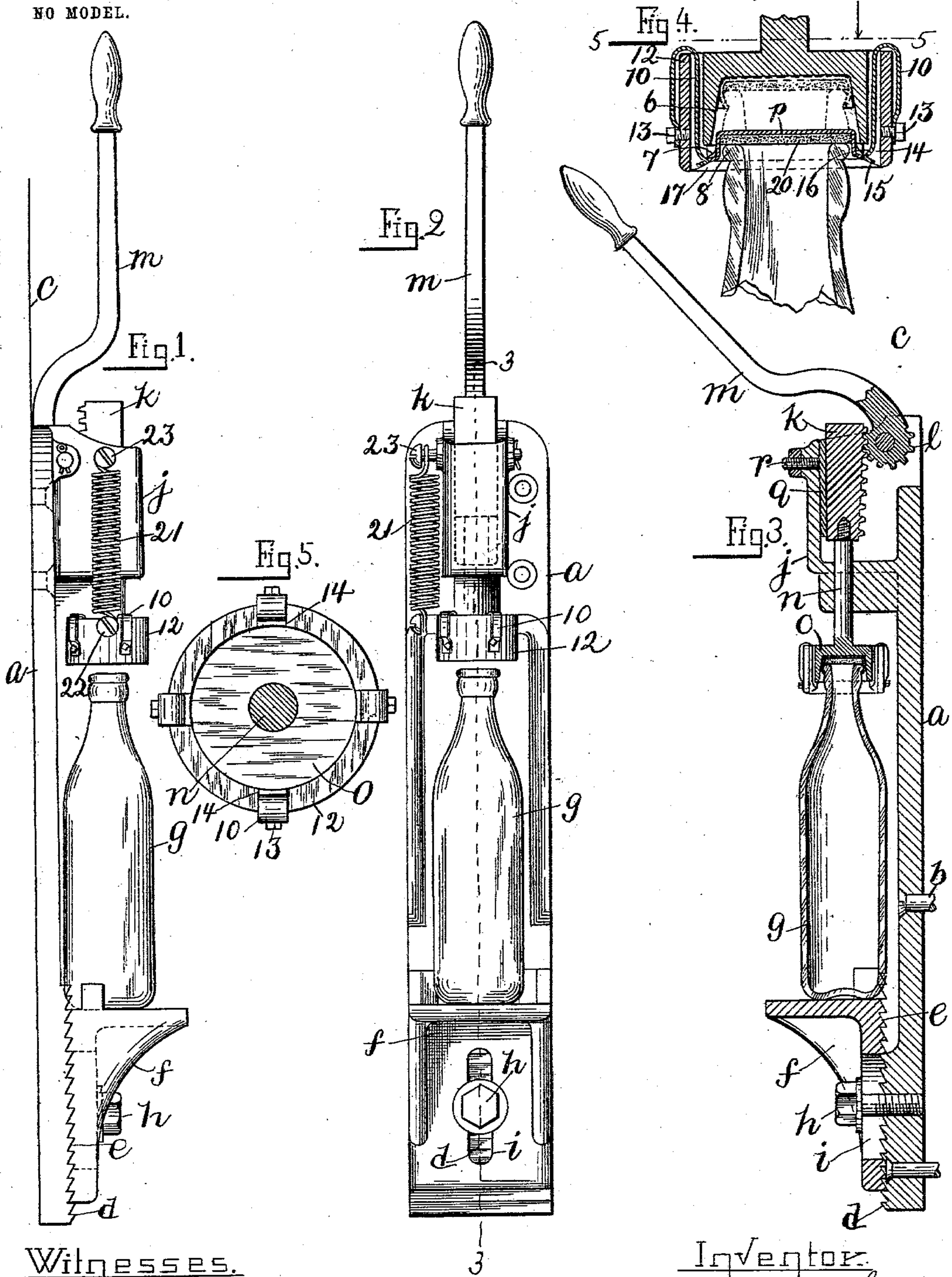


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H. CARMICHAEL.  
APPARATUS FOR CAPPING BOTTLES.  
APPLICATION FILED AUG. 8, 1902.

NO MODEL.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR CAPPING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 752,884, dated February 23, 1904.

Application filed August 8, 1902. Serial No. 118,879. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY CARMICHAEL, a citizen of the United States, residing in Malden, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Apparatus for Capping Bottles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a bottle-capping machine, and has for its object to provide a simple and efficient apparatus for the purpose specified.

Figure 1 is a side elevation of a bottle-capping machine embodying this invention; Fig. 2, a front elevation of the machine shown in Fig. 1; Fig. 3, a vertical section on the line 3 3, Fig. 2, with the parts in the position they occupy when the cap is substantially fixed on the bottle; Fig. 4, an enlarged sectional detail to be referred to; and Fig. 5, a sectional detail, on an enlarged scale, of the socket-piece, the section being taken on the line 5 5, Fig. 4.

The apparatus herein shown as embodying this invention consists, essentially, of a back plate or bar *a*, which in practice is secured by screws *b* or in any other suitable manner to a vertically-arranged support, (represented by the line *c*.) The back plate or bar *a* is provided at its lower end with ratchet-teeth *d*, extended transversely of said plate or bar and which are engaged by ratchet-teeth *e* on the rear face of a bracket *f*, constituting a support for the bottle *g* to be capped. The bracket *f* is thus capable of being moved vertically to enable bottles of different sizes to be capped with the apparatus herein shown. The bracket *f* is secured in its adjusted position by means of a set-screw *h*, extended through a vertical slot *i* in said bracket.

The back plate or bar *a* is provided near its upper end with a housing *j*, closed at its bottom and open at its top and within which is located a rack-bar *k* and a toothed segment or hub *l*, provided with a handle *m*. The rack-bar *l* has connected to its lower end the spin-

dle *n* of a socket *o*, which spindle is extended through the bottom of the housing *j*.

The toothed side or surface of the rack-bar is inclined with relation to the spindle, being wider at the top, and the toothed hub is made eccentric or convoluted, so as to obtain a greater speed of movement at the beginning of the downward movement of the handle to quickly bring the cap *p* within the socket-piece into engagement with the bottle and to obtain a slower movement but increased pressure at the end of the downward movement of the handle and at the time the cap is being forced onto the bottle.

The rack-bar *k* may be adjusted by a gib *q* and an adjusting-screw *r* to obtain perfect alinement of the rack-bar with the socket-spindle, and thereby secure uniform pressure over the surface of the cap. The socket-piece *o* may and preferably will be made as herein shown, it being provided with a socket for the reception of the cap *p* and provided with a conical or tapering annular wall *6*, which is designed to force the outward-crimped flange *7* on the cap around the bead *8* on the neck of the bottle. The socket-piece *o* has cooperating with it a plurality of yielding jaws, preferably made as herein shown and each consisting of a strip *10*, of spring metal, secured to the outer side of a ring *12*, as by a screw *13*. (See Fig. 5.) The metal strip *10* is passed over the top of the ring *12* and down through a slot, channel, or groove *14*, which may be made in the socket-piece or, as preferred, in the ring *12*, as shown in Figs. 4 and 5. The metal strip *10* projects below the socket-piece, and at its lower end the said strip is bent substantially <-shaped to form a guiding and supporting arm, the lower portion *15* assisting to guide the cap into the socket and the upper portion *16* serving to support the cap within the socket preparatory to its being applied to the bottle. The ring *12* extends below the socket-piece *o* and is provided with an inwardly-extended beveled flange *17*, which acts as a guide for the cap *p* when the latter is placed into the socket-piece.



When the cap has been inserted into the socket-piece, the spring-jaws close or move forward and bring their ends below the mouth of the socket and into position to support the rim or edge of the cap. The operator turns the handle from its elevated position shown in Fig. 1 into one substantially at right angles thereto, thereby through the toothed hub *l* and rack-bar *k* moving the socket-piece *o* downward and forcing the cap up into the conical socket with a pressure sufficient to compress the cork lining 20 of the cap over the mouth of the bottle and to turn the crimped edge of the cap inward about the neck of the bottle, as represented in Figs. 3 and 4, thus effectively sealing the mouth of the bottle, the inward turning of the edge of the cap being effected by the conical walls of the socket. When the pressure is removed from the handle, the socket-piece is elevated by the spring 21, fastened at one end by the screw 22 to the socket-piece and at its other end by the screw 23 to the housing *j*. The upward movement of the socket-piece causes the lever to be elevated into its starting position, which is substantially vertical.

By reference to Fig. 3 it will be seen that the rack-bar engages the toothed hub in front of the pivot for said hub—that is, at a point between the said pivot and the front of the housing—so that when the handle is not in use it is elevated out of the way of the operator and allows of ready access to the socket-piece for placing the cap in said socket-piece and for placing the unsealed bottle in position and removing the sealed bottle. By means of the eccentric toothed hub *l* and the inclined rack-bar *k* a quicker and more powerful operating apparatus is obtained.

By the construction herein shown the springs 10, doubled upon themselves, are made capable of moving very readily and freely within the small permissible compass.

I claim—

1. In a bottle-capping machine, the combination with a support for the bottle, of a socket-piece movable toward and from the same, a rack-bar connected with said socket-piece and provided with an inclined surface having rack-teeth, a toothed hub in engagement with said rack-bar and eccentrically mounted, and a handle connected with said hub, substantially as described.

2. In a bottle-capping machine, the combination with a socket-piece, provided with a conical or tapering socket, of a ring secured to said socket-piece outside thereof, one of said parts having a plurality of grooves, channels or slots, and spring-jaws located in said slots to operate substantially as described.

3. In a bottle-capping machine, the combination with a socket-piece provided with a conical or tapering socket, of a ring secured

to said socket-piece outside thereof and provided with a plurality of slots or channels on its inner surface, and spring-jaws located in said slots to operate substantially as described.

4. In a bottle-capping machine, the combination with a socket-piece provided with a conical or tapering socket, of a ring secured to said socket-piece outside thereof, one of said parts having a plurality of grooves, channels or slots, and spring-jaws consisting of metal strips secured to the outside of said ring and passed over the same and down through said slots, the said strips below the socket-piece having bent portions, substantially as described.

5. In a bottle-capping machine, the combination with a support for the bottle, of a socket-piece movable toward and from the same and provided with a conical or tapering socket, a plurality of spring-jaws secured to said socket-piece to support the cap therein, a rack-bar connected with said socket-piece, a toothed hub in engagement with said rack-bar, and a handle connected with said hub so as to produce downward movement of the rack-bar when said handle is moved downward, substantially as described.

6. In a bottle-capping machine, the combination with a back plate or bar provided with a housing closed at its bottom and open at its top, of a socket-piece located below said housing and provided with a spindle extended through said bottom into said housing, said socket-piece being of greater diameter than the said spindle, a rack-bar movable within said housing and attached to said spindle, a toothed hub mounted in said housing between said rack-bar and the said back plate, and a handle attached to said toothed hub, substantially as described.

7. In a bottle-capping machine, the combination with a back plate *a* provided with the ratchet-teeth *d* at its lower end and with a housing at its upper end, a bracket *f* to support the bottle provided with ratchet-teeth on its rear side, and means to secure said bracket to said back plate, a toothed hub pivoted within the said housing and having a handle attached to it, a toothed rack-bar within the housing in mesh with said toothed hub, a socket-piece located below said housing and having a spindle attached to said rack-bar, means to retain the caps in said socket-piece, and a spring to lift the said socket-piece, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY CARMICHAEL.

Witnesses:

JAS. H. CHURCHILL,  
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