

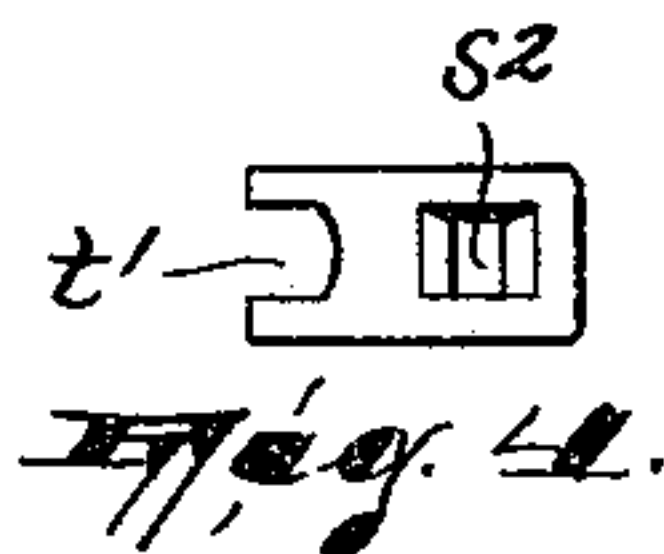
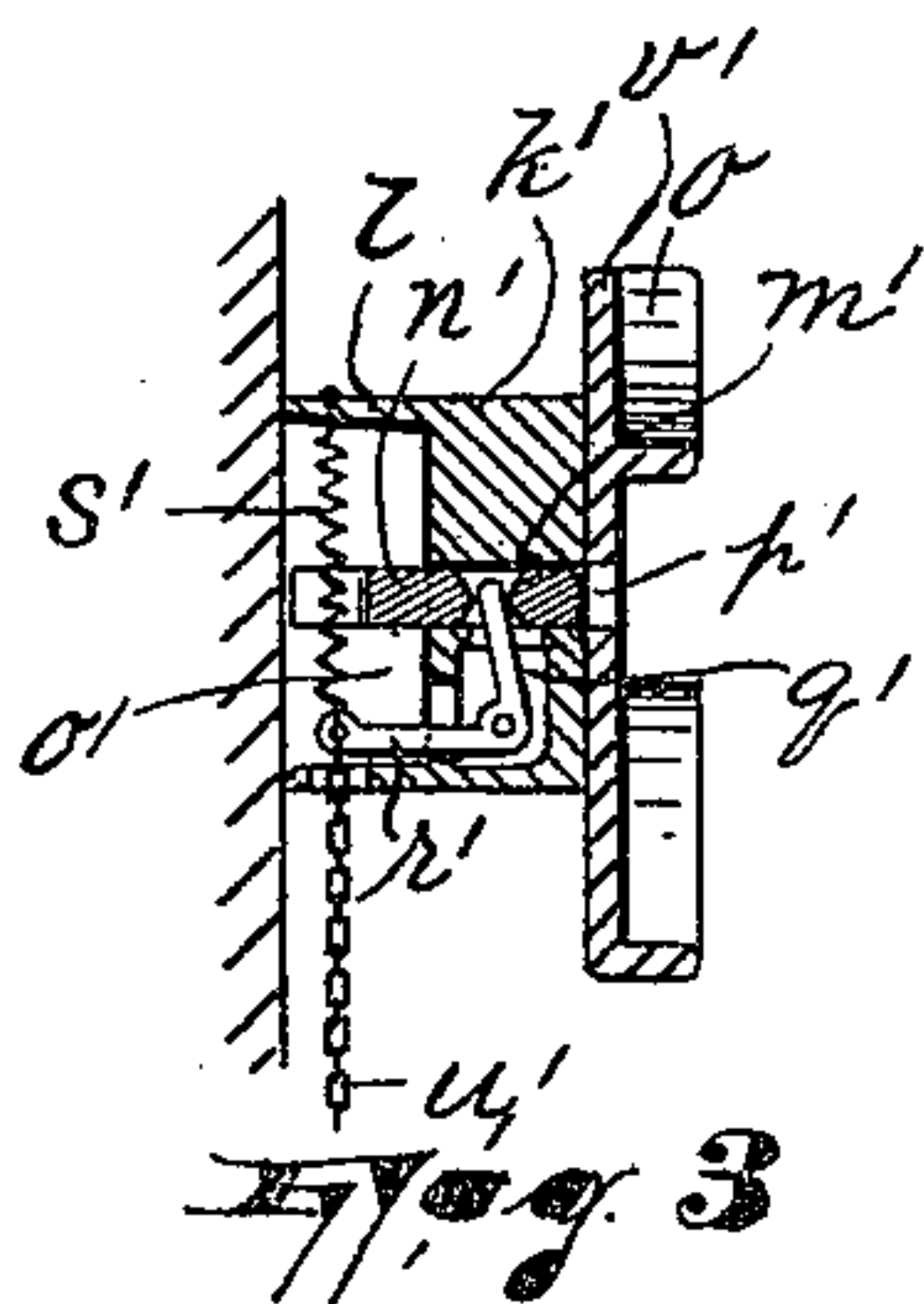
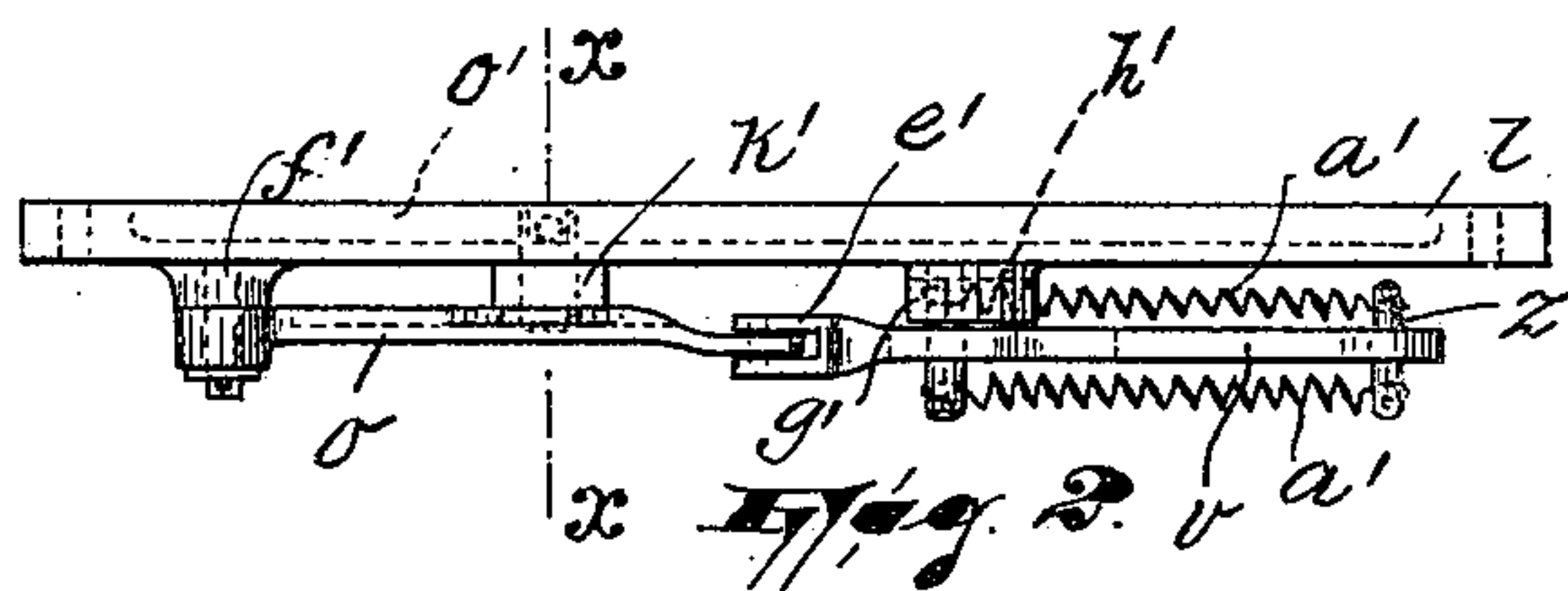
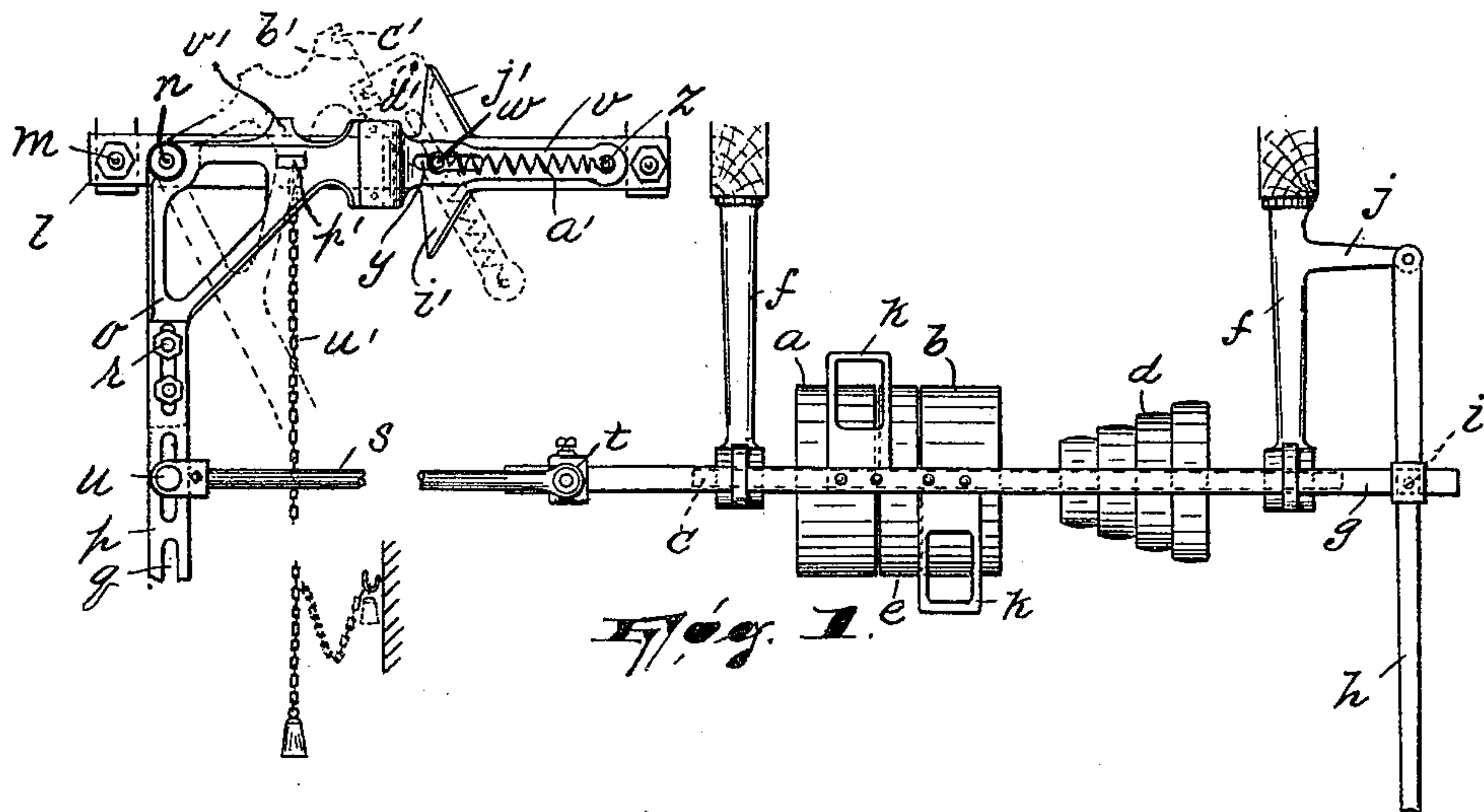
No. 641,611.

Patented Jan. 16, 1900.

C. SCHOPKE.
BELT SHIFTER ATTACHMENT.

(Application filed Nov. 3, 1899.)

(No Model.)



WITNESSES:

Wm. D. Bell,
August J. Rahm.

INVENTOR,

Charles Schopke,

BY

Garner & Steward
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES SCHOPKE, OF PATERSON, NEW JERSEY.

BELT-SHIFTER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 641,611, dated January 16, 1900.

Application filed November 3, 1899. Serial No. 735,710. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SCHOPKE, a citizen of the United States, residing at No. 1105 Madison avenue, in the city of Paterson, county of Passaic, and State of New Jersey, have invented certain Improvements in Belt-Shifter Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to belt-shifting mechanisms.

One of the objects of the invention is to produce a belt-shifting mechanism wherein means is provided for firmly maintaining the belt in any position to which it is shifted relatively to the pulleys over which it is adapted to extend, said mechanism at the same time being capable of actuation with facility.

Another object of the invention is to provide in said shifting mechanism means whereby certain parts may be positively locked against movement while the belt is held on the idle or loose pulley.

I have produced my belt-shifting mechanism with a view to simplicity and durability of construction, and I have constructed it in such a way that it may be applied directly to a shifting-fork or other similar device without materially altering the construction thereof.

The invention consists in the improved belt-shifting mechanism and in the combination and arrangement of its various parts, substantially as will be hereinafter pointed out, and finally embodied in the clauses of the claim.

The invention is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a front view of my improved belt-shifting mechanism. Fig. 2 is a view in side elevation, slightly enlarged, of that portion of my shifting mechanism which embodies the means whereby the belt, after being shifted, is maintained in position. Fig. 3 is a sectional view on the line xx in Fig. 2, the parts of the locking means being shown in detail and somewhat enlarged; and Fig. 4

is a plan view of the bolt included as one of the parts of said locking means.

In said drawings, a and b denote a pair of pulleys that are loosely mounted on a shaft c , (shown in dotted lines in Fig. 1,) carrying other and graduated pulleys d and adapted to be revolved in opposite directions by means of a pair of reversely-driven belts (not shown) which are adapted to extend around said pulleys. Between the pulleys a and b is secured on the shaft c another pulley e , and the pair of belts is shifted so that the one is adapted to engage a loose pulley, consequently being idle, while the other engages the fast pulley e to drive the shaft c , all in the usual manner.

f denotes hangers in which the shaft c is journaled and in which is guided the shifting-rod g of the mechanism, said rod being adapted to be controlled by an operating-lever h , which is pivotally connected to it, as at i , and which is fulcrumed in a projection j of one of the hangers. On this shifting-rod is mounted the pair of forks or guides k , through which the belts pass and the shifting of which in the movements of the rod g produces the shifting of the belts.

It will be understood that when in the claims I use the expression "shifting-fork" I am not limited to the common bifurcated form of this part.

l designates a plate or strip which is secured by bolts m or otherwise to some stationary part situated near the shaft c and the shifting-rod. Upon this plate, and near one end thereof, is fulcrumed on a pin n a bell-crank lever o , to one arm of which is adjustably connected a bar p , having longitudinal slots q therein, the connection being effected by means of bolts r , which penetrate slots in the bell-crank lever and also the bar. s is a connecting-rod which is pivotally secured at one of its ends to an adjustable collar t mounted on the shifting-rod, and which at the other of its ends is pivotally connected to the bar p by means of a bolt u , which is adjustably secured in one of the slots q of said bar. On said plate is mounted another lever v , said lever being fulcrumed upon a pin w , which projects from the plate l and penetrates a slot y in said lever, said slot being preferably dis-

posed near that end of the lever which is adjacent the bell-crank lever.

z is a pin which projects from the lever v , near the end thereof remote from the bell-crank lever, and connecting this pin and the fulcruming-pin w is a spiral spring a' , the tendency of which is to move the lever v longitudinally, guided by its fulcruming-pin and the slot which the latter penetrates. The adjoining ends of the two levers are preferably widened, as appears in Fig. 1, the free-edge b' of the one being provided with appreciably-spaced notches c' , while the other carries correspondingly-spaced pins d' , which are adapted to engage said notches. It is desirable that one of the levers, preferably the one having the pins, should be bifurcated, as at e' (see the view in side elevation, Fig. 2,) to receive the adjoining end of the other lever, so that the two members are guided for true movement in one plane about their respective fulcrums.

I have above referred to the use of but one spiral spring a' for controlling the lever v . However, in the preferred form of my invention, in so far as this detail is involved, I propose to use two spiral springs a' , the one being disposed upon one side and the other upon the other side of the lever v and both connecting the pins w and z , the latter of which projects from both sides of the lever.

f' g' are simply bosses which are integrally formed on the plate l , so as to space the two levers from said plate, both of the pins w and z projecting from said bosses, and the boss g' , where two springs are employed, having a recess h' formed transversely therein, so that the end of the spring a' which is between the lever v and the plate can connect with the pin w .

i' are wings which are integrally formed on the plate l and which are provided with flanges j' , which act as stops to limit the movement of the lever v about its fulcrum.

Upon the plate l is an integral projection k' , upon which the bell-crank lever o partially rests. This projection and the lever have a rectangular bore m' penetrating them, in which is guided a bolt n' , which at one end protrudes into the longitudinal hollow or recess o' , formed in the plate l , and which is adapted to protrude from said projection at its other end, so as to extend into and engage an orifice p' , formed in the lever o . The projection k' is cored out to form a cavity q' , and in said cavity is fulcrumed an angle-lever r' , one end of which projects into an aperture s' in the bolt and the other end of which projects into the hollow or recess of the plate, its free end being connected by a spiral spring s' to one wall of said plate. In order to accommodate the spring s' , which extends transversely of and in alinement with the bolt n' , the latter is bifurcated, as at t' .

u' is a chain or other flexible connection, which is connected to the free arm of the angle-lever, so that the bolt may be actuated.

In order to obviate the lever o being caught or interfered with by the corner of the projection k' , said lever is provided with an extension v' , which in the extreme position of said lever normally overhangs the projection.

In order to operate the mechanism, the bolt being first actuated so as to release the lever o , the actuating-lever h is moved so as to shift the belts, as desired, whereupon the members o and v will assume substantially the position, for instance, shown in dotted lines in Fig. 1, in which position they will be firmly maintained under the action of the spring a' and because the particular pin d' upon which they have bearing the one against the other has moved past the straight line connecting the fulcrums w and n of said levers. In like manner and for the same reasons the members will be automatically maintained upon actuation of the lever h in the position corresponding, but opposed to that shown in dotted lines in said figure. When set as shown in full lines in Fig. 1, the parts will maintain the relative disposition they therein have, owing to the fact that they have double contact with each other.

It will be obvious that my improved belt-shifting mechanism can be employed either where one or two belts are in use.

When the parts are in the positions in which they appear in full lines in Fig. 1, the belts, it will be seen, are engaging the idle pulleys and said parts are locked against movement by the bolt n' . This locking device is merely provided so that should any one attempt to shift the belts and throw the machine into operation while the regular attendant is working about remote parts thereof, after the lock is set, it would be known that it is inadvisable to start the machine.

It is to be observed that I do not wish to be limited to the use of pins and corresponding notches, as herein set forth, for affording the bearings of the members the one against the other, for any construction of the members whereby a buckling action may be produced, so that they will firmly maintain the particular disposition to which they are forced by the actuating-lever, is within the scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of an element to be shifted, a suitable support, two members pivotally arranged on said support, one yieldingly engaging the other, a spring connecting one of said members and the support, and operative connecting means between one of said members and said element, substantially as described.

2. The combination of a suitable support, two members arranged on said support and having a yielding engagement with each other, one of said members being oscillatory relatively to the other and said members having a plurality of appreciably-spaced and co-

acting points of bearing for the one against the other each adapted as an individual fulcrum, and an element to be shifted operatively connected to said movable member, substantially as described.

3. The combination of an element to be shifted, a suitable support, two members pivotally arranged on said support and having a yielding engagement with each other, and said members having a plurality of appreciably-spaced and coacting points of bearing for the one against the other, each adapted as an individual fulcrum, and operative connecting means between one of said members and said element, substantially as described.

4. In a belt-shifting mechanism, the combination of a shifting-fork, a suitable support, two members pivotally arranged on said support and engaging each other, a spring connecting one of said members and the support, said members having a plurality of points of bearing for the one against the other, each adapted as an individual fulcrum, and operative connecting means between one of said members and said shifting-fork, substantially as described.

5. In a belt-shifting mechanism, the combination of a shifting-fork, a suitable support, two members pivotally arranged on said support, the one being movable rectilinearly on its fulcrum toward the other and each having its points of bearing for the other appreciably remote from each other, a spring operatively connecting said support and the movable member, and operative connecting means between one of said members and the shifting-fork, substantially as described.

6. In a belt-shifting mechanism, the combination of a shifting-fork, a suitable support, pins projecting from said support, levers fulcrumed on said pins, one of said levers yieldingly engaging the other and having a rectilinear slot receiving the fulcruming-pin therefor, and each of said levers having its points

of bearing for the other appreciably remote from each other, a spring operatively connecting the slotted lever and the fulcrum for the latter and preserving the engagement between said levers, and operative connecting means between one of said levers and the shifting-fork, substantially as described.

7. In a belt-shifting mechanism, the combination of a shifting-fork, a suitable support, two members pivotally arranged on said support and engaging each other, and the one having pins and the other having corresponding notches adapted to coact to afford bearings for said members the one against the other, a spring operatively connecting one of said members and the support, said last-named member being movable rectilinearly on its pivot, stops projecting from said support, and operative connecting means between one of said members and the shifting-fork, substantially as described.

8. In a belt-shifting mechanism, the combination of a shifting-fork, a suitable support, two members pivotally arranged in said support and engaging each other, and the one having pins and the other having corresponding notches adapted to coact to afford bearings for said members the one against the other, a spring operatively connecting one of said members and the support, said last-named member being movable rectilinearly on its pivot, stops projecting from said support, operative connecting means between one of said members and the shifting-fork, and locking means mounted on said support and adapted to secure said members against movement, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of October, 1899.

CHAS. SCHOPKE.

Witnesses:

JOHN W. STEWARD,
ROBERT J. POLLITT.