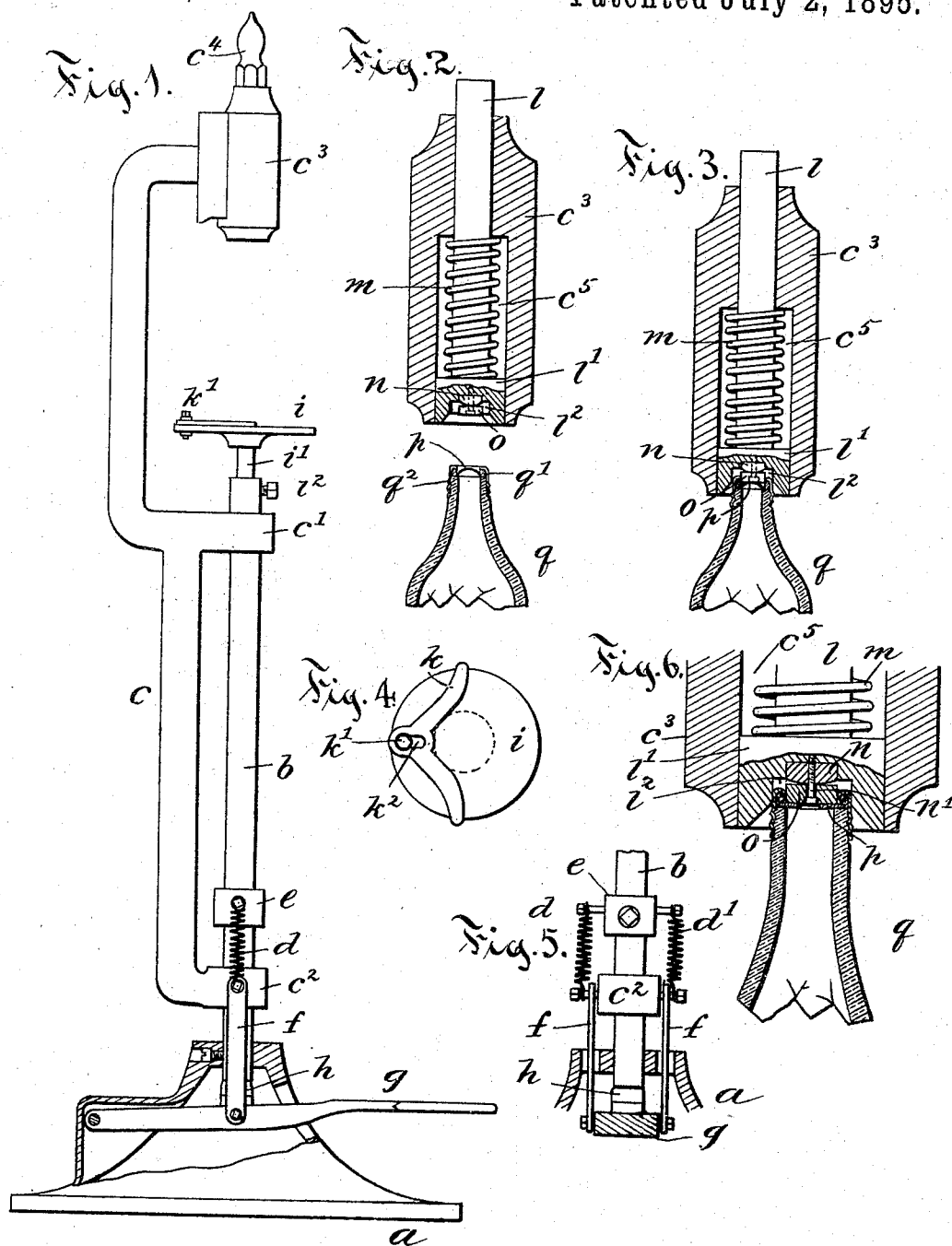


(No Model.)

F. B. THATCHER.
MACHINE FOR STOPPLING BOTTLES.

No. 541,898.

Patented July 2, 1895.



Witnesses:

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MACHINE FOR STOPPLING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 541,898, dated July 2, 1895.

Application filed October 20, 1894. Serial No. 526,476. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK B. THATCHER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Stopping Bottles, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a machine by means of which a thin metallic stopple may be secured in place in a bottle by an operation requiring the flattening or expanding of the stopple, and to this end my invention consists in the details of the several parts making up the machine as a whole and in the combination of such parts as more particularly hereinafter described and pointed out in the claims.

Referring to the drawings, Figure 1 is a view in side elevation of a machine embodying my invention. Fig. 2 is a detail view on enlarged scale in central section through the head, and also through the upper part of a bottle illustrating the relative position of the parts. Fig. 3 is a detail view in central section through the parts shown in Fig. 2, but with the head depressed and the parts in position for expanding the stopple. Fig. 4 is a detail plan view of the table with the adjustable guide. Fig. 5 is a detail view of the lower part of the standard looking from the front of the machine and showing the yielding support of the movable head and attachment of the treadle. Fig. 6 is a detail view, on enlarged scale, partly in section, of the lower end of the plunger showing the action of the latter on the stopple in closing the mouth of the bottle.

In the accompanying drawings the letter *a* denotes the base of the machine preferably of metal cast to shape and of a form and size adapted to hold the machine in an upright position. A standard *b* is secured to the base and it supports a vertically movable frame *c* which has a limited movement on the standard. Arms *c'*, *c''*, on the frame embrace the standard *b* the lower arm *c''* being connected by springs *d*, *d'*, to an adjustable collar *e* secured to the standard. By this means the frame as a whole has a yielding support on

the standard and is held at the upper limit of its permitted play by the spring connections. The frame is also connected by straps *f* to a treadle *g* which is pivotally connected to the base of the machine as shown in Fig. 1 of the drawings. On the upper part of the treadle and between it and the lower end of the standard an elastic buffer *h* is secured the object being to reduce the shock of stopping the upward movement of the treadle and frame.

On the upper end of the standard *b* a table *i* is supported on a stem *i'* which fits a socket in the upper end of the standard and is held in place as by means of a clamp screw *i''* in any desired position of adjustment. On the upper side of this table is secured an adjustable guide rest *k* as by means of a bolt *k'*, the guide rest being of a Y-shape secured to the table by the bolt passing through the slot *k''*, the head of the bolt being greater in width than the slot so as to overhang the edges.

The object of the guide rest *k* is to enable a bottle to be placed quickly and accurately in the proper position to bring the mouth of the bottle and the stopper attached thereto directly under and in the path of movement of a plunger borne in the head of the frame.

The head *c'* of the frame supports a plunger *l* extending through the head, a tip *c''* being suitably secured to the upper end of the plunger to prevent its downward movement. The lower end of the plunger is enlarged as at *l'*, and in the chamber *c''* formed in the head *c'* is located a spring *m*, the upper end of the spring thrusting against the upper wall of the chamber *c''* and the lower end against the shoulder formed by the enlargement *l'*. In the lower end of the plunger is a recess *l''* within which is secured a removable seat *n* that is held in place as by means of the bolt *n'*. This seat is preferably constructed of hardened steel, its lower surface being of a convex form. There is also secured to the face of the plunger within this recess, and with its inner surface resting against the convex surface of the seat *n* a die *o*. This die is preferably flat as to its upper and under surface, a recess being formed in the under surface for the reception of the head of the bolt *n'*, which holds the die in place. The opening in the die through which this bolt extends is prefer-

ably somewhat larger than the bolt in order to allow a tilting movement of the die on the convex surface of the seat *n* so that the former will readily adjust itself on the surface of the stopple *p* that is to be expanded and secured in place to close the mouth of the bottle *q*.

The operation of the device is as follows: A bottle *q* having been placed on a table *i* and in the proper position by means of the guide rest *k*, the stopple *p* being located in the mouth of the bottle with its lower edges projecting against the elastic material *q'* held in place by means of the cap *q''* surrounding the outside of the mouth of the bottle, a pressure upon the treadle *g* causes the frame *c* to be depressed bringing the die *o* into contact with the stopple *p* and flattening the latter as shown in Fig. 6 of the drawings. By this means the edges of the thin disk forming the stopple are thrust outward against the packing *q'* and thus effectually seals the mouth of the bottle. The die *o* being loosely supported on the lower end of the plunger readily tilts to adjust itself to the place of the shoulder in the mouth of the bottle, and the spring *m* provides a cushion supporting the die and the plunger and prevents any jar or sudden jolt as the parts are pressed together and the stopple expanded, and at the time when the stopple is flatly expanded upon the shoulder within the mouth of the bottle.

As already described the reciprocating frame is connected to the treadle by springs which have a yielding connection and the rapidity with which the head is lifted out of contact with the top of a bottle depends upon the force of the spring connection, that force being adjusted in any given machine by the vertical position of the collar *e* secured to the standard. As soon as the pressure upon the treadle *g* is released the springs *d* lift the frame *c* and enable the bottle to be readily removed and the operation repeated on another bottle.

In Fig. 6 of the drawings the stopple *p* which is made of very thin metal is shown as having a center thinner than the rest, this being a preferred form in some forms of stopple usable in this machine.

I claim as my invention—

1. In combination with a base piece, an upright standard, a frame supported on the standard, the yielding connection between the frame and the standard, a treadle pivoted

to the base and connected to the lower part of the frame, a table adjustably secured to the top of the standard, a bottle guide borne on the table, a plunger supported in an overhanging part of the frame and bearing a plunger with a rocking face piece adapted to enter the mouth of a bottle supported on the table, all substantially as described.

2. In combination with a standard, an adjustable table supported on the top of the standard, a vertically reciprocating frame supported from the standard by means of springs and having an overhanging part bearing a plunger, means for reciprocating the frame on the standard, and a spring seated plunger borne in the head of the frame and having a rocking face piece adapted to enter the mouth of a bottle supported on the table, all substantially as described.

3. In a machine for stoppling bottles, a table, a reciprocating frame having a head overhanging the table, a spring seated plunger located in the head and having a rocking face piece adapted to enter the mouth of a bottle, all substantially as described.

4. In a machine for stoppling bottles in combination, a table for supporting a bottle, a plunger located in the socket in an overhanging part of the frame, means for moving the bottle and head toward and from each other, a plunger cushion located within the plunger socket, and a rocking die or face borne on the lower end of the plunger and adapted to enter the mouth of a bottle, all substantially as described.

5. In combination with a base piece, an upright standard secured to the base, a reciprocating frame supported on the standard, a collar borne on the standard and having means for adjustably securing it to the standard, frame supporting springs connected to the collar and to the frame, a treadle pivoted to the base and connected to the lower part of the frame, a table secured to the top of the standard, a plunger supported in an overhanging part of the frame and bearing a plunger with a rocking face piece adapted to enter the mouth of a bottle supported on the table, all substantially as described.

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