

No. 742,781.

PATENTED OCT. 27, 1903.

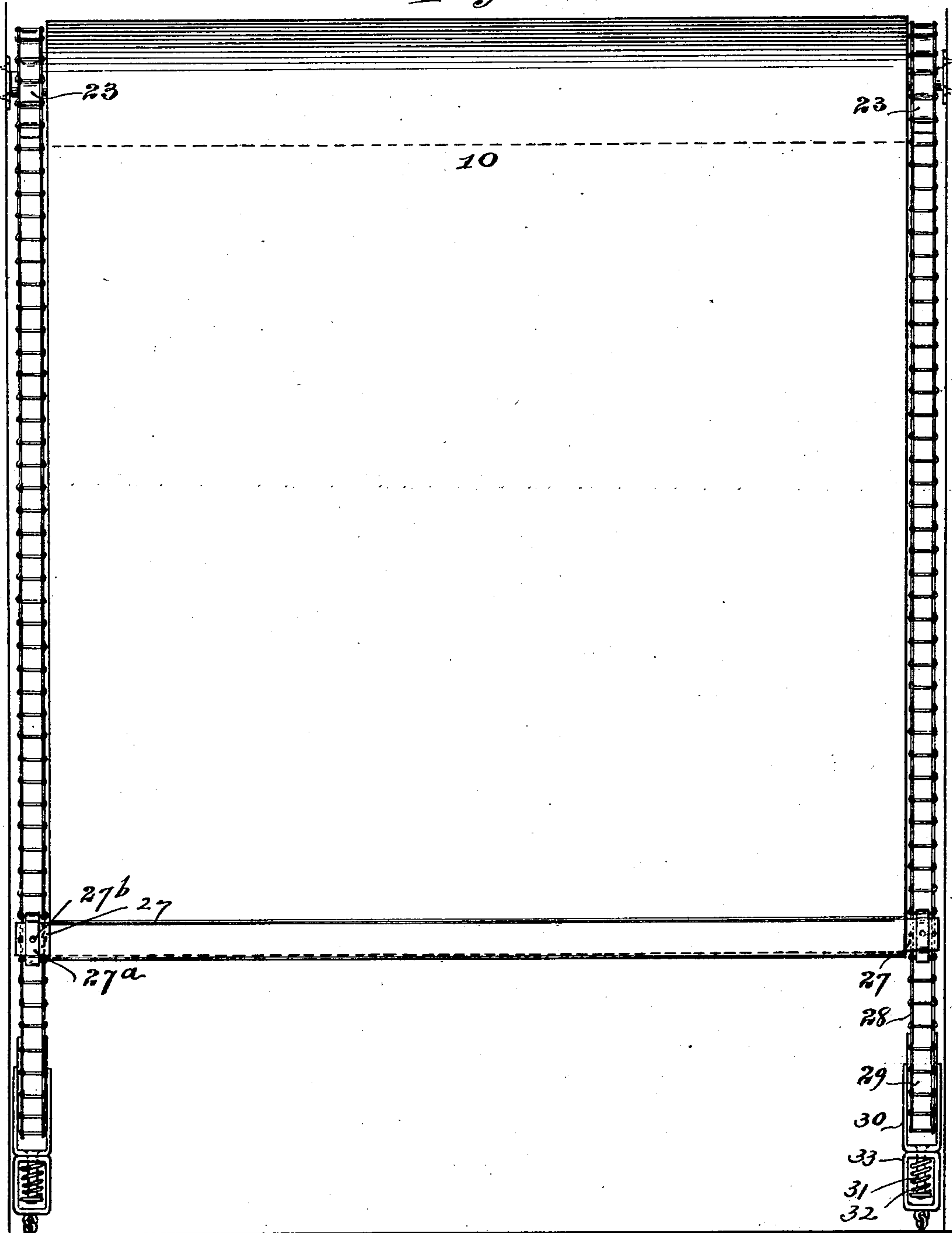
G. H. FORSYTH.
SPRING ACTUATED TAKE-UP.

NO MODEL.

APPLICATION FILED SEPT. 21, 1900.

3 SHEETS—SHEET 1.

Fig. 1.



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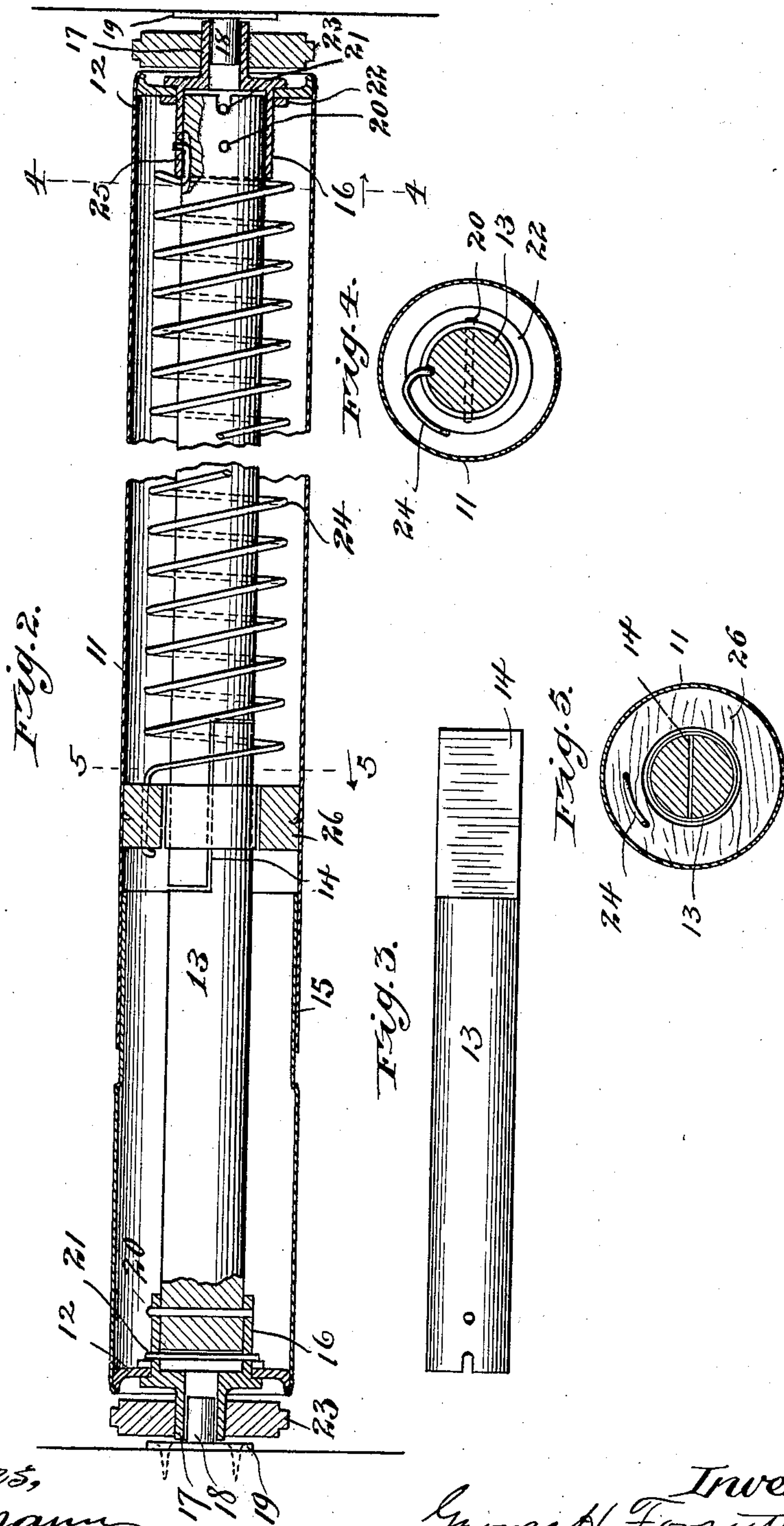
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3 SHEETS—SHEET 2.



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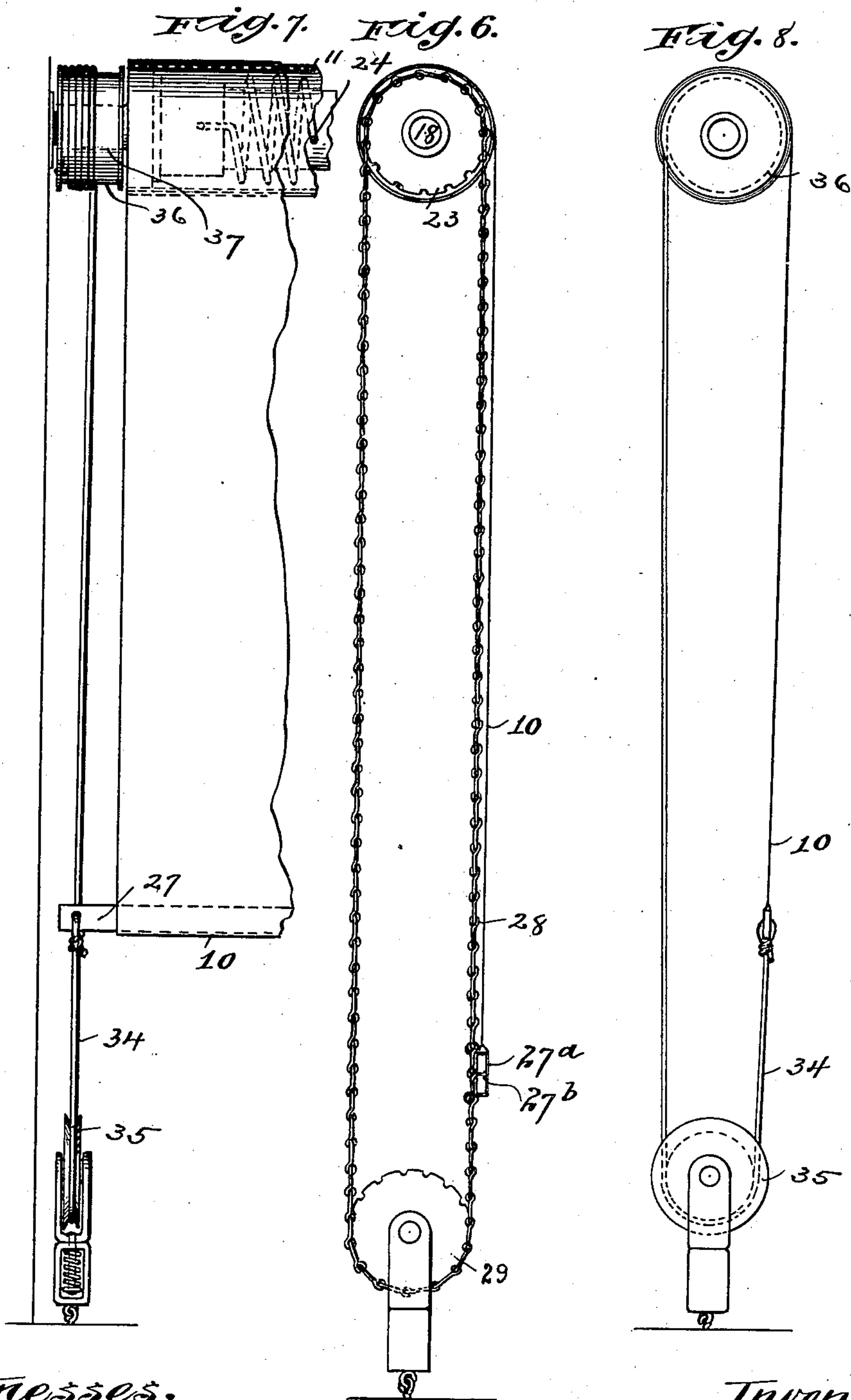
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GEORGE H. FORSYTH, OF CHICAGO, ILLINOIS.

SPRING-ACTUATED TAKE-UP.

SPECIFICATION forming part of Letters Patent No. 742,781, dated October 27, 1903.

Application filed September 21, 1900. Serial No. 30,671. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. FORSYTH, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Spring-Actuated Take-Ups, of which the following is a specification.

Generally stated, my invention relates to means adapted to stretch and hold in a taut and smooth condition an object to be suspended, extended, or moved through the agency of two relatively rotatable parts connected with opposite ends of the object to be acted upon and connected with each other by an elastic medium which tends to produce rotative movements of said parts in opposite directions, whereby said object is held at any adjusted position and is prevented from getting out of alinement or bending when being moved.

My invention is more especially adapted to use in connection with a flexible shade or curtain, being in the nature of an elastic take-up device therefor.

It consists in the parts and combinations of parts in a device of this character and for this purpose, substantially as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a window-shade mounted as above suggested. Fig. 2 is a longitudinal sectional view of the shade-roller, showing its spindle and spring, the pulleys, and the journals of the shade-roller. Fig. 3 is a detail of an extensible spindle. Figs. 4 and 5 are cross-sectional views on the lines 4-4 and 5-5 of Fig. 2. Fig. 6 is an end view of the roller, showing the operating-chains and curtain in edge view. Figs. 7 and 8 show, respectively, in side and end elevation a modified construction.

First describing the embodiment of my invention shown in Figs. 1 to 6, inclusive, let 10 represent a window-shade, one end of which is secured to a sheath 11, which may be a wooden or metal tube, such as is commonly employed for spring-actuated shade-rollers, and in which is fitted the annular heads or collars 12.

13 represents a spindle which may be made in two sections having flattened ends 14, as

shown in Figs. 2, 3, and 5, to adapt them to be overlapped and to enable the spindle to be extended or adjusted as to length to fit windows of varying width. This spindle is an ordinary wooden roller, as shown. The sheath 11 may also be constructed in two sections telescoped together, as shown at 15 in Fig. 2. The ends of the spindles are carried in sockets 16, which are shouldered to confine the annular heads 12 of the sheath and have tubular extensions 17 to receive the journals or pins 18, which are provided with securing-plates 19. This construction of the sheath and the spindle permits relative rotary movement of the parts, and this rotary movement is availed of in some adaptations of the invention. The spindle may be secured within its socket against endwise separation by the pin 20, and an additional pin 21 may be employed resting in a groove in the end of the spindle to prevent rotation of the spindle with reference to its socket. The last-named pin also affords means for holding a collar 22 against the inner side of the head 12 of the sheath. The tubular extensions 17 have secured thereto sprocket-wheels 23. A coiled spring 24 has one end thereof fastened to the spindle, preferably by being let into the wood thereof and having an end upturned, as shown at 25, through an aperture in the socket 16. The opposite end of the spring is secured to an annular block or filling-ring 26, which is secured with the sheath 11. Obviously the spindle and the sheath or roller will ordinarily turn as one piece; but they are capable of independent rotative movement. The shade-stick 27 is secured, preferably in a removable manner, by means of the stirrups 27^a and pins 27^b to the chains or other flexible operating-strands 28, which pass over the pulleys 23, carried by the spindle, and around pulleys 29, journaled at the bottom of the window-frame. These pulleys 29 may be journaled in hangers or yokes 30 and may have a tension device applied thereto, such tension device comprising a sliding bolt or spindle 31, connected with the yoke 30 and extending through a spring 32, mounted within a confining-frame 33, the latter being secured to the window-sill.

The operation of my invention as embodied in a shade mechanism is as follows: When the shade is pulled down, the chains will run with the lower pulleys, while the upper pulleys will revolve together with the spindle and sheath, the spring serving to keep the curtain properly extended or stretched between the roller and shade-stick. When the shade is rolled up by taking hold of the chains or the lower edge of the shade-stick, the spring likewise keeps the shade taut. Obviously the diameter of the shade-roller and the shade wound thereon varies as the shade is rolled or unrolled, and necessarily, therefore, some provision must be made for compensating this varying diameter. By making the shade-roller proper movable with reference to the spindle this variation of diameter is compensated for by the elasticity of the spring, whose coils will compensatingly vary in diameter. In the operation obviously the spring acts with equal force upon the spindle, and the sheath or roller tending to turn them in opposite directions, these tendencies exactly offsetting or counterbalancing each other, so that there is no tendency to either wind up the shade or to unwind it, the tension of the spring being exerted to keep the shade taut. The device presents, therefore, a perfectly-balanced mechanism, and the elasticity of the spring, as before stated, takes care of the variation in diameter of the turns of the shade upon the shade-roller. The connection of the spring at its opposite ends to the shade-roller and to the spindle is, in effect, the same as though the ends of the spring were connected to opposite ends of the shade, and the result is to keep the shade taut, while its lower end is held in parallelism with the shade-roller and is also prevented from flapping. It will be understood that in this mechanism the friction of the chains passing over the pulleys is not depended upon to hold the shade in the adjusted position, nor is it necessary to apply brakes or to cross the cords in order to hold the shade in its adjusted position, because the spring of the shade-roller has inherently no tendency to move the shade from the adjusted position. In a curtain-operating mechanism I prefer to employ chains and sprocket-wheels as means for moving the curtain and holding its lower edge in parallelism with the shade-roller; but obviously cords and pulleys might be employed, although it would be necessary to keep the cords sufficiently taut to turn the spindle, and thereby preserve a practically uniform tension upon the spring. The spring 31 is intended to prevent slack and by means of the keeper and screw-eye shown can be readily secured in a convenient position to the window-sill.

In the modified construction shown in Figs. 7 and 8 instead of using the endless chains I have shown the operating-cord 34, one end of

which is made fast to the curtain-stick, and the other end, after passing around pulleys 35, is secured to and wound upon a drum 36, mounted upon the projection 37 of the spindle, so as to turn therewith. The spring 24 is employed, as in the previously-described construction, and the operation of the device is practically the same.

I claim—

1. In a spring-actuated take-up for sheets or curtains, the combination with a hollow roller having annular heads closing the ends thereof, of socket-pieces mounted in said annular heads, a spindle mounted at its ends in said socket-pieces, means for confining the spindle against rotation in its sockets, a spring surrounding said spindle and connected at one end thereto and at its other end to the inclosing roller, means for rotating said spindle connected to said socket-pieces, said latter means and the roller being adapted respectively for connection to an object to be extended or supported, substantially as described.

2. In a spring-actuated take-up for sheets or curtains, the combination with a hollow roller having annular heads closing the ends thereof, of socket-pieces mounted in said annular heads, said socket-pieces having tubular extensions whereby the roller is journaled, a spindle mounted at its ends in said socket-pieces, means for confining the spindle against both endwise and rotary movement therein, a spring surrounding said spindle and connected at one end thereto and at its other end to the inclosing roller, pulleys for rotating said spindle mounted on said tubular extensions of the socket-pieces, and endless cords passing over said pulleys and adapted to be secured to one end of a shade or curtain whose opposite end is adapted to be secured to the roller, substantially as described.

3. In a spring-actuated take-up for sheets or curtains, the combination with a hollow roller constructed in sections telescoping upon each other and having its ends closed by annular heads, of an annular block or filling-ring secured within the roller, a spindle constructed in extensible sections and fixedly secured in said annular heads, said spindle passing through and being supported in said filling-ring, a spring encircling said spindle and connected at one end thereto and at its other end to said filling-ring and means for rotating the spindle, said latter means and the containing-roller being adapted for connection to opposite ends respectively of a shade or curtain to maintain the same taut through the flexibility of the spring, substantially as described.

4. In a spring-actuated take-up for sheets or curtains the combination with a hollow, longitudinally-extensible roller, a longitudinally-extensible spindle loosely mounted in the roller, a spring connecting the spindle

and roller, a shade and means for connecting the spindle with the shade independent of the roller.

5 In a spring-actuated take-up for shades or curtains the combination with a hollow, longitudinally-extensible roller, a longitudinally-extensible spindle loosely mounted in the roller, a spring connecting the spindle and

roller, a shade and means comprising a band connected to the lower margin of the shade and to the spindle for rotating the spindle.

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