

(No Model.)

2 Sheets—Sheet 1.

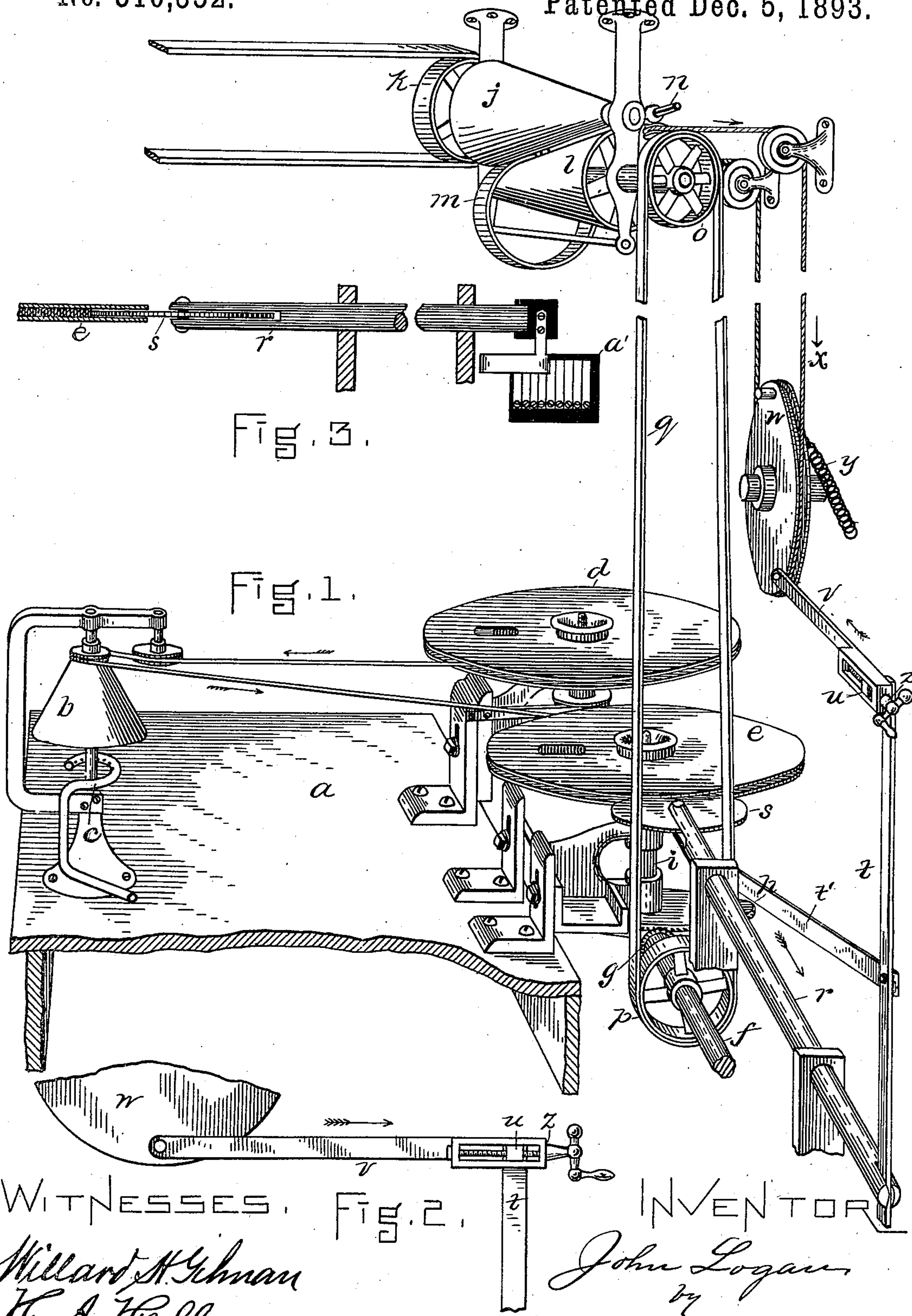
J. LOGAN, Dec'd.

E. LOGAN, Administratrix.

APPARATUS FOR COLORING STEEL RIBBONS.

No. 510,352.

Patented Dec. 5, 1893.



WITNESSES.

FIG. 2.

INVENTOR

Willard H. Schman
H. A. Hall.

John Logan
by

Thos. Brown & Hensley.
ATTYS.

(No Model.)

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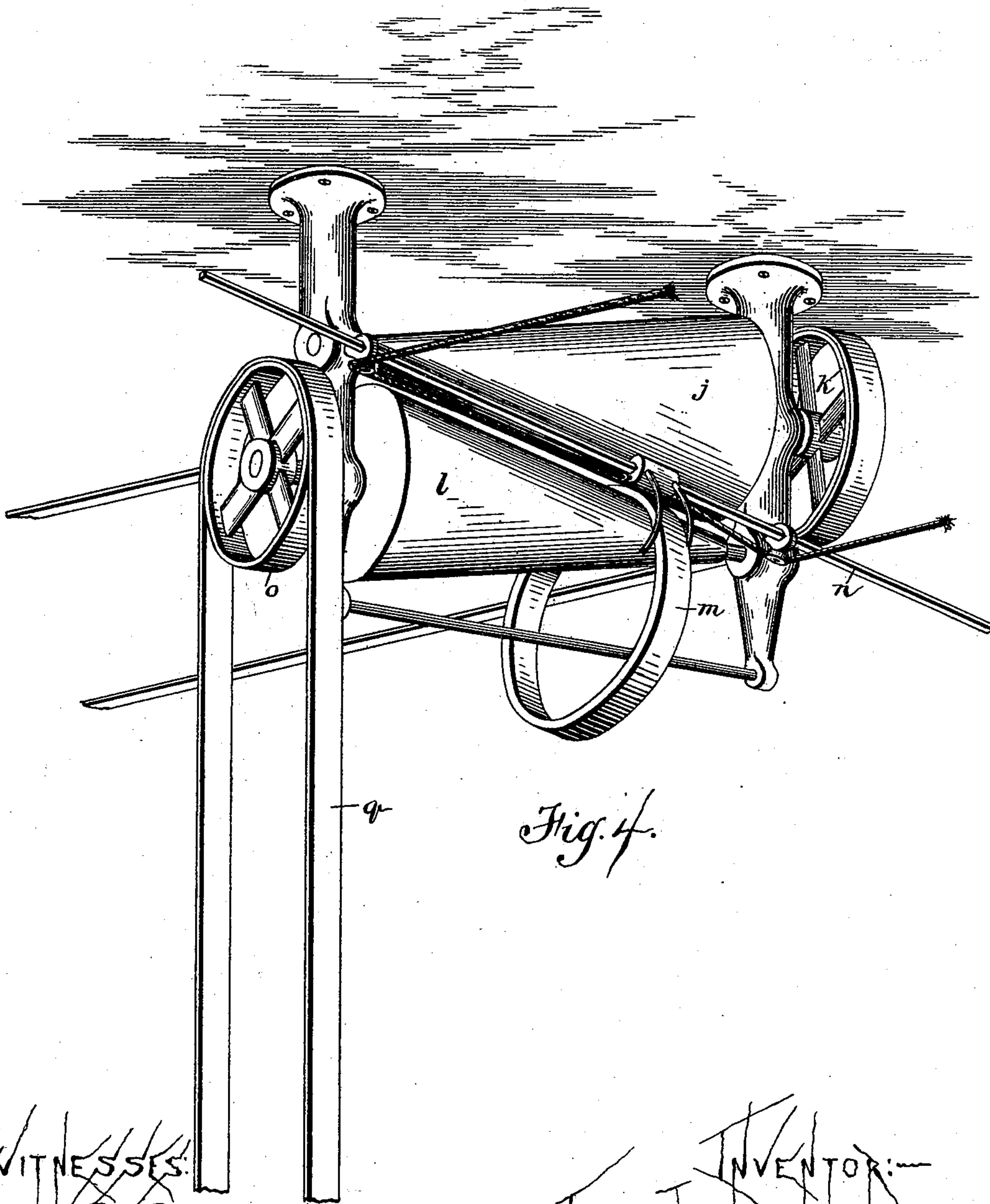


Fig. 4.

WITNESSES:

J. G. Seitz

A. W. Harrison

INVENTOR:
John Logan

BY HIS ATTORNEYS: Wright, Brown & Bailey

UNITED STATES PATENT OFFICE.

JOHN LOGAN, OF WALTHAM, MASSACHUSETTS; ESTHER LOGAN ADMINISTRATRIX 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 Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Means for Regulating the Speed of Winding-On Bobbins of Apparatus for Coloring Steel Ribbons for Watch-Springs, of which the following is a specification.

10 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
15 upon a moving strand or cord, it is essential that the movement of the material being operated upon, shall be uniform in speed. Especially is this true of the long ribbons or strips of steel, which on completion of the
20 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 uniform treatment, either of grinding, polishing,
25 tempering or coloring.

It is necessary that, in the treatment of articles of the form spoken of, the threads, strands, or ribbons should be wound upon some sort of spool, bobbin or reel, and, if
30 the receiving reel or bobbin be revolved at a uniform rate of speed, each successive convolution or layer, being wound upon the preceding one, increases the circumference of the roll, so that the ribbons will be drawn on
35 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
40 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
45 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.

50 Of the said drawings: Figure 1, is a perspective 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
55 perspective view of the friction cones, and illustrates the means for shifting the friction ring.

In the drawings: *a* designates a base or table, supporting the means for effecting the
60 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-
65 ored or tempered is wound. *e* designates the winding-on bobbin which draws off the material from the bobbin *d* around the heater *b* and takes it up upon itself, all as will be more
70 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
75 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-
80 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-
85 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-
90 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 pulleys, whereby the shaft *f* is operated from the
95 shaft of the driven cone *l*.

r designates a rod or shaft mounted in suitable bearings, so as to be longitudinally movable therein, and provided on its inner end with a roller or wheel *s* which rests and rolls
100 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.