

(No Model.)

2 Sheets—Sheet 1.

T. SUTCLIFFE.

FILLING AND STOPPERING MACHINE FOR BOTTLING.

No. 543,113.

Patented July 23, 1895.

Fig. 1.

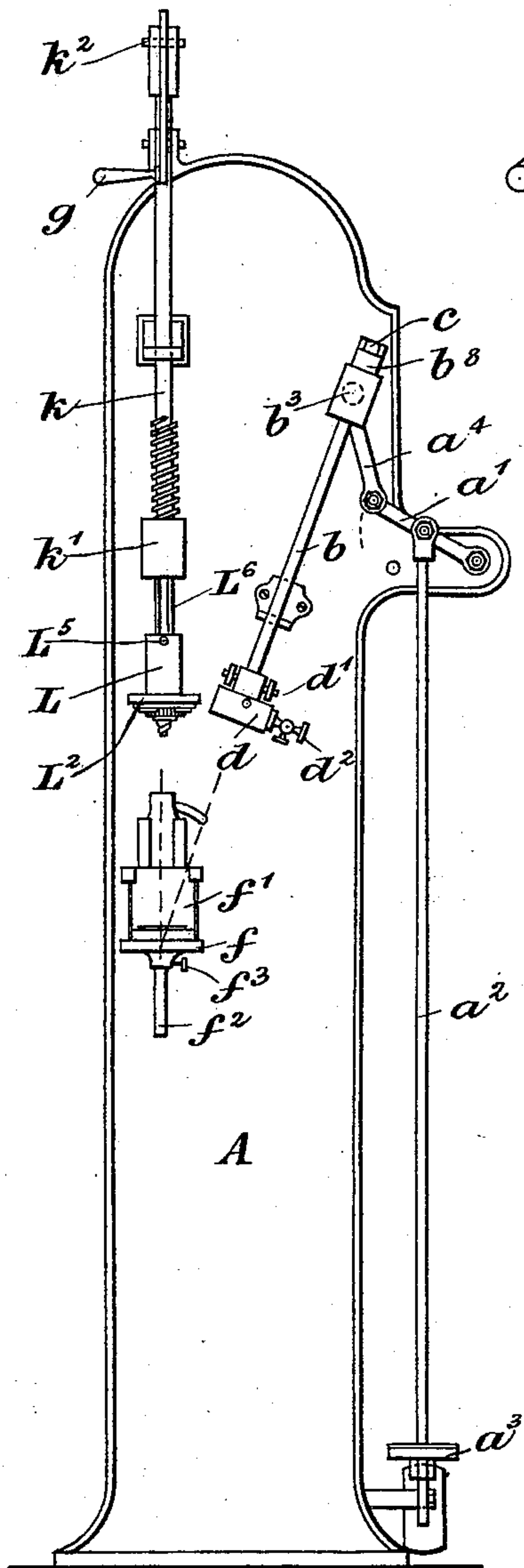
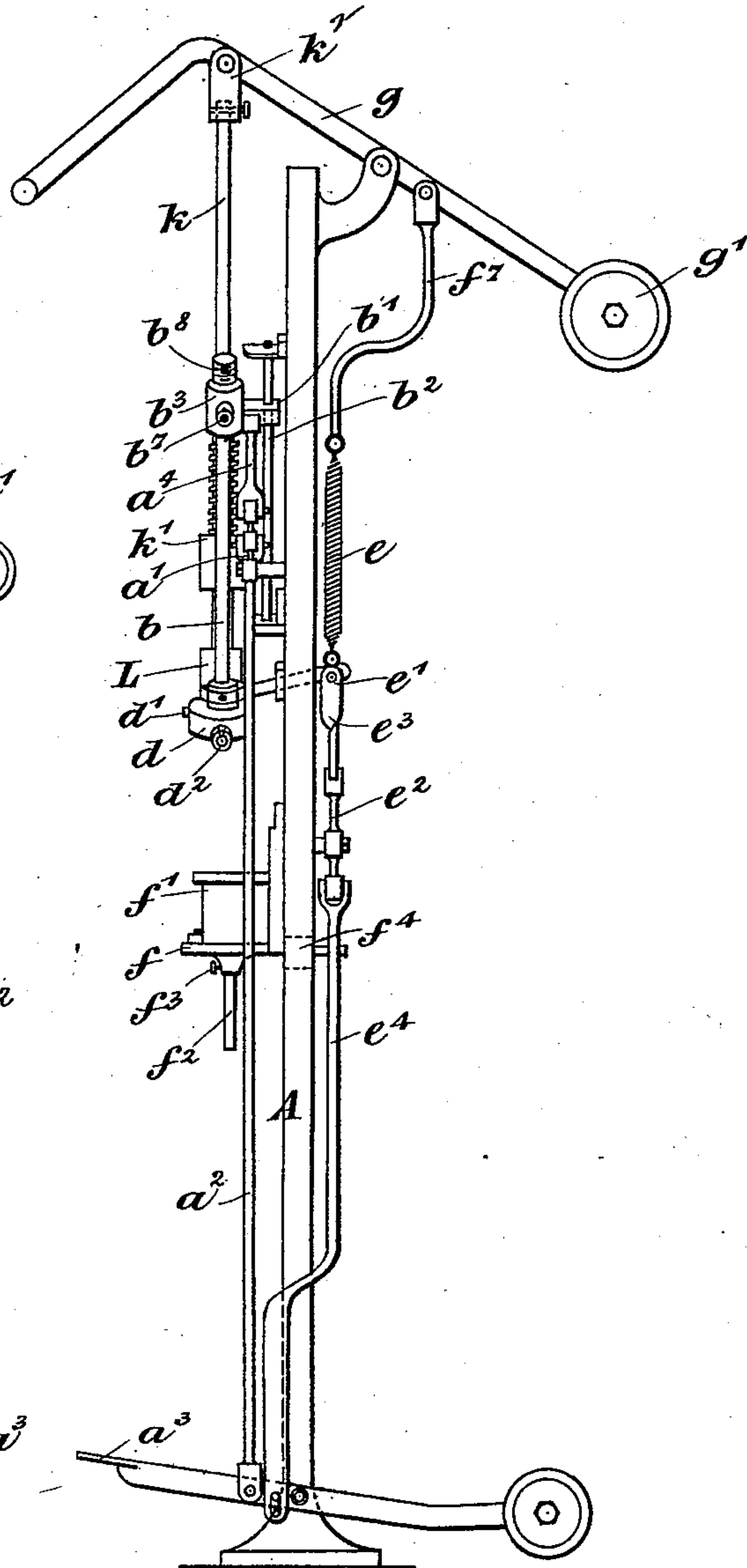


Fig. 2.



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(No Model.)

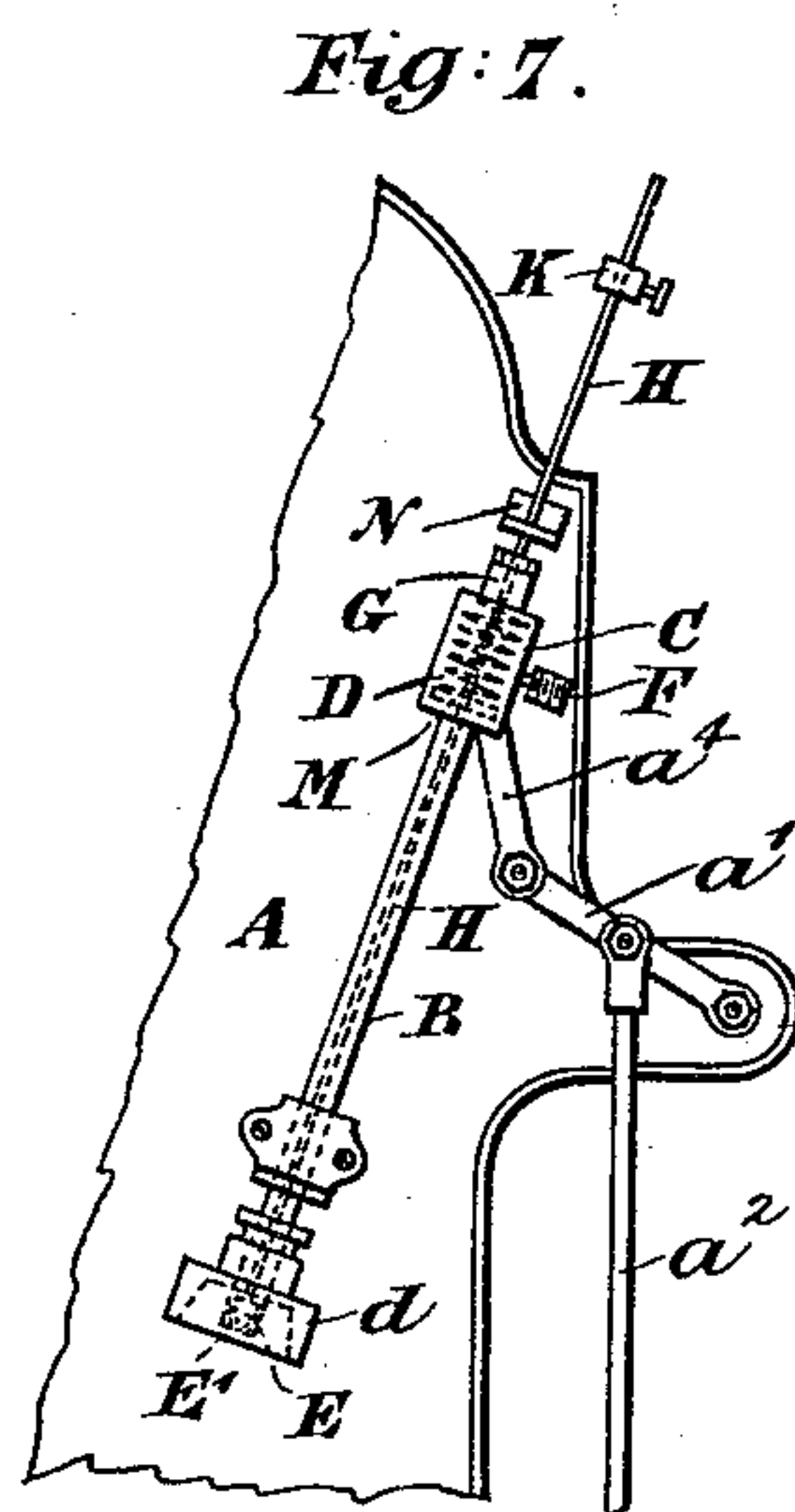
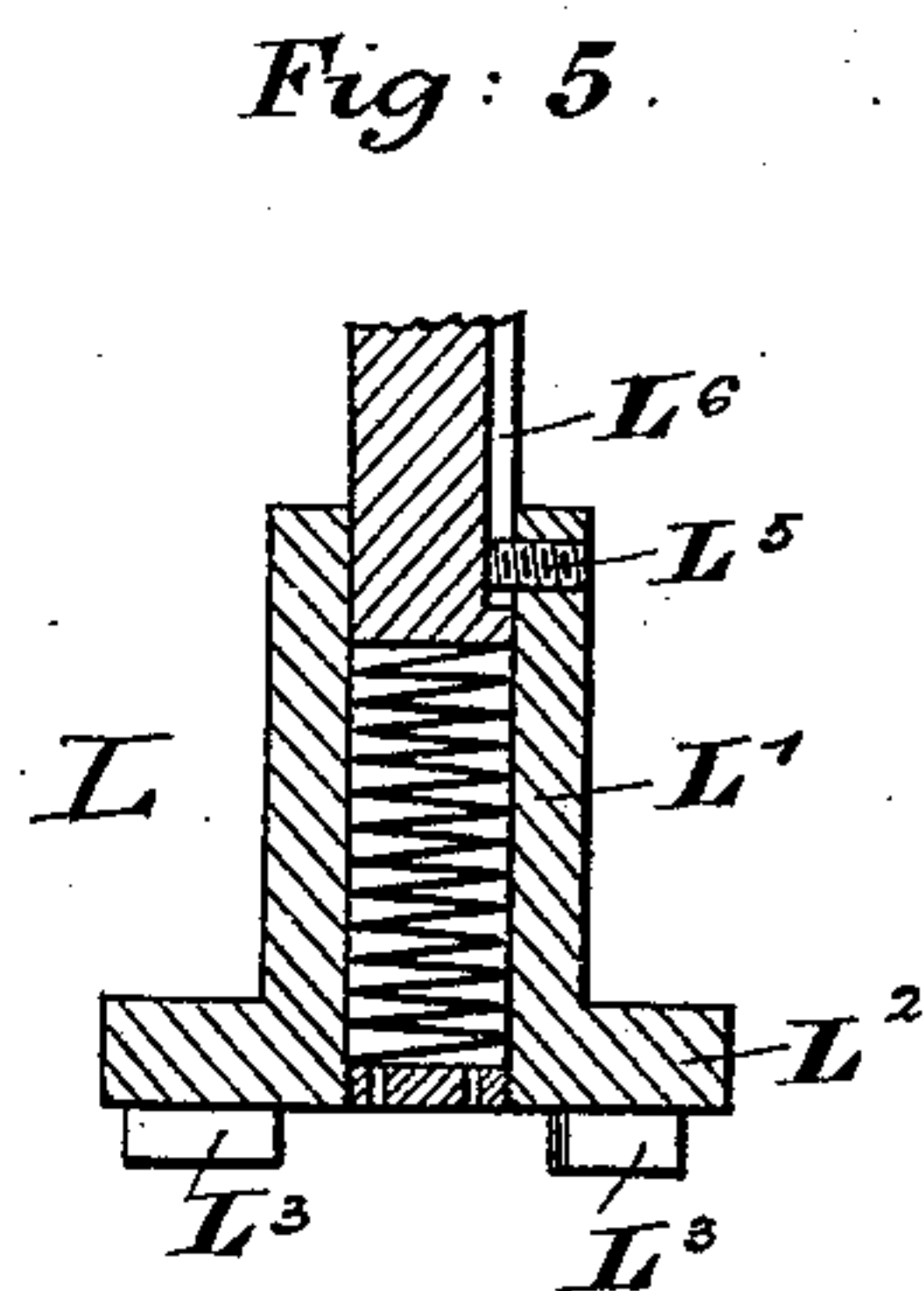
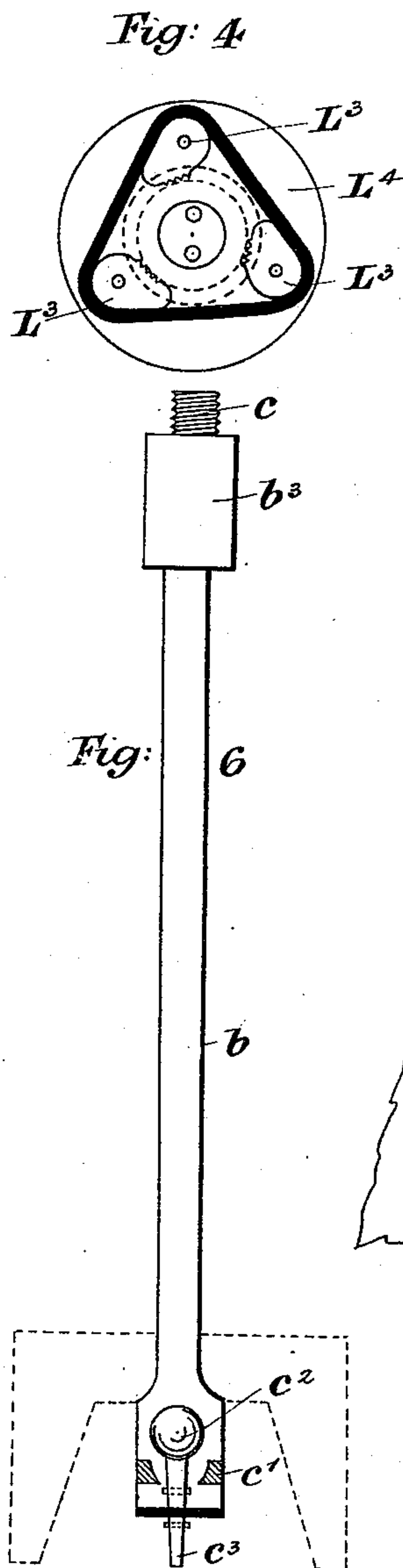
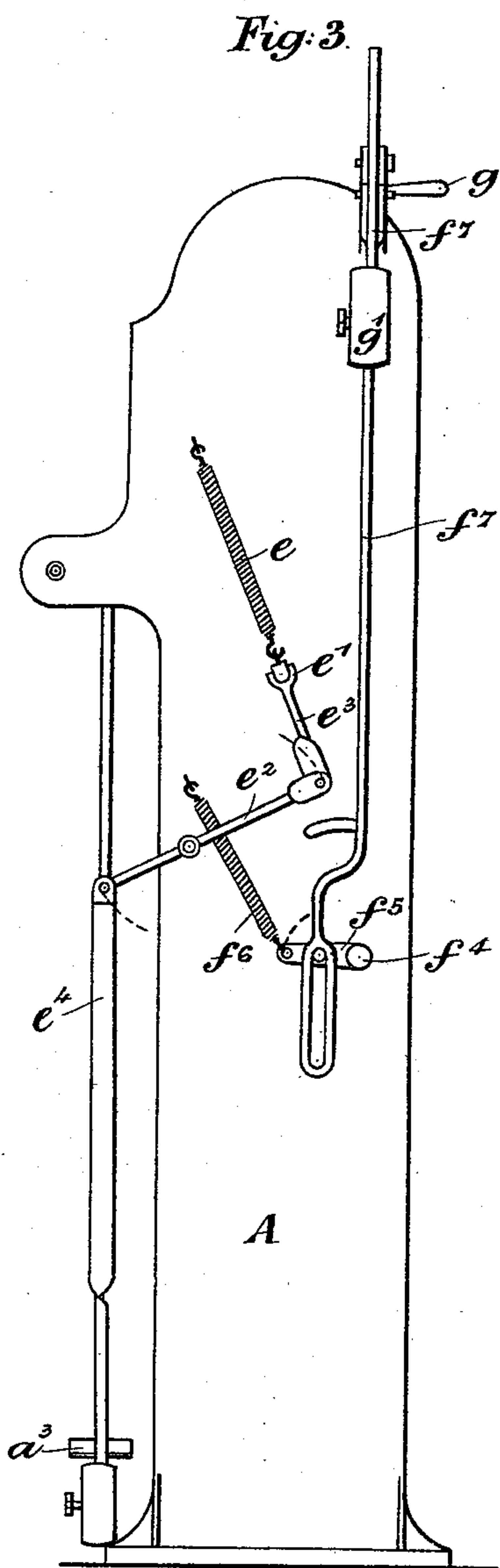
2 Sheets—Sheet 2.

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M. Y. Stewart.

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UNITED STATES PATENT OFFICE.

TOM SUTCLIFFE, OF LONDON, ENGLAND, ASSIGNOR TO THE RYDER & COMPANY, LIMITED, OF SAME PLACE.

FILLING AND STOPPERING MACHINE FOR BOTTLING.

SPECIFICATION forming part of Letters Patent No. 543,113, dated July 23, 1895.

Application filed February 7, 1895. Serial No. 537,579. (No model.)

To all whom it may concern:

Be it known that I, TOM SUTCLIFFE, engineer, a subject of Her Majesty the Queen of Great Britain and Ireland, and a resident of 19 King's Road, Brownswood Park, London, England, have invented certain new and useful Improvements in Filling and Stoppering Machines for Bottling Beers, Mineral Waters, and the Like, of which the following is a specification.

This invention relates to improvements in filling and stoppering machines, such as are employed for bottling beers, mineral waters, and the like.

The machine consists of two parts—an arrangement for filling and an arrangement for stoppering the bottle when filled—the two parts being arranged side by side on one standard or frame, so as to bring the cup at the end of the filling-tube and the chuck for holding the stopper as near together as it is conveniently possible. The bottle is placed on a platform beneath the above-mentioned parts fitted with clips which hold the bottle firm on the platform, the said platform having an automatic motion which moves the bottle from the filling apparatus instantaneously to the stoppering apparatus. I claim to construct the filling apparatus in two different methods, both of which I proceed to describe.

To fully describe my invention reference is made to the accompanying drawings.

Figure 1 is a front elevation of a complete machine. Fig. 2 is a sectional view of the complete machine. Fig. 3 is a back view. Fig. 4 is the chuck for holding the stopper. Fig. 5 is a section of the said chuck. Fig. 6 is a section of the filling-tube and valve. Fig. 7 shows another method of constructing the filling-tube and valves in connection therewith.

A is the frame or standard.

a' is a lever which is attached by means of a rod a^2 to a foot-pedal a^3 . A link a^4 is attached at the end of the lever a' , which is connected to a tube b by means of a cross-bar b' , Fig. 2, the said cross-bar being suitably shaped at the back to correspond with the guide b^2 , Fig. 2, along which it works. Above the cross-bar b' , and situated directly in line with the tube is a small receptacle b , preferably cylindrical,

b^3 , having an inlet at a suitable place, preferably at the top, as at c . At bottom of the tube b , which is enlarged at the bottom, as in Fig. 6, I arrange a seating c' , Fig. 6, of sufficient size, and a valve, preferably ball-shaped, of india-rubber, metal, or other suitable material c^2 , Fig. 6.

Through the seating passes a pin c^3 , Fig. 6, which runs on a guide at the bottom of the tube b , and has small collars on it to regulate the amount of its travel. When the tube b descends into the bottle to be filled, as hereinafter described, the pin c^3 presses against the bottom of the bottle and raises the ball c^2 , thereby allowing the liquor to flow through. When the tube rises the back-pressure of the liquor forces the ball onto its seating and makes a tight joint. By this contrivance I gain the important object of admitting the liquor into the bottle only when the filling-tube has reached the bottom of the bottle; and, further, by having the valve at the bottom of the filling-tube I prevent any flow of the liquor in the tube after the valve is shut. The lower end of the tube b is provided with a cap d to cover the bottle-mouth, which has a lining of rubber or other pliable material to enable the tight joint to be made over the mouth of the bottle. d' is a small valve used for sniffing. d^2 is a cock which regulates the supply of gas to the bottle during the process of filling. The cap d is pressed down onto the mouth of the bottle either by means of a spring placed on the outside of the tube b , or preferably, as shown in the drawings, it may be actuated by a spring e on the back part of the frame, as shown at Figs. 2 and 3. A lever e' works through a slot in the frame directly behind the cup d , one end of the said lever being attached to the spring e and the other to the cup d . The pin on which this lever works is fixed to the frame A. The lever e' operates by the lever e^2 by means of connecting-link e^3 . A rod e^4 is attached to the pedal a^3 so that when the pedal is pressed down the spring e is brought into operation, causing the lever e' to press the cup d over the bottle-mouth. When the foot-pedal is released the cup d is raised from the bottle-mouth by the opposite action of the said levers and spring.

f is the platform on which the bottle is placed.

f' is the holder in which the bottle is placed, and it has a pin f^2 at the bottom passing through the center of the platform and fastened to the platform by a set-screw f^3 , and it can thus be regulated to take different sizes of bottles. The said platform f has a pin f^4 affixed at the back, as shown in Figs. 2 and 3, which passes through the frame A at the end of the pin f^4 , and at the back of the machine is affixed a short lever f^5 , Fig. 3, which is actuated by a spring f^6 and a rod f^7 affixed to the hand-lever of the stoppering arrangement, as shown at Figs. 2 and 3, and is so arranged that the least travel of the hand-lever g causes the platform f to move alternately in a line with the filling and stoppering contrivance. The first portion of the travel of the hand-lever g throws the platform f from the filling to the stoppering contrivance and the after travel completes the stoppering, as hereinafter described. The return travel after the operator loses his hold of the hand-lever g is caused by a weight g' attached to the opposite end of the lever g , and removes the platform f to its normal position, which is in a line with the filling contrivance and ready for recharging the bottle.

k is a spindle which is preferably fixed in a vertical position, as shown in Figs. 1 and 2, having thereon a quick thread or worm which runs through a fixed screwed bush k' , the said spindle k being operated by the lever g , hereinafter described, and attached to same by a link and swivel k^2 , which allows the spindle to revolve when the lever is being pressed down. At the lower end of the spindle k is a chuck or stopper-holder L. (Shown in Figs. 1 and 2, Figs. 4 and 5 showing the bottom and sectional views.) L' in Fig. 5 is the body of the chuck, which is preferably round in shape, having a rim or disk L^2 , Figs. 1 and 5, at the end, so that the bottom surface is large enough to accommodate the cams L^3 , Figs. 4 and 5, which are used for the purpose of gripping the head of the stopper and which are placed as shown in Fig. 4. Although three cams are shown in the drawings, one or more will serve the purpose if the face of the chuck is provided with suitable stops or apertures to take their places, so that when the single or double cam is pressing on the stopper it is being tightly held, but I find in practice that three cams are preferable. The object of these cams is that when the stopper is being turned into the bottle the cams become more and more tight, but the least reverse motion at once releases their hold upon the stopper. L^4 , Fig. 4, is a rubber band which is used to keep the cams in position.

The chuck L is attached to the spindle k , so that it will slide up and down on the plain end of the spindle k , and the pin L^5 , which is fixed in the side of the chuck L, runs in the keyway or groove L^6 provided in the plain end of the spindle k , so that vertically the chuck has a few inches play, but it revolves

with the spindle. It will be seen that the extra travel which is caused by the quick thread on the spindle over the travel required by a screw-stopper is thus disposed of by the spindle k running into the chuck.

If the pitch on the quick screw and that on the stopper are the same, the plain end of the spindle can be dispensed with, if desired, and the spindle can be fixed by a screw into the chuck.

I will now describe the filling-tube and apparatus shown in Fig. 7. The placing and method of working the valve in the filling-tube now described are calculated to prevent the least waste of liquor and to minimize the foaming or fobbing.

A is the frame of the filling-machine.

B is the filling-tube, which is attached in a suitable manner to any pedal or other arrangement for operating it. In the drawings I show its operation by the lever a' , which is attached by means of a rod a^2 to the foot-pedal. A link a^4 is attached at the end of the lever a' , and is connected to the tube B by a suitable pin on the back of the receptacle C. At the foot of the tube B, I affix a seating E' with a valve E of a shape suitable for the seating, preferably conical. To the valve is attached a rod H, which passes through the tube B and a stuffing-box G, and projects to the necessary distance beyond it.

On the top of the tube B is a receptacle C, which contains a spring D, which is used to press the valve E back onto its seating E' when the bottle is filled. The receptacle C has an inlet F, preferably at its side.

K is a collar with a set-screw, so that it can be regulated to any distance on the spindle H.

N is a stop fixed on a suitable place on the frame of the machine.

M is a shoulder on the spindle H.

d is the chuck or cup attached to the bottom of the tube and fits over the mouth of the bottle to be filled. Upon the filling-tube B being operated the chuck d covers the bottle-mouth and a tight joint is made. The tube B and the spindle H which it carries continues to travel through the chuck into the bottle, and when such tube is almost at the bottom of the bottle the collar K on the spindle comes in contact with the stop N. The collar K is so arranged that it only meets the stop when the tube is almost at the bottom of the bottle. The meeting of the collar K and stop N brings the valve E to a standstill, while the tube B, with the seating E' , continues to travel for a distance sufficient to open the valve and give free passage to the liquor, and at the same time compresses the spring in the receptacle C, placed between the shoulder M and the inner surface of the top of the receptacle C. When the filling operation is complete the tube is withdrawn from the bottle and releasing of the said spring forces the valve E back on its seating.

Having now particularly described my in-

vention and in what manner the same is to be performed, I declare that what I claim as new, and desire to secure by Letters Patent, is—

5 1. In a bottle filling and stoppering machine the combination of a pivoted bottle-holder with a filling and stoppering device, each arranged in a line radial from the pivot of the bottle-holder, the bottle-holder being adapted to be turned from one to the other and filled
10 and corked without removing it from the holder.

2. In a bottle filling and stoppering machine the combination of a pivoted bottle-holder with a weighted lever for moving the same,
15 with a bottle filling device consisting of a bottle cap and filling tube reciprocating there-through and an independent lever for thrusting the filling tube into the bottle, substantially as described.

20 3. In a bottle stoppering machine the combination of a revolving shaft provided with a quick thread thereon which passes through a stationary nut fixed on a suitable frame, with a stopper-holding chuck on the lower end of

said shaft, provided with one or more cams 25 arranged upon the lower side of said chuck adapted to grasp and hold a stopper as the shaft is rotated in one direction but release it when it is turned in the opposite direction.

4. In a bottle stoppering machine the com- 30 bination of a revolving shaft provided with a quick thread thereon which passes through a stationary nut fixed on a suitable frame, with a stopper-holding chuck on the lower end of said shaft, provided with three cams arranged 35 upon the lower side of said chuck, and means for pressing the cams against the stopper, said cams being so arranged as to grasp and hold the stopper when the chuck revolves in one direction but release it when the chuck re- 40 volves in the opposite direction.

In witness whereof I have hereunto set my hand, in presence of two witnesses, this 12th day of January, 1895.

TOM SUTCLIFFE.

Witnesses:

FREDK. J. NAYLOR,
A. SWATAU.