSEM.
SYM. 710 - INTERMEDIATE WHEEL ASSEM.
SYM. W-8 - WASHER.
SYM. P-2 - PIN.
SYM. 700 - CANNON PINION ASSEM.
SYM. 190 - TRANSFER CAM ASSEM.
SYM. 720 - HOUR WHEEL ASSEM.
SYM. 833 - HAND WASHER.
SYM. 834 - HAND NUT.
SYM. 4240 - WINDING WHEEL ASSEM.
SYM. 4215 - WINDING SPRING.



NOTE:-
FOR PARTS NOT GIVEN HERE, SEE LS-60-T.

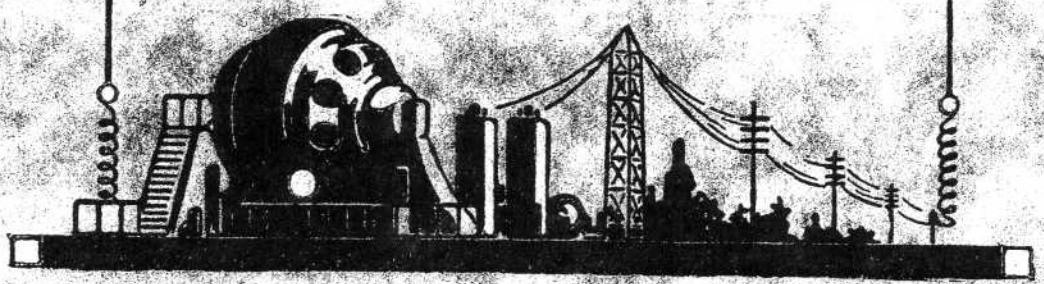
LM-60-T MASTER CLOCK MOVEMENT MOTOR WOUND-WEIGHT DRIVEN 7 MC3

MASTER CLOCK MOVEMENTS

Sym.	A-1	- Screw	.05
Sym.	B-1	- Binding Nut	2 for .25
Sym.	P-2	- Pin	.05
Sym.	W-8	- Washer	.05
Sym.	W-10	- Washer	.05
Sym.	W-11	- Washer	.05
Sym.	101	- Transfer Arm-Upper	.60
Sym.	102	- Transfer Arm-Lower	.60
Sym.	103	- Connecting Arm	.35
Sym.	107	- Connecting Arm Spring Cap	.40
Sym.	108	- Compression Spring	.25
Sym.	109	- Extension Spring	.25
Sym.	110	- Transfer Arm Assembly	2.75
Sym.	120	- Hourly Synchronizing Switch Assembly	3.75
Sym.	130	- Minutes and Seconds Circuit Closer Assem	1.50
Sym.	139	- Circuit Closer Bracket	.60
Sym.	140	- Seconds Contact Assembly	.50
Sym.	147	- Insulating Block	2 for .25
Sym.	150	- Minute Circuit Closer Arm Assem.(Short)	.60
Sym.	160	- Minute Circuit Closer Arm Assem.(Long)	.60
Sym.	170	- Seconds Circuit Closer Assembly	1.25
Sym.	180	- Minutes Circuit Closer Assembly	1.00
Sym.	190	- Transfer Cam Assembly	2.00
Sym.	430	- Pendulum Supporting Pin (Metal Ball)	.15
Sym.	500	- Suspension Spring Assembly (Metal Ball)	.60
Sym.	500-A	- Suspension Spring Assembly (Merc.Pend)	1.80
Sym.	503	- Pendulum Supporting Pin (Merc. Pend.)	.15
Sym.	516-A	- Base	4.00
Sym.	512	- Verge Pivot Bushing	.35
Sym.	519	- Cork Bumper	.05
Sym.	523	- Dial Post	.30
Sym.	530-C	- Verge Assembly(60 Beat-Merc.Pend.)	3.00
Sym.	530-D	- Verge Assembly(60 Beat-Metal Ball)	3.00
Sym.	550	- Escape Wheel Assembly (60 Beat)	2.50
Sym.	570	- Driving Dog Assembly	6.00
Sym.	574	- Driving Dog	.40
Sym.	575	- Driving Dog Spring	2 for .25
Sym.	580	- Compensating Gear Assembly	4.00
Sym.	590	- Winding Wheel Assembly	3.00
Sym.	A698-L	- Reserve Power Spring	.50
Sym.	600	- Center Wheel Assembly	3.00
Sym.	620	- Driven Cam Assembly	3.00
Sym.	630	- Back Lash Dog Assembly	.40
Sym.	640	- Armature Release Weight Assembly	1.75

To be continued.

WARREN CLOCK COMPANY



The gods confound the man who first found out
How to distinguish hours!
Confound him too
Who in this place set up a sundial
So wretchedly to cut and hack my days
Into small pieces!

—Plautus.

Time from a Distance

DEVICES to indicate the flight of time are as old as history but the use of the clock as a means of indicating the passing moments is of more recent origin (dating from the 13th century).

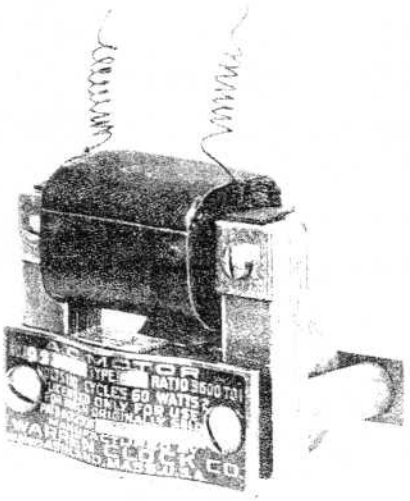
Try to imagine what would happen to our modern world if through some calamity we were suddenly deprived of all clocks and other devices for indicating time. Transportation would be demoralized, industrial schedules upset with a consequent decrease in production, in short, our order of existence would quickly be thrown into chaos and we would soon find ourselves back in the days of primitive living.

So dependent is our advanced civilization upon clocks for the indication of time that we regularly expend considerable effort in maintaining them; we bother and worry with winding, setting, and regulating them. Necessity has compelled us to accept their shortcomings and even make allowances for their habitual errors.

With the advent of modern alternating current electricity, there came into existence waves of current, produced with great regularity.

The value of these waves for an advanced method of indicating time was recognized by the engineers of the Warren Clock Company, and a device for utilizing

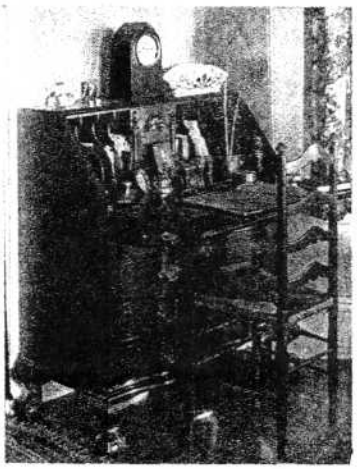
them, called *Telechron* was developed. The word *Telechron* is derived from the Greek "tele" meaning from a distance, and "Chronos" the god of time (time from a distance).



(Fig. 1)

Externally the various types of *Telechrons* as illustrated herein are similar to the types of clocks ordinarily used. Internally, that is inside the case, their similarity vanishes. Instead of a complicated spring-actuated mechanism requiring periodic winding, there is found the simply constructed but remarkable design of Warren motor (Fig. 1) connected through a few gears to the *Telechron* hands.

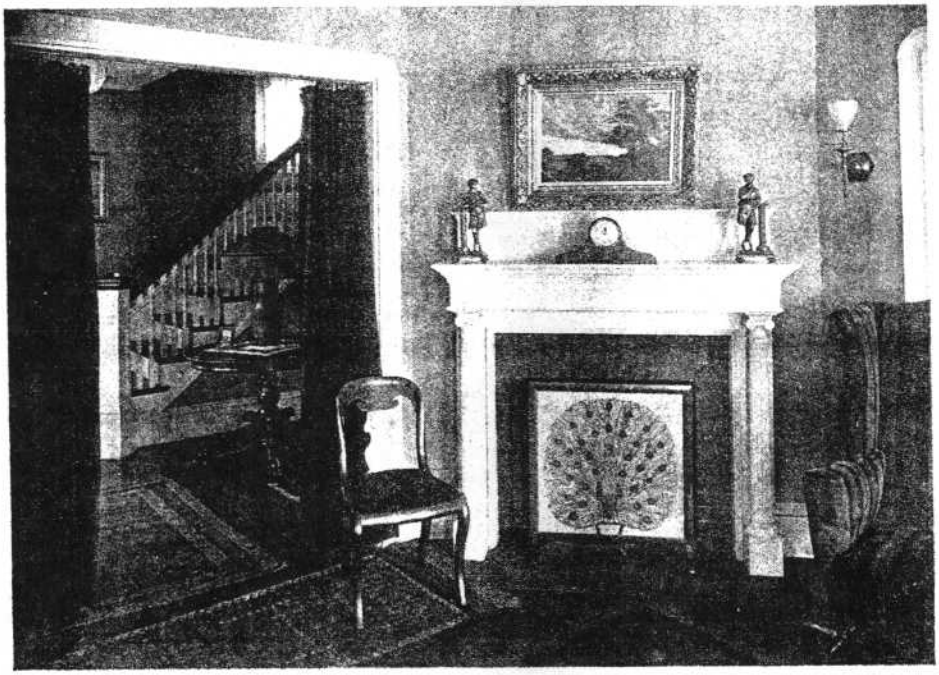
When attached to any suitable circuit, this wonderful little motor immediately responds to the impulses of the time waves of electricity and keeps time.



Many of the Electric Light and Power Companies maintain time waves of the average regularity required by *Telechrons*. There are probably time waves on the electric wires in your home and office. — If in doubt, write us. — You are missing a very valuable service

if you are without *Telechrons*. They may be connected to lighting circuits as easily as an electric lamp or any other electric appliance. When supplied continuously with proper current each *Telechron* installed will indicate time without the winding and other troublesome attention required by clocks.

Owners of clocks which no longer run satisfactorily may have *Telechron* movements installed and obtain the excellent time keeping qualities and freedom from care and attention so characteristic of *Telechrons*.



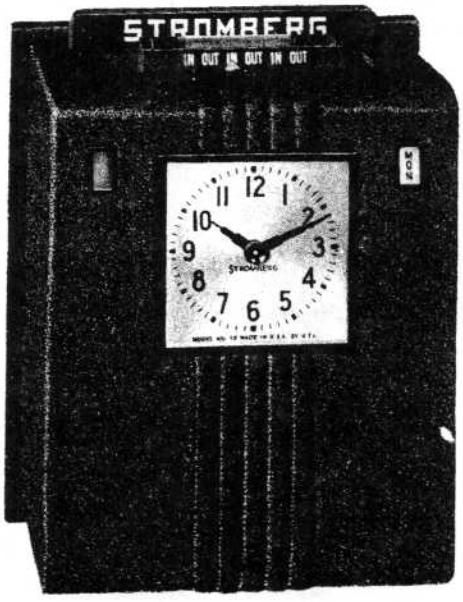
To be continued.

Continued from June, 2006 issue.

STROMBERG *No. 15 Recorder*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 15-1



No. 15 Recorder

The Stromberg Model No. 15 is a compact, sturdily constructed Time Recorder with all the essential features of a larger model. A convenient push bar assures fast, one hand recording — possible even during a current interruption. The pilot dial and type-wheels are direct gear driven for positive synchronization. Full size day and time registrations are made horizontally on the front of the time cards with P.M. hours clearly indicated by underscoring the day character. This recorder may be arranged for weekly, bi-weekly, or semi-monthly payroll periods and accommodates standard size time cards. Conveniently installed anywhere, it can be furnished to operate as an individual unit from regulated alternating current, or as part of a Stromberg Autoset Master Clock System.

Specifications and Features

- One hand push bar printing operation.
- Modern Black Morocco Finished steel case.
- Large Dial for setting and observing time.
- Three point mounting suspension.
- Simple Manual shift feature.
- Automatic day-to-day lift.
- Exclusive automatic ribbon advance mechanism for uniform imprints.
- Indicator window showing when ribbon is completely used.
- Unit construction, simplifying alterations and repairs.
- Uniform platen blow protects typewheels.
- Large printing platen, assures clean prints.
- Prints Day abbreviations, Hours and Minutes.

Dimension: 11½" High, 9" Wide, and 5-3/16" Deep
Shipping Weight — approximately 16 lbs.

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION
109 LAFAYETTE STREET . . . . NEW YORK 13, N. Y.

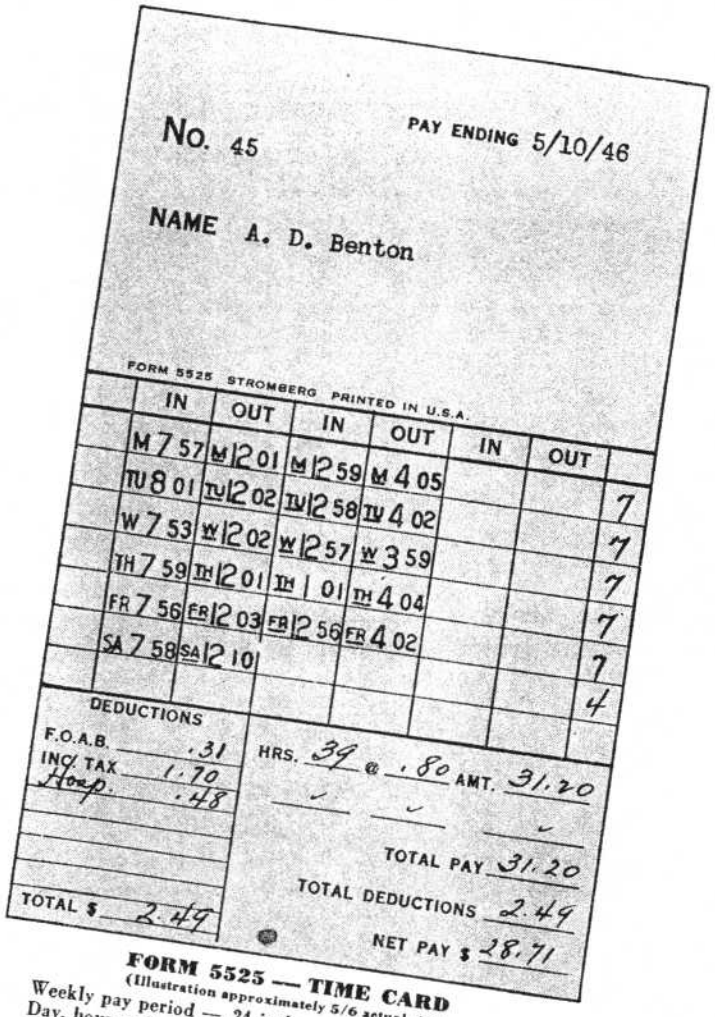
STROMBERG *No. 15 Imprints*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 15C-2

Imprint Specifications

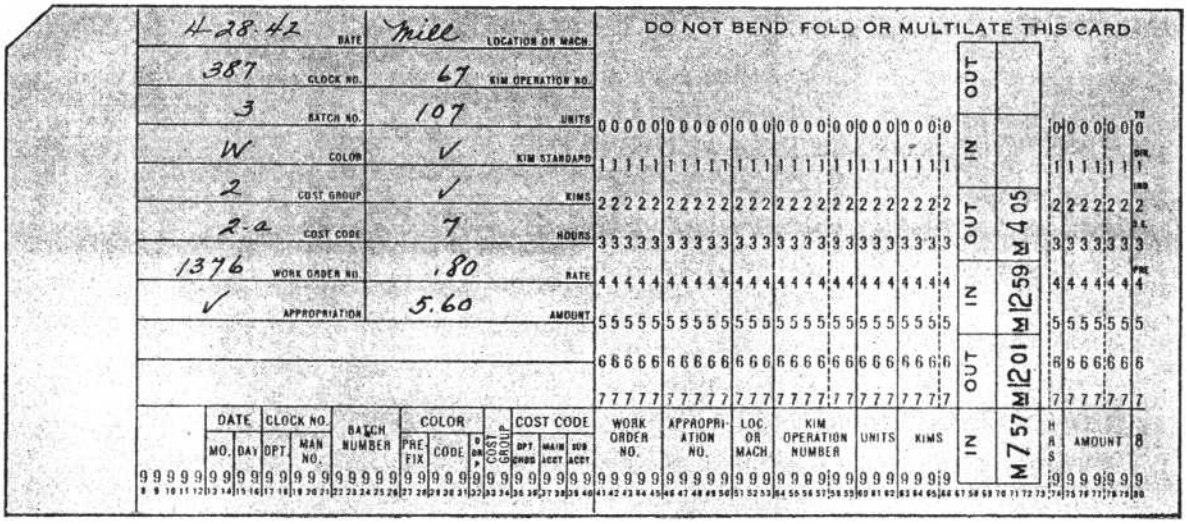
The imprint of the Model No. 15 includes the day of week abbreviation; hours, in two 12 hour cycles; and minutes. P.M. time is indicated by a line underscoring the day abbreviation. In-and-Out registrations for each day are made horizontally and once each 24 hours the mechanism automatically positions the card to receive the imprint on the next lower line. These daily positions can be arranged to print on cards with vertical spacing of either .24 inches or .277 inches apart, to accommodate standard seven or fourteen line cards; and .24 inch spacing on 16 line cards. The Model No. 15 can also be furnished to record in a fixed space on a daily tabulating card.



FORM 5525 — TIME CARD
(Illustration approximately 5/6 actual size)
Weekly pay period — .24 inch spacing — 6 column, 7 lift
Day, hour and minute imprint — Card Size: 3.40" x 5½"
For use with 96SM Card Rack

The Time Cards illustrated, show actual facsimile imprints made by a Stromberg Model No. 15 Recorder. These and other stock forms are available for weekly, bi-weekly and semi-monthly pay periods. Four vertical columns provide space for normal arrival, lunch and closing periods with two extra columns for registering overtime. All Stromberg Time Cards are rotary cut and printed for positive uniformity, on smooth, strong card stock that assures clear time imprints.

Daily Tabulating Card



Daily pay period — Fixed abutement — Day, hour and minute imprint — Card Size: 3.25" x 7⅜" — For use with 96LM Card Rack or T50 Tabulating Rack

(Illustration approximately 5/6 actual size)

PAY ENDING 4/17/46

No. 62

NAME Frank Russo

FORM 5569 STROMBERG PRINTED IN U.S.A.

	IN	OUT	IN	OUT	IN	OUT	
	M 7 50	M 12 05	M 12 27	M 4 32			8
	TU 7 55	TU 12 01	TU 12 29	TU 4 34			8
	W 7 52	W 12 02	W 12 26	W 4 32			8
	TH 7 55	TH 12 03	TH 12 28	TH 4 33			8
	FR 7 54	FR 12 04	FR 12 26	FR 4 35			8
	M 7 58	M 12 04	M 12 27	M 4 32			8
	TU 7 56	TU 12 01	TU 12 25	TU 4 33			8
	W 7 54	W 12 02	W 12 26	W 4 34			8
	TH 7 57	TH 12 03	TH 12 29	TH 4 36	TH 4 58	TH 6 02	9
	FR 7 56	FR 12 01	FR 12 25	FR 4 37			8

DEDUCTIONS
F.O.A.B. .65
INC/TAX 3.80
Hosp 1.48

TOTAL $ 5.93

HRS. 40 @ .80 AMT. 32.00
O.T. - @ -
HRS. 40 @ .80 AMT. 32.00
O.T. 1 @ 1.20 1.20
TOTAL PAY 65.20
TOTAL DEDUCTIONS 5.93
NET PAY 59.27

Time Cards

(Illustrations approximately 3/5 actual size)

FORM 5569

Bi-weekly Pay Period
.24 inch spacing
6 column, 14 lift
Day, hour and minute imprint
Card Size: 3.40" x 7"

FORM 5502

Semi-monthly Pay Period
.24 inch spacing
6 column, 16 lift
Day, hour and minute imprint
Card Size: 3.40" x 7"

PAY ENDING 5/24/46

No. 565

NAME Arthur Mundy

DEDUCTIONS
F.O.A.B. .71
INC/TAX 4.80
Hosp 1.48

TOTAL $ 6.99

FORM 5502 STROMBERG PRINTED IN U.S.A.

DATE	IN	OUT	IN	OUT	IN	OUT	
16							
1/17	M 8 00	M 12 06	M 12 28	M 4 35			8
2/18	TU 7 56	TU 12 04	TU 12 27	TU 4 32			8
3/19	W 7 57	W 12 02	W 12 26	W 4 34	W 4 58	W 7 05	10
4/20	TH 7 54	TH 12 02	TH 12 28	TH 4 32			8
5/21	FR 7 56	FR 12 04	FR 12 26	FR 4 34			8
6/22							
7/23							
8/24	M 7 55	M 12 01	M 12 26	M 4 35			8
9/25	TU 7 57	TU 12 02	TU 12 28	TU 4 32	TU 4 59	TU 7 02	10
10/26	W 7 56	W 12 04	W 12 27	W 4 34			8
11/27	TH 7 54	TH 12 05	TH 12 28	TH 4 32			8
12/28	FR 7 55	FR 12 02	FR 12 24	FR 4 35			8
13/29							
14/30							
15/31	M 7 56	M 12 02	M 12 28	M 4 36			8

HRS. 88 @ .75 AMT. 66.00
4 1.125 4.50
TOTAL PAY 70.50

TOTAL PAY 70.50
TOTAL DEDUCTIONS 6.99
NET PAY $ 63.51

PRINTED IN U.

STROMBERG TIME CORPORATION

SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION

109 LAFAYETTE STREET . . . . NEW YORK 13, N. Y.

STROMBERG *No. 35 Job Recorder*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 35-1

No. 35 Job Recorder

The Stromberg Model No. 35 is ruggedly built for maximum service, even when operating under adverse conditions. Its mechanism is completely protected from blows, dirt, and vibrations by a heavy cast steel case, finished in dull black morocco. The type wheels and pilot dial are train geared, to operate simultaneously and assure their *positive* synchronization. The ribbon mechanism feeds and reverses automatically. The operating unit is a strong positive electromagnet, activated by short electric impulses, released by the timing element. This time element may be either a synchronous motor contactor within the recorder, when it operates as an independent unit or; it may be a master clock, when the machine is connected to an impulse system. This operating construction simplifies changing from one type of time control to the other.

Imprints are made by pressing down on the printing lever. The printing mechanism is entirely mechanical and not dependent upon the current supply, thus assuring continuous operation at all times. Regardless of how much pressure is applied to the printing lever, the force of the imprint platen against the type wheel unit is always *uniform*, and cannot cause damage to the mechanism.

Cards or work tickets for this model should be arranged for imprinting on the left edge only. They are placed on the guide table face up, with the white margin indicator centered over the line on which the registration should fall. Special guides can be furnished to meet individual requirements for imprint locations. Time imprints made with a Model 35 Job Time Recorder can include, in this sequence, all or part of the following: year, month, date, meridian (A.M. and P.M.) or continental (24) hour cycles in hours and minutes, or decimal fractions of hours in tenths, apparent hundredths or five-hundredths. For cost keeping purposes the year is generally omitted. Departmental identification prefix symbols can be included in lieu of the year imprint when required.

A Meridian time imprint is reproduced thus:

NOV 12 A 1 33

Continental time in tenths of an hour is shown as:

NOV 12 13 .5

Decimal fractions in apparent hundredths of an hour register:

NOV 12 13 .55

The different methods of expressing time are illustrated in the following table:

Actual time of day	Imprint of time if hour and minute basis is used	Imprint of time if hour and *apparent* one-hundredth of hour basis is used	Imprint of time if hour and five-hundredths of hour basis is used	Imprint of time if hour and tenth of hour basis is used
7 A.M.	A.M. 7 00	A.M. 7.00	A.M. 7.00	A.M. 7.0
7 07 A.M.	A.M. 7 01	A.M. 7.02	A.M. 7.00	A.M. 7.0
7 02 A.M.	A.M. 7 02	A.M. 7.03	A.M. 7.00	A.M. 7.0
7 03 A.M.	A.M. 7 03	A.M. 7.05	A.M. 7.05	A.M. 7.0
7 04 A.M.	A.M. 7 04	A.M. 7.07	A.M. 7.05	A.M. 7.0
7 05 A.M.	A.M. 7 05	A.M. 7.08	A.M. 7.05	A.M. 7.0
7 06 A.M.	A.M. 7 06	A.M. 7.10	A.M. 7.10	A.M. 7.1
7 15 A.M.	A.M. 7 15	A.M. 7.25	A.M. 7.25	A.M. 7.2
7 30 A.M.	A.M. 7 30	A.M. 7.50	A.M. 7.50	A.M. 7.5
7 45 A.M.	A.M. 7 45	A.M. 7.75	A.M. 7.75	A.M. 7.7
8 A.M.	A.M. 8 00	A.M. 8.00	A.M. 8.00	A.M. 8.0
etc.	etc.	etc.	etc.	etc.

The Model No. 35 Recorder can also be furnished for the Num-Hour plan when operated from a master clock. Here the type unit is arranged to print zero at the starting time, numbering the working hours of the day, and cutting out lunch or other non-productive periods. This method simplifies computations of elapsed time.

Dimensions: 8¾″ high, 13″ wide, 7″ deep.
Base 85 square inches.
Shipping weight — approximately 29 lbs.

•

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION
109 LAFAYETTE STREET . . . . NEW YORK 13, N. Y.

STROMBERG *No. 35 Job Cards*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

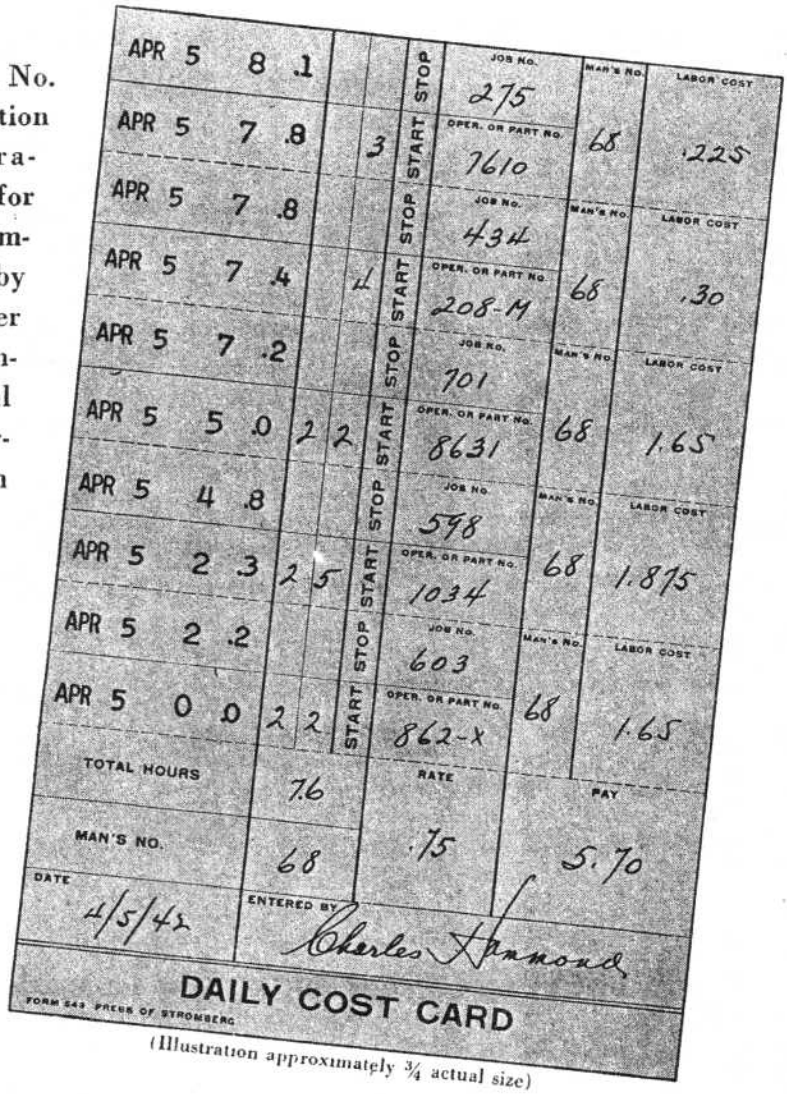
BULLETIN 35C-1

Cumulative Daily Job Card

Stromberg standard Job Card No. 543 illustrates complete distribution of time spent on various operations by an individual employee for one complete work day. Time imprints are actual facsimiles made by a Stromberg No. 35 Job Recorder registering month and date with Continental time expressed in decimal fractions of tenths of an hour. Perforations allow for easy allocation of different operation costs.

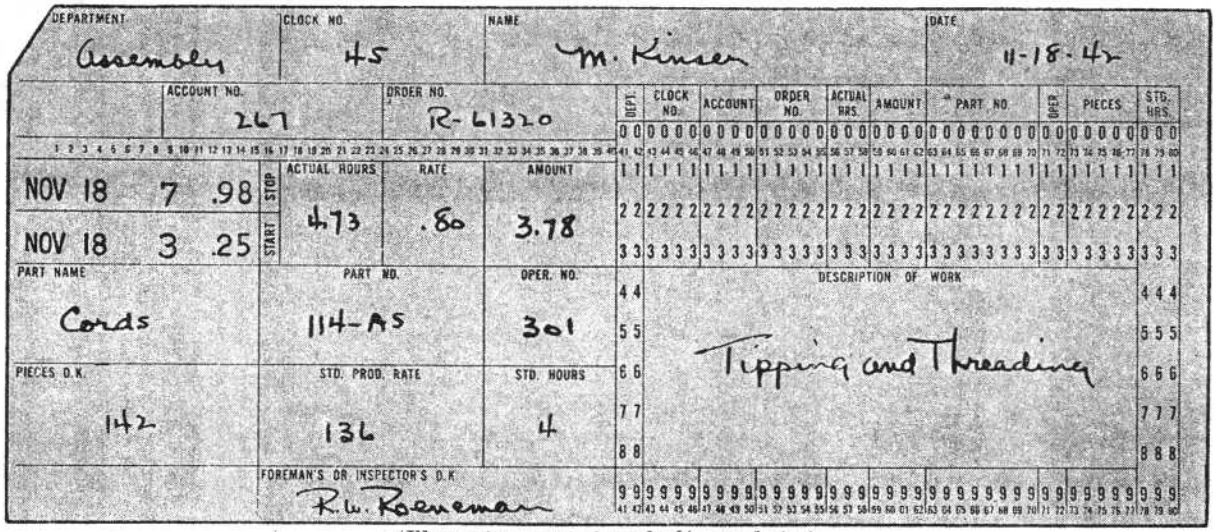
From this sample it can be seen that actual costs chargeable to various jobs can quickly be determined and balanced with total day's pay.

This facsimile card also illustrates the Stromberg Num-Hour method of recording time. Rather than indicating actual time of day, a Master Clock operated Model No. 35 under this plan is arranged to record working time only. The Recorder automatically starts at zero each morning at the regular time work is started and automatically eliminates all non-working time, such as lunch hour, according to a pre-arranged schedule. The Stromberg Num-Hour basis of recording furnishes records from which elapsed time can be determined with maximum convenience.



(Illustration approximately ¾ actual size)

Tabulating Job Ticket

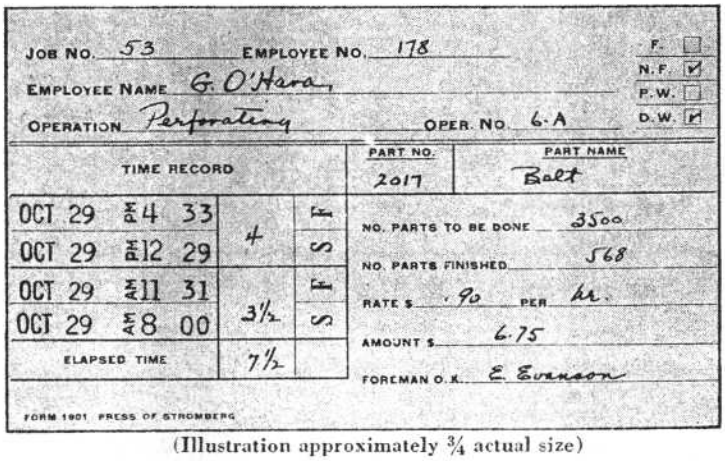


(Illustration approximately 5/6 actual size)

With a tabulating system, tickets similar to the above are used and job time is recorded directly on the tabulating card. This facsimile card shows No. 35 imprints expressed in Continental time with hour and apparent hundredths of an hour.

Individual Job Ticket

Stromberg Job Card Form No. 1901 provides for timing individual job operations. Two lines are allotted to accommodate both morning and afternoon periods in the event an employee performs the same operation for an entire day. This card illustrates No. 35 registrations giving a.m. and p.m. hours and minutes.



(Illustration approximately 3/4 actual size)

PRINTED IN U.S.A.

To be continued.

STROMBERG TIME CORPORATION
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION
109 LAFAYETTE STREET . . . . NEW YORK 13, N. Y.

Electronic "master clock" for old slave dials: $50. "Governor" makes Eureka clocks keep quartz-accurate time with no change to the clock: $95. Voltage regulators: $35 to $55.
Bryan Mumford, 3933 Antone Road, Santa Barbara, CA 93110; (805) 687-5116; www.bmumford .com

New publication: 60-page booklet with facsimiles of instructions and drawings re: **FAVAG** clocks with Hipp-toggle, period 1930-1960 (all in French). $25 including postage. Rare French book on CD-Rom, easily printable (in .tif format: "Horlogerie electrique-1ere partie-Horloges-meres et installation horaires" by **Ch. Poncet**, Cluses, 1905, 227 pages. 25 USD or 25 EUR. Order email, viredazepal @bluewin.ch, or address Michel Viredaz, Chemin du Raidillon 48, CH-1066 Epalinges, Switzerland.
Send money in banknotes, no checks please.

50 - **1908 SELF-WINDING CLOCK CO. CATALOGUES** reprinted in 1979 by Dr. Bengt E. Honning. New old stock. $35.00 ea. Including shipping. Roy Crowe, 9257Appleby St., Downey, CA, 90240, (562) 861-8788, email dcrowe2259@ AOL.com

BULLE Insulating (Shoulder) Washers: these special washers are starting to deteriorate. The clock requires 4 of these washers. I had an exact replacement manufactured. A set of 4 is $5 postpaid.
Mel Kaye, FNAWCC, Box 322, Basking Ridge, NJ 07920

New **Tower & Street Clocks**, replacement movements for Telechron large clocks. Manufactured by Electric Time Co., Inc., 45 West Street, Medfield, MA, USA 508-359-4396/800-531-2562/FAX 508-359-4482 www .electrictime.com - E-mail - sales @electrictime.com

Stromberg Master clock movement and correct seconds beat pendulum, plus rectifier unit. $150 + shipping. Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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Requests for reprints of previously published material should be directed to the Chapter Historian:
Dr. George Feinstein 75-19 195th Street Flushing, NY 11366

MUSEUM WANDERINGS

Science Museum

"Magneta" Electric Master-Clock and Impulse Dial

In this type of master-clock, patented by Fischer of Zurich in 1900, the electrical circuit remains closed throughout, and every minute the armature of a simple dynamo, driven by the clock weight, is sharply rotated, sending a pulse of current through the impulse dials. Successive rotations are in alternate directions and so are the pulses of current.

The system has been used to a considerable extent, both on the European Continent and in the United Kingdom.

Presented by Magneta (B.V.C.) Ltd.
Inv. 1060–1 and 2

--- MART ---

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Information on **Frank Hope-Jones, Synchronome** and their products. Details of any clocks or products of the company and also trade literature are needed for a forthcoming book. If you have anything which you think could be of value please e-mail details to robert_miles.t21@ btinternet.com .

Pendulum for **Standard** Master 2 ½ " D. x 3" Long, nickle plated, there are generally 2 of these on this particular clock and I have only one and need the other.
Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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"Synchronome Brisbane 1903-1991" The story of the Jackson family of electrical clock makers. An Historical Project by Chapter 104. A 32 page booklet about the operation of the Synchronome Elec. Co. of Australasia. $5.00 Norman Heckenberg, 60 Orchard Tce., St. Lucia, 4067, Australia

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"A Guide to Electrical Horology" by Martin Swetsky, FNAWCC. Includes Chapters on History, Electrical Principles, Repair Methods, Tips, plus Repair References. Price $42.00 Post Paid. Mitchell Swetsky, 10 Chelsea Way, Fairport, NY 11450. E-mail MSwetsky@ Rochester.rr.com.

BANGOR Electric Clock Parts, New Factory original parts too many to list separately. Call or e-mail with your needs. Elmer Crum, (727)868-0181, electrichorology@juno.com

Poole, Barr cylindrical Pendulums. $15 + $3 shipping.
Call or E-mail S. Cabibbo (201) 489-8176, TimeandTreasures@ MSN.com

THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78
NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXII #3, DECEMBER 2006

Fellow Horologists:

It is time for our yearly dues payments. Dues remain **$10.00** for U.S. members and **$15.00** for foreign members, due to the higher postage. Dues have not increased in over 30 years. **Please pay promptly as it makes our Secretary-Treasurer's job much easier.**

The next issue of the Journal is our **annual Mart cleanup issue**. Please send a note to either George Feinstein or Harvey Schmidt if you wish to continue your ad in the Mart. Thank you for your help.

The Journal is looking for additional articles. Original articles concerning repair information on both battery powered and 110 VAC clocks are particularly desirable.

The 2008 Time Symposium on Electric Clocks is moving forward. We would appreciate suggestions on prospective speakers who can address a general overview of electric clock making in North America and in Europe. If you or someone you know would be willing to submit a paper on either of these subjects, please let me know.

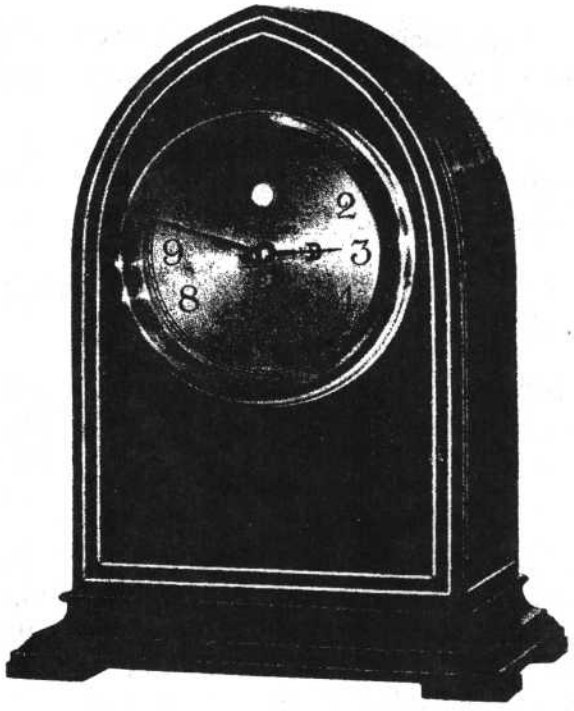
This issue of the Journal of the Electrical Society continues the catalog of the Warren Clock Company. As you review this early Warren Clock Company catalog, you can see the development of the Telechron motors and their associated clocks. In the early days, there were several different clock movements used although all were powered by the basic Telechron motor. In this catalog, you can also see the development of the indicator showing that there had been a power interruption. The earliest Warren clocks did not have an indication that there had been a power failure. This catalog illustrations show that Warren was working hard to find the means of showing that there had been a problem. The initial indicator was a flag labeled "RESET" that dropped down in front of the dial. The red flag behind the dial was next. However, since this was an add-on, room for the indicator had to found wherever possible. Several of these early indicators were located off-center on the dial or at the top of the dial just under the bezel. Finally, the familiar red dot was incorporated in all Warren and GE electric clocks.

As Paul Harvey says, "for the rest of the story," Warren had very complete patent coverage of the self-starting synchronous motor. Other electric clock companies were forced to produce electric clocks with manual start. Please enjoy the holidays and the coming New Year. **Continued on page 23.**

Best wishes to all. Yours very truly, Bill Ellison.....President
Harvey Schmidt, FNAWCC,.....Secretary-Treasurer) Co-
Dr. George Feinstein, FNAWCC..Chapter Historian) Editors

HARVEY SCHMIDT, FNAWCC, Secretary-Treasurer, 75-80 179th ST. FLUSHING NY 11366

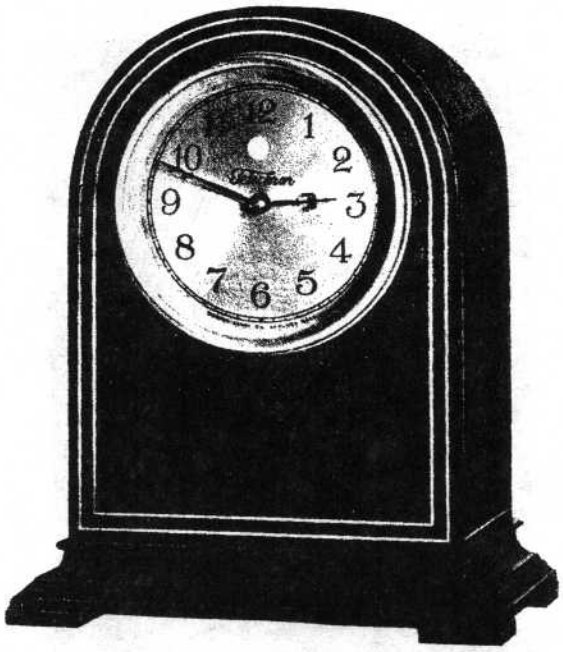
Continued from September, 2006 issue.



GOTHIC MANTEL TELECHRON

NUMBER 501

SIZE:—11⅜ inches high, 8½ inches wide, 5½ inches deep.
DIAL:—Etched Silver, 5 inches in diameter.
CASE:—Mahogany inlaid.
MOVEMENT:—Warren Synchronous Electric.



DORIC MANTEL TELECHRON

NUMBER 502

SIZE:—10⅝ inches high, 8½ inches wide, 5 inches deep.
DIAL:—Etched Silver, 5 inches in diameter.
CASE:—Mahogany inlaid.
MOVEMENT:—Warren Synchronous Electric.

MANTEL TELECHRON

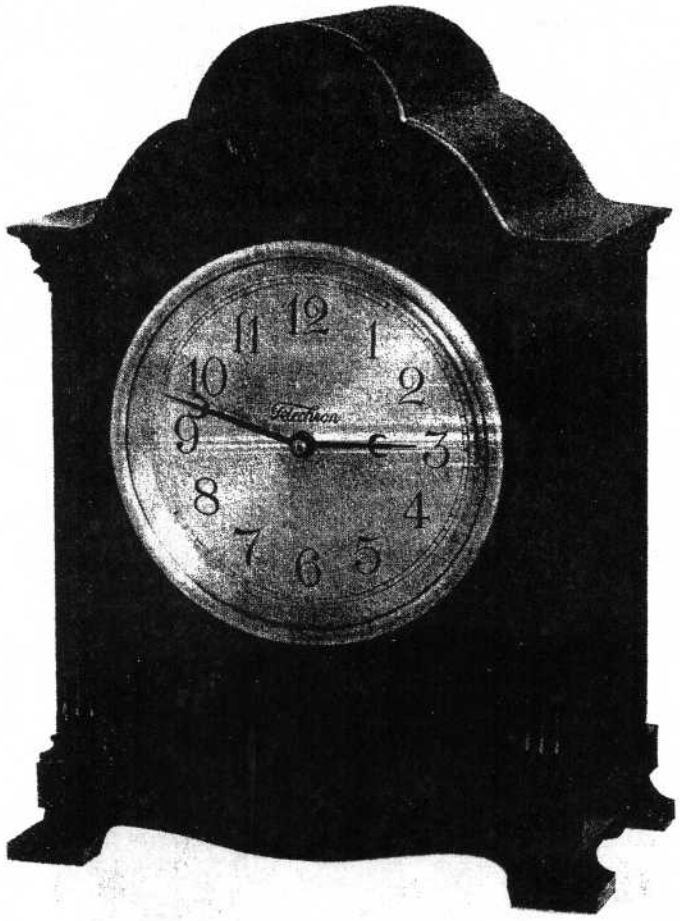
NUMBER 504

SIZE:—12½ inches high, 8⅝ inches wide at base, 6 inches deep at base.

DIAL:—Etched Silver, 6 inches in diameter.

CASE:—Mahogany inlaid.

MOVEMENT:—Warren Synchronous Electric.



MANTEL TELECHRON

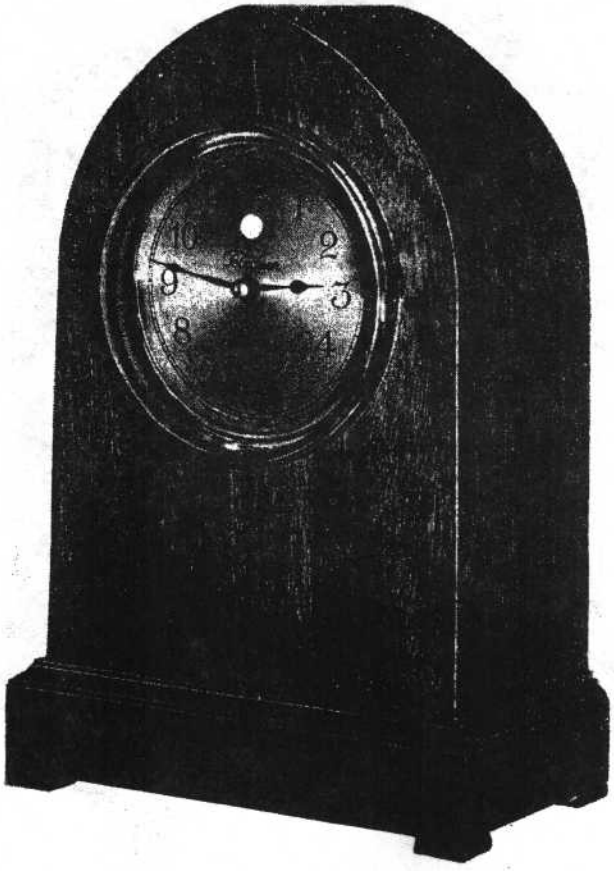
NUMBER 508

SIZE:—13⅛ inches high, 9¼ inches wide, 5¼ inches deep.

DIAL:—Etched Silver, 6 inches in diameter.

CASE:—Mahogany.

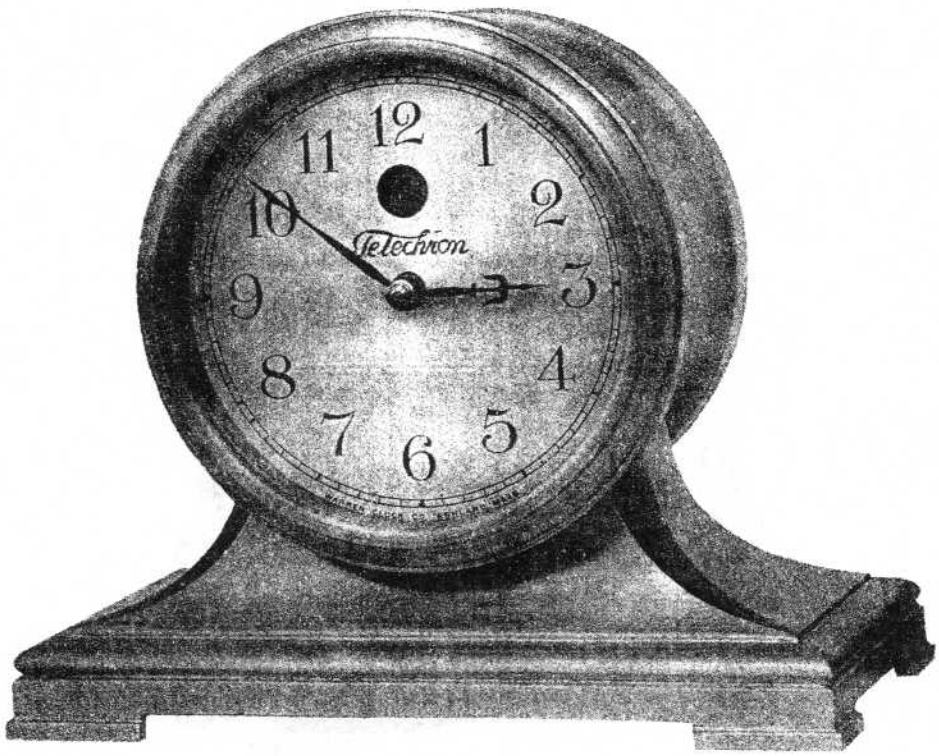
MOVEMENT:—Warren Synchronous Electric.



GOTHIC MANTEL TELECHRON

NUMBER 503

SIZE:—13⅛ inches high, 8¾ inches wide, 5 inches deep.
DIAL:—Etched Silver, 5 inches in diameter.
CASE:—Imitation Mahogany.
MOVEMENT:—Warren Synchronous Electric.



MANTEL TELECHRON

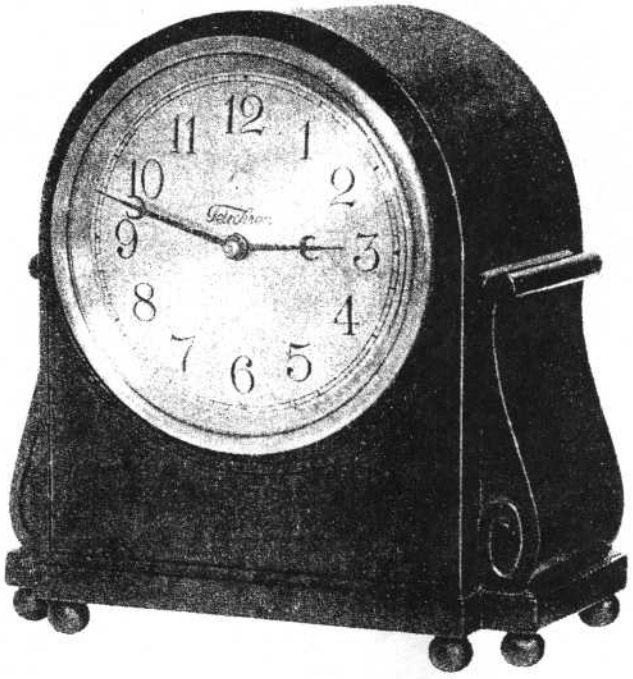
NUMBER 402

SIZE:—6⅞ inches high, 8 inches wide, 4⅛ inches deep.

DIAL:—Etched Silver, 5 inches in diameter.

CASE:—Brass and Bronze finished in Verde Antique or Bronze.

MOVEMENT:—Warren Synchronous Electric.



QUEEN ANNE MANTEL TELECHRON

NUMBER 505

SIZE:—9⅝ inches high, 8⅞ inches wide, 5¾ inches deep.
DIAL:—Etched Silver, 6 inches diameter.
CASE:—Mahogany Ebony inlaid.
MOVEMENT:—Warren Synchronous Electric.

To be continued.

Continued from September, 2006 issue.

STROMBERG *No. 36 Job Recorder*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 36-2

No. 36 Job Recorder

The Stromberg Model No. 36 is scientifically designed and engineered to meet all requirements for modern job time recording. It is sturdy without bulk, easy to use, and economical to operate. Imprints are made *automatically* when a card or ticket is inserted; and to permit registrations even during a current failure, *an emergency hand lever is provided.* This Job Time Recorder is adaptable to all types of single, multiple, or tabulating tickets and can be furnished to print either on the left hand edge or the right hand edge of the card. Special guides can be furnished to locate imprints in fixed positions, or with a key controlled, moveable card funnel that will locate imprints in two fixed positions. This machine can be furnished to operate as an individual unit from a synchronous motor or as part of a Stromberg Autoset Master Clock system.

Specifications and Features

- Modern case finished black Morocco.
- Large pilot dial with unbreakable crystal.
- Trigger type imprinting mechanism.
- Auxiliary hand lever printing unit.
- Accessible key type setting of month and date wheels.
- Wall or table mounting.
- Recessed guide that simplifies locating the imprint.
- Geneva geared typewheel unit, for precise alignment of imprints.
- P.M. registrations are indicated by underscoring the hour characters.
- Automatic positive ribbon reversing mechanism.
- Pilot Dial is train geared to the printing unit for positive synchronization.
- Entire Recorder constructed of interchangeable units to simplify alterations and repairs.
- Electromagnetic power unit drives the mechanism.

Dimensions: 11¾" high, 11" wide and 5⅞" deep.
Base: 65 square inches.
Shipping weight — approximately 26 lbs.

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION
109 LAFAYETTE STREET . . . . NEW YORK 13, N. Y.

STROMBERG *No. 36 Imprints*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 36C

Imprint Specifications

Time imprints made with the Model 36 Job Time Recorder can include, in this sequence, all or part of the following: — year, month, date, meridian or continental (24) hour cycles, hours and minutes, or fractions of hours in tenths, apparent hundredths or five-hundredths.

1944 DEC 22 12 00

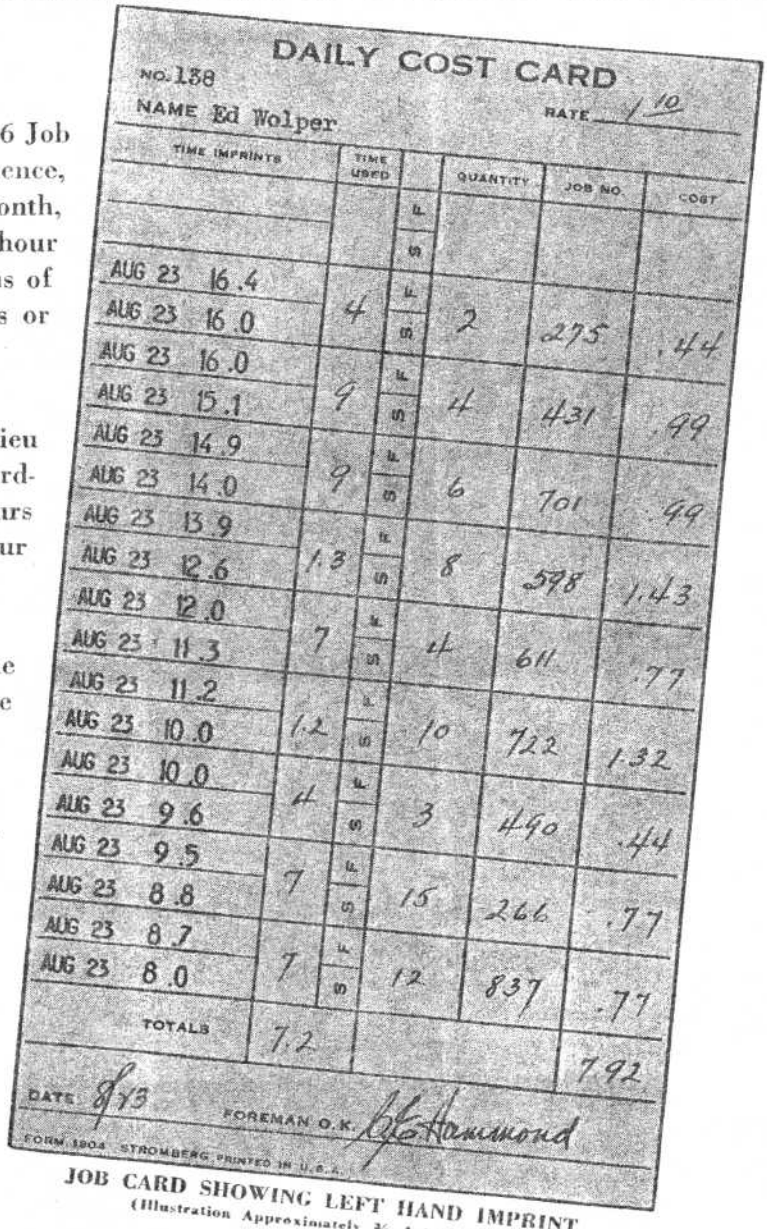
Day abbreviations can be supplied in lieu of the month and date imprint. On recorders printing meridian time, the PM hours are indicated by underscoring the hour character.

WE 10 48

A prefix can be supplied in place of the year imprint when imprints must be identified with specific machines.

BLK FEB 6 18.88

The Stromberg Model 36 Job Recorders can be furnished to print on the left hand edge or on the right hand edge of a card or ticket. The amount of space that must be reserved on a job ticket for the time imprint varies with its specifications. The maximum imprint (Year, month, date, hours and minutes) requires a space $1\frac{3}{8}$" long and $\frac{1}{4}$" high; the minimum (hours and tenths only) a space $\frac{3}{8}$" long and $\frac{1}{4}$" high.



DAILY COST CARD

NO. 138

NAME Ed Wolper RATE 1.10

TIME IMPRINTS	TIME USED		QUANTITY	JOB NO.	COST
		L.			
		S.			
AUG 23 16.4	4	L.	2	275	.44
AUG 23 16.0		S.			
AUG 23 16.0	9	L.	4	431	.99
AUG 23 15.1		S.			
AUG 23 14.9	9	L.	6	701	.99
AUG 23 14.0		S.			
AUG 23 13.9	13	L.	8	598	1.43
AUG 23 12.6		S.			
AUG 23 12.0	7	L.	4	611	.77
AUG 23 11.3		S.			
AUG 23 11.2	12	L.	10	722	1.32
AUG 23 10.0		S.			
AUG 23 10.0	4	L.	3	490	.44
AUG 23 9.6		S.			
AUG 23 9.5	7	L.	15	266	.77
AUG 23 8.8		S.			
AUG 23 8.7	7	L.	12	837	.77
AUG 23 8.0		S.			
TOTALS	72				7.92

DATE 8/23 FOREMAN O.K. L. G. Hammond

FORM 1804 STROMBERG PRINTED IN U.S.A.

JOB CARD SHOWING LEFT HAND IMPRINT
(Illustration Approximately ¾ Actual Size)

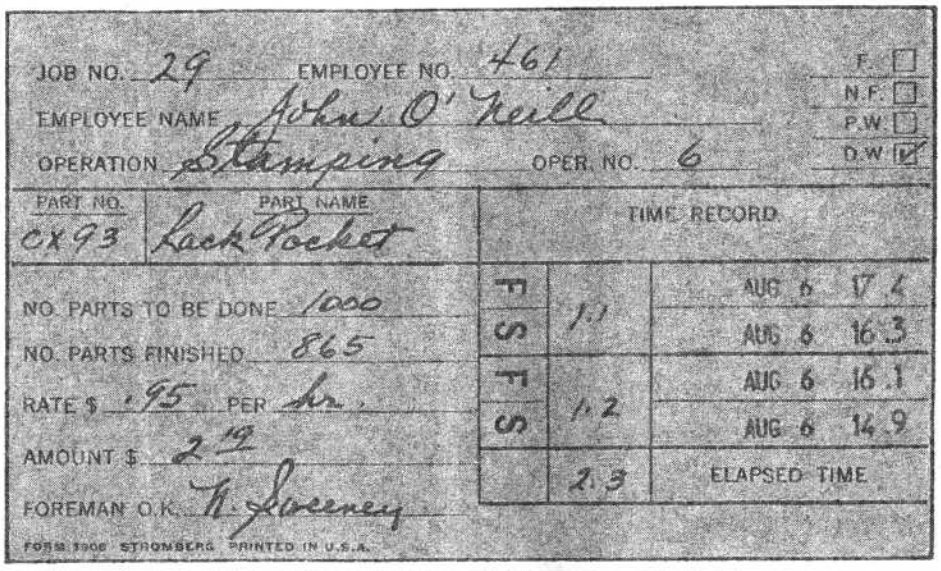
The imprint nearest the bottom, on a left hand card, must be spaced $\frac{3}{8}$" from the center of the imprint to the bottom edge of the card. Imprints can be made, however, as close to the top edge as required. The imprint nearest the top on a right hand card must be

spaced 3/8" from the center of the imprint to the top edge of the card, but can be made as close to the bottom edge as desired.

The minimum distance from the printing edge of the card to the first character of the imprint is 1/16". On a right hand imprint, the minimum distance from the printing edge to the first character on machines printing tenths of hours is 5/32", all other imprints require 1/16".

Machines can also be furnished with a 1/2" margin between the edge of the card and the imprint at no extra cost.

Individual Job Ticket
SHOWING RIGHT HAND IMPRINT



(Illustration Actual Size)

These Job Recorders can be equipped with guides to locate imprints in fixed positions when necessary. They can also be furnished with a guide having a moveable card funnel that will locate imprints in two fixed positions.

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION
109 LAFAYETTE STREET . . . NEW YORK 13, N. Y.

STROMBERG *Job Recorder Users*

TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN JU-2

Job Recorder Users

Stromberg Job Recorders are used universally as the keystone of modern cost systems. A few of the many companies obtaining *cost certainty* with these machines are cited:

Acheson Graphite Corporation
Niagara Falls, New York

Addressograph-Multigraph Corporation
Cleveland, Ohio

Ajax Flexible Coupling Company
Westfield, New York

Allis-Chalmers Mfg. Company
West Allis, Wisconsin

American Radiator & Standard Sanitary Corporation
Buffalo, N. Y.

American Seating Company
Grand Rapids, Michigan

Ann Arbor Press
Ann Arbor, Michigan

Elizabeth Arden, Inc.
New York, New York

The Bastian-Blessing Company
Grand Haven, Michigan

Bendix Aviation Corporation
Wayne, Michigan

Bethlehem Steel Company, Inc.
Johnstown, Pennsylvania

Bissell Carpet Sweeper Company
Grand Rapids, Michigan

Blue Ridge Overall Company
Christiansburg, Virginia

Book Tower Garage, Inc.
Detroit, Michigan

Bourjois Inc.
Rochester, New York

Buffalo Fire Appliance Corp.
Buffalo, New York

Burroughs Adding Machine Company
Detroit, Michigan

Canada Dry Ginger Ale, Inc.
New York, New York

Carborundum Company
Niagara Falls, New York

The Champion Paper and Fibre Company
Hamilton, Ohio

Christian Board of Publication
St. Louis, Missouri

The Cleveland Pneumatic Tool Company
Cleveland, Ohio

Colgate-Palmolive-Peet Company
Jersey City, New Jersey

Combustion Engineering Company, Inc.
St. Louis, Missouri

Corning Glass Works
Corning, New York

The Crosley Corporation
Cincinnati, Ohio

Dahlstrom Metallic Door Company
Jamestown, New York

John Deere Tractor Company
Waterloo, Iowa

Doehler Die Casting Company
Toledo, Ohio

Douglas Aircraft
All Branches

Drake Bakeries, Inc.
Irvington, New Jersey

E. I. du Pont de Nemours & Co., Inc.
Wilmington, Delaware

Elgin Mfg. Company
Elgin, Illinois

Ethyl Gasoline Corporation
San Bernardino, California

Federal Motor Truck Company
Detroit, Michigan

Gaylord Container Corporation
St. Louis, Missouri

General Foods Corporation
Battle Creek, Michigan

Genesee Motoramp Garage
Buffalo, New York

A. C. Gilbert
New Haven, Conn.

The Globe-Wernicke Company
Cincinnati, Ohio

The Goodyear Tire & Rubber Company
Akron, Ohio

Grand Rapids Brass Company
Grand Rapids, Michigan

Hamilton Watch Company
Lancaster, Pennsylvania

Hart Schaffner and Marx
Chicago, Illinois

Indiana University
Bloomington, Indiana

Inland Steel Company
Indiana Harbor, Indiana

Kenosha Auto Transport Corporation
Springfield, Ohio

Kingsport Press, Inc.
Kingsport, Tennessee

Kelvinator Corporation
Detroit, Michigan

Linde Air Products Company
Tonawanda, New York

Los Angeles Transit Lines
Los Angeles, Calif.

The Lufkin Rule Company
Saginaw, Michigan

Mack-International Motor Truck Corp.
Jersey City, New Jersey

The Maytag Company
Newton, Iowa

Milprint, Inc.
Milwaukee, Wisconsin

National Lock Company, Inc.
Rockford, Illinois

News Syndicate Company, Inc.
New York, New York

Noblitt-Sparks Industries, Inc.
Greenwood, Indiana

The O'Sullivan Rubber Company, Inc.
Winchester, Virginia

Perfection Stove Company
Cleveland, Ohio

Poinsettia Dairy Products, Inc.
Tampa, Florida

Buffalo Police Department
Buffalo, New York

Real Silk Hosiery Mills, Inc.
Indianapolis, Indiana

Remington Rand Inc.
Buffalo, New York

Republic Pictures Company, Inc.
North Hollywood, Calif.

Republic Steel Corporation
Warren, Ohio

W. A. Sheaffer Pen Co.
Fort Madison, Iowa

Suni-Citrus Products Company
Haines City, Florida

Teletype Corporation
Chicago, Illinois

Timken Roller Bearing Company
Canton, Ohio

Tubize Chatillon Corporation
Rome, Georgia

United States Government
Various Departments

Vultee Aircraft Div. Aviation & Trans-
Downey, California **portation Corp.**

Ward Baking Company
Pittsburgh, Pennsylvania

Montgomery Ward
Nationally used

Westinghouse Electric Company
Various Branches

H. A. Wilson Company
Elizabeth, New Jersey

Winchester Repeating Arms Company
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Wolverine Brass Works
Grand Rapids, Michigan

Yellow Cab Company
Des Moines, Iowa

L. A. Young Spring and Wire Corp.
Los Angeles, Calif.

To be continued.

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Continued from September, 2006 issue.

MASTER CLOCK MOVEMENTS

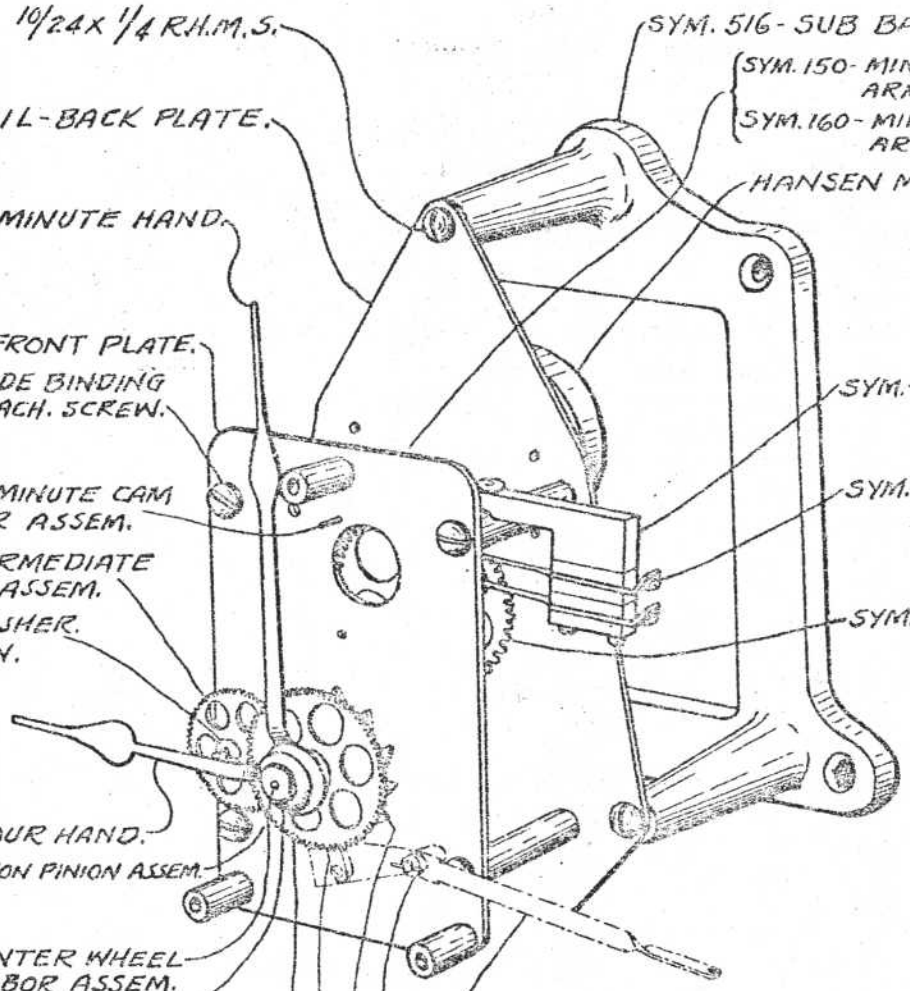
Sym. 644	- Weight Link	2 for .25
Sym. 660	- Armature Cam Assembly	3.00
Sym. 690	- Magnet Assembly (Specify Voltage)	7.00
Sym. 700	- Cannon Pinion Assembly	1.00
Sym. 710	- Intermediate Wheel Assembly	1.60
Sym. 720	- Hour Wheel Assembly	1.10
Sym. 730	- Second Wheel Assembly	1.75
Sym. 732	- Post Screw	.30
Sym. 733	- Post Screw	.30
Sym. 736	- Weight	.90
Sym. 750	- Pendulum Rod Assembly (60 Beat)	1.60
Sym. 780	- Pendulum Rod Bob Assembly (60 Beat)	5.25
Sym. 810	- Second Hand Assembly	.15
Sym. 820	- Hour Hand Assembly	.50
Sym. 830	- Minute Hand Assembly	.50
Sym. 833	- Hand Washer	.15
Sym. 834	- Hand Nut	.25
Sym. 910-A-	Contact Arm Assembly	.75
Sym. A-914-	Contact Arm Spring	.25
Sym. 920	- Dial Assembly (Arabic)	3.85
Sym. 940-A-	Verge and Rod Adjuster Assem. (Mere. Pend)	3.85
Sym. 940-B-	Verge and Rod Adjuster Assem. (Metal Ball)	3.85
Sym. 1591	- Carbon Contact	.15
Sym. 3501	- Binding Plate	.05
Sym. 3910	- Weight Cable Drum Assembly	25.00
Sym. 3929	- Drive Dog	.90
Sym. 3932	- Adjusting Bar	.50
Sym. 3933	- Switch Lever Stop	.40
Sym. 3935	- Control Wheel	1.50
Sym. 3940	- Center Shaft Assembly	3.50
Sym. 3942	- Connector Plate	1.25
Sym. 3943	- Drive Pin	.05
Sym. 3950	- Weight Assembly	6.50
Sym. 3951	- Weight Cap	.85
Sym. 3953	- Weight Shell	1.10
Sym. 3954	- Weight Core	2.40
Sym. 3955	- Weight Rod	.25
Sym. 3956	- Weight Cable	1.75
Sym. 3957	- Weight Hook	.15
Sym. 3958	- Shoulder Screw	.25
Sym. 3960	- Weight Pulley Assembly	2.00
Sym. 3969	- Ratchet Wheel	.75
Sym. 3970	- Intermediate Wheel and Pinion	1.60
Sym. 3974	- Verge Adjuster	
Sym. 3976	- Suspension Spring Post (Mere. Pend.)	.60
Sym. 3976-A-	Suspension Spring Post (Metal Ball)	.50
Sym. 3978	- Motor	25.00
Sym. 3979	- Base	12.00
Sym. 3980	- Switch Control Wheel Assembly	2.75

MASTER CLOCK MOVEMENTS

Sym. 3980-A-	Switch Intermediate pinion Assembly	1.50
Sym. 3990	- Switch Assembly	1.50
Sym. 4201	- Base	4.00
Sym. 4210	- Spring Drive Assembly	12.00
Sym. 4215	- Winding Spring	.40
Sym. 4220	- Spring Barrel Assembly	2.00
Sym. 4221	- Main Spring	1.00
Sym. 4222	- Driving Arm Stop	.60
Sym. 4224	- Connecting Block	.75
Sym. 4230-A-	Gear Wheel Assembly	3.50
Sym. 4230-B-	Gear Wheel and Shaft Assembly	3.50
Sym. 4232	- Driving and Back Lash Dog	.40
Sym. 4239	- Back Lash Dog Spring	.25
Sym. 4240	- Winding Wheel Assembly	2.00
Sym. 4241	- Driving Dog Spring	.40
Sym. 4260	- Magnet Assembly	4.00
Sym. 4270	- Adjusting Plate Assembly	.50
Sym. 4280	- Adjusting Plate Assembly	.50
Sym. 4290	- Armature Assembly	3.00

SYNCHRONOUS MOTOR PROGRAM CLOCK MOVEMENT – SFP AND SMP

MC7



10/24 x 1/4 R.H.M.S.
SYM. B-4321L-BACK PLATE.
SYM. 4330-MINUTE HAND.
SYM. B4311L-FRONT PLATE.
8/32 x 1/4 ST. SIDE BINDING HEAD MACH. SCREW.
SYM. A4315L-MINUTE CAM ARBOR ASSEM.
SYM. 710-INTERMEDIATE WHEEL ASSEM.
SYM. W8-WASHER.
SYM. P-2-PIN.
SYM. 4320-HOUR HAND.
SYM. 700-CANNON PINION ASSEM.
SYM.-600-CENTER WHEEL AND ARBOR ASSEM.
SYM. 834-HAND NUT.
SYM. 833-HAND WASHER.
SYM. 720-HOUR WHEEL ASSEM.
SYM. 4360-DIAL ASSEMBLY.
SYM. 4340-SECOND HAND ASSEM.

SYM. 516-SUB BASE.
SYM. 150-MIN. CIRCUIT CLOSER ARM-SHORT.
SYM. 160-MIN. CIRCUIT CLOSER ARM-LONG.
HANSEN MOTOR #101-P.
SYM.-A-4316-L-BRACKET-CIRCUIT CLOSER.
SYM. #180-MINUTE CIRCUIT CLOSER ASSEMBLY.
SYM. #730-SECOND WHEEL ASSEMBLY.

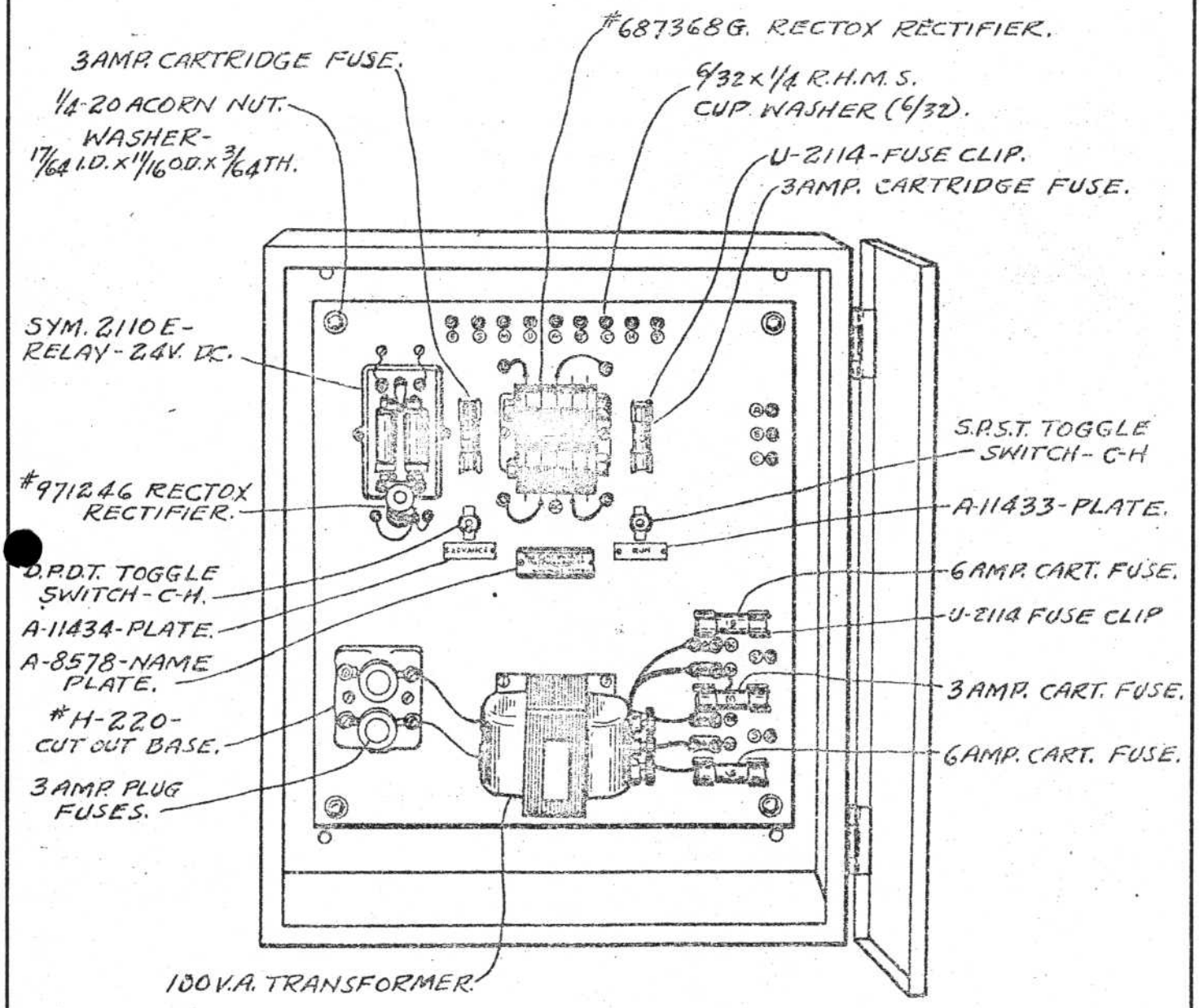
SYM. 890-LIFTING ARM. ASSEM.
SYM. P2-PIN.
SYM. 1790-FIVE MIN. CAM ASSEM.
SYM. 1700-ROLLER LINK ASSEM.
SYM. A2-SCREW.
} THESE PARTS USED ON SFP ONLY.

MOVEMENT - SFP AND SMP
FOR
SYNCHRONOUS MOTOR PROGRAM CLOCK

Sym.	101	- Hansen Motor with Pinion 110 Volt 60 cycle	$6.50	
Sym.	150	- Minute Circuit Closer Arm - Short	.60	
Sym.	160	- Minute Circuit Closer Arm - Long	.60	
Sym.	180	- Minute Circuit Closer Assembly	3.00	
Sym.	516	- Sub Base	4.00	
Sym.	600	- Center Wheel and Arbor Assembly	3.00	
Sym.	700	- Cannon Pinion Assembly	1.00	
Sym.	710	- Intermediate Wheel Assembly	1.60	
Sym.	720	- Hour Wheel Assembly	1.25	
Sym.	730	- Second Wheel Assembly	1.75	
Sym.	833	- Hand Washer	.15	
Sym.	834	- Hand Nut	.25	
Sym.	890	- Lifting Arm Assembly	1.50	
Sym.	1700	- Roller Link Assembly	1.00	
Sym.	4320	- Hour Hand	.50	
Sym.	4330	- Minute Hand	.50	
Sym.	4340	- Second Hand Assembly	.15	
Sym.	4360	- Dial Assembly	3.85	
Sym.	A-2	- Screw	.05	
Sym.	1790	- Five Minute Cam Assembly	2.25	
Sym.	A-4316-L	- Bracket Circuit Closer	.40	
Sym.	B-4311-L	- Front Plate	2.25	
Sym.	B-4321-L	- Back Plate	2.00	
Sym.	P-2	- Pin	.05	
Sym.	W-8	- Washer	.05	
		8/32 x 1/4 St. Side Binding Head Mach. Screw	.60	Gro.
		10/24 x 1/4 R.H.M.S.	.60	Gro.
	MT-50	Transformer - 110 Volt A.C. to 24 Volt A.C.	5.00	
	CX 1350	24 Volt A.C. Bell Relay	6.00	
		Complete Movement without Sub Base Either SFP or SMP with synchronous motor	35.00	

NOTE: Parts prices do not include any installation charges.

MASTER CONTROL PANEL MC9



SEPT. 1943

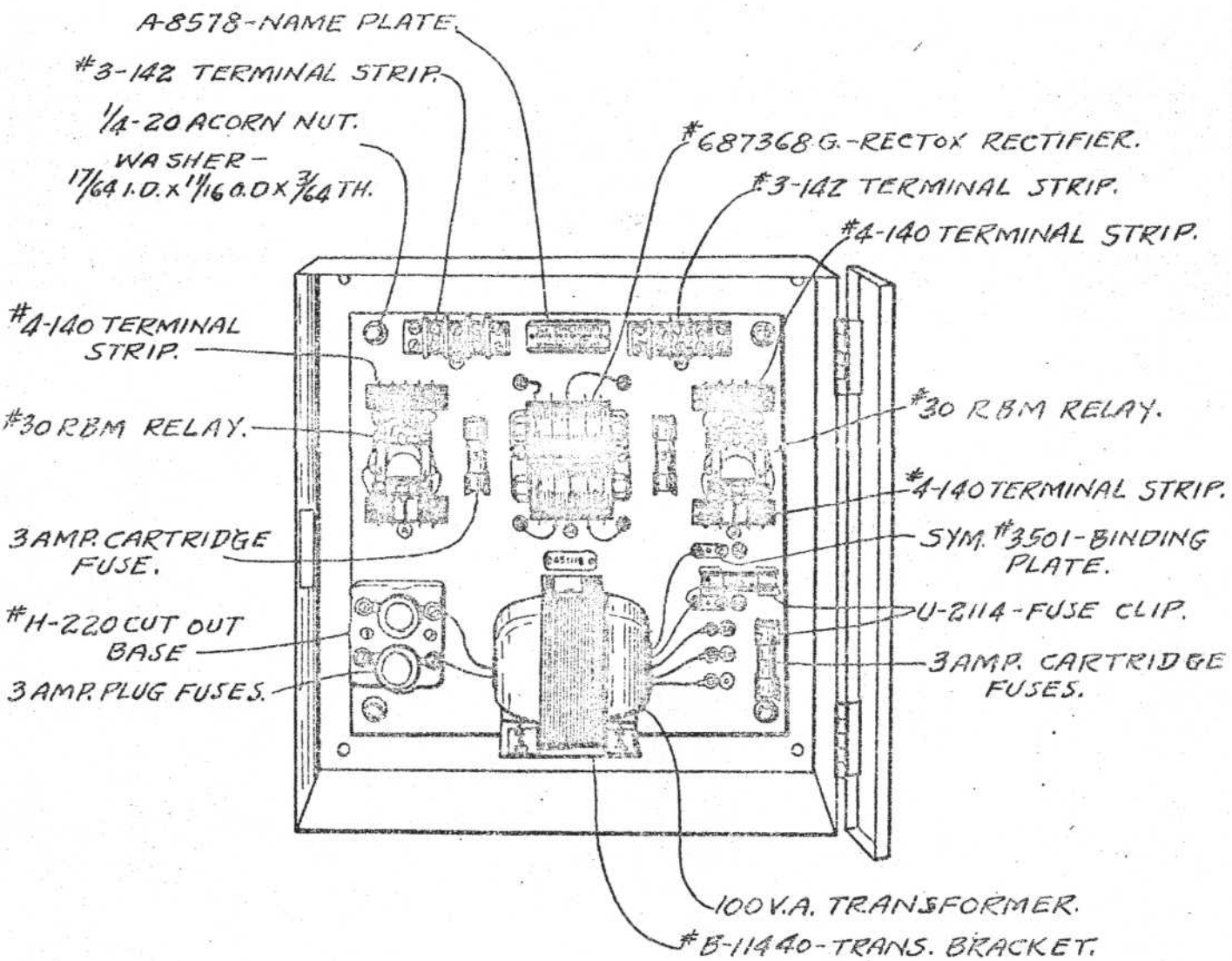
MC 10

RA MASTER CONTROL

ALTERNATING CURRENT

Sym.	A-8578	- Name Plate	$ .25
Sym.	A-11433	- Plate	.25
Sym.	A-11434	- Plate	.25
Sym.	687368 G	- Rectox Rectifier	9.00
Sym.	971246	- Rectox Rectifier	5.00
Sym.	H-220	- Cut Out Base	.75
Sym.	U-2114	- Fuse Clip	.25
		3 Amp. Plug Fuse	.20
		3 Amp. Cartridge Fuse	.10
		6 Amp. Cartridge Fuse	.10
		1/4 - 20 Acorn Nut	.15
		Washer 17/64 I.D. x 11/16 O.D. x 3/64th	.05
		Cup Washer 6/32x1/4 R.H.M.S.	.05
		D.P.D.T. Toggle Switch - C.H.	1.00
		S.P.S.T. Toggle Switch - C.H.	1.00
Sym.	2110 E	- Relay - 24 Volt A.C.	6.00
	MT 100	Transformer 110 Volt A.C. 60 cycle to 24 Volt	8.00
	MT 100	Transformer - Other Voltages and frequencies	15.00

BOOSTER CONTROL PANEL MC11



SEPT. 1943

MC12

RB BOOSTER CONTROL

ALTERNATING CURRENT

Sym.	3501	- Binding Plate	$ .05
Sym.	A-8578	- Name Plate	.25
Sym.	B-11440	- Trans. Bracket	.40
Sym.	687368-G	- Rectox Rectifier	9.00
Sym.	H-220	- Cut Out Base	.75
Sym.	U-2114	- Fuse Clip	.25
		3 Amp. Plug Fuse	.20
		3 Amp. Cartridge Fuse	.10
		1/4 - 20 Acorn Nut	.15
		Washer 17/64 I.D.x11/16 O.D.x3/64th	.05
		#3-142 Terminal Strip	.50
		#4-140 Terminal Strip	.50
		#30 RBM Relay 24 Volt D.C.	6.00
	MT 100	Transformer 110 Volt A.C. 60 cycle to 24 Volt	8.00
	MT 100	Transformer - Other Voltages and Frequencies	15.00

To be continued.

Electronic "master clock" for old slave dials: $50. "Governor" makes Eureka clocks keep quartz-accurate time with no change to the clock: $95. Voltage regulators: $35 to $55.
Bryan Mumford, 3933 Antone Road, Santa Barbara, CA 93110; (805) 687-5116; www.bmumford .com

New publication: 60-page booklet with facsimiles of instructions and drawings re: **FAVAG** clocks with Hipp-toggle, period 1930-1960 (all in French). $25 including postage. Rare French book on CD-Rom, easily printable (in .tif format: "Horlogerie electrique-1ere partie-Horloges-meres et installation horaires" by **Ch. Poncet**, Cluses, 1905, 227 pages. 25 USD or 25 EUR. Order email, viredazepal @bluewin.ch, or address Michel Viredaz, Chemin du Raidillon 48, CH-1066 Epalinges, Switzerland.
Send money in banknotes, no checks please.

50 - **1908 SELF-WINDING CLOCK CO. CATALOGUES** reprinted in 1979 by Dr. Bengt E. Honning. New old stock. $35.00 ea. Including shipping. Roy Crowe, 9257Appleby St., Downey, CA, 90240, (562) 861-8788, email dcrowe2259@ AOL.com

BULLE Insulating (Shoulder) Washers: these special washers are starting to deteriorate. The clock requires 4 of these washers. I had an exact replacement manufactured. A set of 4 is $5 postpaid.
Mel Kaye, FNAWCC, Box 322, Basking Ridge, NJ 07920

New **Tower & Street Clocks**, replacement movements for Telechron large clocks. Manufactured by Electric Time Co., Inc., 45 West Street, Medfield, MA, USA 508-359-4396/800-531-2562/FAX 508-359-4482 www .electrictime.com - E-mail - sales @electrictime.com

Stromberg Master clock movement and correct seconds beat pendulum, plus rectifier unit. $150 + shipping. Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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Requests for reprints of previously published material should be directed to the Chapter Historian:
Dr. George Feinstein 75-19 195th Street Flushing, NY 11366

Continued from page 1.

These companies attempted to influence the passing of federal legislation outlawing self-starting electric clocks based on the argument that the self-starting clock owner would not be aware if the power was interrupted for a relatively short period of time during the night. Since this unfortunate sole would be unaware that his clock had lost time during the night, he would arrive late for work in the morning and his lateness could bring the assembly line to a halt. Think of the lost productivity. This legislation never became law but Warren saw it as a possible threat and became committed to developing an indicator showing that the clock could be in error.

In addition to the Warren Clock Company catalog, this issue of the Journal continues coverage of the Landis Clock Company and of the Stromberg Time Corporation.

On a shopping note, if any of you receive the Lands End Catalogs, you might wish to take a look at the reproduction of the Westclox Moonbeam clocks shown in the catalogs. These reproductions clocks are priced considerably less than the originals now command.

The Journal is looking for additional articles. Original articles concerning repair information on both battery powered and 110 VAC clocks are particularly desirable. The 2008 Time Symposium on Electric Clocks is moving forward. We would appreciate suggestions on prospective speakers who can address a general overview of electric clock making in North America and in Europe. If you or someone you know would be willing to submit a paper on either of these subjects, please let me know.

--- MART ---

All MART Ads are FREE, Send copy to the attention of the Editor:
Harvey Schmidt, 75-80 179th St., Flushing, NY 11366. Limit 3 lines.

WANTED: HOROLOGICAL LITERATURE, Repair info, Catalogs, etc. for the Journal
PORTESCAP Secticon Clock or Movement. Antique Watch & Clockmaker's Tools & Machinery.
(718) 969-0847 Harvey Schmidt, 75-80 179th St., Flushing, NY 11366

Information on **Frank Hope-Jones, Synchronome** and their products. Details of any clocks or products of the company and also trade literature are needed for a forthcoming book. If you have anything which you think could be of value please e-mail details to robert_miles.t21@ btinternet.com .

Pendulum for **Standard** Master 2 ½ " D. x 3" Long, nickle plated, there are generally 2 of these on this particular clock and I have only one and need the other.
Ron Jacobs 3 Woodheights Ave. Taylor, SC 29687 (864) 268-6577, e-mail ronolyn@ aol.com

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Bill Schroeder @ $3.00 each + postage. 6033 N. Sheridan Rd., #31H, Chicago, IL 60660,
(773)275-2563. Also available from most Watch Parts Suppliers.

FOR SALE: Replacement Field Coils for **SESSIONS** and **HAMMOND** synchronous clock movements. Wining's Clock Service, 2910 Farmdale Rd., Akron, OH 44312 (330) 628-9655

"Synchronome Brisbane 1903-1991" The story of the Jackson family of electrical clock makers. An Historical Project by Chapter 104. A 32 page booklet about the operation of the Synchronome Elec. Co. of Australasia. $5.00 Norman Heckenberg, 60 Orchard Tce., St. Lucia, 4067, Australia

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"A Guide to Electrical Horology" by Martin Swetsky, FNAWCC. Includes Chapters on History, Electrical Principles, Repair Methods, Tips, plus Repair References. Price $42.00 Post Paid. Mitchell Swetsky,
10 Chelsea Way, Fairport, NY 11450. E-mail MSwetsky@ Rochester.rr.com.

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