



THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78

NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXIII #1, MARCH 2007

Fellow Horologists:

This issue of the Journal of the Electrical Society completes an early version of a Warren Clock Company Catalog. To complement this early version of a Warren catalog, we begin reproduction of a slightly later version of a Warren Clock Company Catalog. These catalogs combine to illustrate the influence of the Warren Clock Company and, very soon, the General Electrical Company in popularizing the synchronous electric clocks. In this issue of the Journal, we will reprint more of the Stromberg Clock Company information along with additional information pertaining to the Cincinnati and Landis Clock Companies.

In the last issue of the President's Report, I mentioned that there was a reproduction of the Westclox Moonbeam alarm clock shown in the Lands End Catalog. I apologize to those who looked for the reproduction Moonbeam clocks as these clocks were actually shown in the L. L. Bean Christmas Catalog along with the next issue of their catalog. Santa Claus, with help from my wife presented me with one of these reproduction clocks for Christmas and I have submitted a brief article discussing living with a reproduction Moonbeam clock, which will be published in the next issue.

On another note, planning continues for the 2008 NAWCC Electrical Horology Time Symposium to be held in Springfield, Illinois in late October of 2008. Please mark your calendars so that you can attend this event. Currently we have arranged for an exhibit of examples of virtually all of the models of Sangamo Electric Clocks (which were manufactured in Springfield) along with some very fascinating memorabilia associated with the Sangamo Clock Company. We still have some time available for additional talks on electric clocks so sharpen your pencils and share your knowledge with other enthusiasts. Please contact me if you are willing to participate.

Speaking of participation, your editors are looking for articles for the Journal. Again, please share your knowledge. We need how-to-do-it articles along with articles that describe various electric clocks,

Please enjoy this issue of the Journal as we get ready for Spring. Yours very truly,

Bill Ellison.....President

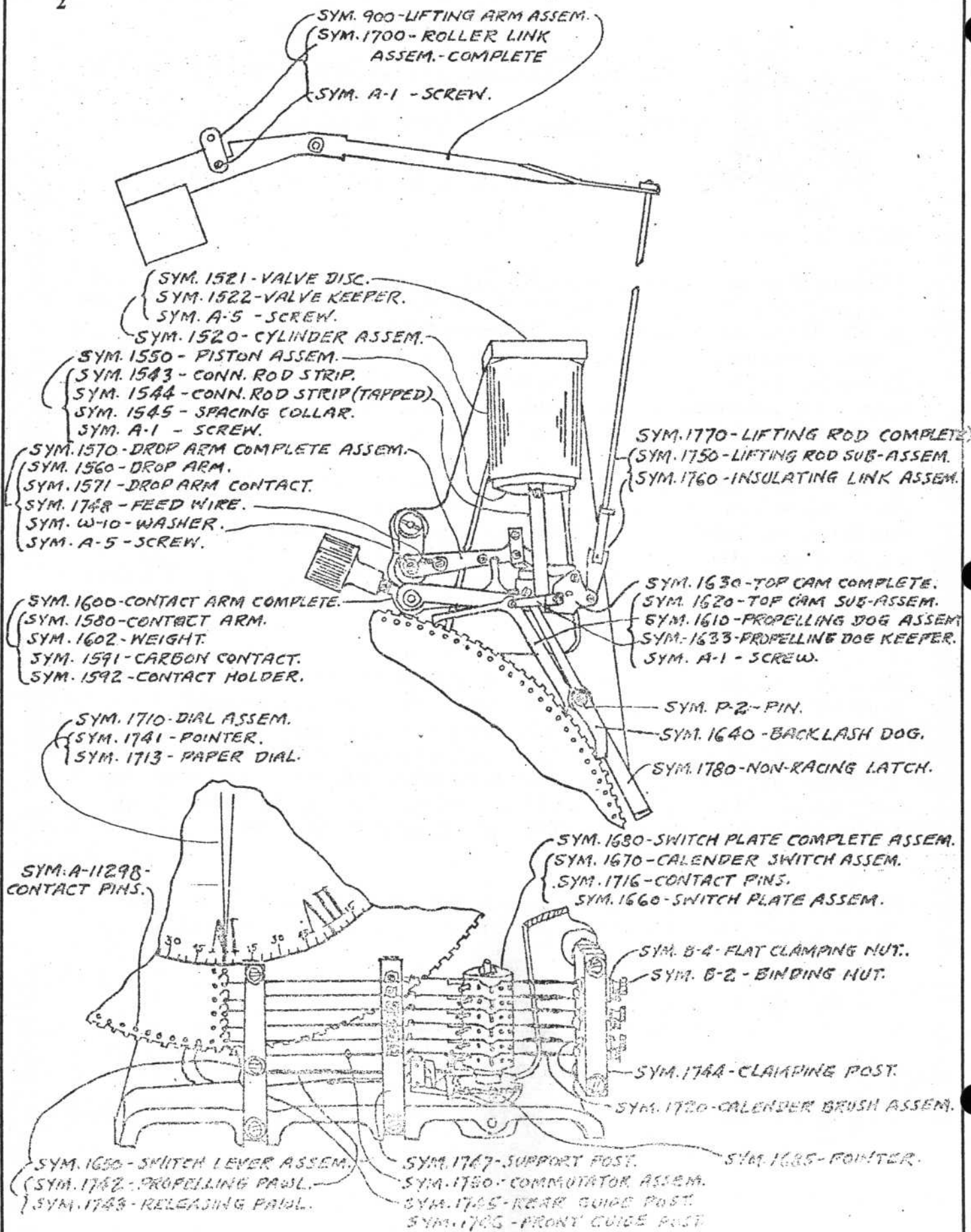
Harvey Schmidt, FNAWCC,.....Secretary-Treasurer) Co-

Dr. George Feinstein, FNAWCC..Chapter Historian) Editors

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

Continued from December, 2006 issue.

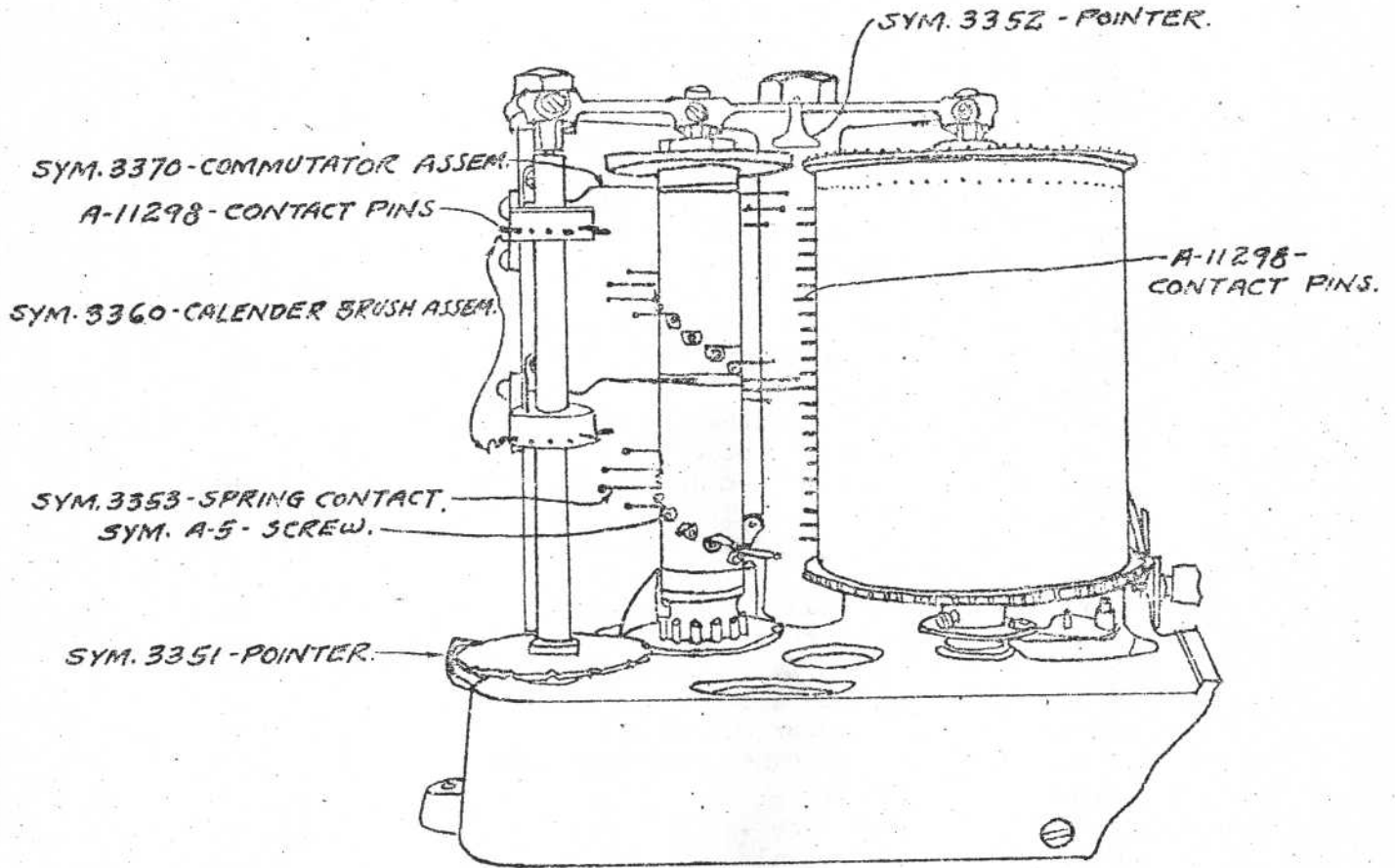
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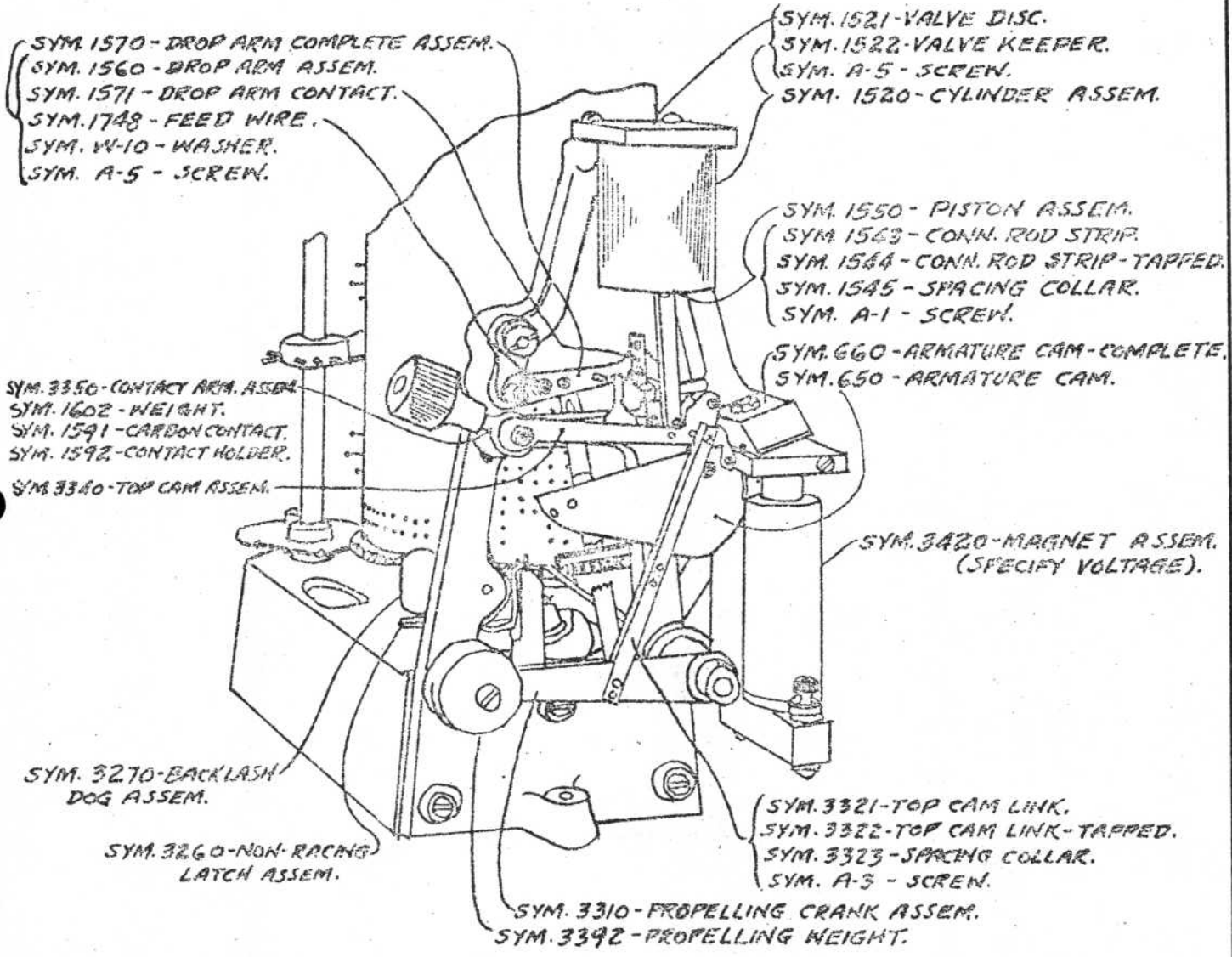


S F P

FIVE MINUTE PROGRAM MACHINE

Sym.	A-1	- Screw		.05
Sym.	A-5	- Screw		.05
Sym.	B-2	- Binding Nut	2 for	.25
Sym.	B-4	- Flat Clamping Nut	2 for	.25
Sym.	P-2	- Pin		.05
Sym.	W-10	- Washer		.05
Sym.	900	- Lifting Arm Assem.		.90
Sym.	U-1700	- Roller link Assem.		2.50
Sym.	1520	- Cylinder Assem.		6.00
Sym.	1521	- Valve Disc.		.30
Sym.	1522	- Valve Keeper		.10
Sym.	1543	- Conn. Rod Strip		.10
Sym.	1544	- Conn. Rod Strip (tapped)		.15
Sym.	1545	- Spacing Collar		.15
Sym.	1550	- Piston Assem.		4.50
Sym.	1560	- Drop Arm		2.50
Sym.	1570	- Drop Arm Complete Assem.		5.00
Sym.	1571	- Drop Arm Contact		.20
Sym.	1580	- Contact Arm		.40
Sym.	1591	- Carbon Contact		.15
Sym.	1592	- Contact Holder		.50
Sym.	1600	- Contact Arm Complete		2.50
Sym.	1602	- Weight		.50
Sym.	1610	- Propelling Dog Assem.		5.00
Sym.	1620	- Top Cam Sub-Assem.		1.50
Sym.	1633	- Propelling Dog Keeper		.40
Sym.	1640	- Backlash Dog Assem.		.40
Sym.	1650	- Switch Lever Assem.		1.50
Sym.	1660	- Switch Plate Assem.		1.00
Sym.	1670	- Calendar Switch Assem.		3.50
Sym.	1680	- Switch Plate Complete Assem.		6.00
Sym.	1685	- Pointer		.25
Sym.	1710	- Dial Assem.		22.00
Sym.	1713	- Paper Dial		.50
Sym.	1716	- Contact Pins	2.50 per C	
Sym.	1720	- Calendar Brush Assem.		2.00
Sym.	1730	- Commutator Assem.		1.50
Sym.	1741	- Pointer		.25
Sym.	1742	- Propelling Pawl		1.00
Sym.	1743	- Releasing Pawl		.40
Sym.	1744	- Clamping Post		.50
Sym.	1745	- Rear Guide Post		.40
Sym.	1746	- Front Guide Post		.40
Sym.	1747	- Support Post		.25
Sym.	1748	- Feed Wire		.05
Sym.	1750	- Lifting Rod Sub-Assem.		.75
Sym.	1760	- Insulating Link Assem.		1.00
Sym.	1770	- Lifting Rod Complete		1.75
Sym.	1780	- Non-Racing Latch		.50
Sym.	A-11298	- Contact Pins	2.50 per C or .50 Doz	





S M P

ONE MINUTE PROGRAM MACHINE

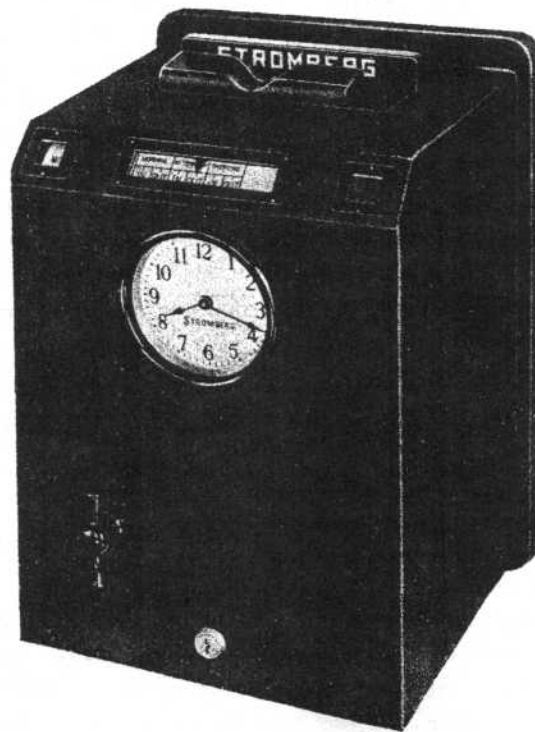
Sym.	A-1	- Screw	.05
Sym.	A-3	- Screw	.05
Sym.	A-5	- Screw	.05
Sym.	W-10	- Washer	.05
Sym.	650	- Armature Cam.	.90
Sym.	660	- Armature Cam-Complete	3.00
Sym.	1520	- Cylinder Assem.	6.00
Sym.	1521	- Valve Disc.	.30
Sym.	1522	- Valve Keeper	.10
Sym.	1543	- Conn. Rod Strip	.10
Sym.	1544	- Conn. Rod Strip (tapped)	.15
Sym.	1545	- Spacing Collar	.15
Sym.	1550	- Piston Assem.	4.50
Sym.	1560	- Drop Arm Assem.	2.50
Sym.	1570	- Drop Arm Complete Assem.	5.00
Sym.	1571	- Drop Arm Contact	.20
Sym.	1591	- Carbon Contact	.15
Sym.	1592	- Contact Holder	.50
Sym.	1602	- Weight	.50
Sym.	1748	- Feed Wire	.05
Sym.	3260	- Non-Racing Latch Assem.	.40
Sym.	3270	- Backlash Dog Assem.	.40
Sym.	3310	- Propelling Crank Assem.	5.00
Sym.	3321	- Top Cam Link	.25
Sym.	3322	- Top Cam Link - tapped	.25
Sym.	3323	- Spacing Collar	.15
Sym.	3340	- Top Cam Assem.	1.00
Sym.	3350	- Contact Arm Assem.	2.50
Sym.	3351	- Pointer	.15
Sym.	3352	- Pointer	.15
Sym.	3353	- Spring Contact	.10
Sym.	3360	- Calendar Brush Assem.	.25
Sym.	3370	- Commutator Assem.	.25
Sym.	3392	- Propelling Weight	.60
Sym.	3420	- Magnet Assem. (Specify voltage)	5.00
Sym.	A-11298	- Contact Pins	.50 per Doz 2.50 per C

To be continued.

STROMBERG .. *Unispeed* ..

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

BULLETIN 70-1



Unispeed Recorder

Stromberg Unispeed construction is based on time-tested engineering principles that culminate in the most accurate and durable attendance recorder available. Its push bar printing feature permits recording *even during a current interruption* — an important payroll protection.

The pilot dial, printing unit and automatic features are all train geared, operating simultaneously in exact synchronism with each other. No split registrations are possible. Moving parts have been reduced to a minimum and large bronze bearings used throughout to provide long trouble-free performance. The operating unit is a strong positive electromagnet, activated by short electric impulses, released by the timing element. The 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.

The Unispeed Recorder is adaptable to any pay period, furnishing dependable records of the exact arrival and departure time of all employees, regardless of how irregular or staggered the shifts. Either horizontal or vertical type registrations can be arranged and machines can be readily altered from one type to the other. It can be furnished with all or any combination of these automatic features: Day-to-Day lift, In-to-Out shift, and two-color ribbon change. The schedules for these features are controlled by micrometer units, adjustable to absolute accuracy.

Specifications and Features

Modern black morocco finished metal case; Mechanical Push Bar type imprinting mechanism; Pilot Dial; Geneva geared type-wheel unit, for precise alignment of imprints; Indicator Windows, showing column and lift positions and ribbon color; Unit Construction, simplifying repairs or alterations; all parts subject to rust treated by Parkerizing; Smooth Plastic Stationary Card Receiver, eliminates shutter plates; Two-point time card suspension, prevents

accumulation of dirt or foreign matter; Protective Ribbon Guard, assures clean imprints while preventing faulty inclusion of portions of adjacent characters; A.M. registrations in light faced straight type; P.M. time shown in heavy italic or slanting type; Prints on the front of the time card; Large printing platen, for longer wear; Uniform Imprints; Automatic positive ribbon reverse; Prints day abbreviations or date, Meridian or Continental (24 hour cycle) hours, minutes, tenths hours, or apparent hundredth hours; Prefixes for identifying the recorder available at an additional price; Operates from a two wire circuit; furnished for Daily, Weekly, Bi-weekly, Semi-monthly, Monthly, or Special Pay Periods.

Model 70000 Unispeed Recorder

Fully automatic and semi-automatic with horizontal "In" and "Out" shift, "Day" to "Day" lift, one or two color ribbon for indicating irregularities. Auxilliary manual shift handle.

Model 30000 Unispeed Recorder

Fully automatic and semi-automatic with vertical lift "In" and "Out" registrations, horizontal "Day" to "Day" shift, one or two color ribbon. Available with seven or eight day columns, sixteen or twenty-two "In" and "Out" spaces.

Case Dimensions: 16" high, 11" wide, and 9 $\frac{3}{4}$ " deep.

Shipping weight: Approximately 55 lbs.

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION

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

STROMBERG

Unispeed Imprints

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

BULLETIN 70C-1

NO. 548 PAY ENDING 1/11/46
NAME Robert Collins

DATE	IN	OUT	IN	OUT	IN	OUT
11	7:58	12:02	12:28	4:33		8
12	7:55	12:03	12:28	4:02		7 1/2
13	7:54	12:03	12:28	4:36		8
14	7:55	12:03	12:27	4:34		8
15	8:28	12:04	12:24	4:32		7 1/2

DEDUCTIONS: F.O.B.B. \$1, INC. TAX \$1.70, HOPE \$48. TOTAL PAY \$31.20, TOTAL DEDUCTIONS \$2.49, NET PAY \$28.71.

ILLUSTRATION 1 (3/5 actual size)
Form 5525—Time Card
Weekly Pay Period—.24 inch spacing.
6 columns. 7 lifts. Day, hour, and minute imprint.

Unispeed Card Imprints

Stromberg Unispeed Recorders can be furnished to record time on standard or tabulating size cards, and for pay periods of daily, weekly, bi-weekly, semi-monthly, or monthly duration, regardless of the number or variety of work schedules. Stock form cards are available for all standard payroll periods.

The recorder imprints all A.M. hours in light faced straight type, and P.M. imprints in bold italic type. Registrations include either day of week abbreviations, or date of the month. Irregularities can be highlighted by a two-color feature, or out-of-space feature, simplifying payroll computations, and psychologically embarrassing off schedule registrants.

Horizontal Type Recording: This type is arranged to print the "IN" and "OUT" registrations for the morning, afternoon, and overtime, on horizontal lines. At the beginning of each day the recorder automatically sets itself to print in the first column of the next lower line. This method of recording is commonly used by organizations that operate one shift each day; use separate recorders for each of several shifts, or designate one recorder for incoming and another for outgoing employees. The time cards in illustrations No. 1 and 2 show horizontal printing with irregularities indicated in red. Stromberg standard imprint space is .24 inch, however, the Unispeed recorder can be furnished for weekly or bi-weekly cards with .277" spacing.

NO. 37 PAY ENDING 1/11/46
NAME F. R. Smith

DATE	IN	OUT	IN	OUT	IN	OUT
11	7:57	12:01	12:28	4:31		8
12	7:52	12:01	12:27	4:33		8
13	8:53	12:02	12:29	4:34		8
14	7:56	12:01	12:28	4:32		8
15	7:53	12:04	12:27	4:32		8
16	7:53	12:02	12:26	4:33		8
17	7:50	12:03	12:25	4:32	4:58	6:32 9 1/2
18	7:59	12:02	12:27	4:35		8
19	7:57	12:05	12:28	4:34		8
20	7:58	12:02	12:28	4:32		8
21	7:51	12:04	12:27	4:32		8
22	7:56	12:03	12:27	4:32		8
23	7:50	12:02	12:28	4:32		8
24	7:51	12:04	12:27	4:32		8
25	7:56	12:03	12:31	4:33		8

DEDUCTIONS: F.O.B.B. \$6, INC. TAX \$1.50, HOPE \$48. TOTAL PAY \$54.97, TOTAL DEDUCTIONS \$13.14, NET PAY \$41.83.

ILLUSTRATION 2 (3/5 actual size)
Form 5502—Time Card
Semi-monthly Pay Period—.24 inch spacing.
6 columns. 16 lifts. Date, hour, and minute imprint.

No. 94 PAY ENDING 1/11/48
 NAME John DeLeon
 F.G.A.R. 38
 INC. TAX 2.18
 Deduct 2.18
 DEDUCTIONS
 TOTAL \$ 3.66

1						
2	7 50	8 50	9 50	10 50	11 50	12 50
3	2 8 27					
4						
5	12 01	12 00	12 00	12 29	12 10	
6	12 29	12 29	12 29	12 27		
7				12 41		
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11	4 31	4 35	4 40	4 59		
12				5 09		
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NET PAY \$ 34.10

ILLUSTRATION No. 3
First Shift

Vertical Type Recording:

Maximum flexibility is attained with this recording scheme. The "IN" and "OUT" registrations are made in vertical columns, one column for each day of the week or date of the month. The Unispeed automatically lowers the printing position to the next space at predetermined times, with a maximum of 16 intervals on standard machines, or 22 intervals under special circumstances. Late "INS" appear below the normal horizontal line, early "OUTS" above it. These stand out conspicuously and simplify payroll computation. At the end of each day the mechanism automatically changes

Form 5504—Time Card
(3/5 actual size)
Weekly Pay Period
.24 inch spacing — 7 column, 16 lift

No. 178 PAY ENDING 1/11/48
 NAME Mr. Barrett
 F.G.A.R. 55
 INC. TAX 2.20
 Deduct 2.20
 DEDUCTIONS
 TOTAL \$ 3.08

1						
2						
3						
4						
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6						
7	12 11	12 22	12 30	12 33	12 31	
8	12 29	12 53	12 59	12 57	12 53	
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12	2 5 01	2 5 10	2 5 07	2 5 08	2 5 04	
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NET PAY \$ 31.77

ILLUSTRATION No. 4
Second Shift

No. 57 PAY ENDING 1/11/48
 NAME J. C. Williams
 F.G.A.R. 47
 INC. TAX 2.50
 Deduct 2.50
 DEDUCTIONS
 TOTAL \$ 4.22

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10	4 10	4 20	4 29	4 18	4 25	
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15	8 58	8 58	8 58	8 55	8 49	
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NET PAY \$ 37.19

ILLUSTRATION No. 5
Third Shift

to the top space of the next vertical column.

Vertical type recording permits incoming and outgoing employees to record simultaneously on the same recorder and use the same form of time card; an ideal plan for firms operating overlapping or staggered shifts. Illustrations 3, 4 and 5, show how, with the same form card, three different shifts may record on the same machine. A "pattern" of recording time appears in horizontal lines of imprints with irregularities clearly shown. The third shift "IN" registrations appear at the bottom of the card, and the morning "OUT" at the top in the next column.

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

STROMBERG *Unispeed Users*

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

BULLETIN RU-3

Unispeed Users

Purchasers of the Stromberg Unispeed recorder like its long wearing qualities and its reliable automatic control of employees. Some of numerous nationally known firms who rely on Unispeed recorders for their time records are:

- | | |
|--------------------------------------------------------------------|----------------------------------------------------------------------------|
| Allegheny Ludlum Steel Corporation
Dunkirk, New York | Diebold Safe & Lock Company
Canton, Ohio |
| American Chain and Cable Company
Bridgeport, Conn. | Dodge — Chicago Plant
Chicago, Illinois |
| American Enka Corporation
Enka, North Carolina | Douglas Aircraft Company, Inc.
All Plants |
| American Sugar Refining Co.
Baltimore, Maryland | Thomas A. Edison, Inc.
West Orange, N. J. |
| American Viscose Corp.
Parkersburg, W. Va. | Electric Boat Company
Groton, Connecticut |
| Bakelite Corporation
Bound Brook, N. J. | The Fairmont Creamery Company
Omaha, Nebraska |
| Bankers Life Company
Des Moines, Iowa | Firestone Tire & Rubber
Several Branches |
| The Bayer Company, Inc.
Albany, New York | Firth Sterling Steel Co.
McKeesport, Pa. |
| Wm. H. Block Co.
Indianapolis, Indiana | Frigidaire Div. General Motors Corp.
Dayton, Ohio |
| J. L. Brandies & Sons
Omaha, Nebraska | Garrett Freight Lines
All Major Cities |
| The Carborundum Company
Niagara Falls, New York | General Aniline Works, Inc.
Rensselaer, New York |
| J. I. Case Company
Burlington, Iowa | General Mills, Inc.
Nationally Used |
| Celanese Corporation of America
Cumberland, Maryland | Goodyear Tire & Rubber Co.
Los Angeles, Calif. — Akron, Ohio |
| Chevrolet Div. of General Motors Corp.
Various Locations | Great Lakes Steel Corp.
Detroit, Michigan |
| Chicago, Rock Island & Pacific Ry.
Silvis, Illinois | Hercules Powder Company, Inc.
Brunswick, Georgia |
| Chrysler Corp.
Detroit, Michigan | Hickok Manufacturing Company, Inc.
Rochester, N. Y. |
| Container Corp. of America
Chicago, Illinois | The Horn & Hardart Company
New York, New York |
| Consolidated Vultee Aircraft Corp.
New Orleans, La. | International Harvester Company, Inc.
Various Plants |
| Corning Glass Works
Charleroi, Pennsylvania | International Silver Company
Meriden, Connecticut |
| Delco Div. General Motors Corp.
Various Locations | Jenkins Bros.
Bridgeport, Conn. |

- Johns-Manville Corp.**
Various Plants
- Kroehler Mfg. Company**
Bradley, Illinois
- Libbey-Owens-Ford Glass Company**
Toledo, Ohio
- Lima Locomotive Works**
Lima, Ohio
- Link-Belt Company**
Indianapolis, Indiana
- Locomotive Finished Material Co.**
Atchison, Kansas
- Los Angeles Shipbldg. and Drydock Corp.**
San Pedro, California
- The Mansfield Tire and Rubber Co.**
Mansfield, Ohio
- Marleau Hercules Fence Co.**
Toledo, Ohio
- Michigan Alkali Company**
Wyandotte, Michigan
- Millers Falls Company**
Greenfield, Mass.
- Missouri-Pacific Railroad Co.**
Kansas City, Missouri
- Moraine Prod. Div. of Gen. Motors Corp.**
Dayton, Ohio
- Muncie Malleable Foundry Co.**
Muncie, Indiana
- Musingwear Inc.**
Various Locations
- Muskegon Piston Ring**
Sparta, Michigan
- Nash Kelvinator Corp.**
Detroit, Mich.
- National Lead Company**
Brooklyn, New York
- National Motor Bearing Co.**
Oakland, California
- New Departure, Div. of General Motors Corp.**
Meriden, Conn.
- Northrop Aircraft, Inc.**
Hawthorne, Calif.
- Northwestern Mutual Life Insurance Co.**
Milwaukee, Wisconsin
- Norton Company**
Worcester, Mass.
- Packard Motor Car Company**
Several Plants
- Peerless Laundry Services, Ltd.**
Los Angeles, Calif.
- Pekin Wood Products Co.**
Helena, Arkansas
- The Pepsi-Cola Bottling Co.**
Wilkes-Barre, Pennsylvania
- The Rath Packing Company**
Waterloo, Iowa
- Remington Rand**
Various Plants
- Rock Island Arsenal**
Rock Island, Illinois
- Shell Oil Company, Inc.**
Various Plants
- Sinclair Refining Co.**
East Chicago, Indiana
- Skenandoa Rayon Corp.**
Utica, New York
- Slatersville Finishing Co.**
Slatersville, R. I.
- Standard Paper Box Corporation**
Los Angeles, Calif.
- Stewart-Warner Corporation**
Dixon, Illinois
- Sun Shipbuilding & Dry Dock Co.**
Chester, Pennsylvania
- The Texas Company**
Houston, Texas
- Thompson Aircraft Products Co.**
Cleveland, Ohio
- Thompson Products, Inc.**
Detroit, Michigan
- Time, Incorporated**
New York, New York
- The Timken Roller Bearing Company**
Canton, Ohio
- U. S. Govt. Picatinny Arsenal**
Dover, N. J.
- U. S. Naval Air Station**
Jacksonville, Florida
- Walworth Company**
Greensburg, Pennsylvania
- Ward Baking Co.**
Various Locations
- Weber Showcase & Fixture Co., Inc.**
Los Angeles, Calif.
- Western Electric Company**
Various Locations
- Western Tablet and Stationery**
Various Locations
- Westinghouse Electric Corp.**
Sharon, Pa.
- Wheeling Steel Corporation**
Portsmouth, Ohio
- Wickwire Spencer Steel Company**
Buffalo, New York
- Wilson and Company**
Various Locations

PRINTED IN U.S.

STROMBERG TIME CORPORATION

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

STROMBERG *Time Card Racks*

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

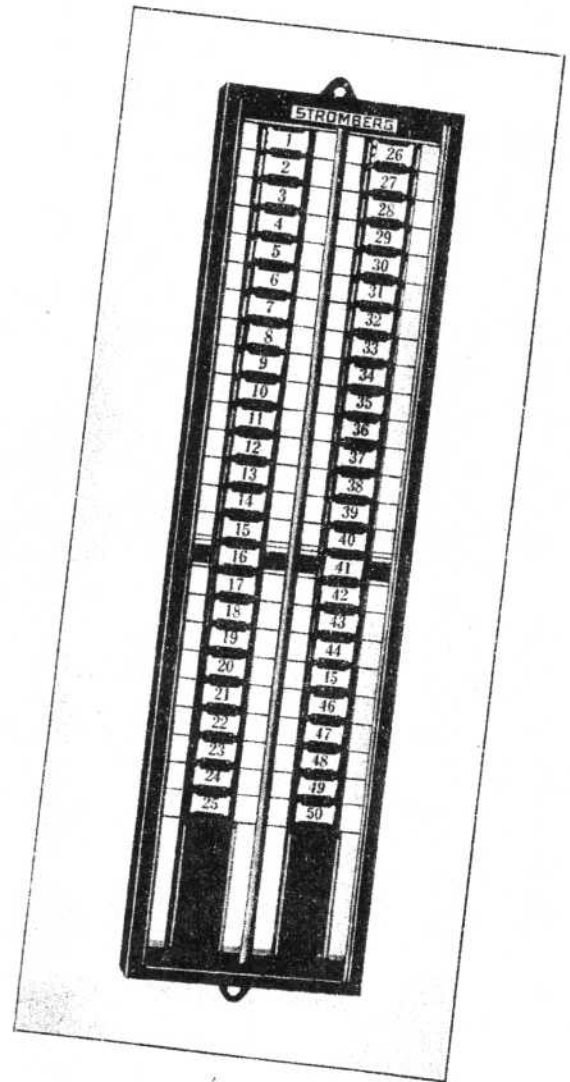
BULLETIN WMR

Wood Frame Card Racks

Solid hard wood frames give strength and long life to these sturdy time card racks. The wood is specially treated to prevent warping and is finished with the same care as that given fine furniture. The card pockets are made of metal to facilitate rapid insertion and removal of the time cards. They are rust proofed and finished in black lacquer. The skeleton type construction of these racks reduces the weight while providing strength and long wearing qualities. It also prevents dirt and foreign matter from accumulating in the pockets.

Number tabs are held securely in place yet can be changed easily without spoiling the tab being removed. Mounting the rack on a wall or frame is simplified by the metal hangers located at the top and bottom of the rack.

These racks hold fifty time cards each, yet only occupy a minimum of wall space. They are constructed with various pocket dimensions to fit all standard size time cards. The detailed speci-



cations of the sizes available are shown in the following table.

Stromberg Wood Frame Card Rack Specifications

Model No.	Capacity	Time Card Size		Pocket Depth	Outside Dimensions		
		Width	Length		Height	Width	Depth
96S50	50	3.40"	5½"	4"	35¼"	9 ⁹ / ₁₆ "	2"
97L50	50	3.40"	7"	5 ³ / ₈ "	35¼"	9 ⁹ / ₁₆ "	2"
97S50	50	3.87"	5½"	4"	35¼"	10¾"	2"
97L50	50	3.87"	7"	5 ³ / ₈ "	35¼"	10¾"	2"
7S50	50	4.34" or 4.60"	5½"	4"	35¼"	12"	2"
7L50	50	4.34" or 4.60"	7"	5 ³ / ₈ "	35¼"	12"	2"
8L50	50	5.20"	7"	5 ³ / ₈ "	35¼"	13½"	2"

Stromberg Card Racks should be mounted with the bottom edge about thirty inches from the floor, for the greatest convenience and visibility. Wherever possible separate racks should be provided for "In" cards and "Out" cards. These should be placed at least three feet away from the recorder to eliminate lost time and congestion, increasing the number of employees that can register during the recording period.

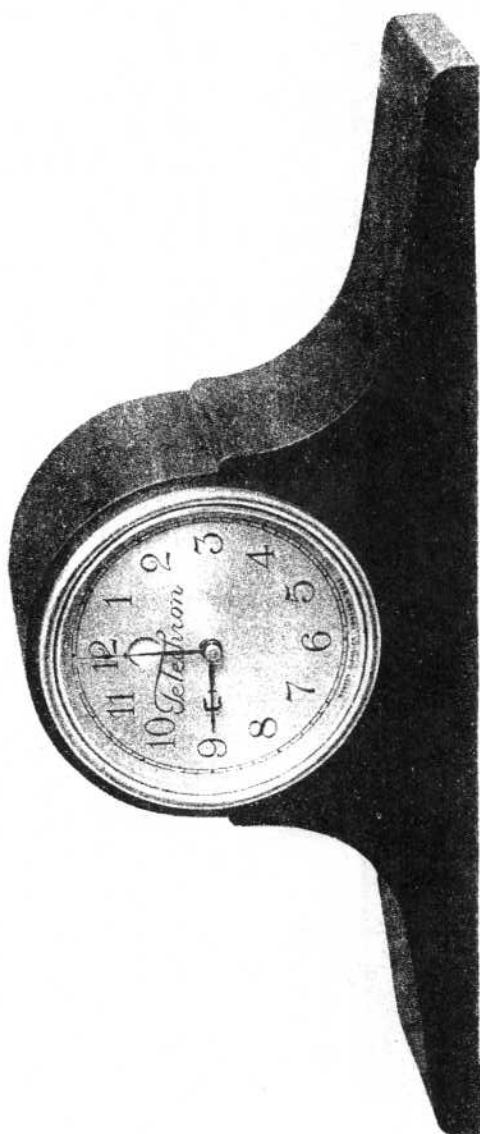
To be continued.

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION

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

ASHLAND, MASSACHUSETTS



TAMBOUR MANTEL TELECHRON

NUMBER 551

Size:— $6\frac{7}{8}$ inches high, 4 inches deep, base is 17 inches wide.

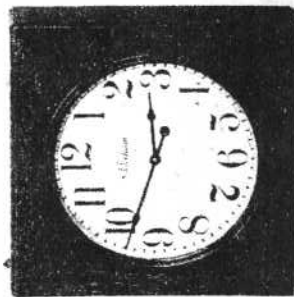
DIAL:—Etched Silver, 5 inches in diameter.

CASE:—Mahogany.

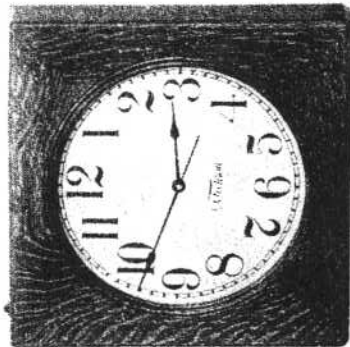
MOVEMENT:—Warren Synchronous Electric.



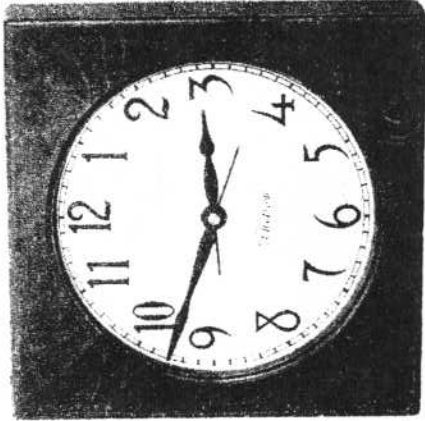
No. 101



No. 201



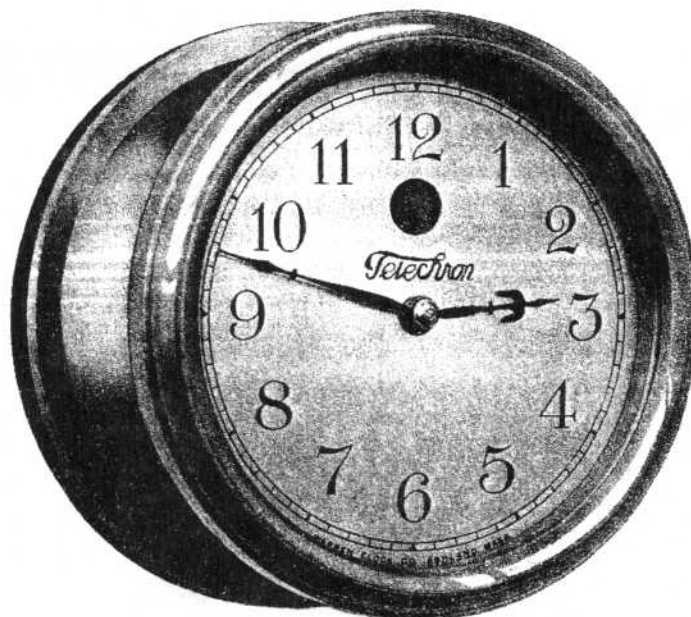
No. 301



No. 401

WALL TELECHONS

<p>Case:—Quartered Oak or Mahogany.</p>	<p>Movement:—Warren Synchronous Electric.</p>
<p>11 inches square</p>	<p>23 inches square</p>
<p>4½ inches deep</p>	<p>5 inches deep</p>
<p>Dial 8 inches dia.</p>	<p>Dial 18 inches dia.</p>
<p>16 inches square</p>	<p>19 inches square</p>
<p>4½ inches deep</p>	<p>4½ inches deep</p>
<p>Dial 12 inches dia.</p>	<p>Dial 14 inches dia.</p>



WALL TELECHRON

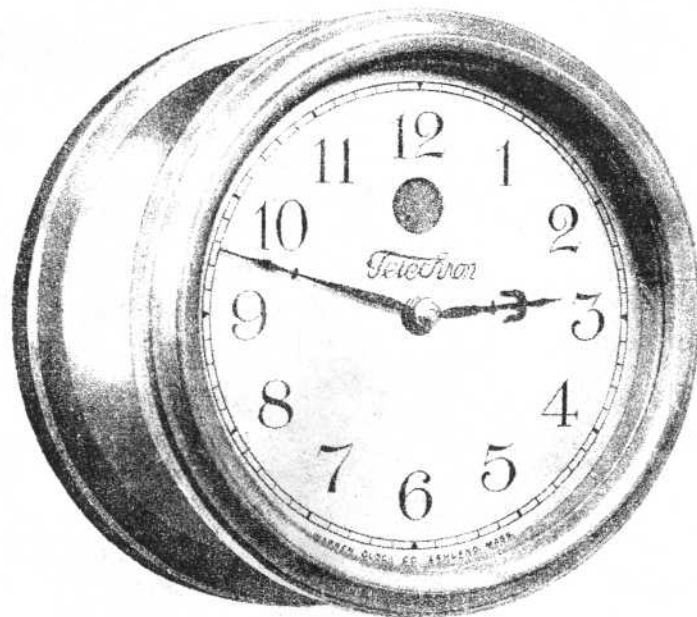
NUMBER 102

SIZE:—5½ inches extreme diameter, 3½ inches deep.

DIAL:—Etched Silver, 5 inches in diameter.

CASE:—Brass lacquered.

MOVEMENT:—Warren Synchronous Electric.



WALL TELECHRON

NUMBER 102

SIZE:— $5\frac{1}{2}$ inches extreme diameter, $3\frac{1}{2}$ inches deep.

DIAL:—Etched Silver, 5 inches in diameter.

CASE:—Brass lacquered.

MOVEMENT:—Warren Synchronous Electric.



WALL TELECHRON

NUMBER 403

SIZE:—15 inches in diameter.

DIAL:—White, 12 inches in diameter.

CASE:—Copper or Brass.

MOVEMENT:—Warren Synchronous Electric.



TELECHRON FOR EXTERIOR OF BUILDING

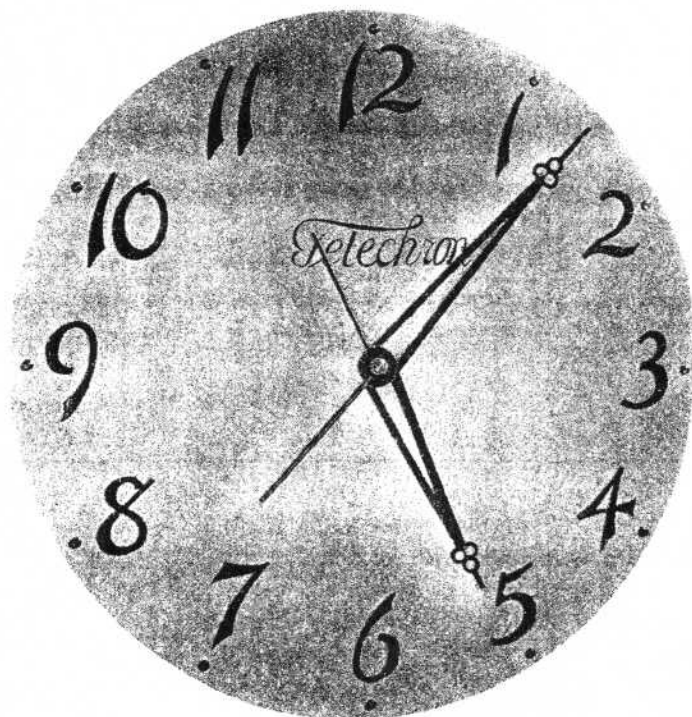
BUILT TO ARCHITECT'S SPECIFICATIONS

SIZE:—As desired.

DIAL:—Illuminated Type or otherwise.

CASE:—Metal.

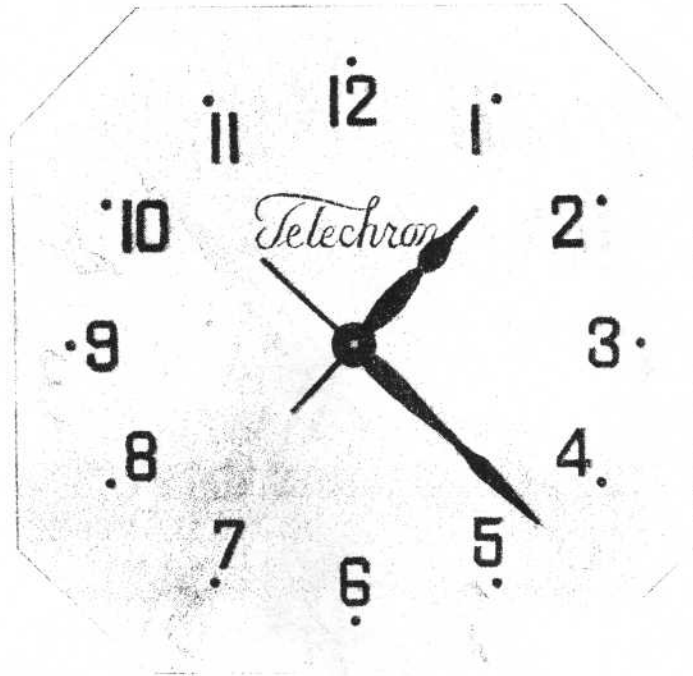
MOVEMENT:—Warren Synchronous Electric.



TELECHRON FOR LARGE INTERIOR

DIAL:—Built to architect's specifications.

MOVEMENT:—Warren Synchronous Electric.



TELECHRON FOR LARGE INTERIOR

DIAL:—Built to architect's specifications.

MOVEMENT:—Warren Synchronous Electric.



Poole, Barr cylindrical Pendulums. \$15 + \$3 shipping.

Call or E-mail S. Cabibbo (201) 489-8176, TimeandTreasures@MSN.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 électrique-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.

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

New replacement motor contacts for **Self Winding Model "F"** movements (exact copies of original). Complete set (front & rear) \$50.00 post paid. Ed Stomner, PO Box 297, St. Germain, WI 54558 (715)479-3148, Sundial@Newnorth.net

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

--- MART ---

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Brillie, junker movements, hands, complete clocks, used batteries, dials, any catalogs.
 Ken Erlenbusch, 124 North Avena Ave., Lodi, CA 95240, (209)369-5833, pickken@sbglobal.net

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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 1 1/4". Available from:
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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
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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

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THE JOURNAL OF THE ELECTRICAL HOROLOGY SOCIETY

CHAPTER #78

NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXIII #2, JUNE 2007

Fellow Horologists:

This issue of the Journal of the Electrical Society continues with the reprint of the later version of the Warren Clock Company Catalog. Also, we are continuing the reprints of the Stromberg Clock Company information along with the reprints of the information on the Cincinnati and Landis Clock Companies.

The planning for the 2008 NAWCC Electrical Horology Time Symposium to be held in Springfield, Illinois in October of 2008 continues. In addition to outstanding talks and speakers and a first class exhibit, we are planning a new feature of the Symposium; a display of "My Favorite Things." This display will consist of small exhibits of a few clocks that we enjoy and wish to share. For example, a display of synchronous electric clocks that have provision for running even though there is an interruption of the electrical power. This display could include the early Telechron clocks that had an "Auxiliary Motor" and a New Haven-Westinghouse clock with the timer that records the length of a short power failure. These displays would require about the area of a card table. Coffee breaks are planned to take place in the room where this display is set-up and you will have the opportunity to discuss your display with the Symposium attendees. Please give some thought to possible displays that you could present and contact me regarding your Favorite Things.

Please enjoy this issue of the Journal and enjoy the Summer.

Yours very truly,

Bill Ellison..(Horolovar@ Juno.com).....President
Harvey Schmidt, FNAWCC,..(WWLathlot@ AOL.com).....Secretary-Treasurer) Co-
Dr. George Feinstein, FNAWCC..(TimeMachine@ Juno.com)..Chapter Historian) Editors

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

Continued from March, 2007 issue.

Cincinnati - Landis

INSTRUCTIONS

for

Electric Clock Systems

Program Clock Systems

Fire Alarm Systems

by

The Cincinnati Time Recorder Co.

Cincinnati, Ohio

Established 1896

Offices in all Principal Cities

SPRING DRIVEN, MOTOR WOUND MASTER CLOCK TYPE SM-80

Extreme flexibility and infinite variety of combinations of time instruments is afforded by the use of CINCINNATI equipment. Any number of Secondary Clocks (Time Indicating), Program Machines (Time Signaling), with Bells, Buzzers, Horns, Gongs (Signal Sounding), and Payroll Recorders, Job Cost Recorders and Time Stamps (Time Printing), located anywhere, can be connected with, operated and controlled by one Master Clock which synchronizes the entire time system.

OPERATING PRINCIPLE

Electrical impulses, one each minute on the minute, sent out over a two-wire system from the Master Clock cause the time progression mechanism of every Secondary Clock, Recorder, Program Machine, etc., connected in the circuit to advance with the Master Clock, which operates from a 105-125 volt A.C. power supply. In the event of complete power failure a reserve power spring in the Master Clock will continue to operate it for 24 hours. However, the entire system can be made operative during power failures by means of a reserve battery converter unit. A secondary control unit permits each clock to operate the equivalent of 40 secondaries. The system, however, can be expanded up to 1600 secondaries by application of additional Booster Controls.

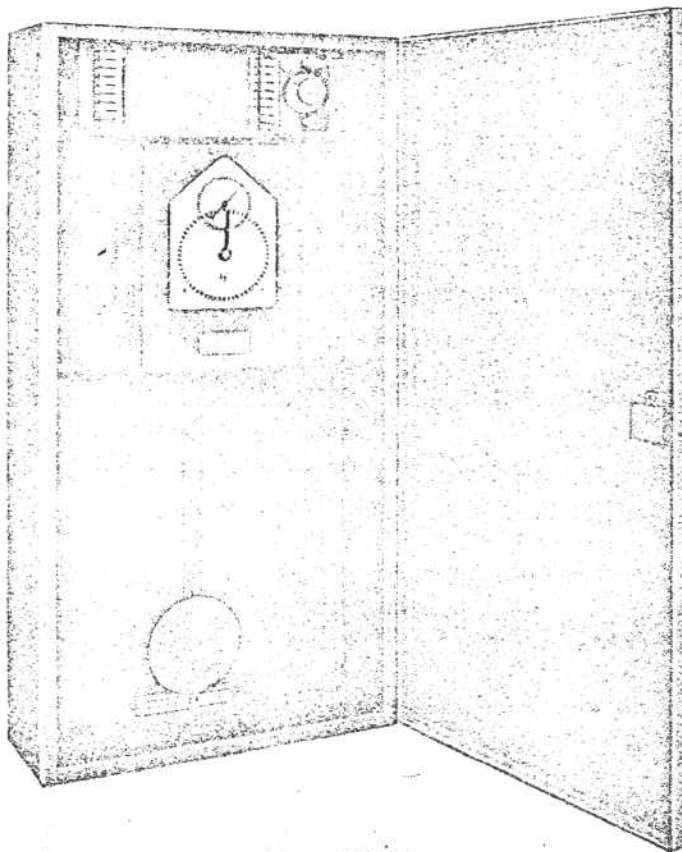
AUTOMATIC RESETTING

A synchronization control device automatically switches on at the 59th minute to check and if necessary reset any or all secondary instruments which, through failure of the electric current or other causes, may not be exactly in time with the Master Clock. Range of correction—55 minutes fast or 35 minutes slow corrected within one hour. In addition, a manual advance switch on the control will allow advancement of the whole system at 60 times normal speed when required.

The SM-80 is particularly applicable in a building or industrial plant where they generate their own power or if they do not have frequency controlled power. It is also ideal in systems where frequent power interruptions occur.

DESCRIPTION

80 beat, self-regulating movement. Case is of sturdy steel construction, finished in black wrinkle finish, and equipped with lock and key. Metal Ball Pendulum.



Type SM-80

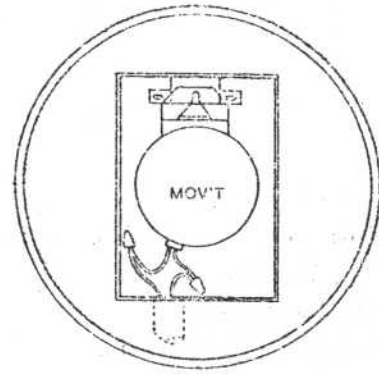
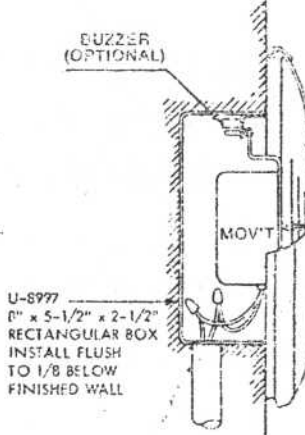
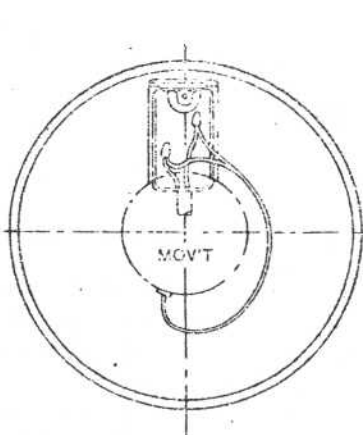
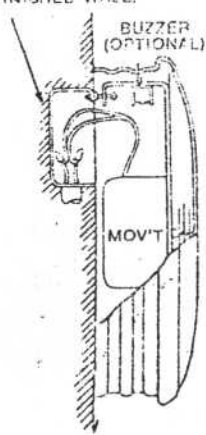
SPECIFICATIONS

Height	32 1/2"
Width	16 1/2"
Depth	6 3/4"
Net Weight.....	70 lbs.
Shipping Weight.....	105 lbs.

INSTALLATION OF CINCINNATI SECONDARY INDICATING CLOCKS

4

2 1/4 x 4 UTILITY BOX*
FLUSH TO 1/8 BELOW
FINISHED WALL.



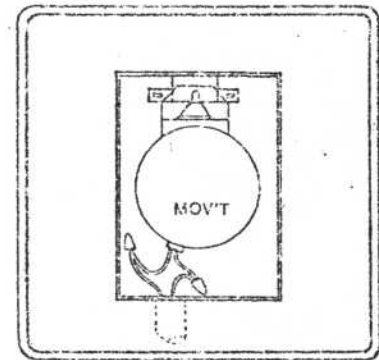
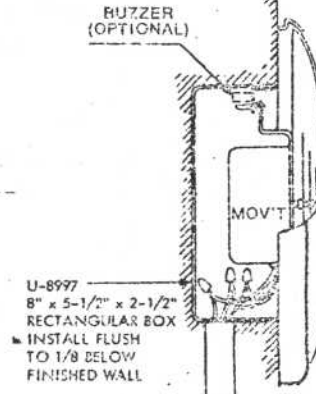
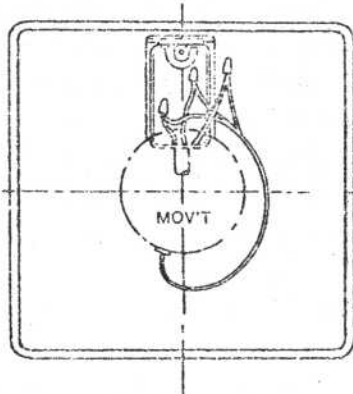
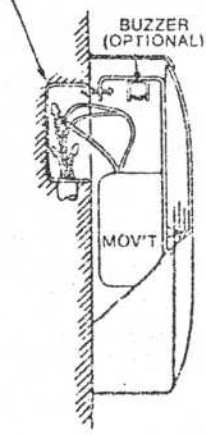
U-8977
8" x 5-1/2" x 2-1/2"
RECTANGULAR BOX
INSTALL FLUSH
TO 1/8 BELOW
FINISHED WALL

SURFACE

ROUND -- SINGLE DIAL

FLUSH

2 1/4 x 4 UTILITY BOX*
FLUSH TO 1/8 BELOW
FINISHED WALL.



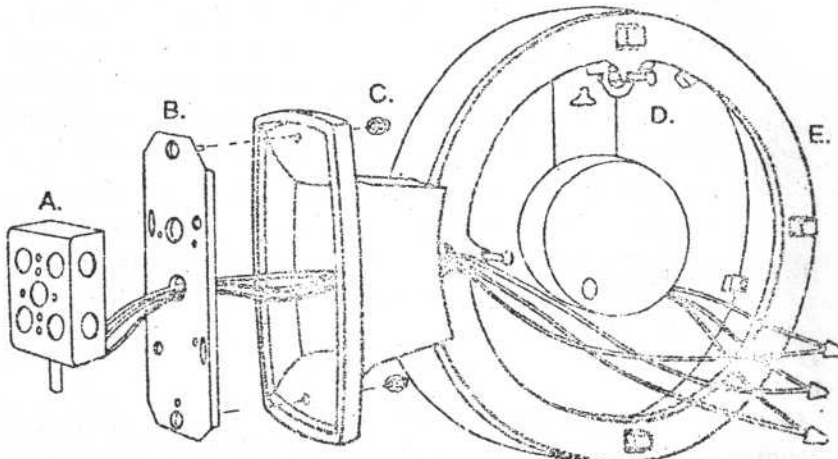
U-8977
8" x 5-1/2" x 2-1/2"
RECTANGULAR BOX
INSTALL FLUSH
TO 1/8 BELOW
FINISHED WALL

SURFACE

SQUARE -- SINGLE DIAL

FLUSH

*Utility box may be 4" square, 4" octagonal or 3 1/4" octagonal
with 12", 15", or 18" surface type secondary indicating clocks.



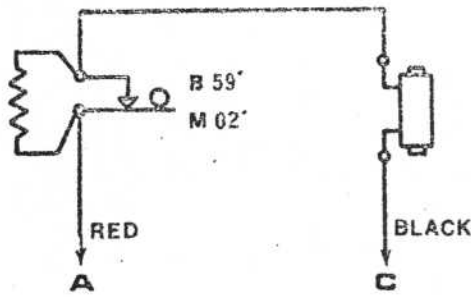
ROUND -- DOUBLE DIAL

- A. 4 x 4 outlet box - furnished by others.
- B. U-8051 mounting plate furnished by CTR.
- C. 10/32 acorn nuts furnished by CTR.
- D. Hang both clocks on mounting studs.
- E. Tighten three screw clamps.

Wire nut clock leads observing proper system connections

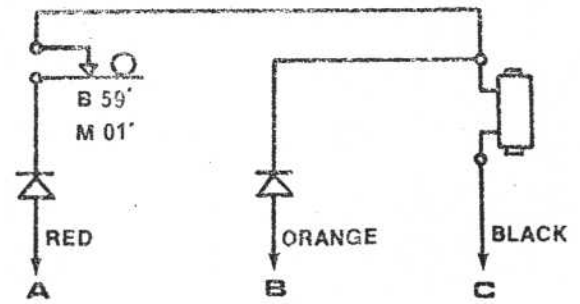
CINCINNATI
TIME RECORDER CO.
1933 CENTRAL AVENUE CINCINNATI OHIO
A UNIT OF FEDERAL SIGNAL

D 1 Series Movement



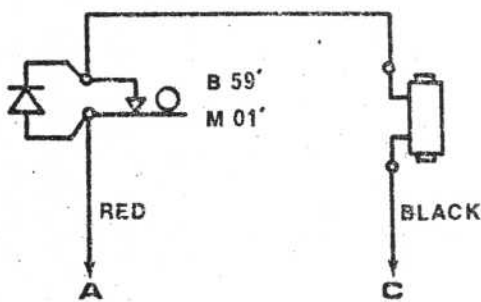
TWO-WIRE DUAL VOLTAGE 24/60v DC

D 2 Series Movement



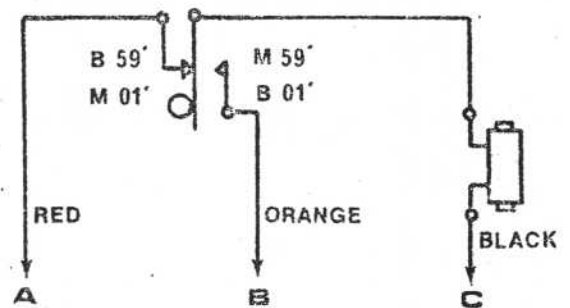
THREE-WIRE - 24v DC

D 3 Series Movement



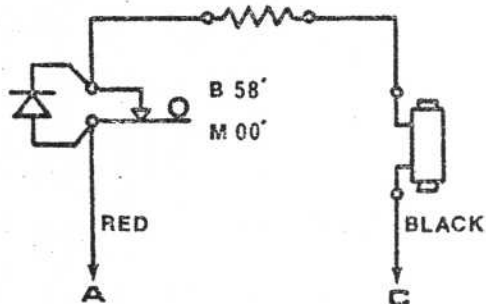
TWO-WIRE POLARIZED 24v DC

D 4 Series Movement



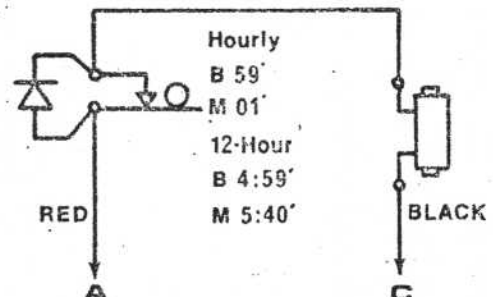
THREE-WIRE IBM - 24v DC

D 5 Series Movement



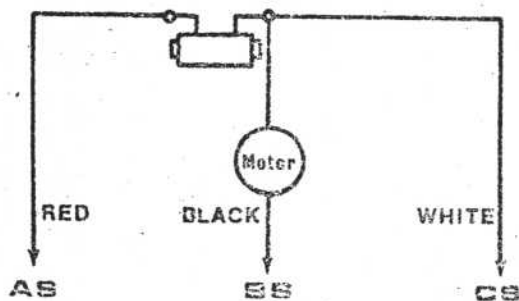
TWO-WIRE POLARIZED - STROMBERG 20v DC

D 6 Series Movement



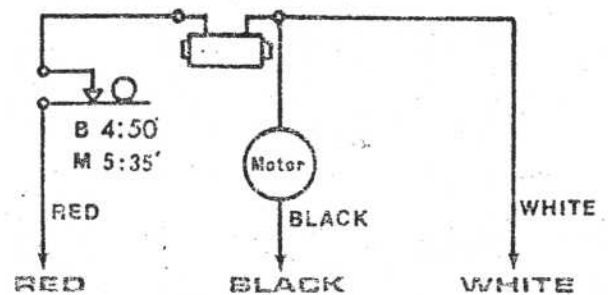
TWO-WIRE POLARIZED - 12-HOUR CORRECTIVE

D 10 or D 12 Series Movement



WIRED SYNCHRONOUS, CTR, OR IBM
D10 115v 60 HZ - D12 24v 60 HZ

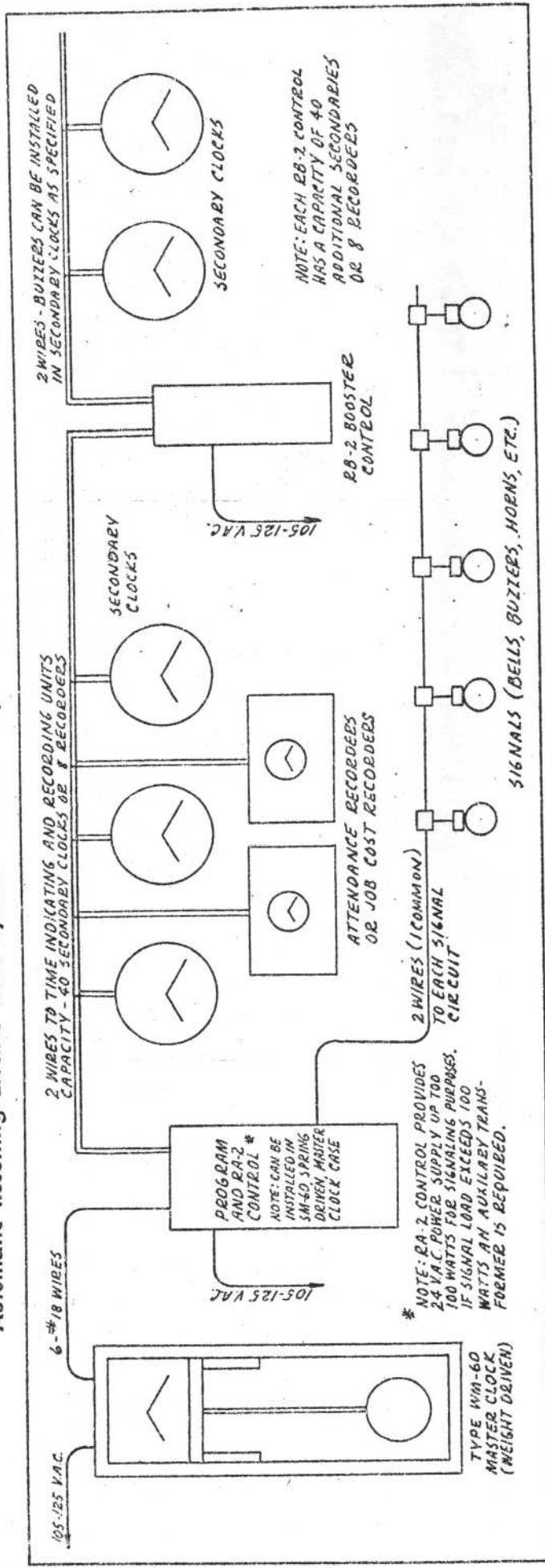
D 8 Series Movement



WIRED SYNCHRONOUS SMP SYSTEM
115v 60 HZ OR 24v 60 HZ

Typical Wiring Diagram for Industrial and Institutional Purposes

Automatic Resetting Electric Time System • Minute Impulse (indicating, signaling and recording)



DETERMINING CORRECT WIRE SIZES

The following table indicates the actual distance in feet that a given secondary load can be located from an RA or RB control for a given wire size.

Number Secondaries	WIRE SIZE				
	#18	#16	#14	#12	#10
5	1600 ft.	2500 ft.	4000 ft.	6250 ft.	10,000 ft.
10	800	1250	2000	3125	5,000
15	530	830	1330	2050	3,330
20	400	625	1000	1560	2,500
30	265	415	660	1025	1,660
40	200	310	500	780	1,250

In calculating load requirements of a Payroll or Job Recorder consider each recorder equivalent to 5 Secondary Clocks. Example: If twelve secondary clocks and three recorders are to be installed on a single circuit and the greatest distance from the RA or RB Control is 500 feet, what size wire should be used?

Secondary Clock load.....	12
Equivalent load of Recorder.....	15
total load	27

By referring to the table it is to be seen that a load of 30 Secondaries operating at 660 feet requires No. 14 wire. No. 14 wire is, therefore, recommended for 500 ft. too, in order to be safe.

Where the load is well distributed along the common circuit the distances in the table above can be increased 25%.

Most electrical inspection bureaus permit installation of the low voltage clock wiring in the same conduit with power and light wiring, provided the same insulation is used on the clock wiring as on light or power wiring. In other words, when approved light and power wire is used on the clock circuit it can be pulled in the same conduit with the power and light wiring. It is suggested you contact local electrical inspection authorities to check above requirements.

STROMBERG *Tabulating Racks*

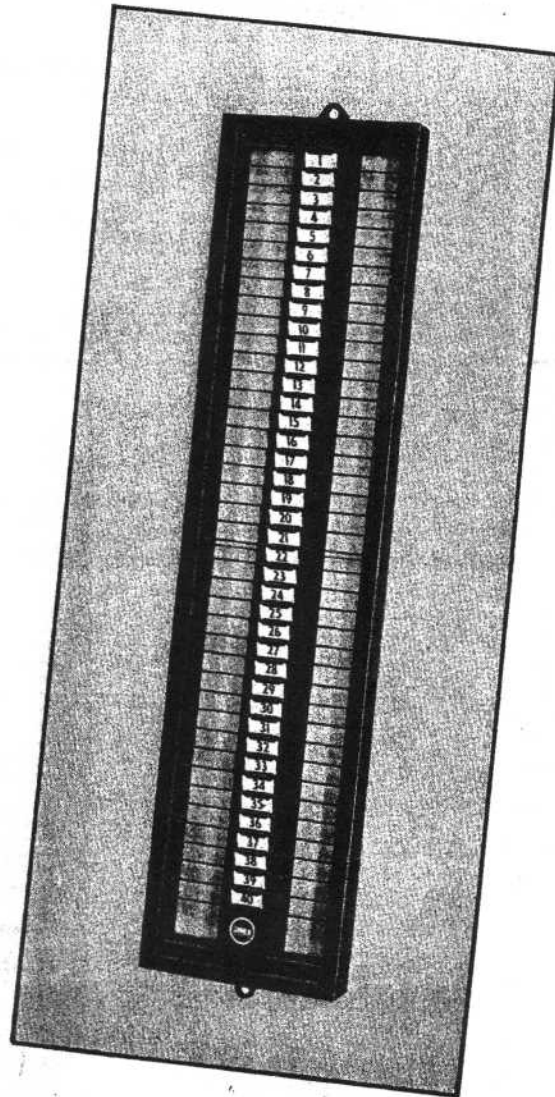
TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN TTR-2

Tabulating Ticket Racks

These racks are designed to accommodate forty tabulating tickets with all the pockets in a single vertical row. This arrangement reduces to a minimum the wall space required for each rack. The strong frame is made of solid hardwood, specially treated to prevent warping and finished with the same care as that given fine furniture. The card pockets are made of steel, rust-proofed and finished in black lacquer. Their skeleton construction facilitates rapid insertion and removal of the card, reduces the weight and prevents dirt or foreign matter from clogging the pockets.

Number tabs are provided for each pocket. They are held securely in place by the tab holder, yet they are easily changed without destroying the tab being removed. Metal hangers located at the top and bottom simplify mounting the racks to the wall or frame.



Details of the dimensions for Stromberg Tabulating Ticket Racks are as follows:

Model No.	Ticket Capacity	Ticket Size		Pocket Depth	Outside Dimensions		
		Width	Length		Height	Width	Depth
T-40	40	3¼"	7 ⁵ / ₁₆ "	2 ¹³ / ₁₆ "	39 ⁵ / ₈ "	9¼"	2"

Mount card racks with bottom edge thirty inches from the floor for greatest convenience and visibility.

Guaranteed free from defects in material and workmanship for one year.

PRINTED IN U.S.

STROMBERG TIME CORPORATION

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

STROMBERG *Program Instruments*

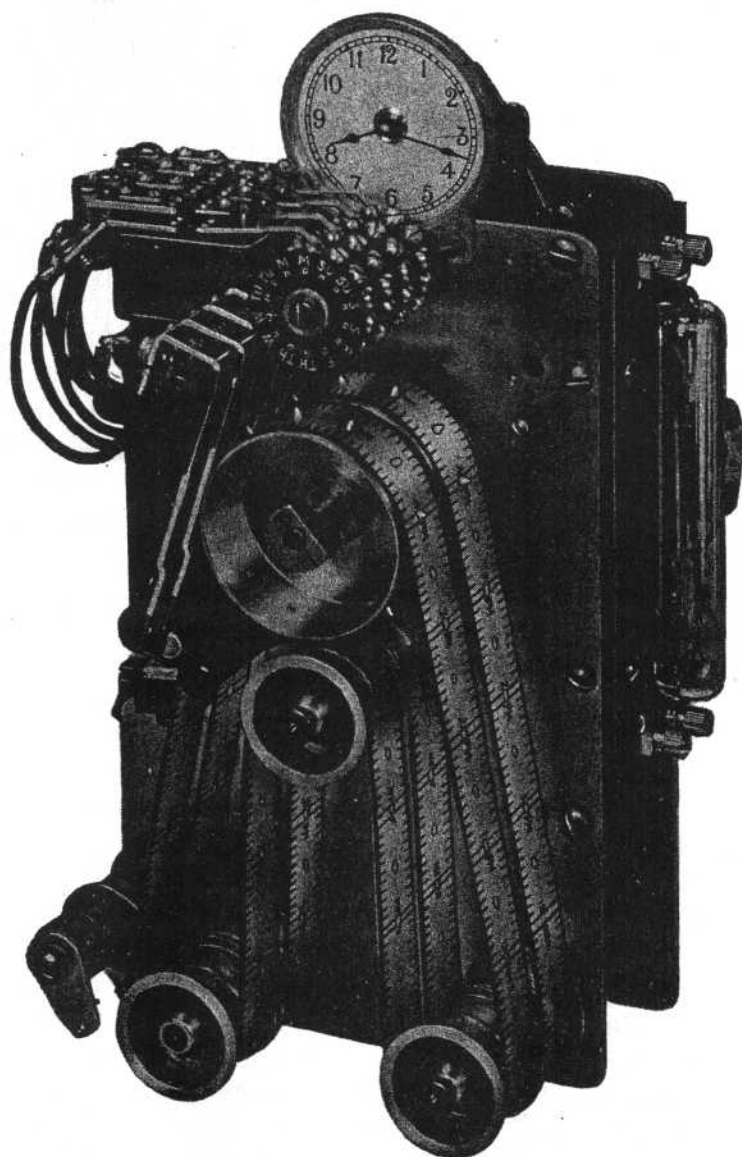
TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 52-1

Program Instruments

Stromberg Program Instruments provide an accurate mechanical means of automatically sounding signals: bells, sirens, whistles, horns and buzzers — or controlling valves and motors at predetermined times. They can regulate the simplest routine schedule or a varied and complex system involving a number of different schedules.

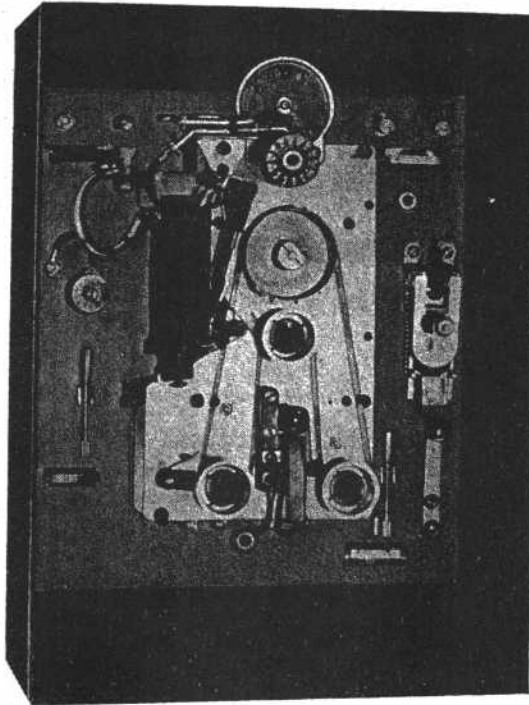
Two types of program instruments are available, multiple circuit and single circuit instruments. Both types use a specially prepared cellulose tape as the schedule element. These tapes are printed to show definite divisions of time for a twenty-four hour period. The schedule is set up by punching holes in the tape at points corresponding to the times which signals are to be operated. Each tape schedules two programs — one on either side. A change in schedule merely requires the punching of a new tape and placing it on the Instrument, which can be done in a few minutes by anyone. Tape punches are supplied with each Instrument for this purpose.



MULTIPLE CIRCUIT INSTRUMENT

These instruments are operated once each minute by electro-magnets which receive an impulse of current from the timing element. This may be either a synchronous motor contactor or an impulse from a master clock system. With each impulse, contact fingers touch the tape, then lift — the tape then moves forward to the next position. There is no wearing of the tape, which usually outlasts the schedule. Where the tape has been punched the finger passes through the hole, thus permitting a small contact on its upper section to close and send current to the signal circuit. Signal circuit current may be taken from the same source as that used to operate the Instrument or it may be drawn from an independent source. Stromberg

Program Instruments are accurate and reliable. They have a long record of continuous service with extremely low maintenance cost.



SINGLE CIRCUIT INSTRUMENT

Specifications for Multiple Circuit Instrument

Furnished in a metal cabinet; with signal relays when required; with a pilot dial; operates from autosest master clock system, Western Union master clock, or a synchronous motor; schedules in intervals of five minutes, or when required, intervals of one minute; one or more tapes each with two schedules; two or more signal circuits; with or without a calendar switch, for cutting the schedules in or out; with or without a timing mechanism of adjustable duration, for regulating the length of the signal. One tape and tape punch included.

Specifications for Single Circuit Instrument

Furnished in a metal cabinet; one signal relay; pilot dial; operates from synchronous motor only; five minute interval schedule only; one signal circuit; with or without calendar switch for cutting out the schedules; one tape with one schedule or, two schedules when equipped with a calendar switch; standard length signal contact of approximately five seconds duration; one tape and tape punch included.

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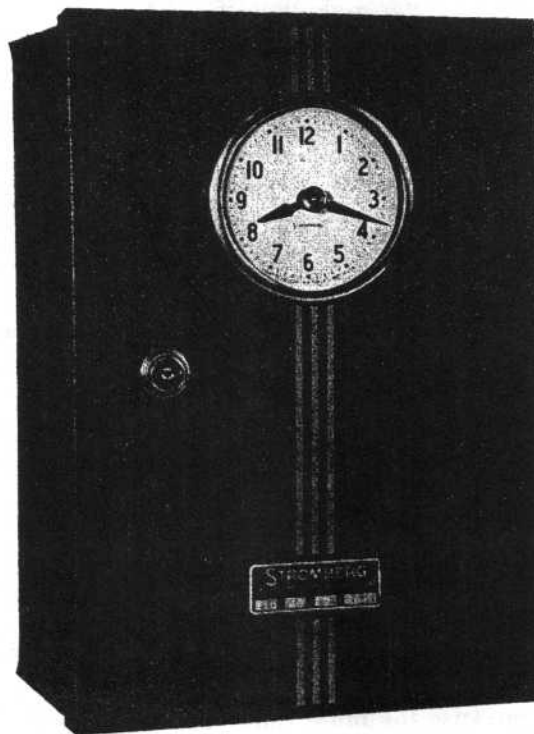
STROMBERG TIME CORPORATION

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

STROMBERG *Program Instrument*

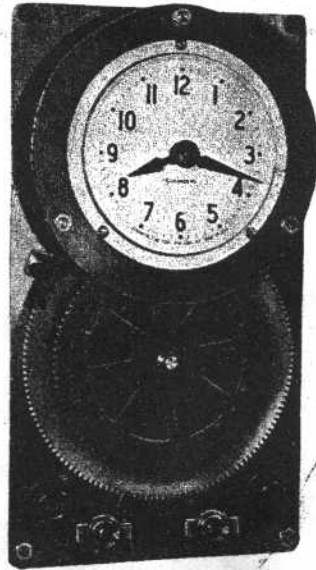
TIME STAMPS • EMPLOYEES TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN D P



Single Circuit Disc Type Program Instrument

A simple, ruggedly constructed Program Instrument for automatically sounding signals; bells, sirens, whistles, horns and buzzers—or controlling valves and motors at predetermined times. The program schedule is set up by attaching adjustable lugs to the program disc, which is calibrated in fifteen minute intervals for a twenty-four hour period. Schedules can be changed by simply readjusting the lugs. The operating element is a synchronous motor which operates on regulated alternating current. Signal circuit current may be taken from the same source as that used to operate the Instrument or it may be drawn from an independent source.



PROGRAM INSTRUMENT

Specifications and Features

- Black Morocco finished metal case.
- Large pilot dial geared directly to mechanism.
- Five minute interval, one program schedule.
- Equipped with motor switch, signal switch and manual signal button.
- Cartridge type fuse for motor and relay circuit.
- Time set by turning knob on minute hand shaft.

Dimensions: $12\frac{3}{8}$ " high, $8\frac{1}{2}$ " wide, and 5" deep.

Shipping Weight: Approximately 14 lbs.

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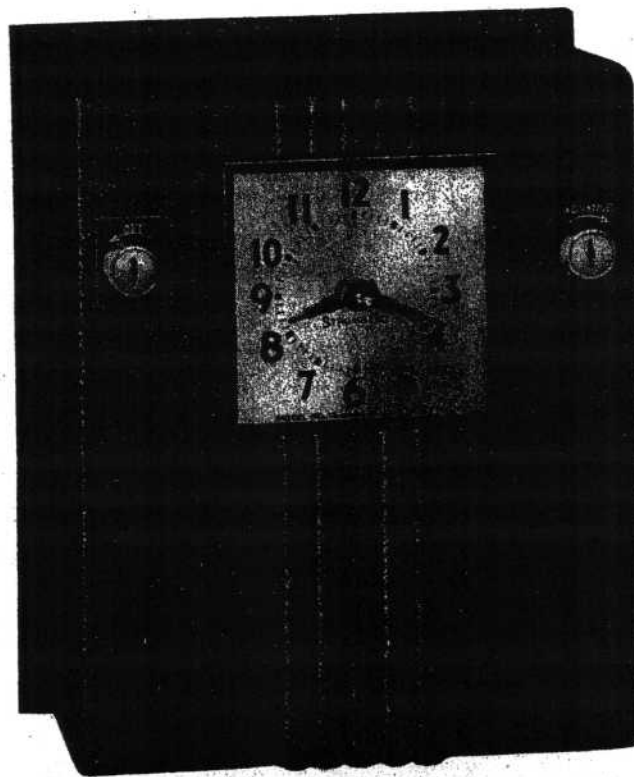
STROMBERG TIME CORPORATION

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

STROMBERG *No. 500 Contactor*

TIME STAMPS • EMPLOYEE'S TIME RECORDERS • JOB TIME RECORDERS • CLOCKS • PROGRAM INSTRUMENTS • TIMERS

BULLETIN 500



No. 500 Synchronous Contactor

The Stromberg Model No. 500 Contactor is a compact, synchronous motor operated control device that supplies correct time to a system of clocks, time recorders, time stamps, and program instruments. This control sends out an electrical impulse once each minute, advancing all secondary equipment simultaneously.

When regulated alternating current is available, this unit combines the simplicity and accuracy of synchronous motored equipment with the advantages of complete uniformity of all units, and long operating life characteristic of master clock controlled time systems.

A resetting feature is included, consisting of an auxiliary motor, arranged to deliver fifteen impulses a minute to the system. The entire system can thus be reset after a current failure by simply inserting a key in the advancing switch and turning on the auxiliary motor. This quickly brings the system to correct time and the resetting switch is then turned off. The dial on the face of the control serves as a pilot for resetting, as well as a timepiece. The mechanism can be turned on and off completely by a tamper-proof lock switch.

This master control requires a two wire circuit only. The secondary devices are equipped with rectifying units and electromagnetic movements for positive and efficient operation from the alternating current impulse delivered by the control device.

The control unit is sturdily constructed for long wear and contains no clock movement or delicate parts. It will operate efficiently regardless of vibration, dirt or dust, and requires no regulation or adjustment.

Dimensions: 11½" High, 9" Wide and 5-3/16" Deep.

Shipping Weight: Approximately 16 Lbs.

PRINTED IN U.S.

To be continued.

STROMBERG TIME CORPORATION

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

Telechron *

Electric Clocks

Commercial Clocks

Program Instruments

Program Signaling Equipment

Tower Clocks

Central Control Systems

Bulletin A-12

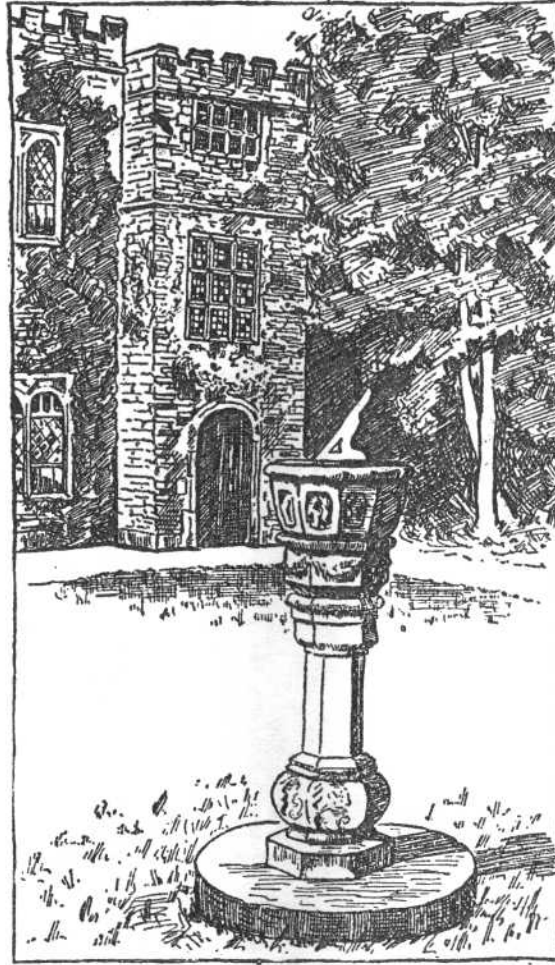
A.1A. Standard Classification 31123

WARREN TELECHRON COMPANY

Ashland, Massachusetts, U. S. A.

The Ancient Timekeeper

Sundial at Christ College, England



“Time Passes Silently Away
By minutes, hours, and then the day.”

The Sundial is still used for its Beauty, but most of us require a more accurate means of timekeeping. The Modern Timekeeper is described in the following pages.

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Telechron

“The Modern Timekeeper”

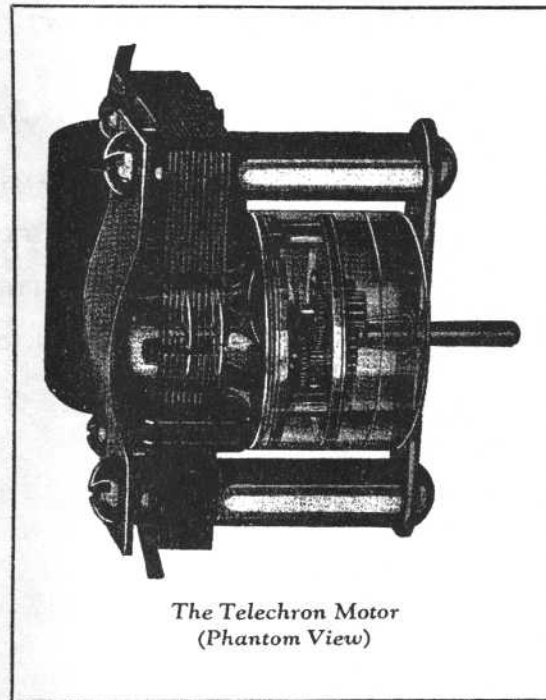
MINUTES count! Seconds count in the busy world of today. Modern life demands that every moment be completely utilized in order that the progress of the world may advance at the rate which science and industry require. Thus, accurate timekeeping has become recognized as an essential factor in the life of every community, organization, and individual.

The inevitable result of progress is achievement. Thus, with the need for precise and accurate timekeeping, a clock has been developed which is the greatest advance in horology within the past 200 years. With the advent of regulated alternating current furnished by the public service companies, it has now become possible to utilize the exact alternations of the current to operate electric clocks with a precision which is beyond comparison. This latest timekeeper is the *Telechron* Electric Clock which operates on an entirely new principle.

The success of the *Telechron* Electric Clock has been entirely due to the development of the simple, compact *Telechron* Motor which has made possible the utilization of the ordinary lighting current for accurate timekeeping. This motor is probably the smallest, self-starting, synchronous motor ever developed for a practical commercial application. Its speed, and consequently that of the clock mechanism which it drives, depends entirely upon the number of alternations of current per second. These alternations or cycles are so regulated by means of a *Telechron* Master Clock in the power station that any number of *Telechron* Electric Clocks connected to the lines of that power station will always run at the proper speed to give extremely accurate time.

The *Telechron* Master Clock is an excellent timekeeper in itself, and in addition is compared at least once daily with the radio time signals broadcast by the United States Naval Observatory at Washington, D. C., — the source of government official time. These Master Clocks are now being used to regulate the frequency in thousands of cities and towns throughout the world.

Telechron Electric Clocks are available for either individual or system installations with no restrictions in number or size. They are very inexpensive to install and operate as they require no local master clock, storage batteries, charging equipment, or even the cost of additional wiring, although a separate clock circuit is recommended for special systems. The simplicity of installation and operation makes



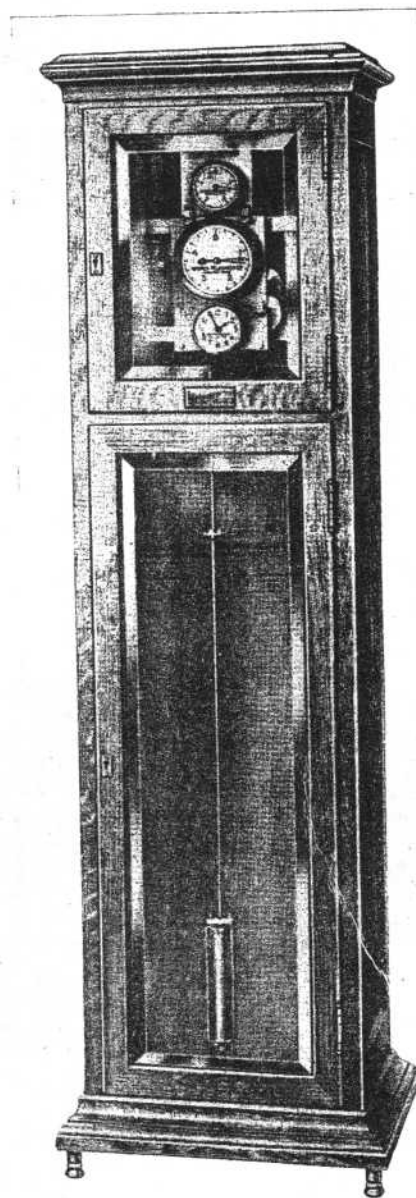
The *Telechron* Motor
(Phantom View)

Telechron Electric Clocks especially suitable for use in public buildings, factories, schools, hotels, office buildings, hospitals, railway stations, apartment houses, etc. There is no service charge because the power companies furnish the regulated frequency, and thus the correct time, as a part of their service.

Telechron Electric Clocks require no winding, oiling, or regulating. They contain no springs or other delicate mechanisms to cause trouble. The *Telechron* Motor is not affected by normal changes in voltage, current, or temperature and is many times stronger than a corresponding spring-driven movement, thus giving a more positive motion to the hands. As the important rotating parts are totally enclosed in an air-tight case and are permanently lubricated, it is impossible for the movement to become clogged or lose time through accumulations of dirt and dust or extremes of heat and cold.

Telechron Electric Clocks can be furnished with cases, dials, and hands of many varied designs, to harmonize with any architectural detail, and ranging in size from small household clocks to immense tower clocks. In addition, it is also possible to obtain program clocks, time stamps, in-and-out recorders, job recorders, and time equipment of a similar nature which are actuated by *Telechron* Motors and which will operate with the same degree of precision.

The workmanship and material of all *Telechron* Electric Clocks are of the highest quality throughout and each movement is individually tested to insure absolutely dependable and satisfactory service. All *Telechron* equipment is fully guaranteed against defects of material and workmanship for a period of one year from the date of installation.



Front View of *Telechron* Master Clock located in power station of public utility company

Further information and full particulars concerning TELECHRON Electric Clocks will be gladly furnished upon request to the

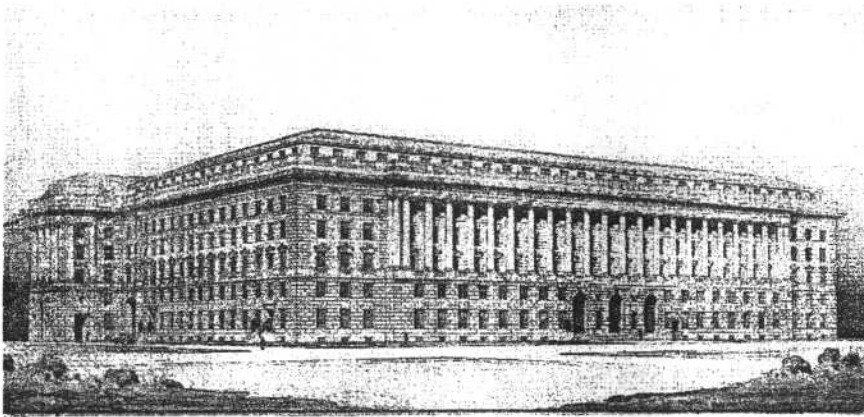
WARREN TELECHRON COMPANY

ASHLAND, MASSACHUSETTS, U. S. A.

Telechron

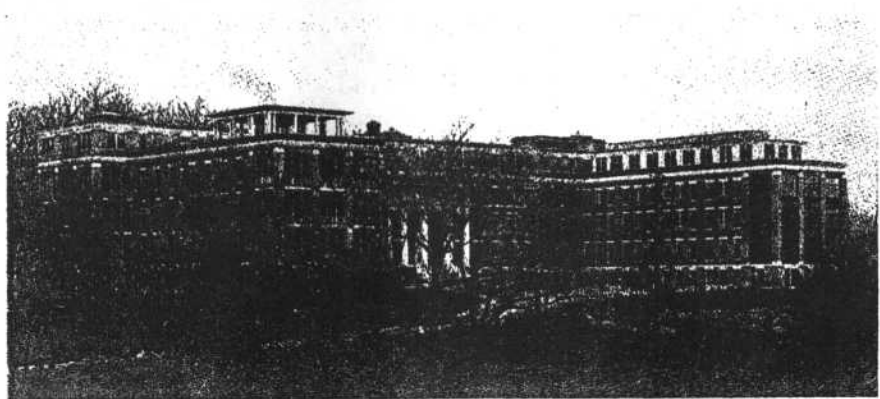
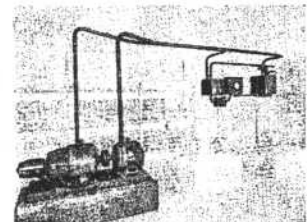
Typical Installations

Telechron Electric Clocks have been installed in many public and private buildings and their use is becoming widespread wherever accurate timekeeping is desired with a minimum of care and effort. The following are a few typical examples of the many buildings in which Telechron Electric Clocks are giving complete satisfaction.



The INTERNAL REVENUE BUILDING, Washington, D. C., is equipped with an ADFR (Automatic Double Frequency Resetting) system involving 875 clocks with buzzers, two 6 circuit program clocks and central control equipment. System installed April, 1930.

(Below)
Control Equipment
for this System

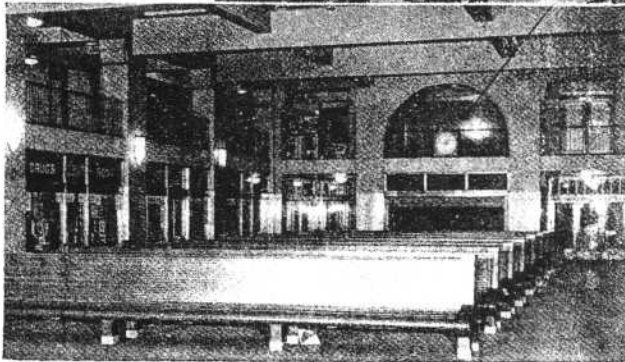


WATERBURY HOSPITAL, Waterbury, Connecticut. This hospital is equipped with an ADFR (Automatic Double Frequency Resetting) system involving 55 Telechron Clocks and central control equipment. The original installation of 30 clocks was made in 1926 and 25 more were added in 1929.

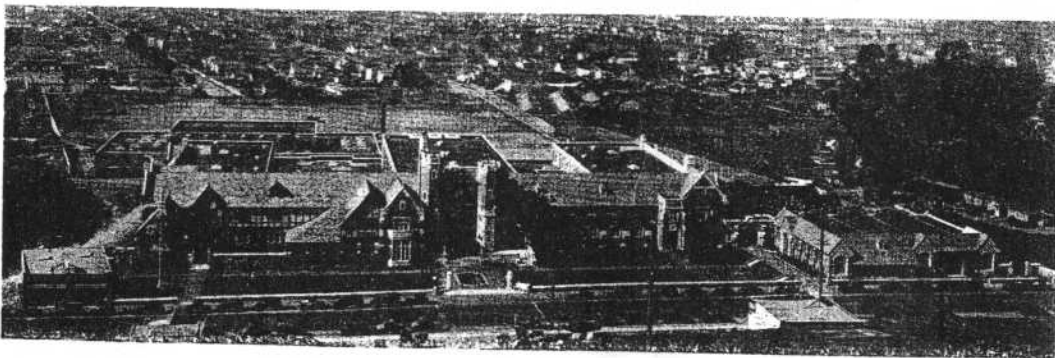


HOTEL MANGER,
Boston, Mass. (One
of North Station
Group.)

Equipped with an AT (Auto Throw-over) system consisting of four hundred fifty-one guest room clocks, thirteen double face illuminated corridor clocks, one 14" double face cafeteria clock, one 18" marble clock, one 12" marble clock and complete central control equipment. Installed September, 1930.

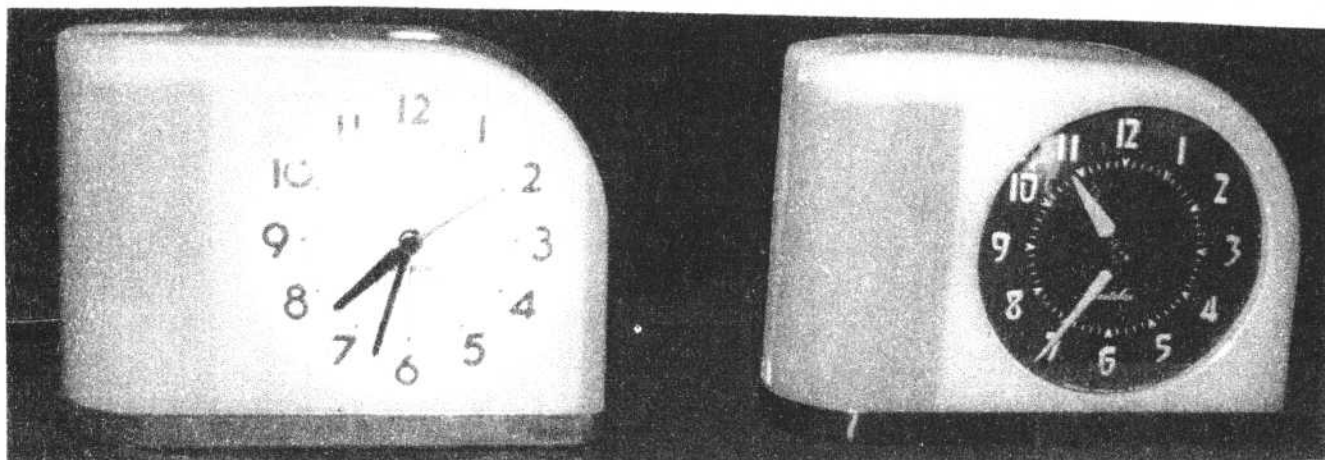


Left — Corner of the waiting room in the new Boston and Maine R. R. Station, Boston, Mass., which adjoins the Manger Hotel (pictured above). The arrow points to one of the 31-inch flush mounted Telechron Clocks. The system consists of 6 indoor and 3 outdoor clocks and AT Central Control equipment. Installed November, 1928.



East Oakland, Cal., HIGH SCHOOL, where a typical ADFR (Automatic Double Frequency Resetting) system consisting of 66-406 Telechron Wall Clocks, one 12-circuit Program and Central Control equipment, is giving excellent service. Installed July, 1929.

To be continued.



LIVING WITH A REPRODUCTION WESTCLOX MOONBEAM ALARM CLOCK

It is easiest to begin this review with a photograph showing the reproduction of the Westclox Moonbeam Alarm Clock along with an example of the original version of the clock. Thanks to Tony Bolek for this photographic comparison. As is evident, both the original (yellow case on the right) and the reproduction (blue case on the left) are the same size. The white dial on the reproduction is slightly larger in diameter than the original and the reproduction clock includes a "Snooze" alarm button just visible above the numeral 12. Otherwise, the clocks are very similar in appearance.

Interestingly, the reproduction clock uses a stepper motor to drive the hands while the original clock has a synchronous motor to drive the hands. Unfortunately, my original Moonbeam is a long way from working so I will have to make some assumptions concerning life with the original alarm clock versus life with the reproduction alarm. The original clock alarm begins with a flashing light that flashes for 7 minutes. If you do not turn off the flashing alarm, a buzzer then sounds and, presumably, you are awake. Original sales literature stresses the flashing light provides a gentle way for the sleeper to awaken.

The reproduction Moonbeam features a back lighted dial that is quite bright. If you can fall asleep with considerable light in the bedroom, you then get to enjoy the flashing light when the alarm first goes off. The flashing light is very bright and it is all that I can do not to jump out of bed and yell "cheese it - the cops" in my best 1930's gangster movie voice. If somehow you do not wake-up with the flashing light (hard to imagine), after 5 minutes a ringing bell sounds. Between the two methods of awakening the sleeper, I am reasonably sure that you will be awakened by the reproduction clock. However, I would not describe either the light or the bell as being gentle.

Jim Linz's book entitled "Westclox Electric" includes considerable information concerning the design and advertising pertaining to the original Moonbeam alarm clocks. Life with the reproduction is interesting and I am now looking for a working original Moonbeam for comparison purposes.

Bill Ellison

Bangor Electric shelf clock (\$1200), **Bangor Electric** wall clock (\$1800). No shipping. JPegs available if necessary. Neither clock is currently working, but they were working when I bought them in 1980. No missing parts. Must be picked up. (718) 969-0847, email wvlathlot@AOL.com
Harvey Schmidt, 75-80 179 St. Fresh Meadows, NY 11366

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

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

New replacement motor contacts for **Self Winding Model "F"** movements (exact copies of original). Complete set (front & rear) \$50.00 post paid. Ed Stomner, PO Box 297, St. Germain, WI 54558 (715)479-3148, Sundial@Newnorth.net

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

Reclus Impulse Dial

This electrical impulse dial movement was patented by Victor Reclus of Paris in 1886. It is believed to be the first in which the wheel is locked at every stage in the cycle of operation by the use of two clicks only.

With this locking device it is impossible for the momentum of the hands to cause them to over-run and so to move through the space of two teeth for a single impulse.

[See British Patent Specification No. 12,491 of 1886.]

Lent by Sir W.C. Leng & Co. Ltd., Sheffield
Time Measurement Catalogue No. 440
Inv. 1912-238

--- **MART** ---

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Brillie, junker movements, hands, complete clocks, used batteries, dials, any catalogs.
 Ken Erlenbusch, 124 North Avena Ave., Lodi, CA 95240, (209)369-5833, pickken@sbcglobal.net

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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 1 1/4". 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 Replacement Field Coils for **SESSIONS** and **HAMMOND** synchronous clock movements.

SALE: 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

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
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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

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

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, 9257 Appleby St., Downey, CA, 90240, (562) 861-8788, email dcrowe2259@AOL.com



**THE JOURNAL OF
THE ELECTRICAL HOROLOGY SOCIETY**
CHAPTER #78
NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXIII #3, SEPTEMBER 2007

Fellow Horologists:

This issue of the Journal of the Electrical Horology Society continues the reprinting of the Warren Telechron Catalog, Stromberg Clock Company Instructions, and the Cincinnati and Landis Clock Company Instructions. We ask for your help in providing material for future Journals. While catalogs and instruction information is always nice, we are also looking for original articles by our members. These articles could include repair information for particular clocks, how-to-do-it tips, interesting electric clock descriptions and so forth. Please let us hear from you.

As an example of an original article, I purchased a gallery clock at the Great Lakes Regional earlier this month. The clock has "AMERICAN SELF WINDING" prominently displayed on the dial and "Sahlin Manufacturing Company Grand Rapids, Michigan" at the bottom of the dial under the 6. The case is very well made (Grand Rapids was a furniture making city) and the movement is made by Imperial. The movement is powered by a weighted arm raised by a solenoid and a balance wheel is used to control the time. I was unable to find any information about the Sahlin Manufacturing Company on line so I would appreciate any information about the company and would also be interested in knowing if any other clocks made by this company exist.

This summer I had the opportunity to spend some time at NAWCC Library in Columbia and one of my projects was to examine the information on electric clocks that the Library has available. Many of the books are readily available but I did find several books that I was unfamiliar with. I have written a brief review of several of the books that I examined. All of these books are available for loan and I urge you to take advantage of this tremendous resource that is a part of our membership to NAWCC.

Planning for the Time Symposium to be held in October 2008 continues. We are still looking for presentations so, if you have something in mind, please let me know.

Enjoy this issue of the Journal and enjoy our fall season.

Yours very truly,

Bill Ellison..(Horolovar@ Juno.com).....President
Harvey Schmidt, FNAWCC,..(WWLathlot@ AOL.com).....Secretary-Treasurer) Co-
Dr. George Feinstein, FNAWCC..(TimeMachine@ Juno.com)..Chapter Historian) Editors

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

Book Reviews

The following is a brief review of several of the books on electrical horology available for circulation from our Library at Columbia, Pennsylvania. Please understand that these reviews are highly subjective and they do not meet the standards of my Eighth Grade English teacher. Sorry Mrs. Hume. In this review, I will try to highlight features useful to electric clock collectors. However, all of these books are worth borrowing and watching for at our Marts if you like to purchase books for your personal library.

The Electric Watch Repair Manual - Second Edition by Henry B. Fried

Of course, Henry Fried was the Dean of Horological Education and this book is a good example of why. As the title states, the book covers electric watch repair. Even if you are not interested in watch repair, the first part of the book covers the basics of electricity and electro-magnetism. If it has been some time since you studied basic electricity, it is worth refreshing your memory. The book includes information of the transistorized clocks such as the models made by Kundo, Junghans (ATO), and SEMCA transistorized balance clocks. The discussion is from a "what is happening" point of view. No specific repair information is provided although circuit diagrams are provided. The second part of the book covers electric watch repair. The repair descriptions are very detailed and thorough and the illustrations are clear and well thought out.

Modern Electric Clocks: Principles, Construction, Installation, and Maintenance by Stuart F. Philpott

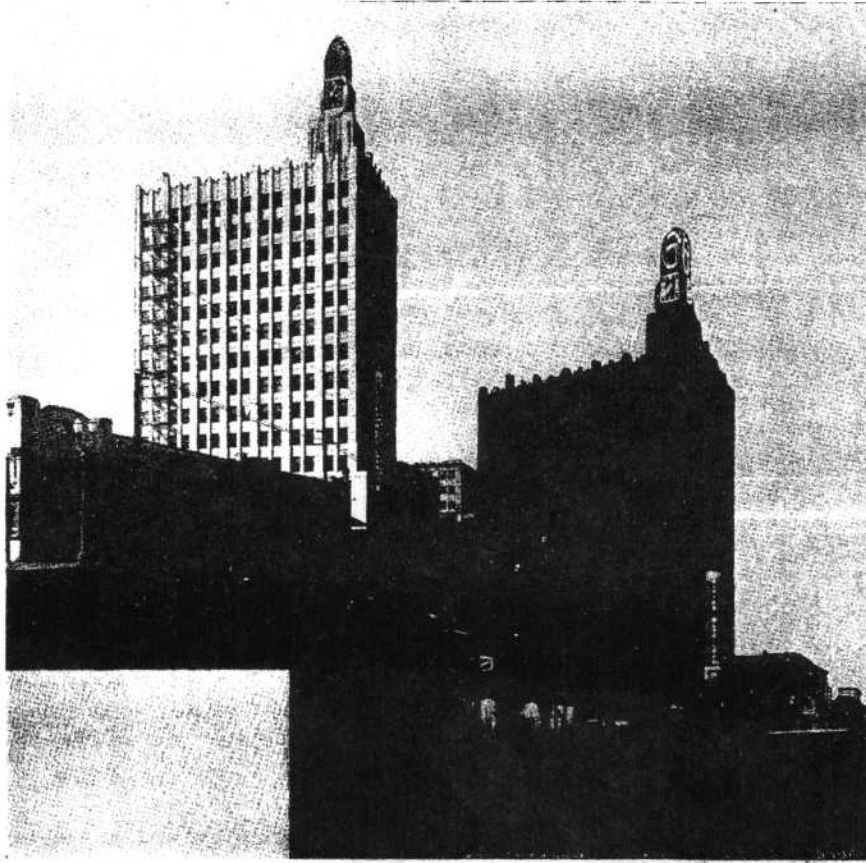
The First Edition of this book was published in England in 1933. The NAWCC Library circulates the Fourth Edition published in 1949. The book deals with English made clocks and also describes a few electric clocks made in other countries and sold in England. As is common, this book begins with a review of electricity. This section includes a good description of various early electric batteries.

Philpott then discusses various types of electric clock then in production. The descriptions of the clocks are quite good with an emphasis on how the clocks function. The information given is not deep enough to serve as a repair manual but it is detailed enough to help with identification of particular movements or clocks. The section on synchronous motor clocks is very good with an emphasis on tuning fork controlled clocks. There is detailed information on the various synchronous motors then in production; again this information is useful for identification purposes.

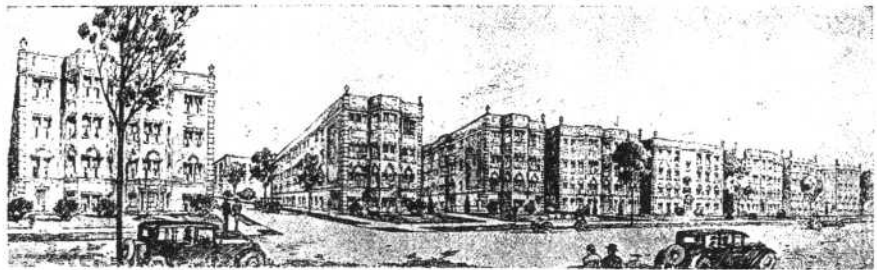
There are sections on turret (or tower clocks) and marine time systems. Probably none of us will ever have the opportunity to work on one of these marine time systems but they are interesting to read about. For example, there were 689 clocks of 60 different types controlled from a control panel located in the chart room on the ocean liner Queen Elizabeth.

Electrical Horology by H. R. Langmann and A. Ball

This book is a Xerographic copy of the 1946 version of a book originally written much earlier. This book includes a good summary of the history of electrical time keeping. It is enjoyable to read and follow the various steps taken in order to develop the clock designs described in this book. The historical information and information that is useful for identification purposes represent the main value of this book.



Day and night view of the BAY CITIES BUILDING and LOAN ASSOCIATION BUILDING, Santa Monica, California. The tower and superstructure, which is 55 feet above the top of the building, houses a four-face Telechron Electric Clock with 12-foot dials. The numerals and hands are Neon illuminated.



HOYNE MANOR APARTMENTS, Chicago, Illinois. Like the better apartments everywhere these apartments are completely equipped with Telechron Electric Clocks.

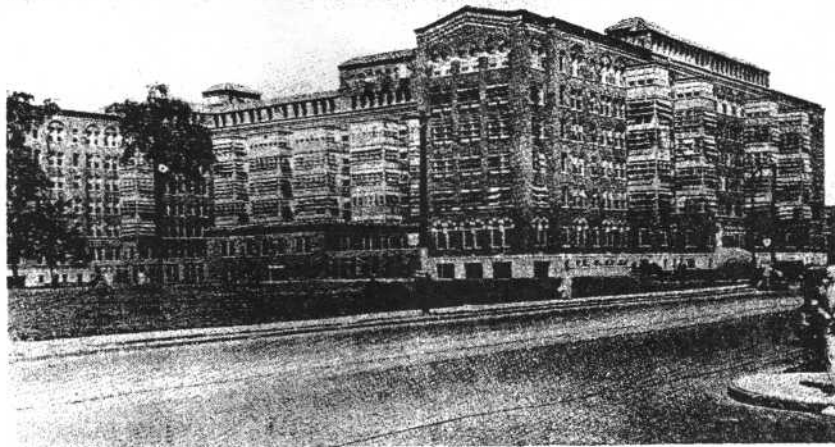


SAN FRANCISCO STOCK EXCHANGE,
San Francisco, California.

The entire building is equipped with wall and desk clocks. Over each stock board are two clocks with four-foot dials, visible from the entire trading floor.

A program clock rings the opening and closing bell.

HERMAN KIEFFER HOSPITAL, Detroit, Michigan. This hospital is equipped with an ADMR (Automatic Dual Motor Resetting) system involving 28 twelve-inch surface type clocks, one 18-inch flush clock and central control equipment. Installed November, 1928.

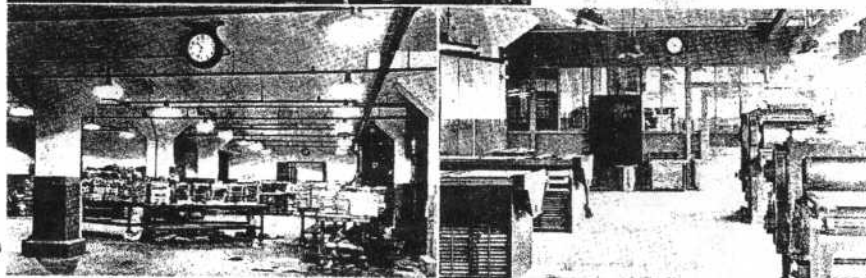




DAILY NEWS BUILDING, New York City, N. Y. This building is equipped with an ADFR (Automatic Double Frequency Resetting) Telechron Clock System.

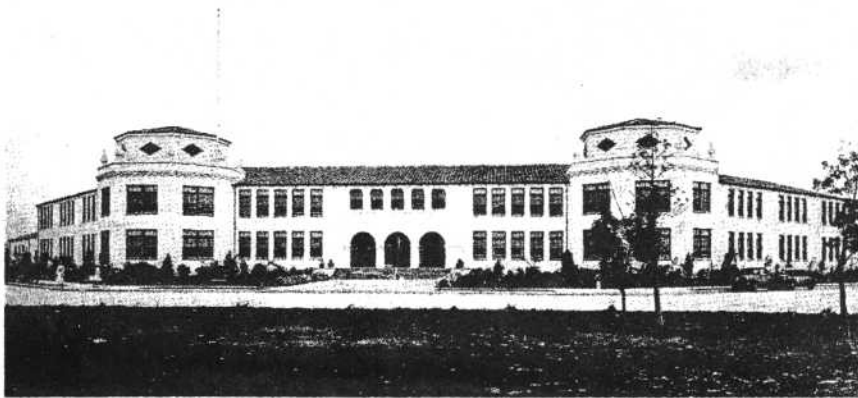
A total of 45 clocks have been installed throughout the offices and plant of the building, with others to be added later. Installed March, 1930.

Below, left, is a view of the shipping room, showing one of four double face saddle suspension Telechron clocks installed, while at the right, also below, is a view of the composing room showing one of twenty 15" round metal case surface type Telechron clocks.



NEW JERSEY BELL TELEPHONE COMPANY BUILDING, Newark, N. J. The Telechron equipment furnished for this building includes nine special clocks, some of which have very expensive modernistic dials. In addition to this equipment, approximately 190 Telechron Clocks are installed in other offices, halls, etc. Installed 1929.





AUDUBON JUNIOR HIGH SCHOOL, Los Angeles, Cal. This school is equipped with an ADFR (Automatic Double Frequency Resetting) Telechron Clock System consisting of 55 wall clocks in the classrooms, a program clock and central control equipment. Installed September 1, 1929.



EASTERN-COLUMBIA BUILDING, Los Angeles, Cal. An ADFR (Automatic Double Frequency Resetting) Telechron Clock System is installed, consisting of four 15½ foot Neon illuminated tower clocks, twelve other specially designed clocks located throughout the interior of the structure and central control equipment. Installed September, 1930.

Telechron

Commercial Clocks

(For Indoor Use)

DUE to the many advantages of the Telechron Motor and to the variety of Telechron Clock Movements, it is possible to manufacture every type of clock regardless of its design or application. The accuracy of operation and simplicity of construction are the same in all Telechron Clock Movements resulting in a mechanism which is beyond comparison.

All Telechron Clock Movements operate on the same principle, regardless of their size or location. Consequently, the motor of each movement must be directly connected to a source of regulated alternating current, which is maintained at a constant average frequency, by means of a Telechron Master Clock located in the power station of the local utility company.

Each Telechron Clock is equipped with an individual movement and, in the case of multiple face clocks, one movement for each dial. All Telechron Electric Clocks are con-

structed so that they may be individually connected to a power circuit or installed as a part of a clock system controlled from one central point. This latter control may be either manual or automatic in operation and may be obtained through the installation of manual or automatic control equipment as described in the bulletin on Telechron Central Control Systems.

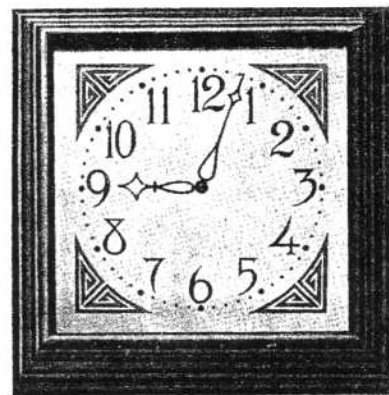
Telechron Electric Clocks for indoor use should never be installed in any location except within a building or other protected place. A number of weatherproof clocks are described in the bulletin on Telechron Commercial Clocks for Outdoor Use.

The quality of materials and workmanship throughout every Telechron Electric Clock is of the highest. Each Clock is guaranteed against original defects in material and workmanship for a period of one year while in normal use and operation.



Oak, Mahogany, Walnut and White

Style	Dial Inches	Case Inches Square
908	8	10 $\frac{1}{4}$
910	10	13
912	12	15 $\frac{1}{2}$
915	15	19
918	18	23
924	24	30



Numerals: Arabic or Roman

Style	Dial Inches	Case Inches Square
1319	8	12 $\frac{1}{2}$
1320	12	17
1321	14	19 $\frac{1}{2}$
1322	18	22 $\frac{1}{2}$
1323	24	28 $\frac{3}{8}$

Hand painted silver dial with corner ornaments of gold leaf and black hairline stripe.

Above models are designed for use with a central control system, but can be used for individual installation.

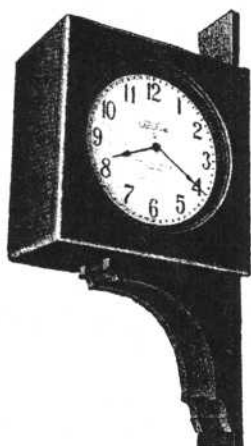
Telechron

Electric Clocks—Wood Cases

(For Indoor Use Only)

OAK, MAHOGANY AND WALNUT

Knee Bracket Square Case
Double Face



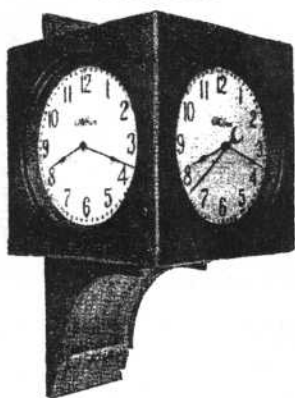
Style	Dial inches	Case inches sq.	Approx. Height inches
3210	10	13	26
3212	12	15½	31½
3215	15	19	38
3218	18	23	45
3224	24	30	56

Chain Suspension Square Case
Four Face



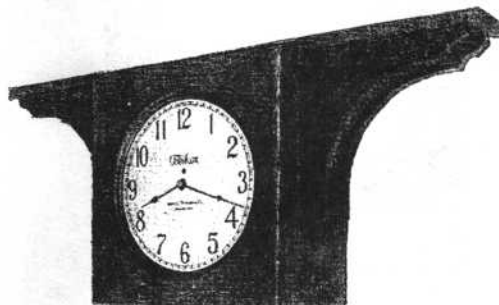
Style	Dial inches	Case inches sq.	Approx. Height inches
3710	10	13	37
3712	12	15½	41
3715	15	19	47
3718	18	23	53
3724	24	30	66

Knee Bracket Square Case
Three Face



Style	Dial inches	Case inches sq.	Approx. Height inches
3310	10	13	26
3312	12	15½	31½
3315	15	19	38
3318	18	23	45
3324	24	30	56

Saddle Suspension Square Case
Double Face



Style	Dial inches	Case inches sq.	Approx. Length inches
3110	10	13	36
3112	12	15½	42
3115	15	19	50
3118	18	23	60
3124	24	30	76

Above models are designed for use with a central control system, but can be used for individual installation.

WARREN TELECHRON COMPANY

ASHLAND, MASSACHUSETTS, U. S. A.

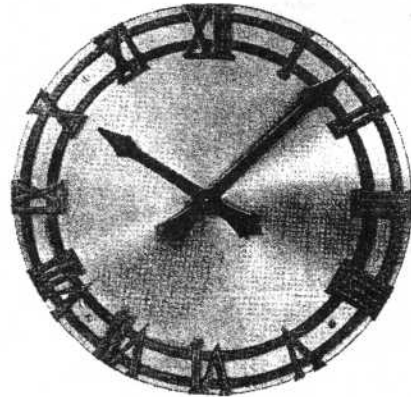
Telechron Electric Clocks

SKELETON DIALS
(For Indoor Use Only)

With Minute Dots



Without Minute Dots



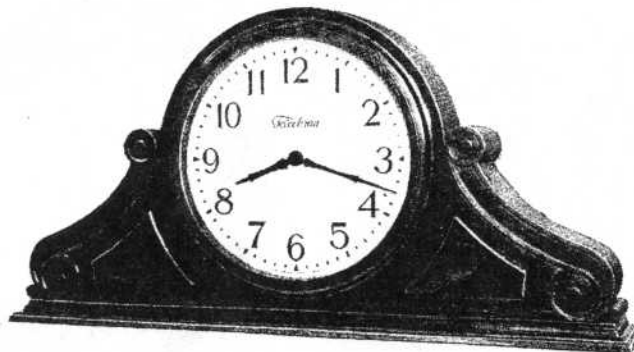
Hands and
Characters
Oxidized Bronze
Finish

Style	Dial	Outside Diameter
755	8 inches	8 inches
756	12 "	12½ "
757	14 "	15 "
758	18 "	18 "
760	24 "	24 "
761	30 "	30 "
762	36 "	37 "
763	42 "	43 "
764	48 "	49 "

Style	Dial	Outside Diameter
775	8 inches	7 inches
776	12 "	11 "
777	14 "	13½ "
778	18 "	16½ "
780	24 "	21½ "
781	30 "	27½ "
782	36 "	33½ "
783	42 "	39½ "
784	48 "	45½ "

Furnished with Special Box

TAMBOUR CLOCK



Mahogany or Walnut Case
Also available for ceiling suspension

Style	Dial	Height	Length
1412	12 inches	16½ inches	40½ inches
1415	15 "	18½ "	48½ "
1418	18 "	24 "	61 "
1424	24 "	32 "	81½ "

1712 Series available in double face design

Above models are designed for use with a central control system, but can be used for individual installation.

WARREN TELECHRON COMPANY
ASHLAND, MASSACHUSETTS, U. S. A.

Telechron

Electric Clocks — Metal Cases

(For Indoor Use Only)

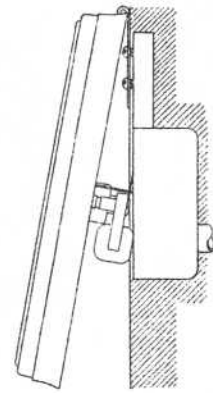
Surface Case



Standard finish
Statuary Bronze
Lacquer

Style	Dial	Case Diameter
108	8 inches	12 inches
110	10 "	14 "
112	12 "	16 $\frac{3}{4}$ "
115	15 "	19 $\frac{3}{4}$ "
118	18 "	24 "
124	24 "	30 $\frac{3}{4}$ "
130	30 "	36 $\frac{1}{2}$ "
136	36 "	42 $\frac{1}{2}$ "
142	42 "	48 $\frac{1}{2}$ "
148	48 "	54 $\frac{1}{2}$ "

Semi-Flush Case



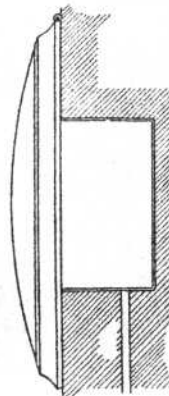
Style	Dial	Case Diameter
2308	8 inches	10 $\frac{1}{16}$ inches
2310	10 "	12 "
2312	12 "	14 $\frac{1}{4}$ "
2315	15 "	17 $\frac{1}{4}$ "
2318	18 "	21 "
2324	24 "	27 $\frac{1}{2}$ "

Furnished with or without special box; 10 inch sizes and larger can be supplied with a bell or buzzer mounted on back of dial.

8 to 24 in. inclusive available with bell or buzzer on dial back.

2712 Series available with illuminated dial.

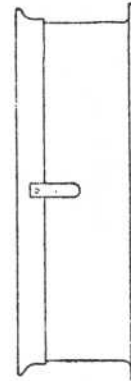
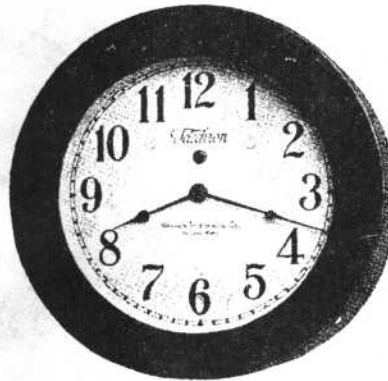
Flush Case Convex Crystal



Style	Dial	Case Diameter
444	6 inches	6 inches
445	8 "	8 "
446	12 "	13 "
447	14 "	15 "
448	18 "	18 "

Furnished with or without outlet box.

Boiler Room Surface Case (Dust and Moisture Proof)



Style	Dial	Case Diameter
2508	8 inches	12 inches
2510	10 "	14 "
2512	12 "	16 $\frac{1}{2}$ "
2515	15 "	19 $\frac{3}{8}$ "
2518	18 "	23 "
2524	24 "	29 $\frac{1}{4}$ "

Above models are designed for use with central control system, but can be used for individual installation.

WARREN TELECHRON COMPANY

ASHLAND, MASSACHUSETTS, U. S. A.

INSTALLATION AND OPERATING INSTRUCTIONS
FOR TYPES SM-60, WM-60, AND SM-80
2 WIRE MASTER CLOCKS AND
MAGNET DRIVE "MASTER-PRO"

1. UNPACKING: This equipment is by nature fragile and requires more careful handling than common electrical appliances. Before opening the carton or crates, inspect for possible damage. Carefully unpack the apparatus, observing precautions as may be indicated on attached tags. Note again whether any damage has been incurred. If so, make claim immediately against transportation company.
2. INSTALLATION: To insure best regulation, the Master Clock should be hung on a wall that is free from vibration. An inside wall of brick or masonry is preferable. The clock should never be mounted where it is subject to sudden jars. Also, avoid locations where it is extremely dirty or dusty, or where abnormal humidity conditions prevail. The Master Clock is hung from a single hanger bolt which is furnished. Bolt must be anchored well enough to support 130 pounds. After hanging the Master Clock, be absolutely certain that it settles against the wall and is plumb in all directions.

Remove all tie wires and packing screws as indicated by the tags. Now remove packing around the pendulum, and install.

The cables which support the weights in the WM-60 Master Clocks are fastened together with a spring. Unfasten one cable at a time, making sure both cables are held in tension. The fittings on the ends of the cables are then screwed into the holes in the ends of the weights.

Illustration A shows the manner in which the pendulum rod is hooked over the spring suspension. Illustration B shows how the virge wire slips into the slot in the pendulum rod. Now check again to see that the case is plumb correctly. When it is correctly plumbed, the pendulum rod will be the same distance from the back of the case throughout the pendulum length. In the rest position, it will read at the zero mark on the pendulum scale which is fastened at the bottom of the case.

A. "MASTER-PRO", MAGNET DRIVE, MOUNTED IN MASTER CLOCK CASE,
MODELS 202, 204, 206

1. Remove the right half of "Master-Pro" front panel.
2. Remove shipping tag from chain at top. Follow instructions on shipping tag.
3. Electrical connections to program circuits are to be made in accordance with drawing No. D 1031 or D 1042. The rating of the program circuit switches is 15 amperes at 24 volts A.C. or 3 amperes, 115 volts A.C.

B. "MASTER-PRO", MAGNET DRIVE, MOUNTED IN SEPARATE METAL CASE,
MODELS 212, 214, 216

1. Remove key to unlock cover. Cover is removed by lifting vertically and cut. Hang "Master-Pro" vertically by screws through holes in back.
2. Remove shipping tag from chain at top. Follow instructions on shipping tag.
3. Electrical input connections are to be made in accordance with drawing No. D 1031 for 2 wire Master Clock System and D 1040 for 3 wire Master Clock System.
4. Electrical connections to program circuits are to be made in accordance with drawing No. D 1031 or D 1040. The rating of the program circuit switches is 15 amperes at 24 volts A.C. or 3 amperes, 115 volts A.C.

If more than 100 watts of signal power is required, an auxiliary power source must be used. Refer to the wiring diagrams for proper connections.

3. ELECTRICAL CONNECTIONS TO MASTER CLOCK: (REFER TO WIRING DIAGRAMS IN THIS MANUAL)

Set minute hand to 15 minutes past the hour to make the following adjustments. Terminals described below can be reached and serviced by means of a short screw driver, making it unnecessary to remove the clock face.

The input voltage (105-125 volts at 60 cycles, unless otherwise marked on the equipment) is connected to the fuse block on top of the Master Clock case.

There are eight terminals for line voltage adjustment labeled from B to H on the RA - Control panel. Before adjusting for line voltage, connect entire load circuit (secondaries, recorders, "Master-Pro" if in separate case) to terminals B and C on top of Master case (connect to A, B and C for 3 wire systems).

Turn the Main Switch ON. Now connect the tap on the lettered terminal board from A to the terminal which gives a D.C. voltage of 24 volts at terminals B and C. If exactly 24 volts cannot be had, choose the next higher value. By turning the Manual Reset Switch ON and holding the pendulum slightly off center, steady D.C. voltage may be read at B and C.

Push the red Thermo Cutout button in to be sure its contacts are closed.

The fuse is a 1 ampere tempo proof Fustat, type S-1. This means that only a 1 ampere Fustat will fit into the fuse receptacle. An extra one is included with each unit.

4. SETTING HANDS: Start Master Clock by gently moving pendulum off center and allowing it to swing freely from 2 to 2 on the scale. The minute impulse relay in the RA control will be energized each minute. At the instant the relay is de-energized; (as determined by listening or by watching for the instant the secondary clock minute hand advances) stop pendulum and set second hand exactly on 60. Then set the hour and minute hands to two minutes ahead of the correct time. BE SURE THE MINUTE HAND IS SET EXACTLY OVER THE MINUTE MARKING ON THE DIAL. This is important for correct operation of the system. When the correct time arrives, set the pendulum in motion. If possible, this adjustment should be made when the correct

time is five minutes before the hour. The system is now in operation. The minute hand is set correctly if the corrective cycle starts at the 59th minute, plus or minus five seconds.

A most accurate way to set the Master Clocks is to stop the pendulum when the second hand reads 30 seconds. Then adjust the minute hand midway between the two minute marks. If time is available, adjust between the 56th and 57th minutes and when correct time is 56 minutes, 30 seconds past the hour, the pendulum should be started.

CAUTION: Do not turn minute hand backwards.

5. **SECONDARY CLOCKS:** When installing, be sure that all secondary clocks, recorders and "Master-Pro" read the same so that they can be corrected together. Be sure that all clocks are mounted to hang vertical and perpendicular.

All secondaries and recorders can be set to correct time from the Master by turning on the Manual Reset switch.

When recorders or a "Master-Pro" is connected to the system, bend one of the fixed Seconds Impulse contacts on the Master Clock so that it does not make contact with the moving contact driven by virge shaft. Otherwise, recorders may not advance during the corrective cycle.

During long resetting periods of 15 minutes or more, the Thermo Cutout switch may open. Push red button for continued resetting.

Do not attempt to correct secondaries during the 59th to 3rd minute positions of the Master Clock. When the Reset switch is turned on, clocks will advance at 60 times normal speed until they reach the 59th minute, when they will stop. Press the button above the Reset switch 3 times to carry clocks over the 59, 60 and 01 minute positions when correcting beyond the hour. Correction will then again be automatic until the next 59th minute position. Turn Reset Switch OFF when secondary equipment reads 2 minutes ahead of correct time.

CAUTION: Do not hold button in except to impulse secondary circuit past the 59th, 60th and 1 minute positions.

6. **OPERATION:** The entire clock system will function continuously with a minimum of care and maintenance. Regulation of the clock is done by adjusting the knurled nuts on the bottom of the pendulum (Illustration C). Each clock is accurately set at the factory; however, after installing it may be desirable to make an adjustment. Turning the screw to lift the bob higher on the pendulum rod causes the clock to run faster. One turn on the metal ball pendulum rod corresponds to approximately 2 minutes per day. On the mercurial pendulum there is a coarse screw at the bottom of the weight and a vernier screw at the top of the weight. One turn of the vernier screw corresponds to ONE SECOND per DAY correction; one turn of the coarse screw corresponds to ONE SECOND per HOUR correction.
7. **POWER FAILURE:** If power fails, the secondary clocks will stop. Type WM-50 Master Clocks will continue to run on their own weight reserve for a total of seven days. Types SM-60 and SM-80 Master Clocks have a total run down time of 24 hours. On short power interruptions which do not extend beyond the 59th minute, the Master Clock will automatically correct the time on the 59th minute. Interruptions extending beyond the 59th minute are corrected manually as described in paragraph 5.

8. MAINTENANCE: It is recommended that some one man in the organization be assigned the responsibility of the proper operation and servicing of the Time Control System. The following technical information is designed to give the maintenance man an understanding of the System's operation in order to help him in servicing the equipment.

ELECTRICAL FUNCTIONS OF THE 2 WIRE MASTER CLOCK
AND RA-2 CONTROL

9. The enclosed wiring diagram No. D 1026 of the RA-2 Control and Master Clock contacts illustrates the electrical functions.
10. Each minute, the seconds shaft, through cams and levers, causes the Minute Impulse contacts to close on the 58th second and open on the 60th second. These contacts energize the impulse relay through terminals 5 and 7 and the transformer. This relay closes its contacts and energizes the copper oxide rectifier, thereby providing a 24 volt impulse at terminals 1 and 2. This operation is the same through the 2nd and 59th minutes.
11. Within plus or minus 5 seconds of the 59th minute, a cam on the 60 minute shaft of the Master Clock causes the Corrective Circuit contacts to make. This automatically causes the Seconds Impulse contacts (which are operated once a second by the wiper shaft) to operate the impulse relay. This provides 24 volt impulses every second at terminals 1 and 2. When the 45th second of the 59th minute is reached, the Corrective Circuit contacts open.
12. The secondaries, recorders and program instruments are designed to operate on 24 volts from the 2nd to the 59th minute inclusive. When the secondary is advanced to the 59th minute, a switch controlled by a bakelite cam opens and causes a resistance to be inserted in series with the actuating magnet. This resistance will not allow enough current to flow to operate the magnet with 24 volts applied. Hence, all secondaries, fast or slow, are stopped at the 59th minute. Therefore, the corrective factor of the system is from 58 minutes fast to approximately 40 minutes slow.
13. At the 45th second of the 59th minute (approximately) the Corrective Circuit contacts are opened. This completes the corrective cycle and allows the Hi-Voltage Contacts to be made. At the 60th minute, the Minute Impulse contacts are made. The impulse relay energizes the copper oxide rectifier which immediately energizes the Hi-Voltage relay through terminals 3 and 4. When the Hi-Voltage relay operates, it connects an additional 30 volt transformer winding in series with the copper oxide rectifier, so that the voltage at terminals 1 and 2 rises to 48 volts. This 48 volt impulse will actuate the magnets in the secondary clocks with the resistors in series. This action continues for the 1st and 2nd minutes. At the completion of the 2nd minute impulse, the cam operated switch in each secondary is closed, thus shorting the resistor. At the 2nd minute, 45th second position of the Master Clock, the cam in the Master Clock causes the Hi-Voltage Circuit contacts to open.
14. The system now continues to operate on 24 volts as before.

-5-

15. The Hi-Voltage relay is energized only during the 60th, 1st and 2nd minute positions of the Master Clock. The push button permits this relay to be energized independent of the Hi-Voltage Circuit contacts, for resetting purposes.
16. The Thermo Cutout Switch provides protection for the transformer and rectifier against prolonged application of voltage to the impulse circuit in case Master Clock stops while the Minute Impulse contacts are closed. The cutout contacts will open in about 60 seconds with 24 volts applied continuously to the rectifier and in about 20 seconds with 48 volts applied. Push the red button to recycle the Thermo Cutout Switch for continued operation. In general, if the Thermo Cutout contacts open, it is a sign of trouble in the system, although prolonged resetting periods may cause this to occur.
17. From the above description of the electrical circuit, it is apparent that the minute and second hands must be properly synchronized at the 59th minute so that the corrective cycle will be completed and the Hi-Voltage Circuit contacts made before the 60th minute impulse is sent. This is necessary to insure that 3 successive Hi-Voltage impulses are sent out at the 60th, 1st and 2nd minutes to actuate all secondaries which, at these positions, have the resistor in series.

RESERVE POWER FEATURES

18. The M-60 clock mechanism is weight driven and is automatically wound once each 24 hours. The unit will run seven days without electrical power. When electrical power comes back on, the motor will immediately wind the weights up.
19. The SM-60 and SM-60 clock mechanisms are spring driven and are automatically kept wound by a Telechron Motor Cam and spring mechanism which winds the spring once a minute. This mechanism prevents over winding of the Main Spring and holds it in constant tension. This insures accurate time keeping properties for the Master Clock. The spring power will operate the clock for 24 hours after electrical power is off. If the power has been off 24 hours or more, the clock should be manually rewound. To do this, release the pawl which engages the toothed wheel and turn the wheel to which the spring is fastened in a counterclockwise direction. About 5 turns on this wheel will fully wind the clock.

PROGRAM CIRCUIT OPERATION

1. CONTROLS: The toggle switches numbered 1 through 6 control each program circuit respectively. Turning these switches OFF inactivates the corresponding program circuit. The push buttons provide emergency signaling on each circuit as indicated by the number of the push button at any time whether toggle switches are on or not.
2. DESCRIPTION OF OPERATION: Each minute the MINUTE DIAL progresses one-sixtieth of a revolution by a mechanical impulse mechanism. Contact rollers placed on pins threaded through the opposite limbs in each chain operate enclosed across switches at the minute calibrated on the MINUTE DIAL, directly beneath the roller. The hour of operation is indicated by the hour hand of the clock. The

circumferential lines and small numbers 1 to 6 on the MINUTE DIAL indicate the circuit which any contact roller will control. The chain is equivalent to 12 hours long and advances one link per minute. The "Master-Pro" is fully corrective and will correct, if necessary, on the 59th minute of each hour. It will advance with the rest of the system when the Manual Reset Switch is turned on at the RA Control.

3. Calendar Dial progresses one-fourteenth of a revolution every 12 hours. Normally this advance occurs at 6:00 A.M. and 6:00 P.M. each day. Contact rollers and pins inserted over a cross hatched section will cause the circuit to be active during the corresponding day from 6 P.M. to 6 A.M.

4. SETTING A PROGRAM SCHEDULE:

- a. List the desired signal chronologically starting with the one occurring earliest in the day. Then allocate the signals to the desired circuits as well as determining what periods of the week each circuit is to be operative for Calendar Dial scheduling.

- b. To set the first signal, turn the knob located behind the pilot clock until the clock reads 15 minutes before the exact first signal time. In order to release knob, turn plunger in rotary solenoid clockwise approximately 20 degrees. Suppose the first signal is to be set at 8:25 A.M. on circuit 1. Turn knob until clock indicates 8:10. The 25 minute mark on the MINUTE DIAL will then face directly out. Insert a pin through the link of the chain on the right side of dial at the 25 minute mark and insert one contact roller on the pin, then insert pin thru link of chain on the left side of dial at the 25 minute mark. Hold pin in place with another roller placed on pin on outside of chain. Now fasten the first contact roller on the pin in the #1 circuit space indicated by the circumferential lines on the minute dial. This operation is continued until all signals are set up.

- c. If more than one circuit is to be operated at one time, include a contact roller on the pin set at that time for each circuit to be controlled.

- d. When signals are set so that pins are required in consecutive links of the chain insert the consecutive pins in the chain at opposite sides of the MINUTE DIAL. That is, insert one pin into left chain and the next consecutive link into the right chain.

- e. When signals are to be set on consecutive minutes on the same circuit use the contact rollers which have flats. CAUTION:- Flat rollers are to be used to set consecutive minute intervals on the same circuit only. One used alone will not actuate switches properly.

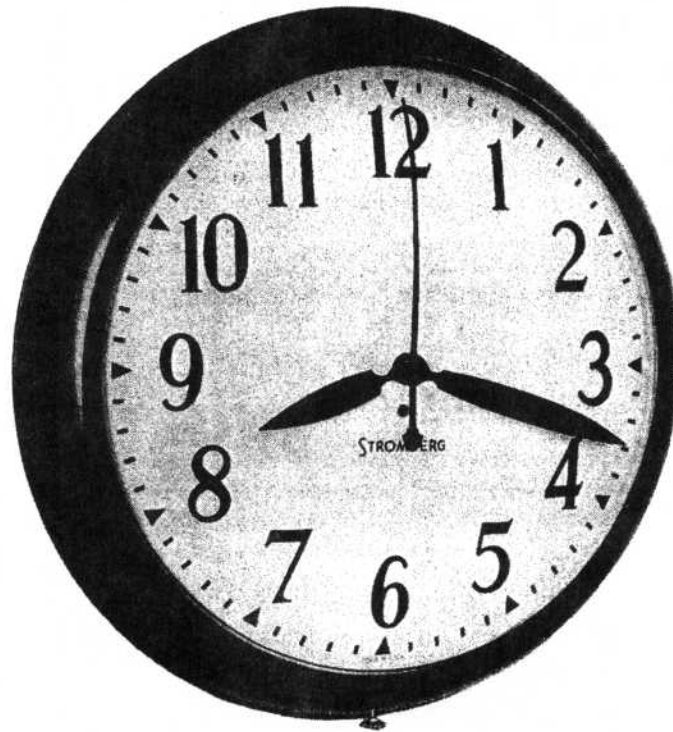
- f. If it is desired to set a 24 hour schedule, two program circuits must be used. The corresponding calendar switches are set to operate one circuit from 6 A.M. to 6 P.M. and the other from 6 P.M. to 6 A.M. A jumper must be connected between the two circuits so operated on the 1-8 terminal board.

- g. When more than one contact roller is placed on a pin turn rollers so that screws are not in a line. Allow just a little freedom, about 1/32 inch play, when fastening the outside roller to hold the pin in the chain. Always turn MINUTE DIAL by the knurled knob. Do not push dial around with fingers.

STROMBERG *Synchronous Clocks*

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

BULLETIN 112-1



No. 112-A Wall Clock

An attractive, simple design that harmonizes with any surroundings and is easily read from a distance, this clock is an ideal timekeeper for commercial or industrial use. Its shallow case, convex dial and sharp pointer hands provide a maximum range of visibility. This is a quality product, manufactured to Stromberg standards of construction and workmanship.

Specifications and Features

- Hangs on the surface of the wall.
- Operates from 110 Volt, 60 or 50 cycle A.C. current.
- Metal Case, finished in statuary Bronze lacquer.
- Black numerals, hour and minute hands.
- White convex dial with convex crystal.
- Red sweep second hand.
- Current interruption indicator.
- Pendant resetting knob.
- Slow speed self-starting motor.
- Equipped with cord and plug.
- Sealed motor lubricated for life of clock.
- Dial size 12½ inches only.
- Visibility 50 feet under normal conditions.
- Guaranteed free from defects in material and workmanship for one year.

Dimensions: 15" diameter, 3" deep.

Shipping Weight: 6 lbs.

PRINTED IN U.S.

STROMBERG TIME CORPORATION

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

STROMBERG

Secondary Clocks

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

BULLETIN 1000



Model 1000 Wall Clock

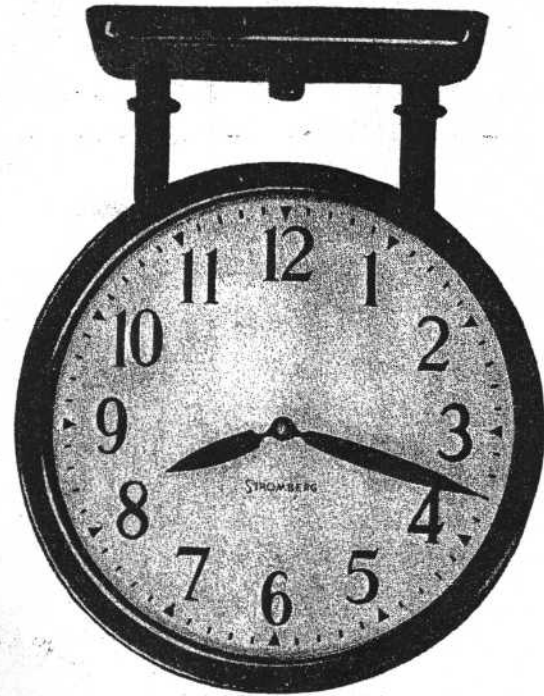
Completely new construction based on years of clock engineering, these Stromberg Secondary Clocks will give long trouble-free service. Their narrow cases fit snugly to the wall, giving the clock a minimum of profile. Clear, sharp numerals and hands simplify reading at maximum distances and the convex glass breaks up blurring light reflections. They are operated by electrical impulses from a Stromberg Auto-set Time System, giving accurate and uniformly synchronized time. The new electromagnetic movement has a positive action, operating more quietly than former styles. When conditions require it, additional sound proofing can be furnished at slight additional cost. This substantial construction and absence of any delicate mechanism insures a long operating life, even under adverse conditions. Vibration or jars in no way affect their accuracy. All Secondary Clocks can be supplied with special finishes to harmonize with their surroundings. The Stromberg Engineering Department will gladly cooperate in planning and designing clock systems to meet any need.

Model 1000 Wall type clocks are supplied in dial sizes of 10, 12½, 16, 20 and 25 inches. They may be mounted to the wall by a self centering hanger or by a hanger plate attached to a standard outlet box.

Model 1200 Double faced clocks are supplied in dial sizes of 12½, 16 and 20 inches. They can be mounted in one of four standard positions; suspended from the ceiling, on a pedestal, and from the right or left wall position. When required, they can also be specified for ceiling suspension by means of chains. These clocks are mounted to a standard outlet box.

**Chart for
Determination of Dial Sizes**

Distance from Clock	Dial Sizes
20 to 30 feet	10 inches
30 to 50 "	12½ "
50 to 70 "	16 "
70 to 100 "	20 "
100 to 160 "	25 "



**Model 1200
Double Faced Bracket Clock**

Specifications and Features

- Round spun steel cases finished Statuary Bronze.
- Convex white lithographed dials, black hands and numerals.
- Silvered dial at additional cost.
- Convex cover glasses.
- Wall type dial sizes: 10, 12½, 16, 20 and 25 inches.
- Positive electromagnetic secondary movements, tightly covered.
- Quiet operation
- Self centering wall hanger.
- Wall box mounted for semi-flush application.
- Four position bracket suspension of double faced clock.
- Chain suspension from ceiling.
- Double faced dial sizes: 12½, 16 and 20 inches.
- Mounted to a standard outlet box
- Guaranteed free from defects in material and workmanship for one year.

PRINTED IN U.S.

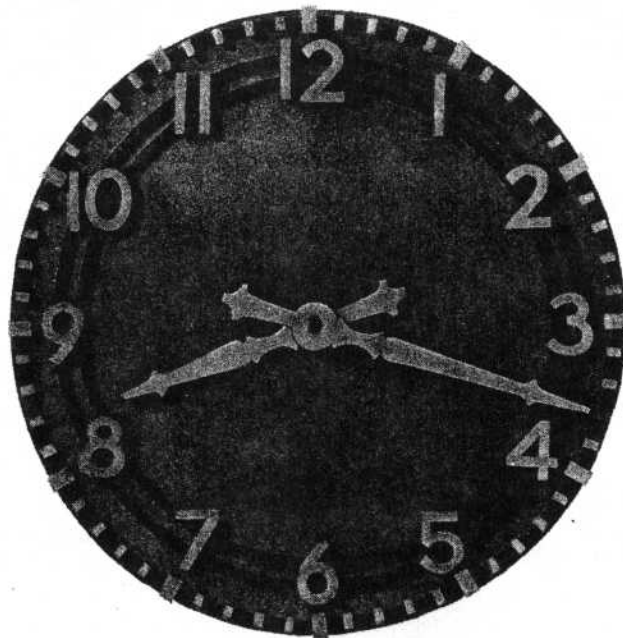
STROMBERG TIME CORPORATION

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

STROMBERG *Skeleton Dial Clocks*

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

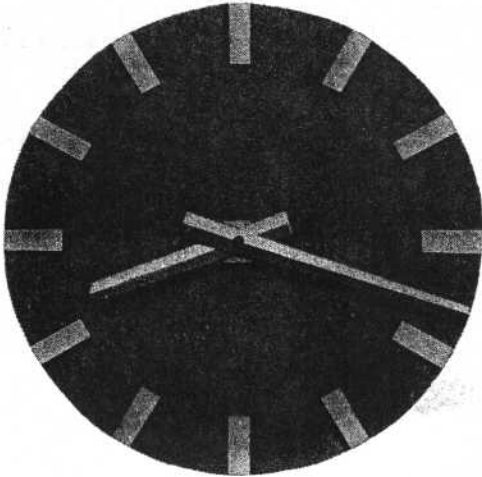
BULLETIN SDC



Model AN1612 Indoor Skeleton Clock

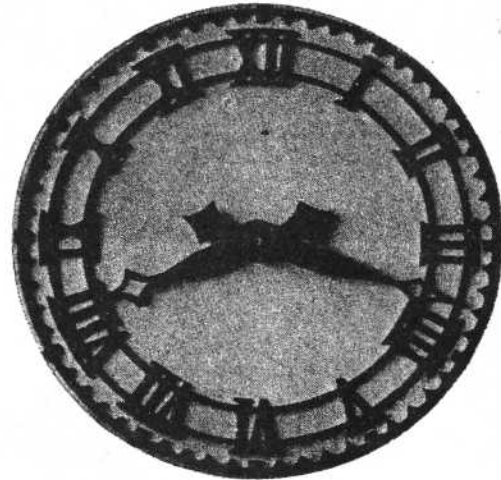
The clock illustrated combines Arabic numerals, on numeral mounting rings, with a minute marker ring. The rings can be omitted, or Roman numerals may be substituted as required. This clock can also be constructed with a small center plate.

Stromberg Indoor Type Skeleton Clocks are designed in a wide range of styles to harmonize with any surrounding decoration. Their construction has been simplified by fastening all elements of the clock to a full diameter plate, eliminating nearly all of the installation work formerly required. The plate is furnished in a prime coat of paint and can be finished to match the surrounding wall at the point of installation. Special clock designs can be supplied when required.



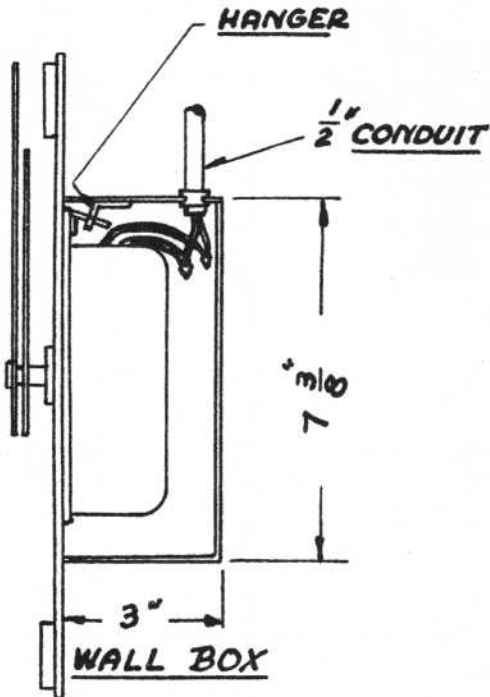
Model M1612
Indoor Skeleton Clock

A modern adaptation, with simple hour markers. Variations in the style of markers and hands can be supplied. Detailed drawings of special designs should be submitted for estimate of cost.



Model FRN1612
Indoor Skeleton Clock

This clock provides the same features as Model AN1612 but in an alternate construction with rings, Roman numerals and markers on the same plane.



Sketch of mounting and construction details of 12" and 16" sizes.

Specifications and Features

- Dial sizes 12 $\frac{1}{2}$ ", 16", 20" and 25" Diameter.
- All Cut Metal Construction.
- Hands, numerals, rings and markers natural or plated finish.
- Impulse type electromagnetic clock movement.
- Synchronous motor supplied when required on 12" and 16" sizes.
- Entire clock mounted by hanger to special wall box in 12" and 16" sizes.
- Hanger and bracket mounting supplied on 20" and 25" sizes.
- Protective housing for movement supplied with 20" and 25" sizes.

PRINTED IN U.S.A.

STROMBERG TIME CORPORATION

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

--- **MART** ---

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Brillie, junker movements, hands, complete clocks, used batteries, dials, any catalogs.
 Ken Erlenbusch, 124 North Avena Ave., Lodi, CA 95240, (209)369-5833, pickken@sbcglobal.net

Telechron B2 and B13 rotors whether working or not. Arthur Crow AFCROW@ATT.Net

American Clock Co. Chicago, movement with 13" drop. Bill Keller W.Keller@yahoo.com

Bulle clock pendulum coil, approx. 45 mm long x 30 mm diameter. Mel Kaye, Box 322,
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**THE JOURNAL OF
THE ELECTRICAL HOROLOGY SOCIETY**
CHAPTER #78
NATIONAL ASSOCIATION OF WATCH & CLOCK COLLECTORS

VOLUME XXXIII #4, DECEMBER 2007

Fellow Horologists:

This issue of the Journal of the Electrical Society concludes the reprinting of the information concerning the Cincinnati and Landis Clock Companies and continues the Warren Clock Company catalog along with the Stromberg Clock Company installation information.

EHS member Fortunat Mueller-Maerki has kindly prepared a review of "Brillie Electric Clocks" by Robert H. A. Miles and Martin Ridout which is published by the Antiquarian Horological Society. We thank Fortunat for this review and solicit other member's articles. We need articles for the Journal. Both original articles and horological information suitable for reprinting are needed.

With the end of 2007 and the beginning of 2008, it is time for the RENEWAL OF MEMBERSHIP DUES. We are able to continue our yearly dues of \$10.00 for US members and \$15.00 for other members. Please send in your dues as soon as possible so that we can minimize Secretary-Treasurer Harvey Schmidt's work. It is also nearing the time when we need to "clean-out" the classified ads in the Journal. Please contact George Feinstein via e-mail if you wish to continue your ads (or have new ads for the Journal).

The NAWCC Electrical Horology Time Symposium held in October, 2008 is fast approaching. We will hold the Symposium in the Route 66 Motel in Springfield, Illinois. Holding the meeting in the Route 66 Motel is like holding the meeting in a museum. This motel was a featured stopping point on Route 66. It has been updated and modernized but it retains much of its original feel. Rooms are reasonably priced, parking is free, and there are several restaurants in the area. The meeting rooms are spacious - in short the Route 66 Motel is an ideal place for the Symposium. Details on making reservations and travel suggestions will be published in the next issue of the Journal.

Speaking of Route 66, in the old days (before interstate roads and franchised motels and restaurants), one of the pleasures of automobile travel was sampling regional foods. I was recently introduced to a Springfield, Illinois speciality known as a "Horse Shoe". If you are watching your cholesterol, please skip the remainder of this paragraph. Also, do not mention this information to your Cardiologist. A Horse Shoe or its smaller version, a Pony Shoe is a plate of food consisting of a large piece of Texas Toast topped with meat (your choice) and surrounded by French fries. A white cheese sauce is then poured over both the sandwich and fries. Delicious but challenging. A Horse Shoe is something to look forward to and is not be missed.

Best wishes for the New Year. Enjoy this issue of the Journal. Yours very truly,
Bill Ellison..(Horolovar@ Juno.com).....President
Harvey Schmidt, FNAWCC,..(WWLathlot@ AOL.com).....Secretary-Treasurer) Co-
Dr. George Feinstein, FNAWCC..(TimeMachine@ Juno.com)..Chapter Historian) Editors

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

Brillié Electric Clocks: Product Catalogues – Installation and Set-up – Fault-Finding.

By Robert H.A.Miles and Martin Ridout (Translators from the French originals). Consisting of facsimile like translations of seven French language documents. Published 2007 by The Electrical Horology Group of the Antiquarian Horological Society, Ticehurst (United Kingdom). Paperback, 96 pages, numerous black & white illustrations, ISBN 978-0-901180-45-2, available from the from the AHS office or through www.ahsoc.demon.co.uk. UKP 10 for member, UKP 15 for nonmembers, plus postage

While not quite as well known as the competing Bulle brand electric clocks Brillié electric clock systems were a mainstay of French horology in the first half of the 20th century but were hardly sold in the English speaking world. But increased international networking of electrical horology collectors at such events as the annual Mannheim swap market has led to an increasing numbers of Brillié and other formerly exotic electric timepieces appearing outside of their traditional home markets. This in turn has fueled the demand for more technical information on these brands. For many years such knowledge was primarily passed along privately, or through specialized websites and in periodicals of very limited circulation, such as the Technical Papers of the EHG of AHS and the newsletters of the various electrical horology chapters of NAWCC. In Germany an unofficial network of enthusiasts developed which copied and recopied old catalogs and technical bulletins.

One of the very few technical monographs on a specific brand of “foreign” electric clocks available in English was the “Bulle Clock” by Robert Miles (published 1995, ISBN 0 901180 31 9. Finally now somebody has stepped up to quench this thirst for knowledge and produced another monograph in this area: The Electrical Horology Group within the AHS again took the lead, and Robert Miles again – this time supported by Martin Ridout – undertook the tedious task of translating some of the rare French language original documents.

The resulting publication is a fount of useful knowledge for the electrical clock enthusiast and a must have for any owner or repairer of a Brillié brand timekeeper. The book contains translations of a variety of undated Brillié catalogues (presumably from the 1920s), typeset with reproductions of the original illustrations to create English language “quasi-facsimiles” of the French originals. The catalogs cover electrical, stand-alone regulators, master clocks for electrical time distribution systems, slave dials, as well as auxillary apparatus such as bell controllers, marine apparatus (steamship master clocks), night-watchman clocks and what the English call “clocking-in”-clocks (and Americans call time recorders). These catalogs account for about 75% of the book. The last quarter is devoted to translations of two technical documents, one labeled “Instructions for fault finding in Brillié Brothers Electric clocks” (undated) and an apparently more recent document from the 1960s named “Brillié Instructions for Installing and Putting into Service”.

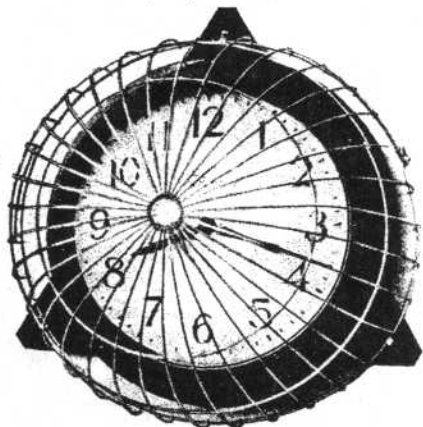
While a more in-depth corporate history and thorough technical history of the Brillié brand, a text with more analysis and more judgment, still awaits to be written we are grateful to the publishers and translators for this publication. It clearly fills a void.

Telechron

Electric Clocks—Metal Cases

(For Indoor Use Only)

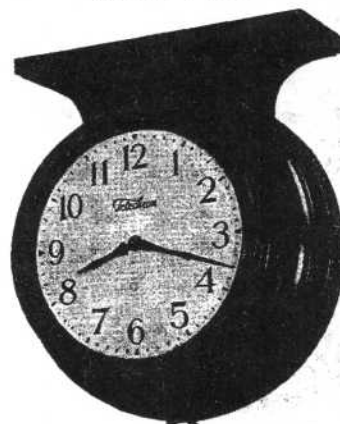
Gymnasium Clock
(Single Face)



Style	Dial	Case Diameter
2612	12 inches	16½ inches
2615	15 "	19¼ "
2618	18 "	24 "

Wire guard and clock hinged to wood back.

Ceiling Saddle Suspension
(Double Face)

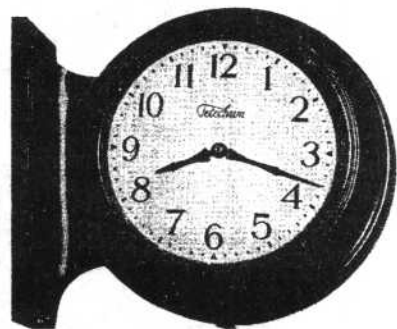


Style	Dial	Case Diameter	Height
1810	10 inches	14 inches	17 inches
1812	12 "	16½ "	20¼ "
1815	15 "	19¼ "	24 "
1818	18 "	24 "	29 "
1824	24 "	30¾ "	37¼ "

All metal case and saddle.

2812 Series available with illuminated dial.

Wall Bracket Suspension
(Double Face)



Style	Dial	Case Diameter	Width
2010	10 inches	14 inches	17 inches
2012	12 "	16½ "	20¼ "
2015	15 "	19¼ "	24 "
2018	18 "	24 "	29 "
2024	24 "	30¾ "	37¼ "

3012 Series available with illuminated dial.

All metal case and saddle.

Chain Suspension
(Double Face)



Style	Dial	Case Diameter
1910	10 inches	14 inches
1912	12 "	16½ "
1915	15 "	19¼ "
1918	18 "	24 "
1924	24 "	30¾ "

2912 Series available with illuminated dial.

Spun cases mounted back to back on cast hinges and suspended from cast saddle by chains.

Standard Finish on all models — Statuary Bronze Lacquer.

Above models are designed for use with a central control system, but can be used for individual installation.

WARREN TELECHRON COMPANY
ASHLAND, MASSACHUSETTS, U. S. A.

Telechron

Electric Clocks — Marble Dials

(For Indoor Use Only)

Bronze Ring Type
Surface Mounted

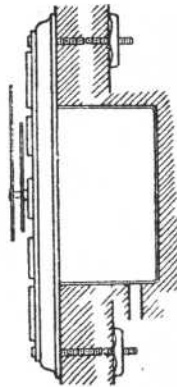


Style	Dial	Ring Diameter
1361	12 inches	13 1/4 inches
1362	14 "	15 1/4 "
1363	18 "	18 1/4 "
1364	24 "	25 "
1365	30 "	31 "
1366	36 "	37 "

Ogee Edge Type
Surface Mounted



Style	Dial	Outside Diameter
1371	12 inches	12 1/4 inches
1372	14 "	15 "
1373	18 "	18 "
1374	24 "	24 "
1375	30 "	30 "
1376	36 "	36 "



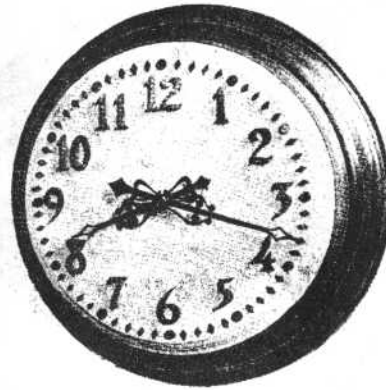
Method of
Mounting
Marble Dials

Plain Square Edge Type
Surface or Recess Mounted



Style	Dial	Outside Diameter
1391	12 inches	12 1/4 inches
1392	14 "	15 "
1393	18 "	18 "
1394	24 "	24 "
1395	30 "	30 "
1396	36 "	36 "

Wood Case Type
Surface Mounted



Case of solid Oak, Mahogany or Walnut

Style	Dial	Case Diameter
1381	12 inches	16 1/4 inches
1382	14 "	18 1/4 "
1383	18 "	21 1/4 "
1384	24 "	27 1/4 "

Dial blanks of any specified domestic or imported marble

Above models are designed for use with central control system, but can be used for individual installation.

WARREN TELECHRON COMPANY
ASHLAND, MASSACHUSETTS, U. S. A.

Telechron^{*}

Commercial Clocks

(For Indoor Use)

THE simplicity of the Telechron synchronous electric motor and the variety of Telechron movements make it possible to manufacture practically every type of clock regardless of its design or application.

All Telechron motors are self-starting, and operate on the same principle,—direct from the regulated alternating current,—the frequency of which is controlled by means of a Telechron Master Clock located in the power company's generating plant.

Each Telechron clock dial is equipped with a complete, individual, self-contained movement.

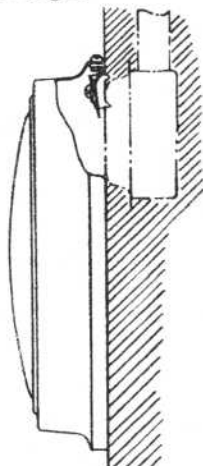
All clock designs shown in this bulletin are for application to a Telechron clock system of manual or automatic resetting type or continuous service type, but may be installed as individual timekeepers.

Telechron special clocks are well-known for their simplicity and dependable operation. They are manufactured by the industry's PIONEER,—assuring engineering and development research of the highest order. Quality materials combined with careful workmanship result in a product of outstanding VALUE. Satisfied uses are impressed by their reasonable initial cost, installation costs, and negligible maintenance expenses. Estimates covering specific projects furnished upon request.

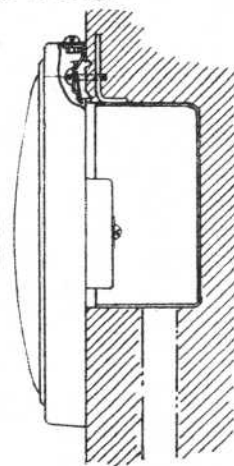
Each Telechron electric clock is guaranteed against original defects in material and workmanship for one year while in normal use and operation.

For Telechron central control equipment see bulletins A12-12, A12-13 and A12-14.

Surface Case Design



Semi-Flush Case Design



Standard finish. Statuary Bronze Lacquer
Special finish. Colored lacquer or electroplated

Style	Dial	Case Diameter	Style	Dial	Case Diameter
5008	8 inches	10 $\frac{3}{8}$ inches	5108	8 inches	9 $\frac{5}{16}$ inches
5010	10 "	12 $\frac{3}{8}$ "	5110	10 "	11 $\frac{5}{16}$ "
5012	12 "	14 $\frac{3}{8}$ "	5112	12 "	13 $\frac{3}{8}$ "
5015	15 "	17 $\frac{3}{8}$ "	5115	15 "	16 $\frac{3}{8}$ "
5018	18 "	20 $\frac{3}{8}$ "	5118	18 "	19 $\frac{3}{8}$ "

Use standard pull box or equal.

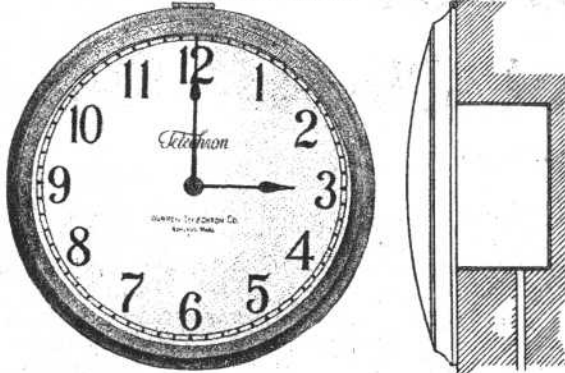
2700 series available with illuminated dial.

A modern simple design permitting case manufacture in different metals and various finishes at reasonable cost. Specially shaped convex crystals provide unusual visibility with minimum case projection, resulting in built-in appearance. Standard dials are white lithographed metal, with black arabic characters. Also

Furnished with special box.

available with lithographed aluminum or etched silver finish dials. Standard cases are aluminum, but copper or brass cases are also available. Construction with flat wire glass or shatterproof crystals can be furnished for gymnasium use.

Flush Case Design
Convex Crystal



Standard finish

Style	Dial
444	6 inches
445	8 "
446	12 "
447	14 "
448	18 "

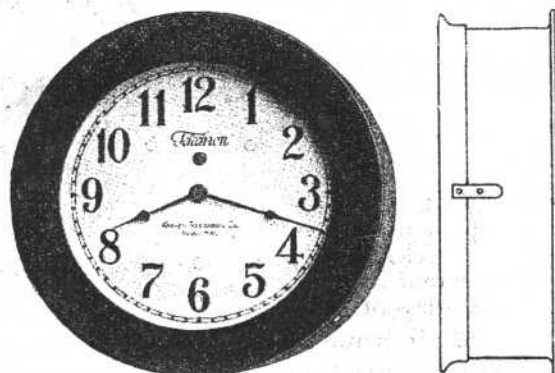
Statuary Bronze

Case Diameter
6 3/8 inches
8 "
13 1/8 "
15 "
18 "

Furnished with or without outlet box.

An attractive hinged bezel model suitable for installations requiring extreme flush designs.

Boiler Room Surface Case Design
(Dust and Moisture Proof)



Standard finish

Style	Dial
2508	8 inches
2510	10 "
2512	12 "
2515	15 "
2518	18 "
2524	24 "

Black Lacquer

Case Diameter
12 inches
14 "
16 1/4 "
19 1/8 "
23 "
29 1/4 "

The cast metal case is finished in black lacquer. A conduit knockout is provided in back of case. The door joint is gasketed to keep out dust, dirt and moisture.

Skeleton Design



Dial	Style No.	Outside Diameter	Style No.	Outside Diameter
8"	755	8"	775	7"
12"	756	12 1/2"	776	11"
15"	757	15"	777	13 1/4"
18"	758	18"	778	16 1/4"
24"	760	24"	780	21 3/8"
30"	761	30"	781	27 1/2"
36"	762	37"	782	33 1/2"
42"	763	43"	783	39 1/2"
48"	764	49"	784	45 1/2"

All models furnished with wall box.

The 750 series (as shown) is of 3 ring construction with minute dots,—for flush mounting.

The 770 series is of 2 ring construction without minute dots,—for flush mounting.

Entire special skeleton and marble clock constructions, to architect's specifications, can also be supplied.

All models are designed for use with a central control system, but can be used for individual installation.

Marble Design



Dial	Style No.	Outside Diam.	Style No.	Outside Diam.	Style No.	Outside Diam.	Style No.	Outside Diam.
12"	1391	12 1/2"	1361	13 1/4"	1371	12 1/2"	1381	16 3/8"
15"	1392	15"	1362	15 3/4"	1372	15"	1382	18 7/8"
18"	1393	18"	1363	18 3/4"	1373	18"	1383	21 7/8"
24"	1394	24"	1364	25"	1374	24"	1384	27 7/8"
30"	1395	30"	1365	31"	1375	30"		
36"	1396	36"	1366	37"	1376	36"		

All flush models furnished with wall box.

The 1390 series (as shown) has square cut edge dial blank,—for flush or recess mounting.

The 1360 series has spun metal trim ring,—for flush mounting.

The 1370 series has molded edge dial blank,—for flush mounting.

The 1380 series is the same as 1390 series but on wood ring,—for surface mounting.

All kinds of domestic and imported marbles can be furnished.

Saddle Suspension Design

(Double Face—Wall or Ceiling)



All metal case construction

Standard Finish
Statuary Bronze Lacquer

Special Finishes
Colored lacquer or
electroplated

Furnished with $3\frac{1}{4}$ " octagonal
box with $\frac{3}{8}$ " Fixture Stud

Style	Dial	Case Diameter
5310	10 inches	$12\frac{5}{8}$ inches
5312	12 "	$14\frac{5}{8}$ "
5315	15 "	$17\frac{1}{16}$ "
5318	18 "	$20\frac{1}{16}$ "

2800 series available with illuminated dial

Consists of two (2) 5000 series clocks mounted back to back on center ring. The bracket clock can be mounted either to ceiling or wall according to requirements.

Chain Suspension Design

(Double Face)



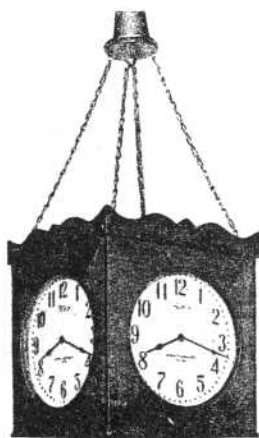
Style	Dial	Case Diameter
5410	10 inches	$12\frac{5}{8}$ inches
5412	12 "	$14\frac{5}{8}$ "
5415	15 "	$17\frac{1}{16}$ "
5418	18 "	$20\frac{1}{16}$ "

2900 series available with illuminated dial

The chain suspension construction permits raising or lowering to suit conditions.

Chain Suspension Square Case Design

(Four Face)

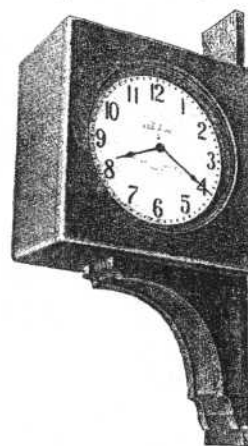


Style	Dial	Case
3710	10 inches	13 inches sq.
3712	12 "	$15\frac{1}{2}$ "
3715	15 "	19 "
3718	18 "	23 "
3724	24 "	30 "

Case of oak, mahogany, walnut or metal.
Furnished with pull box for mounting.

Knee Bracket Square Case Design

(Double Face)

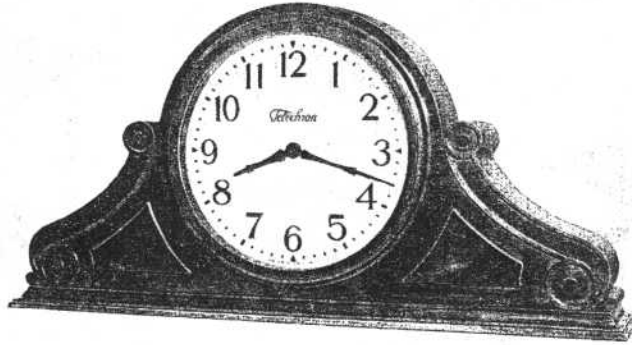


Style	Dial	Case	Approx. Height
3210	10 inches	13 inches sq.	26 inches
3212	12 "	$15\frac{1}{2}$ "	$31\frac{1}{2}$ "
3215	15 "	19 "	38 "
3218	18 "	23 "	45 "
3224	24 "	30 "	56 "

Case of oak, mahogany or walnut.

All models are designed for use with a central control system, but can be used for individual installation.

TAMBOUR CASE DESIGN

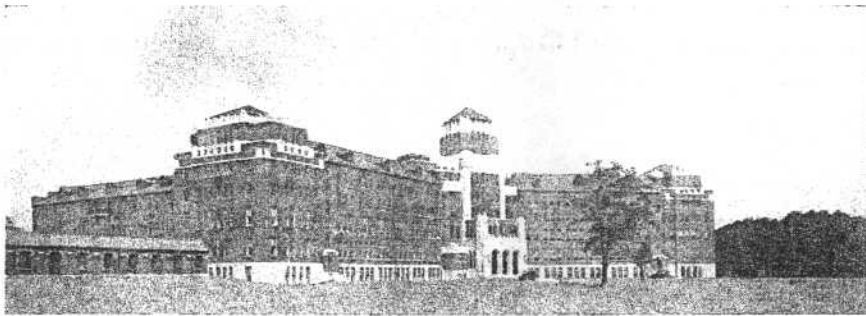


Mahogany or Walnut Case

Style	Dial	Height	Length
1408	8 inches	10 $\frac{1}{2}$ inches	21 inches
1412	12 "	16 $\frac{1}{4}$ "	40 $\frac{3}{4}$ "
1415	15 "	18 $\frac{1}{2}$ "	48 $\frac{3}{4}$ "
1418	18 "	24 "	61 "
1424	24 "	32 "	81 $\frac{1}{4}$ "

1700 series available in double face design

By inverting dials, both series can be ceiling suspended.
Dials of lithographed metal black and white design,
lithographed aluminum design and etched silver design.



Above is the new SAINT MARY ACADEMY BUILDING, Monroe, Mich. The Telechron clock installation in this building, the Mother House, and Dining Hall involves a Telechron ADFR system consisting of 83 secondary clocks, one program clock and central control equipment. D. A. Bohlen & Sons, Architects, Indianapolis, Ind.

All models are designed for use with a central control system, but can be used for individual installation.

WARREN TELECHRON COMPANY

ASHLAND, MASSACHUSETTS, U. S. A.

★Telechron is the trademark, registered in the U. S. Patent Office, of the Warren Telechron Company

-7-

h. The CALENDAR DIAL provides for operation of any circuit during any 12 hour period from 6 A.M. to 6 P.M., etc. When the pilot clock indicates between 10:00 and 5:59, the CALENDAR DIAL can be turned by hand, at other times it is locked by its driving mechanism.

i. To set the CALENDAR DIAL simply insert pins and contact rollers at the desired periods of the week shown on the dial. The shaded sections of the dial indicate the NIGHT period, 6 P.M. to 6 A.M. of each day. For example: if circuit 1 and 3 are to ring on a night schedule from Mon. thru Fri., insert pins and contact rollers at circuits 1 and 3 over the Mon. thru Fri. shaded areas. If circuits 2, 4, 5, and 6 are to ring a day schedule Mon. thru Fri., insert pins and contact rollers over the Mon. thru Fri. clear areas.

j. When the Manual Reset switch on the Master Clock is used to set the system in time after a power failure extending beyond the automatic corrective range of the system, the program circuits should be silenced by means of the toggle switches. Otherwise, unwanted signals may be sounded during the corrective period.

5. Duration Switch contacts are mounted on the Master Clock mechanism seconds shaft. These contacts control a 24 volt D.C. relay and rectifier mounted in the "Master-Pro". The relay contacts in turn control the program circuit duration. The duration time can be varied from 2 to 10 seconds by loosening and sliding the pivot screw for the outside cam arm controlling the duration contacts to the right to increase duration, to the left to decrease it.
6. Check tension in chain after all contact rollers are installed. The proper tension exists when the chain at top of unit can just be pressed down at one point until it touches an idler. The nuts at either side control this tension. Each chain can be individually controlled. If unit is to be shipped where it may lie on its side tighten chain to prevent it slipping from its idlers.
7. Check program schedule after all contact rollers are installed. The knob can be used to turn the MINUTE DIAL until clock indicates 1 minute before signal, then allow motor to operate unit normally thru the signal period for a check.
8. Set "Master-Pro" on Correct Time by turning knob until pilot clock indicates same time as the Master Clock.
9. Set CALENDAR DIAL by hand if time is after 10 until the pointer at left side of drum indicates the correct day or night of the week on the scale at the end of the Calendar Drum. If time is before 10 lift calendar shift lever mechanism on left to permit rotation of CALENDAR DIAL.
10. Make record of signal schedule on Signal Schedule Record Card.

SERVICE HINTS

1. If secondary clocks do not operate:
 - A. Check electrical power and fuse in RA control.
 - B. Push red Thermal Cutout Button in firmly.
 - C. Check DC impulse voltage at terminals B and C. It must not be less than 20 volts.

2. If secondary clocks do not stop at 59th minute during corrective cycle:
 - A. Check to see that voltage at terminals B and C is not more than 55 volts.
 - B. If not, check to see that the switch in each clock opens on the 59th minute.
3. Secondaries do not correct: Check Master Clock contact sequence as described in the electrical function of parts.
4. If secondaries do not pass through 59, 50 and 1 minute positions:
 - A. Check setting of minute hand as described in paragraph 4 of operating instructions.
5. If minute hand slips on the 60 minute shaft:
 - A. Check by comparing it with second hand. At 60 seconds the minute hand should be directly on the minute. If slipping, tighten assembly by squeezing with pliers after carefully removing assembly from the clocks.
6. After installing:
 - A. Check to see that hands pass freely on all clocks. It may eliminate the necessity for a later service call.
7. A little alcohol, or carbon tetrachloride will clean contact points. If badly pitted, use #00 sandpaper.
8. Oil clock sparingly with high-grade oil with a wire or needle.
9. Checking the beat: The "tick-tock" of a clock is the best way to tell if it is in beat. It should be uniform and evenly spaced. Hold your ear to a screw driver held against the mechanism to obtain amplification.

Observing the throw of the virge at the escape wheel will give some indication of the beat. Watching the second hand is another method. The second hand should move uniformly as it jumps from second to second. It should also stop momentarily the same length of time at each seconds' indication.
10. Adjusting the beat: Make sure clock is plumb in all directions. You can check this in one direction by observing the pendulum and marker in the rest position. Pendulum rod should be the same distance from back of case throughout its entire length. Pendulum must swing freely. Make sure there is not excessive building vibration.

Adjusting screws at top of clock mechanism between virge wire and virge permit easy adjustment of beat when necessary. In making adjustment, turn screws slightly and check as in step 9 above.

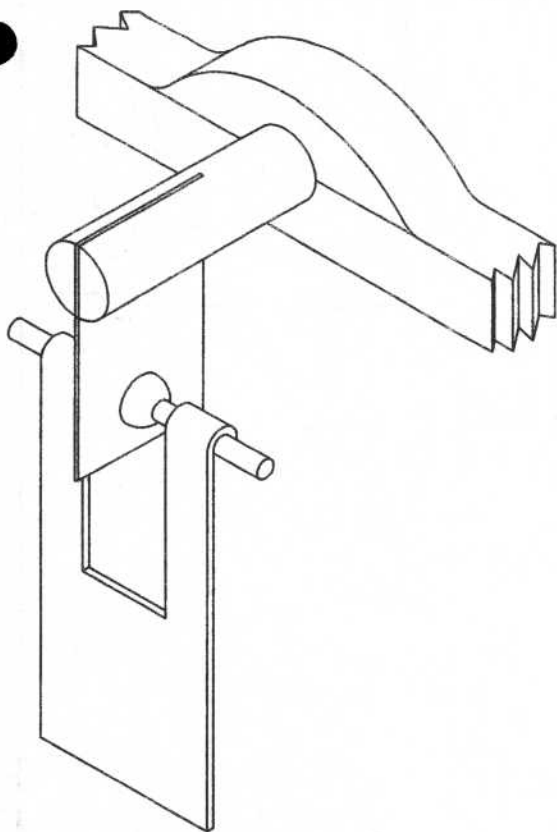
INSTALLATION OF PENDULUM

ILLUSTRATION A
MANNER IN WHICH PENDULUM
ROD IS HOOKED OVER THE
SPRING SUSPENSION.

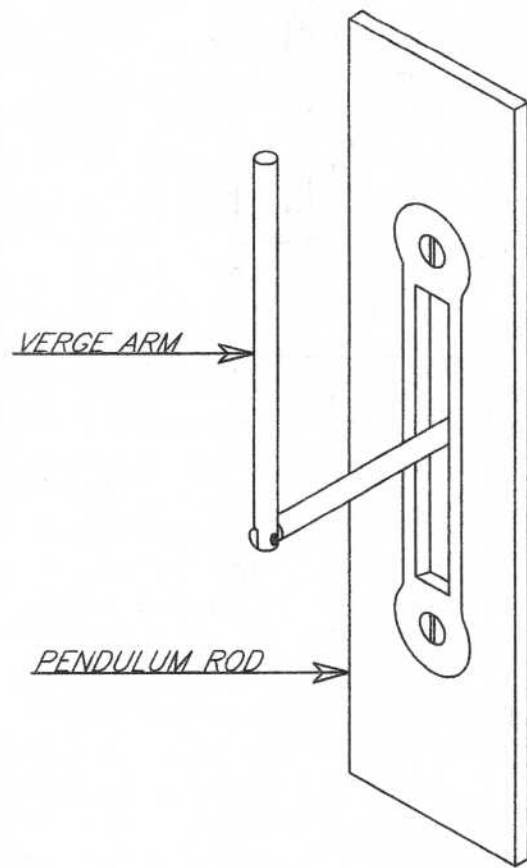
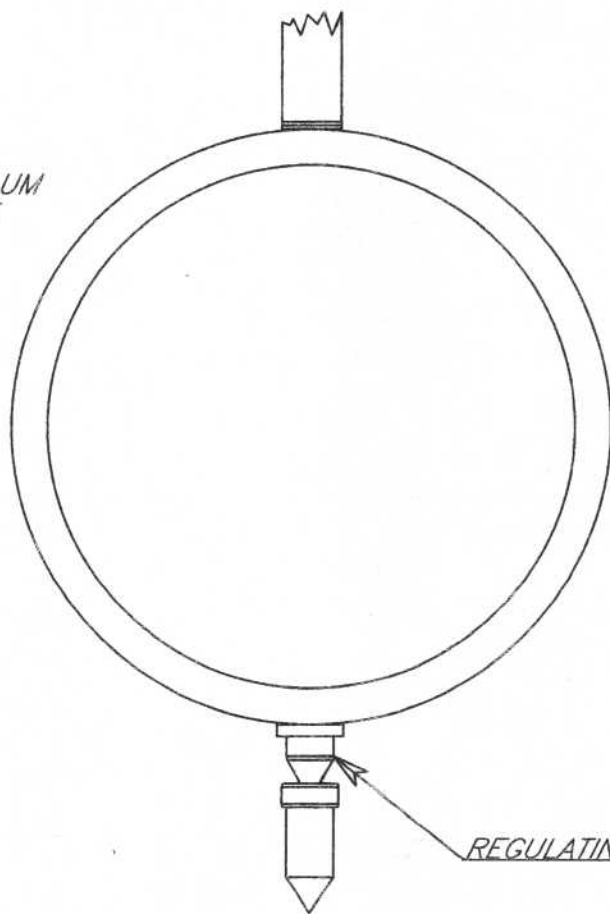


ILLUSTRATION B
MANNER IN WHICH VERGE
WIRE IS CONNECTED TO
PENDULUM.

NOTE:
ON THE MERCURIAL PEND-
ULUM THE "U" SHAPED
BRACKET ON VERGE ARM
SLIPS AROUND PENDULUM
ROD.

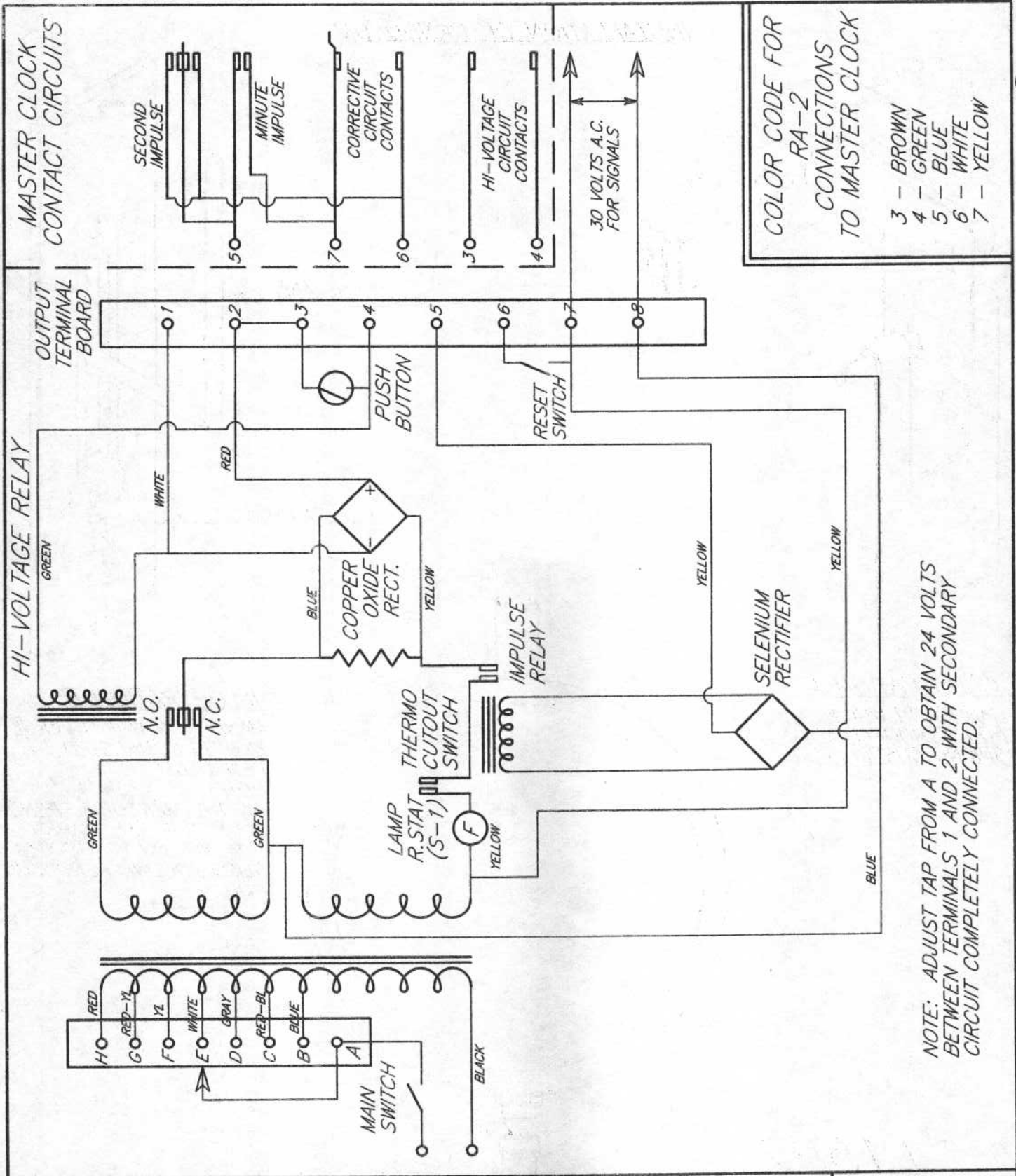


L1552

REGULATING SCREW OF MASTER CLOCK

ILLUSTRATION C

TURN SCREW TO RAISE BOB IF CLOCK RUNS SLOW, TURN SCREW
TO LOWER BOB IF CLOCK RUNS FAST. ONE FULL TURN OF SCREW
CORRESPONDS TO APPROXIMATELY 2 MINUTES PER DAY.

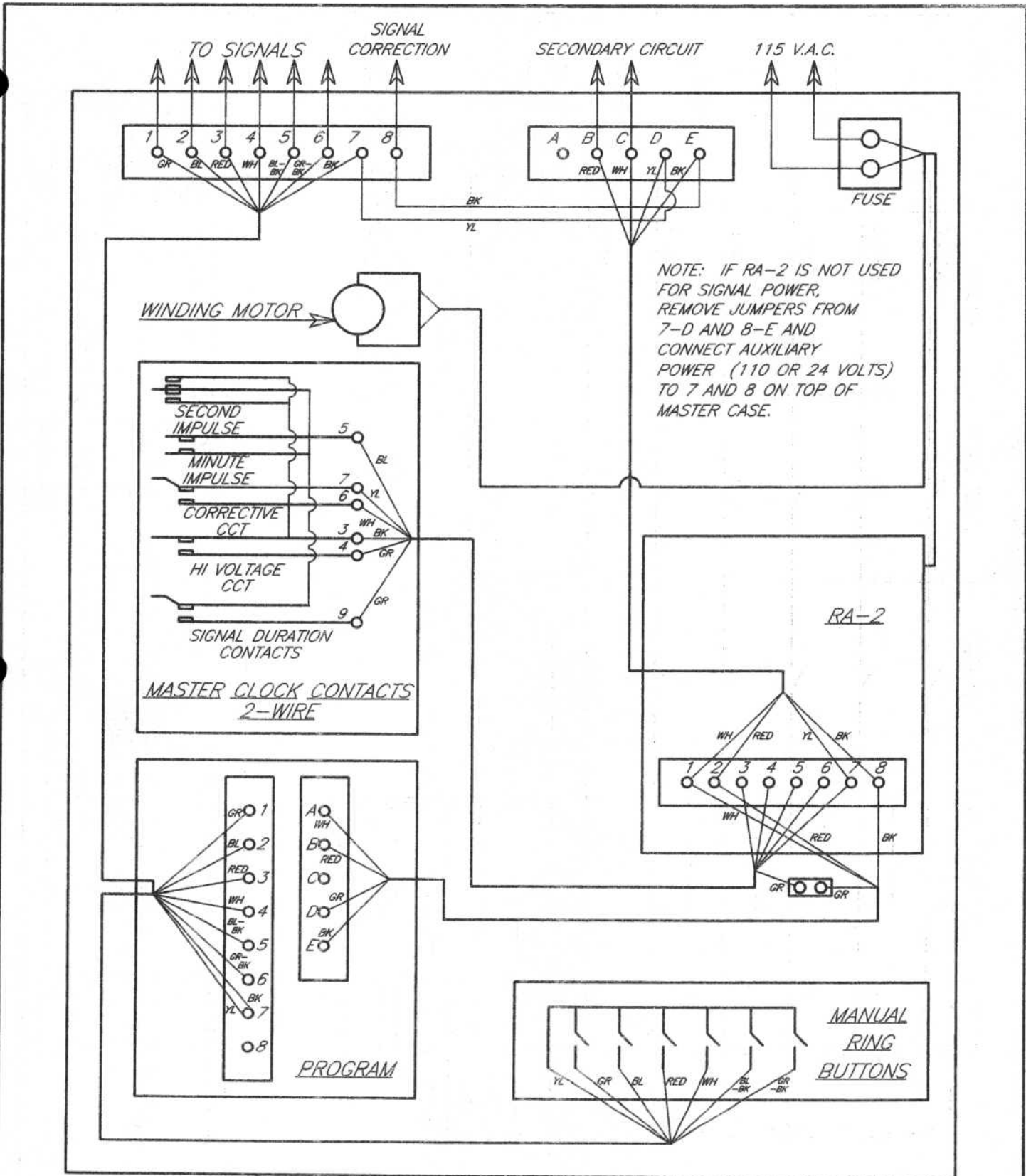


COLOR CODE FOR RA-2 CONNECTIONS TO MASTER CLOCK

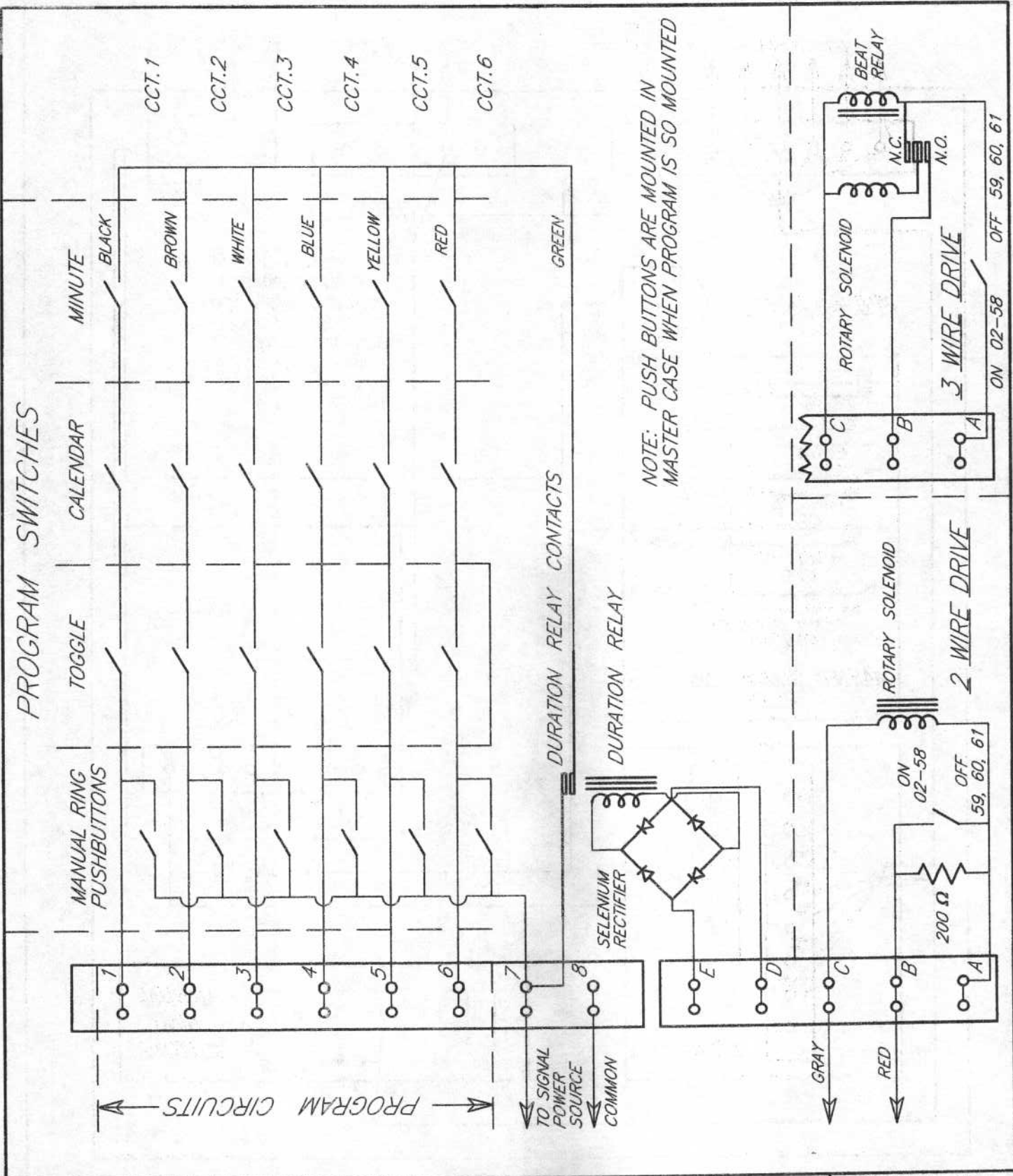
- 3 - BROWN
- 4 - GREEN
- 5 - BLUE
- 6 - WHITE
- 7 - YELLOW

NOTE: ADJUST TAP FROM A TO OBTAIN 24 VOLTS BETWEEN TERMINALS 1 AND 2 WITH SECONDARY CIRCUIT COMPLETELY CONNECTED.

DATE 2/1/50	WIRING DIAGRAM CIRCUIT DIAGRAM FOR RA-2 CONTROL PANEL	DRAWING No.
DR. By R. A.		D 1026
APR'V'D. P. G.	THE CINCINNATI TIME RECORDER CO. CINCINNATI, OHIO, U. S. A.	



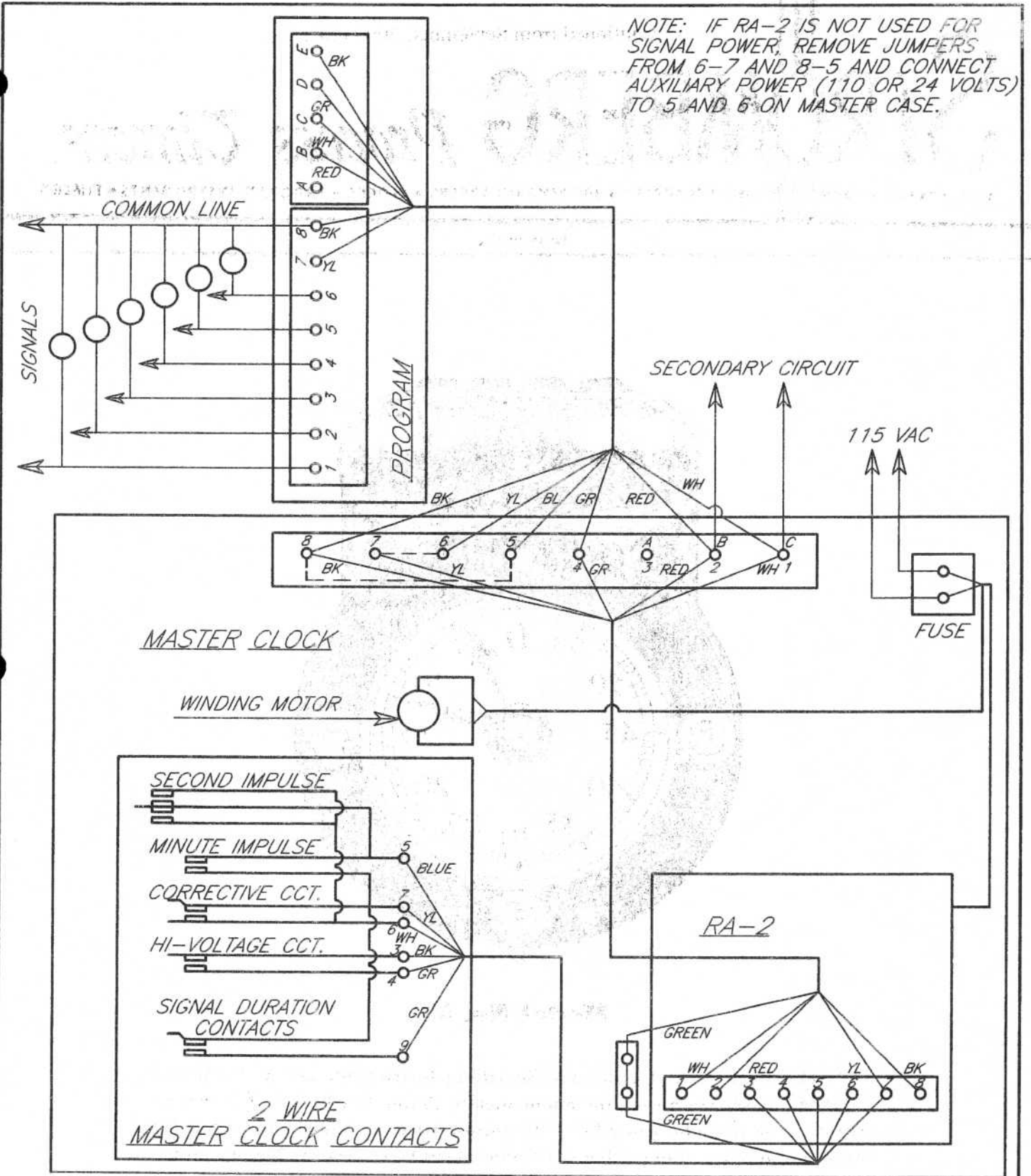
DATE 25 APR 50	WIRING DIAGRAM	DRAWING No.
DR. By P. G.	MASTER CLOCK WITH MASTER - PRO (MODELS 202, 204, 206) (2 WIRE)	D 1028
APR'V'D.	THE CINCINNATI TIME RECORDER CO. CINCINNATI, OHIO, U. S. A.	



NOTE: PUSH BUTTONS ARE MOUNTED IN MASTER CASE WHEN PROGRAM IS SO MOUNTED

DATE 26 APR 50	<p align="center">WIRING DIAGRAM</p> <p align="center">MASTER - PRO (MODELS 202, 204, 206, 212, 214, 216) 2 OR 3 WIRE MAGNET DRIVE</p>	DRAWING No.
DR. By P. G.		D 1029
APR'V'D.	<p>THE CINCINNATI TIME RECORDER CO. CINCINNATI, OHIO, U. S. A.</p>	

NOTE: IF RA-2 IS NOT USED FOR SIGNAL POWER, REMOVE JUMPERS FROM 6-7 AND 8-5 AND CONNECT AUXILIARY POWER (110 OR 24 VOLTS) TO 5 AND 6 ON MASTER CASE.



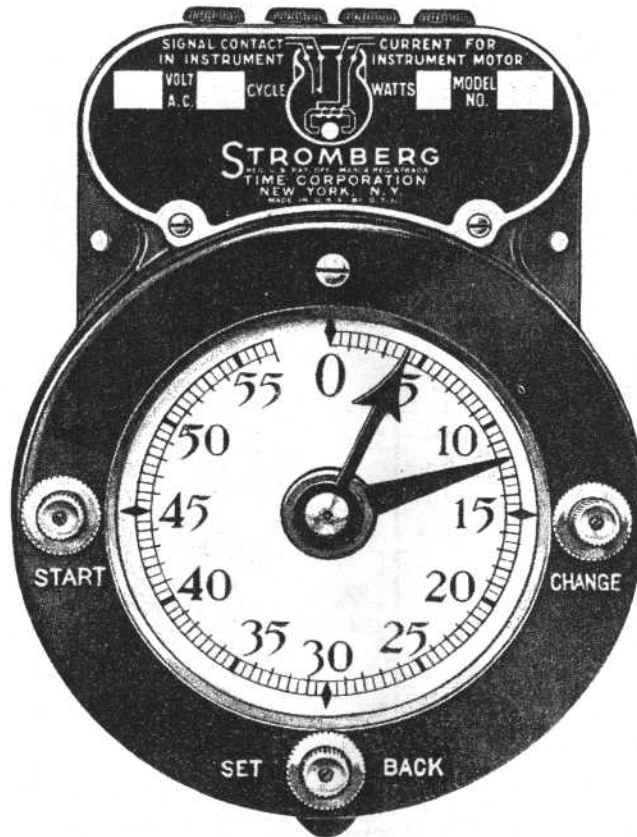
<p>DATE 27 APR. 50</p>	<p style="text-align: center;">WIRING DIAGRAM MASTER CLOCK WITH MASTER-PRO IN SEPARATE CASE (MODELS 212, 214, 216) (2 WIRE)</p>	<p>DRAWING No.</p>
<p>DR. By P. G.</p>		<p style="font-size: 2em; font-weight: bold;">D 1031</p>
<p>APR'VD.</p>	<p>THE CINCINNATI TIME RECORDER CO. CINCINNATI, OHIO, U. S. A.</p>	

Continued from September, 2007 issue.

STROMBERG *Process Timers*

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

BULLETIN 55-1



Model No. 55

Stromberg Process Timing and Signalling Instruments are a simple and thoroughly accurate means for automatically timing the length of a process operation or periodic procedure. By substituting mechanical precision for guesswork and uncertainty, these instruments cut labor costs, increase quantity and quality of output, assure greater uniformity of production, and reduce manufacturing spoilage.

All Stromberg Process Timers are ruggedly constructed for heavy service. They contain no clock mechanism or other delicate parts, are not affected by heat or cold and are housed in cases designed and constructed to protect all operating parts from dust and moisture. A glass protected dial, $3\frac{1}{2}$ inches in diameter, is easily read from a distance. The dials vary in markings and total time covered, depending upon the length of process operation for which the Instruments are to be used.

Stromberg Process Timing and Signalling Instruments automatically make electrical contacts at the end of any predetermined time intervals for which the Instruments may be set. This contact may be used to open or close circuits for a great variety of purposes—ringing bells, lighting signal lamps, starting and stopping electric motors, reversing drafts, opening and closing valves and many other uses. At any time the dial of the Instrument will show exactly the total length of the operating period, how much time of the operating period has already elapsed, and how much longer the operation is to continue.

Many of the largest industries in the United States are using Stromberg Process Instruments to their advantage in a great variety of applications. Just citing a few examples will clearly indicate the practically unlimited scope of service of these Instruments in repeated operations where correct timing is a vital factor.

Many saw, drill and small tool manufacturers control the time of heat treating with Stromberg Timers.

Steel companies use them to ring bells at intervals of 10 or 20 minutes as signals for reversing the drafts on blast furnaces.

Stromberg Process Instruments accurately time the vulcanizing and molding of rubber.

Nearly 200 Stromberg Process Instruments are being used by a large manufacturer for controlling the time that heat is applied to mold insulating materials, radio dials, electric switch handles, etc. A Timer is mounted on each furnace and its automatic operation allows a worker to supervise several units, as well as assuring greater uniformity in quality of product and eliminating practically all spoilage.

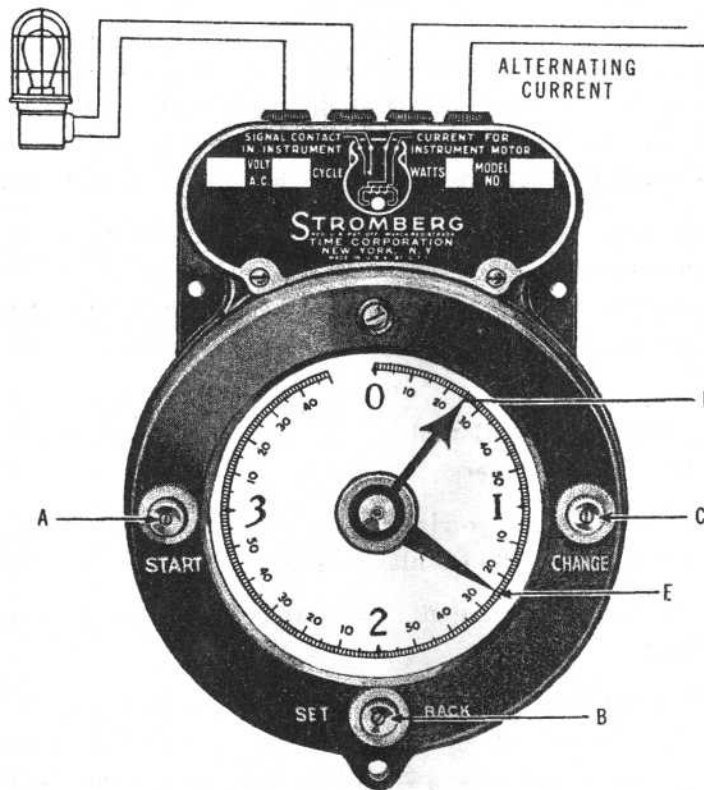
Stromberg Timers control the time heat is applied in the processing of a great variety of steel products.

The majority of the leading manufacturers of industrial furnaces and ovens equip their units with Stromberg Process Instruments to accurately control the time element of heat processing.

Just as pyrometers are used to control temperature, Stromberg Process Instruments time the period that heat is to be applied. To secure uniform re-

sults, both time and temperature in certain exact proportions must be accurately controlled.

Hundreds of other applications for Stromberg Timers are found in enamel and japan baking, injection molding presses, periodic agitation of liquids, commercial baking and candy making, timing immersion of steel etchings, annealing steel car wheels, case hardening, etc. In practically every case the results from the initial use have warranted the installation of additional Stromberg Process Instruments.



Model No. 55

Model No. 55 Process Timers and Signalling Instruments automatically signal the end of any period of time.

The dial shown above has a maximum length interval of 3 minutes and 48 seconds and is graduated in two second intervals. Dials having longer lengths of intervals and different gradations are furnished as standard to meet particular conditions.

The red enamelled setting hand marked "E" on the diagram on page 3 is set to show the period of time of the process. In the illustration the Instrument is set for a process of one minute and twenty-four seconds.

The black enamelled pointer marked "D" is the indicating hand which starts from the point at which the Instrument has been set and travels to zero. In the illustration the indicating hand has started at one minute and twenty-four seconds and has travelled one minute, also showing that twenty-four more seconds must elapse before the process is completed.

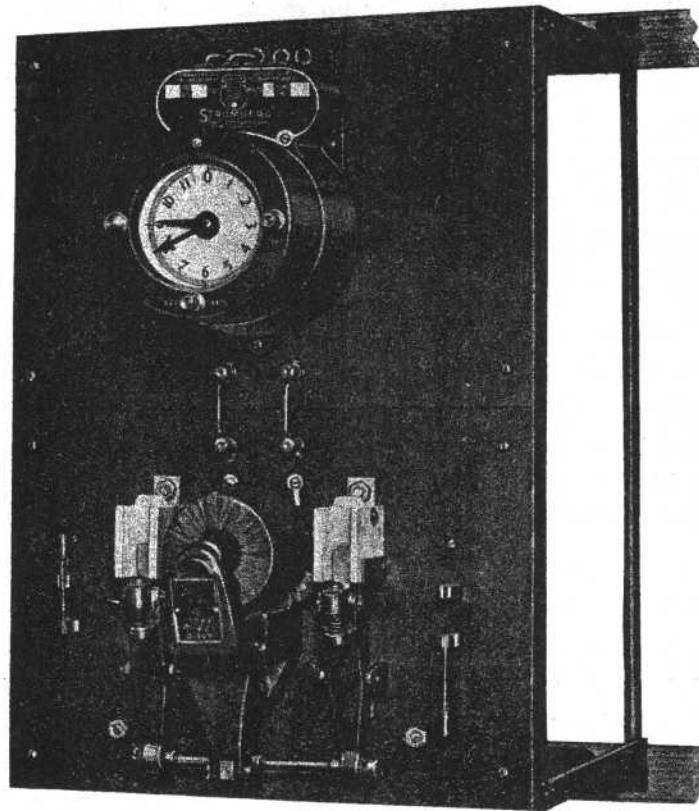
The button marked "C" is used for setting the Instrument for any length of process desired. By pushing and then turning this button the Instrument is set for a new length of process. The turning of this button also causes the setting hand "E" to move and by observing the location of the setting hand the Instrument can be quickly set for any new length of process. The "C" button may be equipped with a lock to prevent setting by an unauthorized person.

When the indicating hand reaches zero, an electrical contact is made to transmit current to a signal which announces the completion of a process. The signal continues to sound until the operator pushes the button marked "B" which causes the indicating hand to throw back quickly to the starting point at which the Instrument is set. In the Instrument illustrated on page 3 the indicating hand will move back to one minute and twenty-four seconds.

The indicating hand then remains stationary at the starting point until the operator is ready to start a fresh process when button "A" is pressed, which releases the indicating hand and causes it to begin immediately to travel toward zero, in correct relation to time.

When the indicating hand has been started it must complete its cycle before the Instrument can be reset for another cycle.

In most instances it is advisable to use a relay with the Process Instrument to protect the contact.



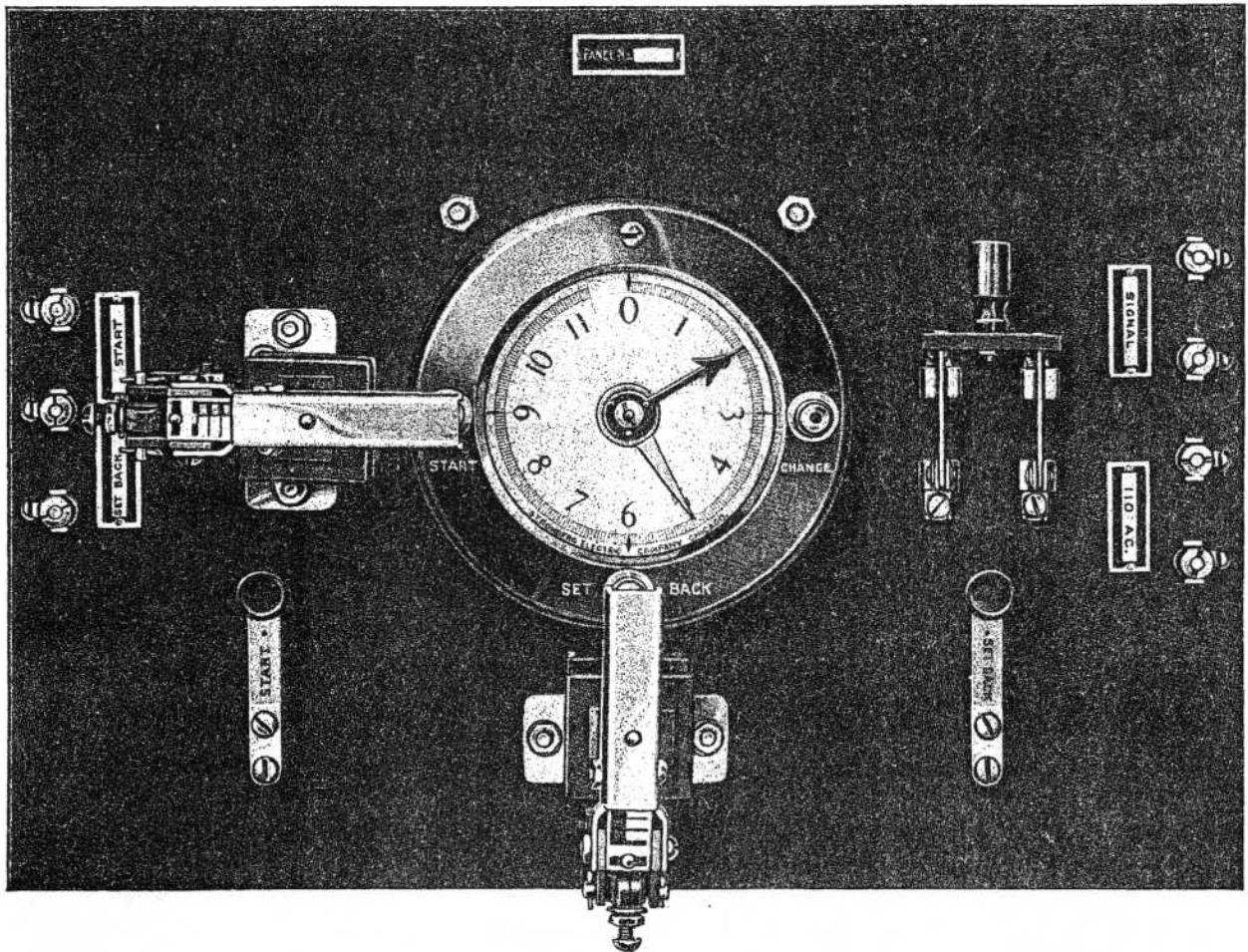
Model No. 55-A

Mounted on Panel with Magnetic Switch

The function of the Stromberg Model No. 55-A Timer is to open and close circuits. When the set back button of this Instrument is pressed the indicating hand is positioned at the point for which the Instrument is set, as determined by the setting hand (in the above case it is 9 minutes) and immediately starts travelling back towards zero—in correct relation to time. The signal or motor operating circuit is closed as soon as the set back button is pressed and remains closed until the indicating hand reaches zero, thus completing the operating cycle.

This Model is used when it is desired to maintain the flow of current to a switch or some other apparatus for a predetermined length of time after the button has been pressed.

Magnetic switches of any size or type to meet specific current requirements can be furnished with either Model No. 55 or No. 55-A.



Model No. 56

Stromberg Model No. 56 Process Instrument is equipped for automatic control. In this Timer the human element is entirely eliminated by using electro-magnets which, when energized, automatically operate the set back and start buttons. The Instrument is enclosed in a steel cabinet 18" wide, 15" high and 11" deep. A simple illustration of this automatic control is in connection with a furnace for heat treatment of any material. The furnace door is equipped with two contacts for the control of current for energizing electro-magnets. The manual opening and closing of the furnace door automatically control the start and set back buttons on this Stromberg Timing and Signalling Instrument. When a processing period is completed a signal is automatically

operated until the furnace door is opened. With the opening of the furnace door the signal ends and the indicating hand of the Instrument is automatically reset to the starting position and remains in this position until the furnace door is closed, when it automatically starts returning to zero.

Similarly, presses for rubber curing or the molding of insulating or other materials may be equipped with contacts, so that when the press is opened or closed the No. 56 Process Timer is automatically controlled. These Process Instruments may also be equipped with an automatic feature whereby the closing of one contact resets the Instrument for the next operation and also simultaneously starts the timing of the operation.

A careful study of the application of these Instruments to most processes will indicate that human control can be eliminated and errors or wilful disregard of the time element prevented. In fact, the entire timing of a whole process itself can be made almost entirely automatic.

The Model 56-A Instrument is the same as Model 56 except that the start button with accompanying solenoid is eliminated.

When a relay is furnished with Model No. 56 or No. 56-A Process Timer, it is mounted on the panel with the Instrument.

The use of a relay is recommended to protect the contact in the Process Timer against the passage of excessive loads of current thereby substantially increasing the life of the Instrument. In addition, the contact on the relay is much easier to replace than that in the Timer itself.

Magnetic switches can be supplied with all Stromberg Process Instruments to meet any current requirements.

Standard Dials

Models 55, 55-A and 56-A are manufactured with five standard dials, as follows:

Maximum Length of Interval	Dial Gradations or Setting Interval
3 Minutes and 48 seconds	2 Seconds
11 Minutes and 24 seconds	6 Seconds
22 Minutes and 48 seconds	12 Seconds
57 Minutes	30 Seconds
1 Hour and 54 Minutes	60 Seconds

When greater maximum lengths of intervals are involved, special Instruments can be furnished. When required, relays are supplied.

The dial illustrated on Page 1 is the 57-Minute Dial

The dial shown on Page 3 is the 3 Minutes and 48 Seconds Dial

The dials pictured on Pages 5 and 6 are 11 Minutes and 24 Seconds Dials

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