

(No Model.)

2 Sheets—Sheet 1.

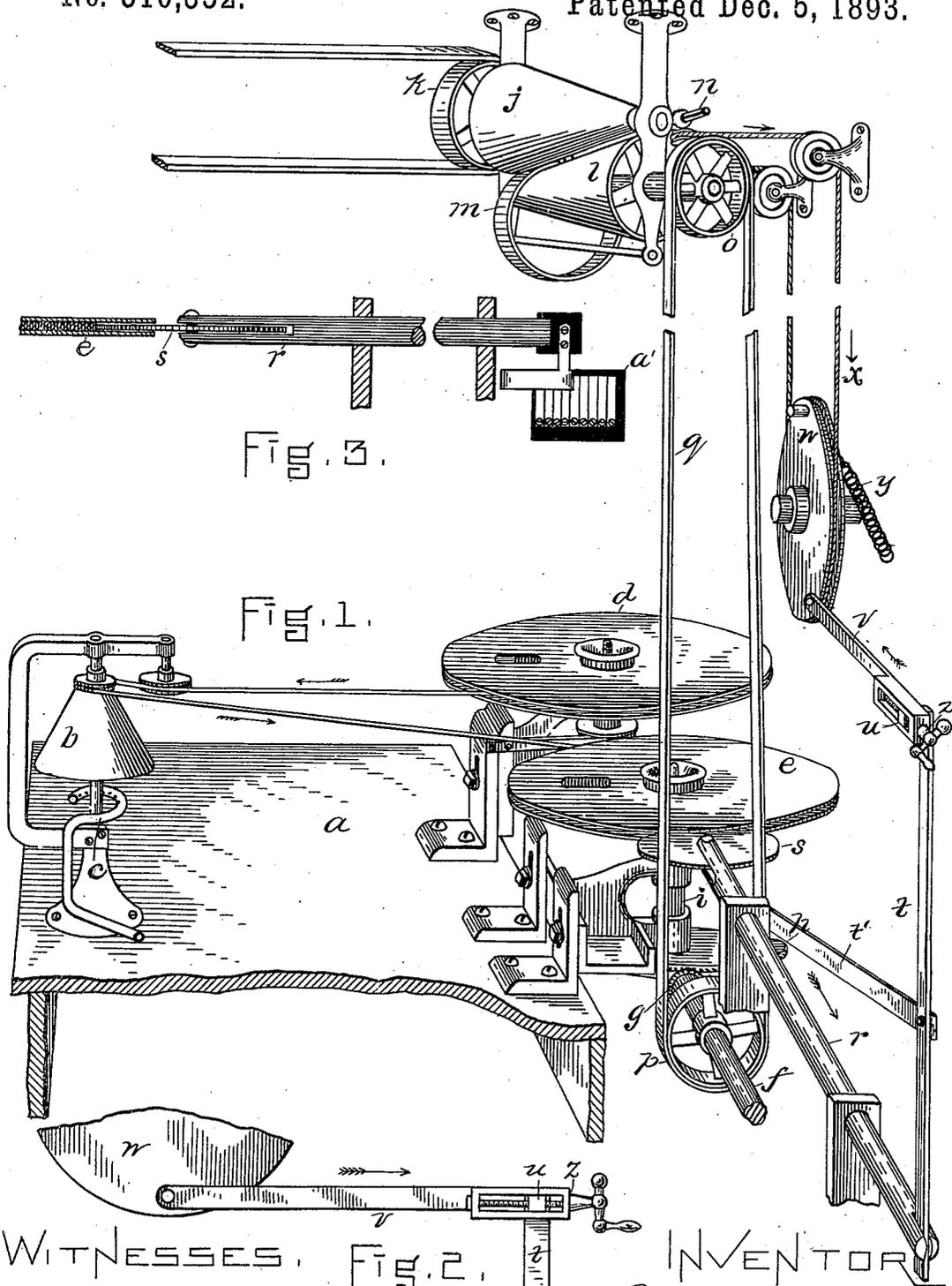
J. LOGAN, Dec'd.

E. LOGAN, Administratrix.

APPARATUS FOR COLORING STEEL RIBBONS.

No. 510,352.

Patented Dec. 5, 1893.



WITNESSES. FIG. 2.

Willard H. Gihman
H. A. Hall.

INVENTOR

John Logan
by

Wright, Brown & Crossley.
ATTYS.

(No Model.)

2 Sheets—Sheet 2.

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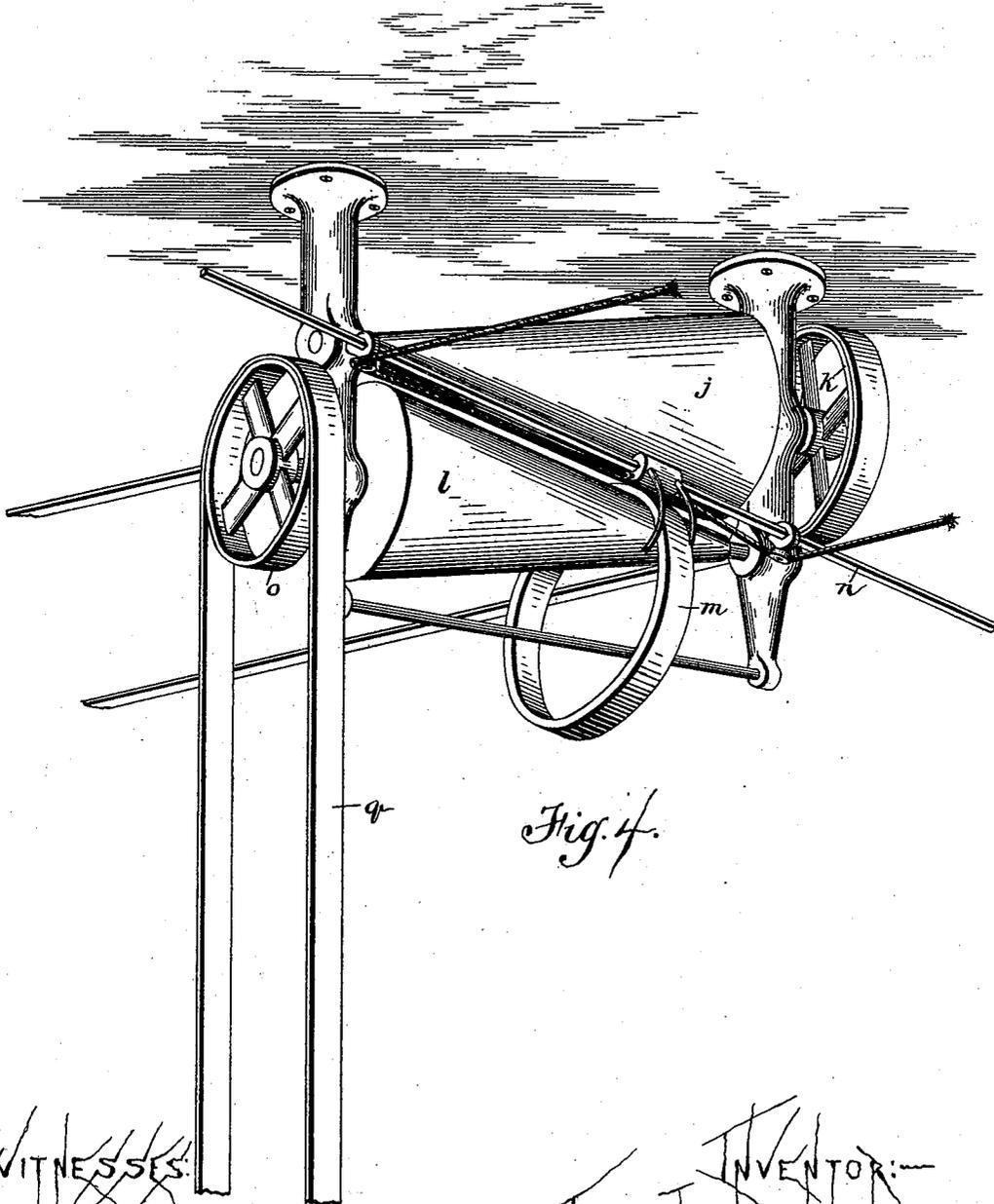


Fig. 4.

WITNESSES:

J. W. Seitz

A. W. Harrison BY HIS ATTORNEYS: *Wright, Brown & Conley*

INVENTOR:
John Logan

UNITED STATES PATENT OFFICE.

JOHN LOGAN, OF WALTHAM, MASSACHUSETTS; ESTHER LOGAN ADMINIS-
TRATRIX OF SAID JOHN LOGAN, DECEASED.

APPARATUS FOR COLORING STEEL RIBBONS.

SPECIFICATION forming part of Letters Patent No. 510,352, dated December 5, 1893.

Application filed March 28, 1892. Serial No. 426,741. (No model.)

To all whom it may concern:

Be it known that I, JOHN LOGAN, of Wal-
tham, in the county of Middlesex and State
of Massachusetts, have invented certain new
and useful Improvements in Means for Regu-
lating the Speed of Winding-On Bobbins of
Apparatus for Coloring Steel Ribbons for
Watch-Springs, of which the following is a
specification.

In the manufacture of watch main springs,
and in many other classes of goods in which
operations requiring a definite and uniform
period of time, or in which a constant and
uniform amount of work is to be performed
upon a moving strand or cord, it is essential
that the movement of the material being op-
erated upon, shall be uniform in speed. Es-
pecially is this true of the long ribbons or
strips of steel, which on completion of the
various and successive operations, is to be
broken or cut into uniform lengths, suitable
for individual main springs, in order that the
entire length of a long strip shall receive uni-
form treatment, either of grinding, polishing,
tempering or coloring.

It is necessary that, in the treatment of ar-
ticles of the form spoken of, the threads,
strands, or ribbons should be wound upon
some sort of spool, bobbin or reel, and, if
the receiving reel or bobbin be revolved at a
uniform rate of speed, each successive convo-
lution or layer, being wound upon the pre-
ceding one, increases the circumference of
the roll, so that the ribbons will be drawn on
at a gradually increasing rate of speed, so
that if the body of the bobbin were small,
and the ribbon being wound upon it were of
considerable length, the variation in the
speed of the ribbon between the beginning
and the end of the winding would be very
considerable.

To secure a uniform speed in the movement
of a ribbon of steel or other metal or material,
is the object of my invention, which may
be understood by the following description,
together with the accompanying drawings,
which form a part of this specification.

In all the views, like letters indicate the
same parts.

Of the said drawings: Figure 1, is a perspec-
tive view of my improved apparatus, portions

thereof being represented as broken away.
Fig. 2, is a side view detail on an enlarged
scale. Fig. 3, is a diagram representing a
modified form of the invention. Fig. 4 is a
perspective view of the friction cones, and
illustrates the means for shifting the friction
ring.

In the drawings: *a* designates a base or ta-
ble, supporting the means for effecting the
coloring of watch main springs. Of the said
means, *b* designates a revoluble heater or
stove. *c* is a burner connected with a gas
pipe for heating the stove *b*. *d* designates
the bobbin upon which the material to be col-
ored or tempered is wound. *e* designates the
winding-on bobbin which draws off the ma-
terial from the bobbin *d* around the heater *b*
and takes it up upon itself, all as will be more
fully understood by reference to United States
Letters Patent No. 459,914, granted to me,
September 22, 1891.

f designates a shaft upon which is a gear *g*
meshing with a gear *h* upon the shaft *i* of the
winding-on bobbin *e*.

j is a friction cone which is driven by a belt
which passes about a pulley *k* on the shaft of
the cone *j*.

l is a driven cone which is operated by
means of a friction ring or belt *m* which ex-
tends between the driving cone *j* and driven
cone *l*, as is common in what is known as
Evans' friction cones.

n is a rod mounted in suitable bearings
provided with a fork on the shaft which em-
braces the belt *m*, so as that the same may
be shifted between the friction cones and
vary the speed at which the cone *l* may be
driven, all as is well understood by mechanics
generally acquainted with driving mechan-
ism.

o is a pulley secured to the shaft of driven
cone *l*, and *p* is a pulley secured to the shaft
f, and belt *q* being passed about the said pul-
leys, whereby the shaft *f* is operated from the
shaft of the driven cone *l*.

r designates a rod or shaft mounted in suit-
able bearings, so as to be longitudinally mov-
able therein, and provided on its inner end
with a roller or wheel *s* which rests and rolls
upon the material wound upon the bobbin *e*.
Connected with the outer end of the rod *r* is

a rod or bar t which is attached at its upper end to a block or box u adapted to be adjusted in a bearing extending longitudinally of a bar v pivotally connected at its opposite end with a pulley w , about which passes a band or belt x , the ends of which are so connected with the fork or other means whereby the band or belt m is shifted, that when the pulley w is rotated in one direction, the said band or belt m will be shifted toward the small end of the cone l , and when the said pulley is moved in the opposite direction, the belt m will be moved toward the larger end of the said cone. The rod t is pivoted to a suitable support t' and is pivotally connected at its upper and lower ends respectively with the bar v and the rod r . With this construction and arrangement of parts, it will be seen that as the winding-on bobbin fills, the rod r will be in the direction indicated by the arrow marked in proximity thereto in Fig. 1, moving the bar v in the opposite direction, and gradually turning the pulley w , so as to move the band m toward the small end of the cone j and operating the winding-on bobbin at a gradually reduced speed, corresponding to the diameter of the material on the winding-on bobbin. A spring y connected at one end with the pulley w and at the other end with a stationary part of the machine or frame, tends to hold the roller or wheel s against the wound-on material. By making the connection of the bar t with the rod r adjustable, I am enabled to adjust the extent to which the belt or band m may be moved to suit circumstances. Any suitable means may be provided for this adjustment. As herein shown, the means consists of a screw z supported in suitable bearings, which screw is provided with a crank or handle for turning it, and is tapped through the block u .

I do not limit the scope of my invention to the exact form of construction described and shown in the foregoing specification, nor do I restrict it to the use of coloring or tempering steel ribbons, as it is evident that it can be applied to other materials, and to a variety of operations.

If an electric motor should be employed for operating the winding-on bobbin, the outer end of the rod r might be provided with means communicating with a commutator a' , as shown in Fig. 3, so as to reduce the strength

of the electric current, in a well known way, as the winding-on bobbin becomes filled.

Having thus described the nature of my invention and explained a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its employment, I declare that what I claim is—

1. In an apparatus for giving a uniform rate of speed to a movable ribbon or strand, the combination of the winding-on bobbin on which each successive convolution of ribbon is superposed or wound, a driving wheel connected with said winding-on bobbin, a sliding arm or rod having a roller at one end to bear against the outer layer or coil, a pulley and connections from said sliding arm to said pulley whereby longitudinal movement of the rod imparts a rotary movement to the pulley, speed changing mechanism and flexible connections from the periphery of said pulley to said speed changing mechanism, substantially as and for the purpose described.

2. In an apparatus for giving a uniform rate of speed to a movable ribbon or strand, the combination of the winding-on bobbin on which each successive convolution of ribbon is superposed or wound, a driving wheel connected with said winding-on bobbin, a sliding arm or rod having a roller at one end to bear against the outer layer or coil, a pulley and connections from said sliding arm to said pulley whereby longitudinal movement of the rod imparts a rotary movement to the pulley, a spring for moving said pulley in one direction, two friction cones, one of which receives power and the other of which is connected with the driving pulley of the winding-on bobbin, a friction ring interposed between the said cones, a sliding rod for shifting said ring and flexible connections from said ring shifting rod with the periphery of the said pulley, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of March, A. D. 1892.

JOHN LOGAN.

Witnesses:

ARTHUR W. CROSSLEY,
C. F. BROWN.