

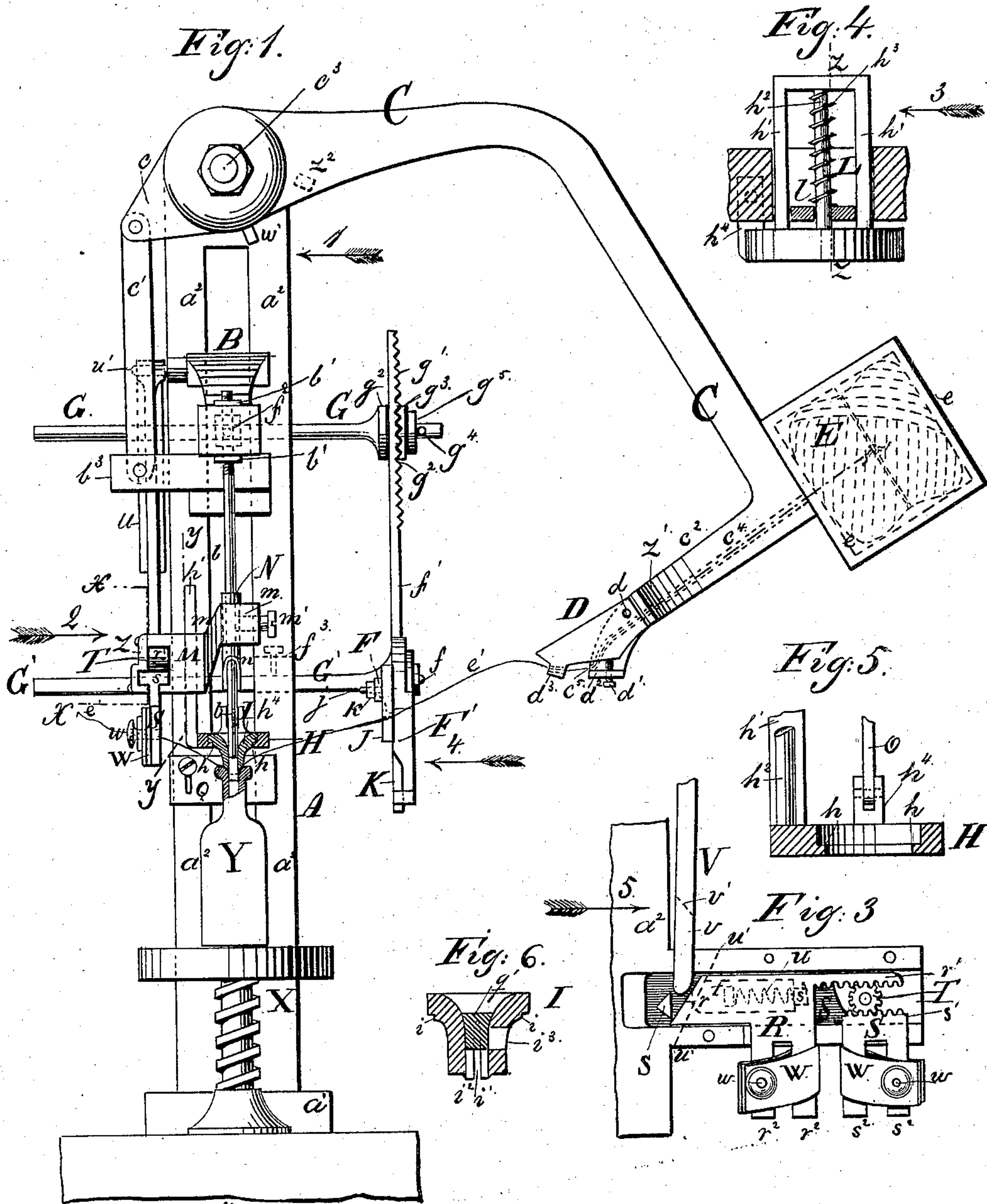
(No Model.)

2 Sheets—Sheet 1.

T. R. LOWERRE.
BOTTLE CORKING MACHINE.

No. 365,753.

Patented June 28, 1887.



WITNESSES
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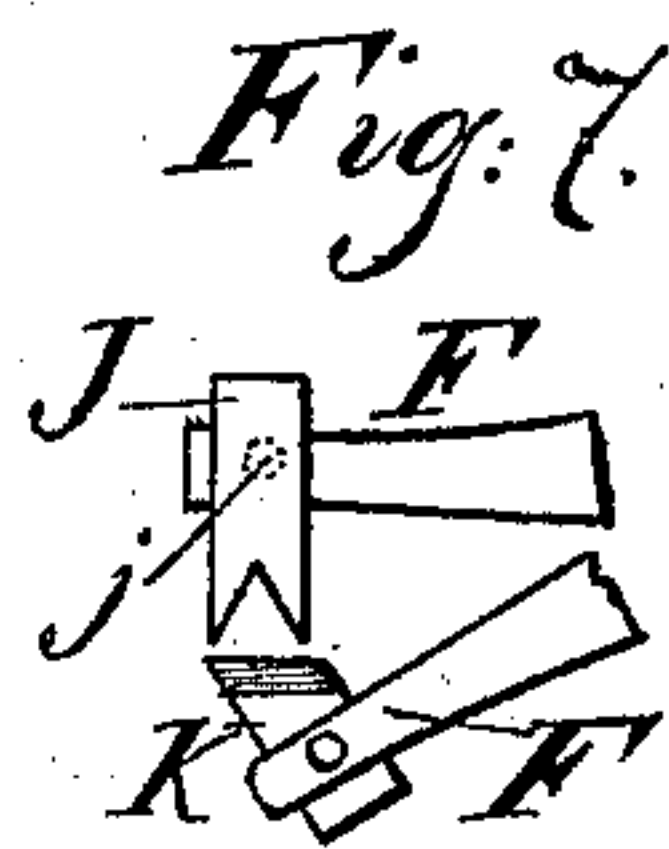
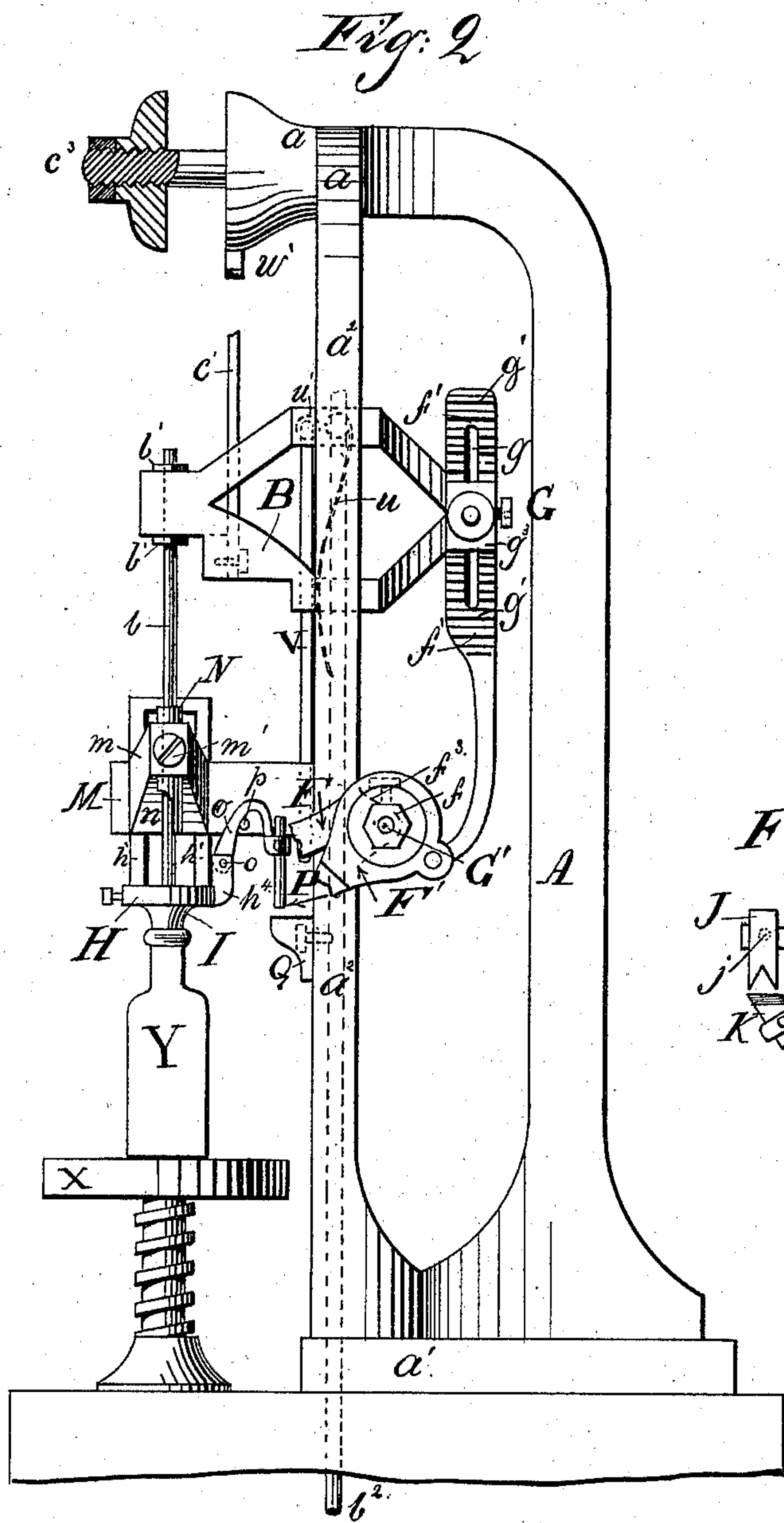
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2 Sheets—Sheet 2.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS R. LOWERRE, OF NEW YORK, N. Y.

BOTTLE-CORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,753, dated June 28, 1887.

Application filed May 22, 1886. Serial No. 202,987. (No model.)

To all whom it may concern:

Be it known that I, THOMAS R. LOWERRE, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented a new and useful Improvement in Bottle-Corking Machines, of which the following is a specification.

My invention relates to bottle-corking machines in general, but has for its object more especially to effect certain improvements in the construction of the bottle-corking machine patented by me April 29, 1884, in which, in addition to the ordinary operation of pushing the cork into the neck of the bottle, the cork, previous to insertion, is automatically slit and provided with a short piece of cord or wire inserted in the slit thus made, and which cord is allowed to remain therein for use afterward, as a means of extracting the cork from the bottle without the aid of a cork-screw.

The main part of the present invention is that by which the cord is grasped automatically, and held while being cut, and again released while the cork is being pushed into the bottle-neck.

The invention also comprises improvements in the shears and their connecting-rod adjustment and the adjustment of the slitting-knife; also the construction whereby the cork is stamped or printed on the side automatically while being inserted; also the construction of the cork-holder, and various other details, as will be hereinafter fully described with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine constructed according to my present invention. Fig. 2 is a rear elevation of the same, or as seen in the direction of arrow 1, Fig. 1, the slitting-knife lever being removed, so as to expose to view the parts otherwise concealed by it. Fig. 3 is a detail face view of the cord-clamping device, seen in the direction of arrow 2, Fig. 1, its cover being removed to expose the parts beyond the line xx . Fig. 4 is a detail section on the line yy , seen in the direction of arrow 2, and showing the manner in which the cork-guide holder is held to enable it to slide in the frame and rise automatically after being depressed. Fig. 5 is a detail section of the cork-guide holder on the line zz of Fig. 4, and seen in the direction of arrow 3,

or in the same direction as it is represented in Fig. 1. Fig. 6 is a detail vertical section through the cork-guide, taken in the center line at right angles to Fig. 1. Fig. 7 is a detail view showing the construction of the cord-shears.

A is the frame of the machine, preferably formed of casting. The frame A is provided with an upper and a lower head, $a a'$, to which are fastened at opposite sides vertical guide-bars a^2 , between which is fitted to slide the block B, to which the plunger b is attached.

In my previous patent referred to the plunger was detachable, having a shank entering a socket held by a set-screw. In the present case it will be seen that the upper end of the plunger goes through a vertical hole in the block B, to which it is secured by nuts b' above and below, as shown in Figs. 1 and 2, which allows of not only removing it and replacing it by another when required, but also of adjusting its length below the block B.

To the block B, directly between the guides a^2 , is secured a downwardly-projecting rod, b^2 , (see foot of Figs. 1 and 2,) whose lower end should be connected to a treadle, so that by depressing the latter the plunger b will descend for the purpose of pushing the cork into the bottle-neck. On removal of pressure from the treadle a spiral spring surrounding the rod b^2 , and which may be interposed between the stationary portion of the frame A and the slide-block B, causes the plunger to rise, as described in my previous patent; or the spiral spring may be dispensed with and the plunger caused to rise simply by the weight of the spool-case or other weight attached to the slitting-knife lever.

C is the said lever or bar, which carries the cork-slitting knife and the cord-spool. The lever C is pivoted to the head a directly above and in center line with the plunger, and has a short arm, c , by which and a connecting-rod, c' , it is connected to a lateral projection, b^3 , secured to the block B in such a way that the connecting-rod c' will be as nearly parallel with the plunger as possible. Opposite to the arm c the lever C is bent downward, and its lower end provided with an arm, c^2 , projecting in the same direction as the arm c .

D is the slitting-knife. This is pivoted at d , with the edge turned upward, as shown in

Fig. 1, and underneath, butting against the back of the knife, is a set-screw, d' , threaded through a lug, d^2 , by which set-screw the elevation of the knife D may be adjusted, so as to make a more or less deep slit through the cork, the knife in being adjusted turning on its pivot d . When the plunger descends, and by the downward pull on the rod c' and arm c caused thereby, the lever C is oscillated upon its fulcrum c^3 , the inclined and sharp edge of the knife will pass through and across the lower end of the cork, and thus slit it.

P is a ball of twine. (Preferred to a spool.) This I inclose in a box, e , secured to the arm c^2 , in which box the twine is preferably laid loose, as indicated in Fig. 1. The cord e' passes from the ball E through a tube, e^4 , (shown in dotted lines in Fig. 1,) issuing at e^5 through the end of the lever C, directly behind a little lug, d^3 , projecting from the back of the knife D below its point, and thence through a hole in the said lug d^3 . By this construction of the knife it is evident that in passing through the cork a clear space is cut for the cord, and the slit is kept open by the knife while the cord simultaneously enters, and the slit closes upon the cord by the elasticity of the cork when the knife has passed completely through. As the plunger keeps descending the lever C is swung off enough to allow the knife D to pass clearly through and beyond the shears. These consist of a stationary jaw, F, a movable jaw, F', pivoted at f to the stationary jaw, both having cutters attached, and an adjustable connecting-rod, f' , the latter being pivoted with one end to the rear end of the jaw F', and with its other end to a bar, G, secured to the back of the sliding block B, by the downward movement of which the shears are operated. As the plunger still further descends the cord e' is first clipped off by the said shears and then the cork is pressed through its holder and into the neck of the bottle, leaving the ends of the cord projecting above the bottle, so that they may be tied in a loop for convenience in afterward extracting the cork. The stationary jaw F of the shears is fastened to or, preferably, formed in one piece with and at right angles to the bar G'. The bars G G' are held by set-screws in lugs to allow of sliding them, so as to adjust the distance of the shears from the center of the plunger, and thereby the length of the piece of cord to be cut off, the opposite end of the said piece being held by an automatic clamping device, as will be presently described. It will be noticed that by not cutting the cord until the knife D has passed a distance beyond the shears a portion of the cord always is left projecting from the knife, as in Fig. 1, and readily accessible to be grasped by the said clamping device.

As thus far described, the general features of the machine do not differ materially from those of that described in my previous patent, the only specific difference so far being the

manner of attaching the plunger b , and the manner of adjusting the slitting-knife to give the desired depth of cut, as before stated.

In addition to the said two features, I have made several other improvements, which I will now describe. The arm G', which carries the stationary jaw of the shears, is round, and has its bearings in holes through lugs f^3 upon the rear surface of the guide-bars a^2 of the frame A, and is held by a set-screw through one or both of the said lugs. The upper stationary cutter, J, is provided with a bolt, j , rigidly secured to it at right angles, and the said bolt goes through a hole in the jaw F. The outer end of the bolt is threaded and provided with a nut, k , which, when tightened up against the part F, keeps the cutter J in the desired position. The cutting-edge is in the shape of an inverted V, as shown in Fig. 7, and the lower cutter, K, which is bolted to the lower and movable jaw, F', has an inclined cutting-edge, as also shown in Fig. 7, so that when the shears are closed the cord will always be forced into the angle of the cutting-edge of the upper cutter, thus securing a clean cut every time, without failure from the cord chancing to slide off the knife-edge. By the aforesaid construction of the bar G' and the cutter J it is evident that the height of the latter can be adjusted to a nicety by simply swinging the arm F farther up or down, as may be required, and then tightening the set-screw in the lug f^3 , after which the cutter J is turned into the vertical position—such as shown in Fig. 7—and secured in the said position by its nut k . The upper bar, G, by which the rod f' is connected to the inner end of the slide-block B, is round, like the rod G, and is secured in a bearing in the said block by a set-screw, f^2 , in a usual manner. The connecting-rod f' is provided longitudinally with a slot, g , by which it is entered upon the outer end of the rod G until it lodges against a shoulder, g^2 , rigid upon the said rod. The outer surface, g' , of the connecting-rod f' is serrated or corrugated on both sides of the slot g , as shown in Figs. 1 and 2, and a perforated washer or plate, g^3 , serrated on its inner surfaces to correspond with the serrated surface g' , is also entered upon the outer end of the rod G to engage the serrations of the rod f' and clamp it in position, by a washer, g^5 , and a pin, g^4 , passing through the rod G and through a groove in the surface of the washer. This affords a secure fastening and a convenient mode of adjusting the distance between the pivotal points of the connecting-rod f' , so as to give the movable jaw F' of the shears a greater or less throw, as may be desired, to adapt the shears to keep open while the slitting-knife passes them, and not to cut the cord until the knife has passed a sufficient distance beyond them to leave loose a required length of the end of the cord. The slight turning of the bar G necessary to operate the rod f' is effected at

the outer side of the rod f' , between the outer surface of the serrated plate g^3 and the inner surface of the washer g^5 , held on the rod by the pin g^4 . The inner side of the rod f' moves against the collar g^2 .

M is an arm or bracket formed upon or rigidly attached to one of the guide-bars a^2 of the frame A.

In the arm or bracket M are formed the horizontal guide for the cord-clasping device and the vertical guide for the cork-holder; and through a lateral and slightly-elevated projection, m , on the said arm M, in the center line of the plunger b , is bored a hole to receive a sleeve, N, which is held in place by a set-screw, m' , and through which sleeve the plunger b fits and slides snugly. The lower end of the sleeve N is cut away at n , so as to facilitate the insertion of the cork into the holder when the plunger b is at its highest elevation, at which elevation its lowest end is about at or a little above the cut-away portion n .

The cork holder consists of two parts—the cork-guide holder and the cork-guide. The cork-guide holder is a ring, H, having a circular opening and an annular shoulder, h , in said opening to receive and retain the cork-guide I, (shown in Fig. 6,) which latter has a circular flange with a rabbet, i , to fit the said hole and shoulder in the ring H. The ring H is provided with two uprights, h' , connected at their upper ends, by which it is fitted to slide in a slot, L, in the frame-piece M. Centrally between the two uprights h' is a round rod, h^2 , surrounded by a spiral spring, h^3 , which is interposed between the rigid horizontal part which connects the upper ends of the uprights h' and a bridge across the slot L, and which bridge is rigid with the frame-piece M, as shown in Fig. 4, so that the cork-holder is supported by the said spring h^3 upon the said bridge.

On the side of the ring H nearest to the guide-bars a^2 are perforated lugs h^4 , to and between which is pivoted at o a lever, O, which is curved, about as shown in Fig. 2, and has a lug in which is secured by a set-screw a type or stamp, P, which is inked by coming in contact with a pad on a bracket, Q, secured to the frame. The object of the arm and type O P is to stamp the side of the cork with the date of patent or other mark, and its operation will be easily understood with reference to Fig. 2. When the cork-holder is depressed for the insertion of the cork, the part of the arm O which is nearest to the pivot o strikes a pin, p , which is secured to the frame-piece M in close proximity to the path of the lug h^4 , thereby immediately swinging the arm O up, so that the type comes in the position shown in Fig. 2. As the holder is further depressed the type retains the same position and descends until its end surface comes in contact with the ink-pad on the bracket Q. On withdrawal of the pressure the spring h^3 instantly pulls up

the holder, thereby causing the pivot o to pass above the pin p , in consequence whereof the arm O swings down by its own weight, (which may be aided by a light spring, if desired,) and the type enters a hole, i^3 , in the cork-guide I, and, striking the side of the cork q' , leaves its impression thereon. The cork-guide has a downwardly-tapering central hole, as shown in Fig. 6, to receive the cork q' , and is provided also in the path of the knife D with a slot, i' , through which the knife passes while slitting the cork, as in my previous patent.

In order to always insure the proper central location of the bottle-neck to the plunger b , the lower end surface of the cork-guide I, adjoining its central opening, is provided with a nipple, i^2 , which, with a thin edge, enters the extreme end opening in the bottle-neck surrounding the cork. The drawings in Figs. 1 and 2 show the parts in the position when the plunger has forced the cork partly into the bottle-neck and not yet completely out of the piece I. When the cork is inserted in the holder, the plunger is at its highest position, as above stated; and the stationary sleeve N, after the cork has been inserted underneath the lower end of the said sleeve, serves as a stop against the upper end of the cork, to keep it in position against the pressure of the slitting-knife, which otherwise would have a tendency to push it up and out of the cork-holder.

The cord-clamping device consists of two jaws, R S, sliding in a way or recess in the stationary frame portion M. The jaws are closed to clamp the cord by a bar, V, depending from the block B, and are opened to release the cord and to allow the cord-carrying slitting-knife to pass through the opening between them by the expansion of a spring, U. The action will be easily understood with reference to Fig. 3. The slides R S lap each other, the outer slide, R, being cut at an incline, at r , and the inner slide, S, having a triangular projection, s , both slides being geared together by having racks $r' s'$, between which is pivoted a pinion, T, meshing in both racks simultaneously and turning upon a stud stationary in the frame portion M. To the said frame portion is also secured a pin, t , and a slot is made through the slide S, in order that its movement will not be interfered with by the said pin. A small projection or shoulder, s'' , is formed upon the slide S, and the aforesaid spring U is interposed between the said shoulder s and stationary-pin t , thus tending normally to push the slide S outward or toward the right, and, by the intervention of the racks and the pinion T, thereby cause the other slide R to move inward or toward the left to separate the clamping-surfaces from each other. These latter are formed by pieces of leather W, which are each attached to downwardly-projecting prongs or plates $r^2 r^2 s^2 s^2$, by being wrapped around one of the said prongs and then fastened to the other prong by a flanged screw, w , as plainly shown in Fig. 3. The bar V is

pivoted at its upper end to the slide-block B at u' , as shown in Figs. 1 and 2, and a light spring, u , (see Fig. 2,) attached to the block, is pressing upon the bar V, always in the direction of arrow 5. The bar V, which in Fig. 3 is shown in the position of just beginning its downstroke, is provided with a metallic shoe, v , which is cut at an incline at v' . As the block B begins to descend the lower end of the bar V enters between the incline r and the triangular stop s , upon the slides R S, respectively, thus wedging them apart and closing the clamping-surfaces W W upon the cord immediately as the knife D has passed through the opening between them. When the bar has descended so far that the upper end of the shoe v has got below the triangular projection s , the spring U instantly opens the jaws of the slides R S. The cover Z, (see Fig. 1,) which confines the slides in the frame portion M, is cut away at an incline indicated by the dotted and dashed line $U' U'$. (See Fig. 3.) During the continuance of the downward stroke the shoe v of the bar V passes a considerable distance below the slides R S, without producing any effect on them, the object being to allow them to remain open from the time the cord has been released until the corked bottle has been removed and all the parts allowed to resume their normal position, in which the knife D, with the end of the cord projecting from it, has passed through the opening between the jaws W W.

To prevent the bar V from being moved by the pressure of the spring u too far in the direction of arrow 5, it is arranged to strike against the cover Z (at $v' v'$) as a stop and guide during the path of the shoe v below the slide. On the upward motion the incline v' of the shoe v engages the corresponding incline of the triangular shoulder s , thereby causing the bar V to be deflected against the pressure of the spring in the direction opposite to that indicated by the arrow 5, and ascending on that side of the pin s opposite to that on which it descended until the lower end of the bar has passed completely above the pin s , when the spring u will again move it in the direction of arrow 5 until it stops against the incline r of the slide R, which is the working-surface, between which and the pin s it operates to close the slide-jaws.

In order to prevent the arm c^2 of the lever C, when in its horizontal position, (as it is when no pressure is applied to the treadle,) from interfering with the free vertical movement of the cork-holder while inserting the cork, the said arm is offset or curved at z' , as shown by shading in Fig. 1, to a radius larger than that of the ring H of the holder.

In order to prevent possible damage by the momentum of the lever C in resuming its normal position on the withdrawal of pressure from the treadle, the upper head, a , of the machine-frame is provided with a check or stop, w' , (see Figs. 1 and 2,) and the lever C is pro-

vided with a pin or projection, z^2 , (see Fig. 1,) in position to strike against the stop w' when the lever has resumed its normal position.

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

1. In a bottle-corking machine, the combination, with a descending plunger and a knife carrying the cord and movable transversely to the motion of the said plunger, of automatic clamping-jaws closing upon and holding the end of the said cord while the knife recedes from them, substantially as set forth.

2. In a bottle-corking machine, the combination, with a descending plunger and a knife carrying the cord and movable transversely to the motion of the said plunger, of the slides R S, provided with clamping-surfaces W W for the cord, and operating-surfaces $r s$, meeting each other at an incline, and the vertically-movable bar V, provided with the shoe v , having incline v' , and normally acted upon, as by the spring u , substantially as and for the purpose set forth.

3. In a bottle-corking machine, the combination, with a descending plunger and a knife carrying the cord and movable transversely to the motion of the said plunger, of the slides R S, provided with clamping surfaces W W for the cord, and operating surfaces $r s$, meeting each other at an angle, and the vertically-movable bar V, substantially as described, the said slides R S being provided with racks $r' s'$, geared together by means of the studded pinion T, and one of the said slides, S, having a shoulder, s^3 , and a spring, U, interposed between the said shoulder and a stationary part, t , for the purpose of automatically opening the clamping jaws, as specified.

4. The combination of the knife D, having below its cutting-surface a perforated lug, d^3 , with the lever C, provided with the cord-guide issuing in the rear of the said lug d^3 , and the portion d^2 , with set-screw d' , the said knife being pivoted to the said lever and bearing upon the said set screw for the purpose of adjusting the depth of the cut, substantially as hereinbefore set forth.

5. In a bottle-corking machine having a descending plunger and a cord-carrying knife moving transversely to the said plunger, and shears connected to receive movement from the sliding block and plunger, the combination of the bar G', carrying the stationary cutter, the lever F', pivoted to the said bar G' and carrying the movable cutter, the bar G, secured to the slide-block B and provided with the shoulder g^2 , and connecting-rod f' , pivoted to the said lever F' and having corrugated surfaces g , a slot, g' , and the corrugated plate g^3 , and a fastening device, as $g^5 g^4$, to tighten the said corrugated plate against the said connecting-rod and shoulder, substantially as and for the purpose hereinbefore set forth.

6. In combination with the slide-block B,

connecting-rod f' , and lever F' , carrying the lower cutter, K , the bar G' , adjustable by sliding and turning in the stationary portion of the frame, the said bar G' being provided with the arm F , and the inverted- V knife J , adjustable on a bolt or pin, j , upon the said arm, as and for the purpose set forth.

7. In combination with the descending plunger b , the cork-holder provided with uprights h' and h^2 , the stationary frame portion M , having way L to receive the said uprights and cross-bridge l , and the spiral spring h^3 , arranged and operating substantially as and for the purpose set forth.

8. The combination of the frame portion M , having pin p , the cork-holder arranged to

slide in the said frame portion and provided with the lug h^4 , the bent arm O , pivoted to the said lug and provided at its free end with the type or stamp P , and the stationary pad Q , the said cork-holder being also provided with a side opening, i^3 , to admit the end of the type to the cork, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 17th day of May, 1886.

THOMAS R. LOWERRE.

Witnesses:

A. W. ALMQVIST,
T. M. CROSSMAN.