G. KIRKEGAARD.

BOTTLE CAPPING MACHINE.

APPLICATION FILED FEB. 20, 1907.

946.138.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1

Fig. 1.

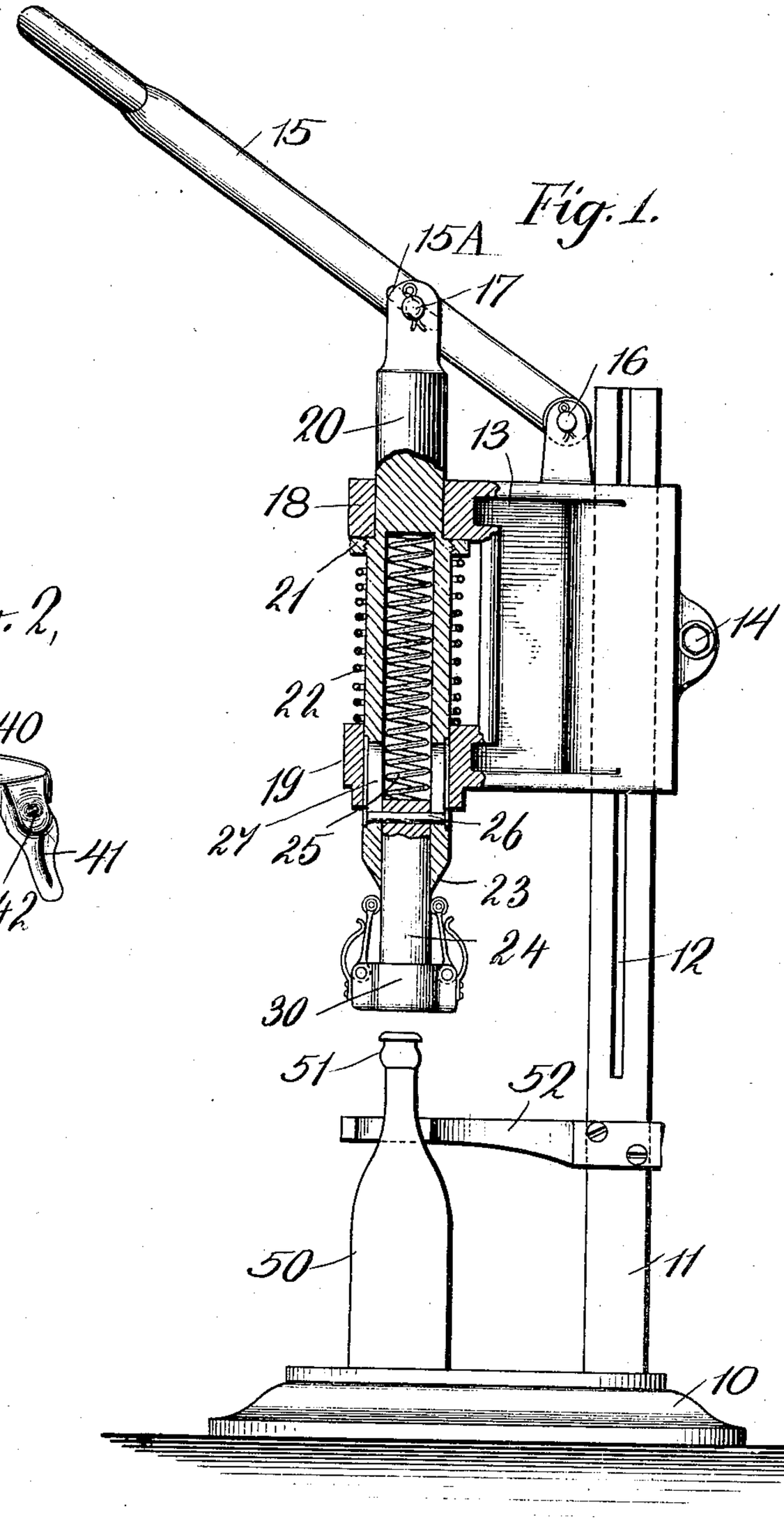
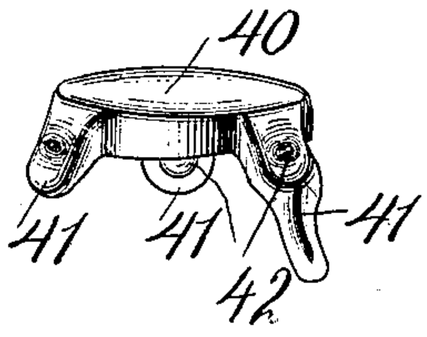


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3,

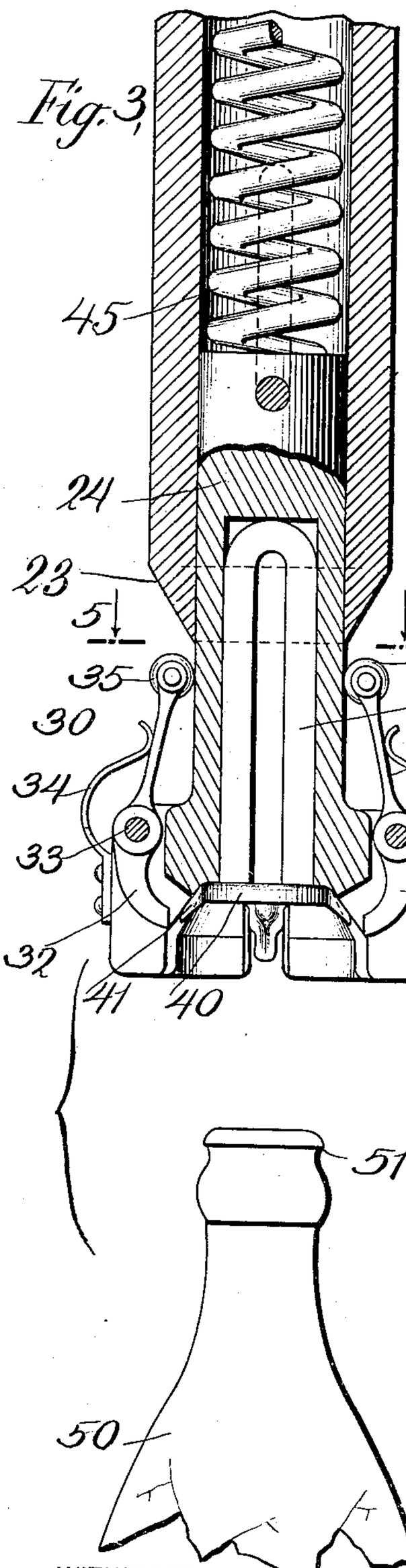


Fig. 5,

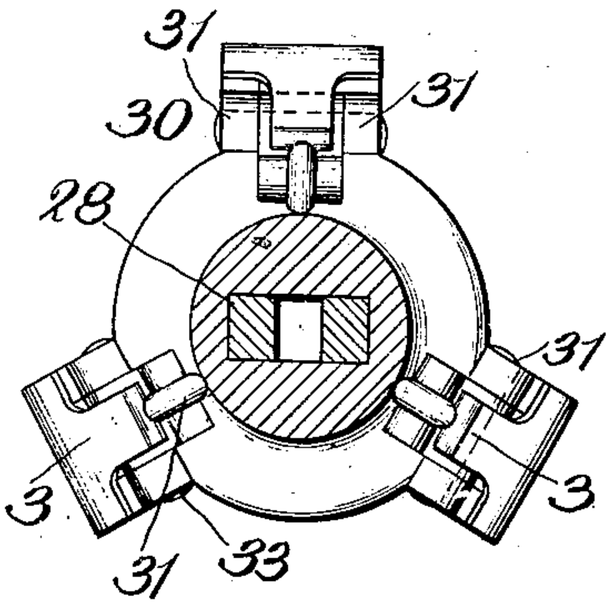


Fig. 4,

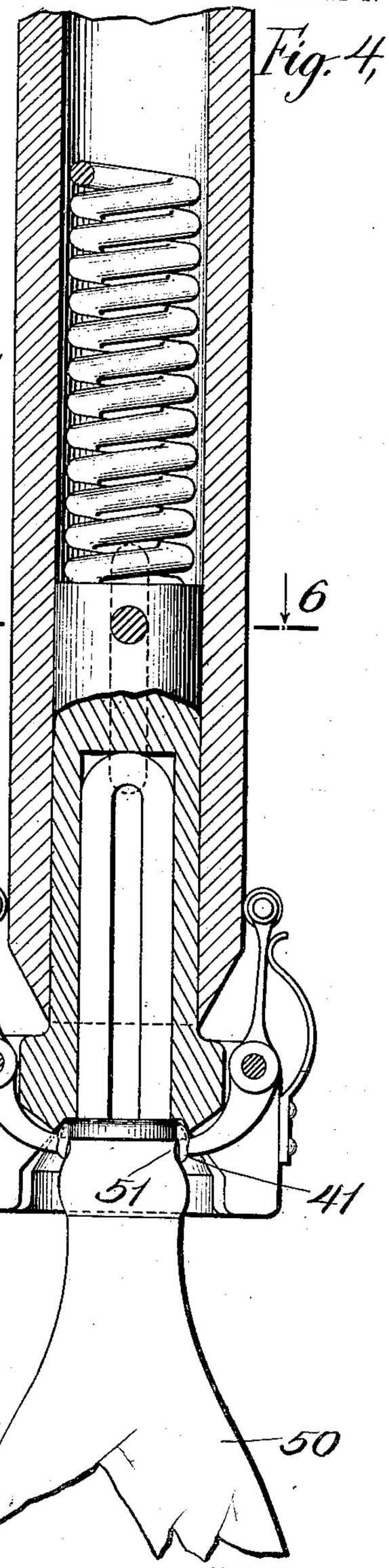
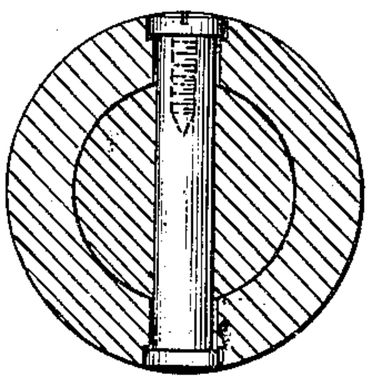


Fig. 6,



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UNITED STATES PATENT OFFICE.

GEORG KIRKEGAARD, OF NEW YORK, N. Y.

BOTTLE-CAPPING MACHINE.

946,138. Specification of Letters Patent. Patented Jan. 11, 1910.

Application filed February 20, 1907. Serial No. 358,477.

To all whom it may concern:

Be it known that I, GEORG KIRKEGAARD, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, United States of America, have invented certain new and useful Improvements in Bottle-Capping Machines, of which the following is a specification.

My invention relates to a bottle capping machine and its object is to provide a simple and efficient apparatus for securing bottle stoppers or caps over the mouths of bottles or jars.

I will describe my invention in the following specification and point out the novel features thereof in claims.

Referring to the drawings, Figure 1 shows in side elevation, partly in section, my improved bottle capping machine. Fig. 2 is a perspective view of a bottle cap which I have invented and which may be applied to bottles by means of my present invention. Fig. 3 is an enlarged sectional side elevation of the bottle capping head and some of its associated parts showing the relative position of these parts before the operation of applying a cap to a bottle. Fig. 4 is a sectional side elevation of similar parts to those shown in Fig. 3 showing, in this case, the parts in position occupied when the cap has just been clamped on the bottle. Fig. 5 is a sectional plan view through the line 5—5 of Fig. 3, and Fig. 6 is a sectional plan view through the line 6—6 of Fig. 4.

Like characters of reference designate corresponding parts in all of the figures.

10 designates a base upon which the various parts of my machine are mounted. 11 is a standard securely attached to this base. This standard may be provided with a slot 12.

13 designates a supporting-head or carriage which is slidably mounted upon the standard 11 and guided by the slots 12, and which may be secured to the standard at any desired position by means of a lock-nut 14.

15 designates a lever which is pivoted to the supporting-head 13 at 16. This lever is provided with a slot 15^{A}. A pin 17 is arranged to pass through this slot.

20 designates a spindle which is slidably mounted in the supporting-head 13 at 18 and 19. The upper end of this spindle is slotted vertically for the reception of the lever 15 with which it is connected by means of the pin 17. A collar 21 is attached to the spindle 20 and a spring 22 which is compressed between this collar 21 and the portion 19 of the head or carriage 13 tends to hold the spindle and its associated parts in their upper position as is shown in Fig. 1. The upward movement of these parts is limited by the collar 21 striking against the portion 18 of the supporting-head 13. The lower end of the spindle 20 is beveled as is shown at 23 for a purpose which will be fully pointed out later.

The lower part of the spindle 20 is hollow and is arranged to receive a compression shaft 24 and a compression spring 25. A pin 26 in this shaft projects through slots 27, 27 in the sides of the spindle, and this pin serves to hold the shaft 24 within the spindle 20. The slots 27, 27 are of sufficient length to provide for a considerable independent vertical movement of the shaft 24 within the spindle 20.

The lower end of the shaft 24 may be hollowed out and a permanent horseshoe-magnet 28 inserted within the cavity thus formed, the purpose of which I will fully describe hereinafter.

The lower end of the shaft 24 is constructed to form a cap applying head 30. For this purpose it is provided with lugs 31, 31 in which are pivoted locking levers 32, 32 as at 33. Springs 34, 34 are arranged to press the upper ends of the locking levers 32 inwardly and antifriction rollers 35, 35 may be applied to the upper end of these locking levers. Their lower extremities are shaped to engage with the depending lugs or fingers 41 of the bottle cap 40.

The caps 40 are generally constructed of magnetic material and in operating this device one of these caps is placed against the lower end of the compression shaft 24 and is held thereon by the magnet 28 with its projecting lugs or fingers 41 opposite the locking levers 32. The magnet 28 serves the purpose of holding this cap upon the compression shaft during the first part of the operation of the apparatus. A bottle 50 is now placed upon the base 10 directly under and in vertical alinement with the spindle 20 and the compression shaft 24. An adjustable guiding bracket 52 may be secured to the standard 11 to facilitate the holding of the bottle in proper position. Now, when an operator depresses the lever 15 the spindle 20 and its associated parts will be moved together downward thereby until the cap 40

meets the top of the bottle 50. These caps are usually provided with a cork lining which comes in contact with the top of the bottle. The downward movement of the cap and of the compression shaft is arrested by the contact of this cap with the bottle. A further movement of spindle 20 causes this cap to be pressed upon the bottle under the action of spring 45 so that the cork lining is firmly compressed over the orifice of the bottle, and this compression of the cork lining increases during the remainder of the operation. As the spindle 20 is further depressed the cam shoulder 23 at its lower end becomes wedged between the antifriction rollers 35 and presses the latter outward. This causes the lower ends of the locking levers to be pushed inward and to thereby squeeze the lugs or fingers 41 in under the annular rim or shoulder 51 on the bottle neck. This securely fastens or locks the cap upon the bottle. The relative position of the parts as above described is shown in Fig. 4.

The upper portion of the locking levers 32 is made flat and quite thin so that they may have a certain amount of spring. This construction is important as it prevents the breaking of the bottle neck by abnormal pressure.

When the lever is released the spring 22 will cause it and its connected parts to be moved upward and the operation above described will be reversed. That is, the cam or shoulder 23 will be removed from its contact with the locking levers 32, and the springs 34 which bear against the upper portion of the locking levers will cause them to return to their initial position. As soon as the pin 26 reaches the bottom of the slots in the spindle the compression shaft 24 will be raised with the spindle until the whole apparatus is free and clear of the bottle.

I have shown and described my invention as used in applying a particular form of bottle cap which I have invented to bottles. The invention is not, however, limited to this precise construction of bottle caps, as it is adaptable as well for use in conjunction with many other forms of bottle caps which are to be locked upon bottles by an initial downward movement and a subsequent pushing in of a portion of the cap.

What I claim is:—

1. In a bottle capping machine, a spindle, a shaft yieldingly mounted therein, locking levers pivotally mounted on said shaft, said levers comprising rigid cap engaging portions and relatively long resilient portions, and being fulcrumed between said rigid and resilient portions.

2. In a bottle capping machine, a spindle provided with a beveled end, a shaft yieldingly mounted therein, locking levers pivotally mounted on said shaft, said levers comprising rigid cap engaging portions and resilient portions and being fulcrumed between said rigid and resilient portions, and friction reducing means mounted on the resilient portions of said levers for engagement with the beveled end of the spindle.

3. In a bottle capping machine, a recessed shaft adapted to engage a bottle cap, a retaining magnet inserted within said recessed shaft, and means on said shaft for grasping and compressing said bottle cap when the latter is held in operative position by said magnet.

4. In a bottle capping machine, a recessed shaft adapted to engage a bottle cap, a permanent horse-shoe magnet inserted within said recessed shaft, and means on said shaft for grasping and compressing said bottle cap when the latter is held in operative position by said magnet.

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

GEORG KIRKEGAARD.

Witnesses:

ERNEST W. MARSHALL,

ELLA TUCH.