

No. 880,407.

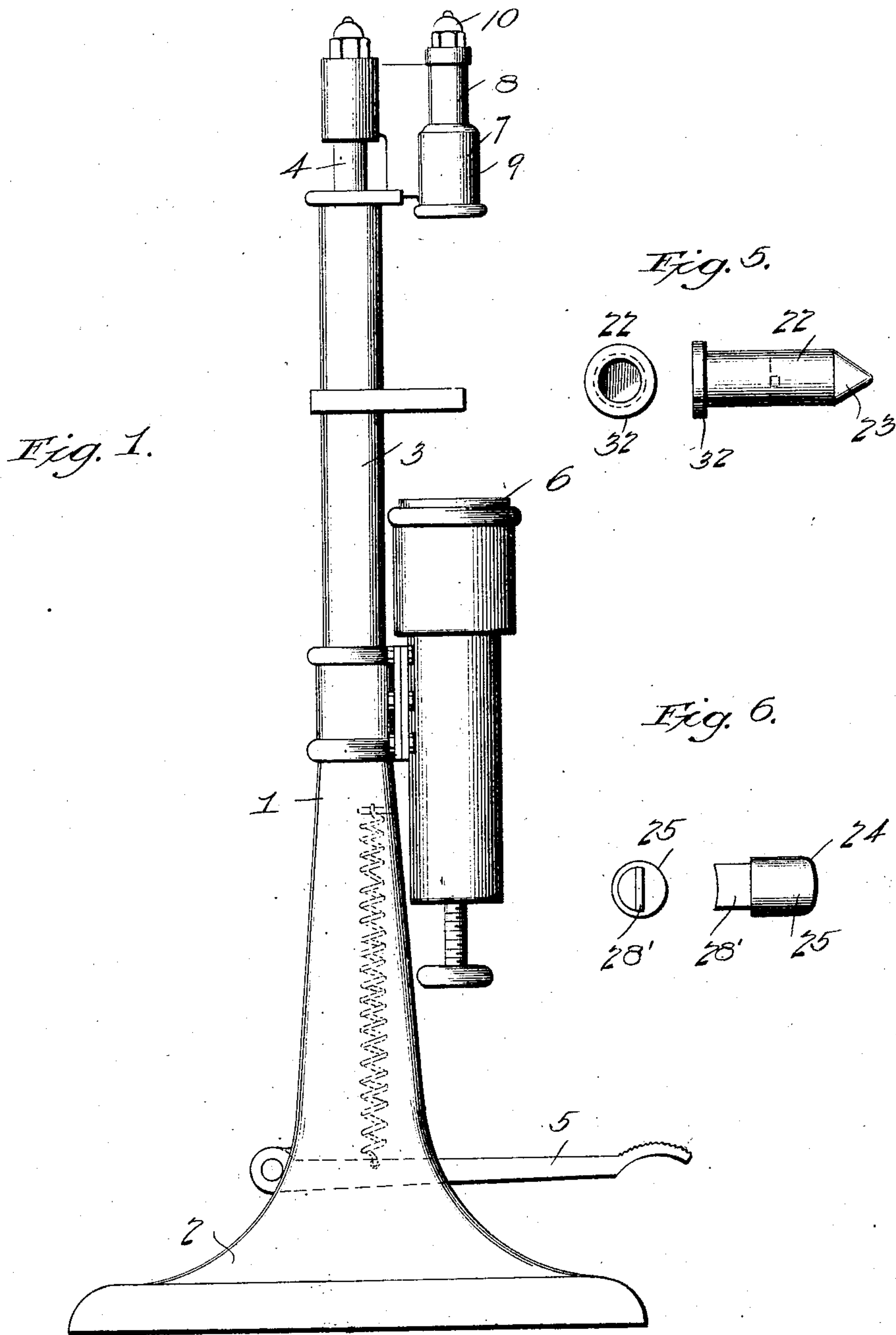
PATENTED FEB. 25, 1908.

E. D. SCHMITT.

MACHINE FOR APPLYING BOTTLE CAPS.

APPLICATION FILED MAY 23, 1907.

2 SHEETS—SHEET 1.



Witnesses

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Fig. 3.

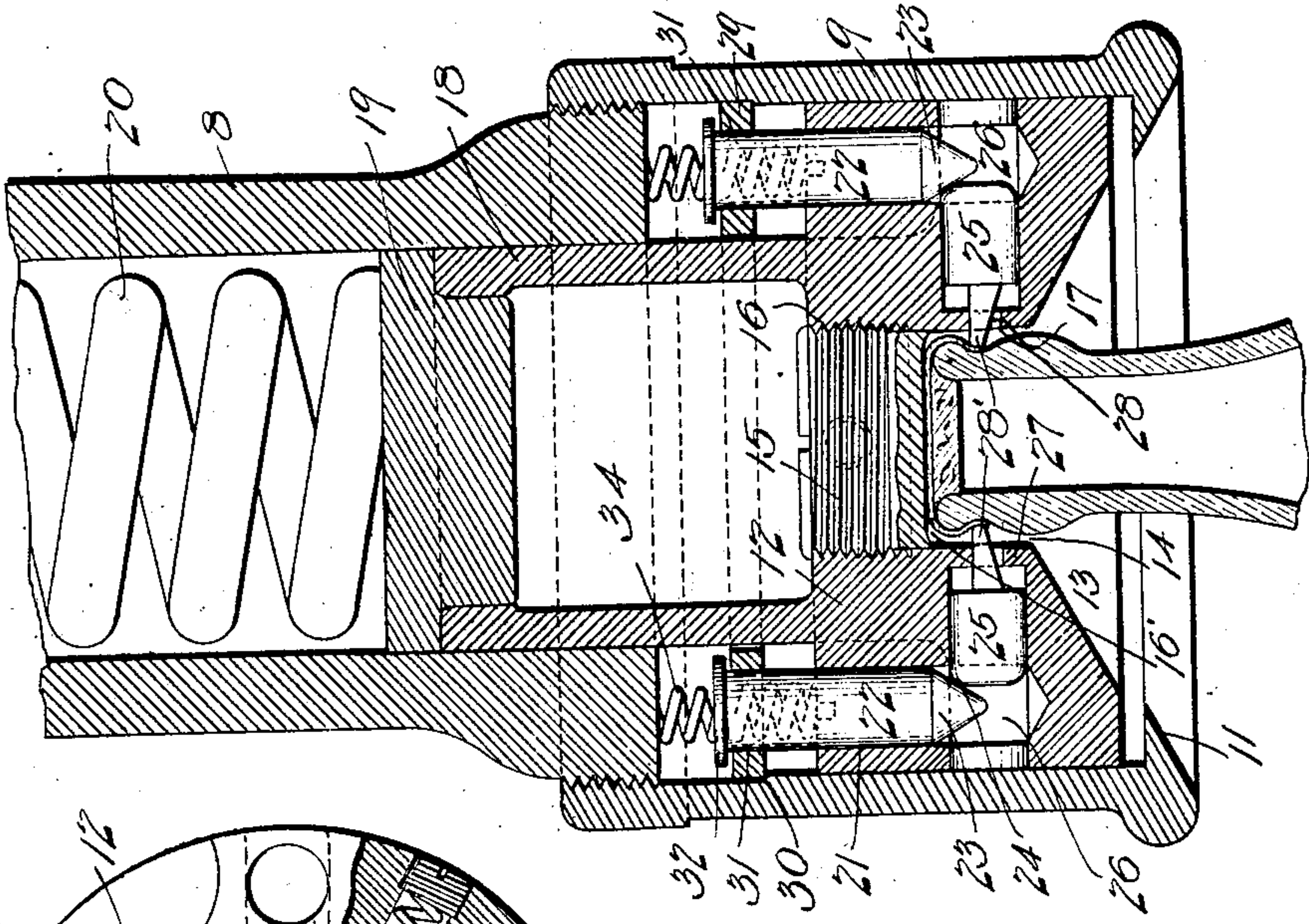


Fig. 4.

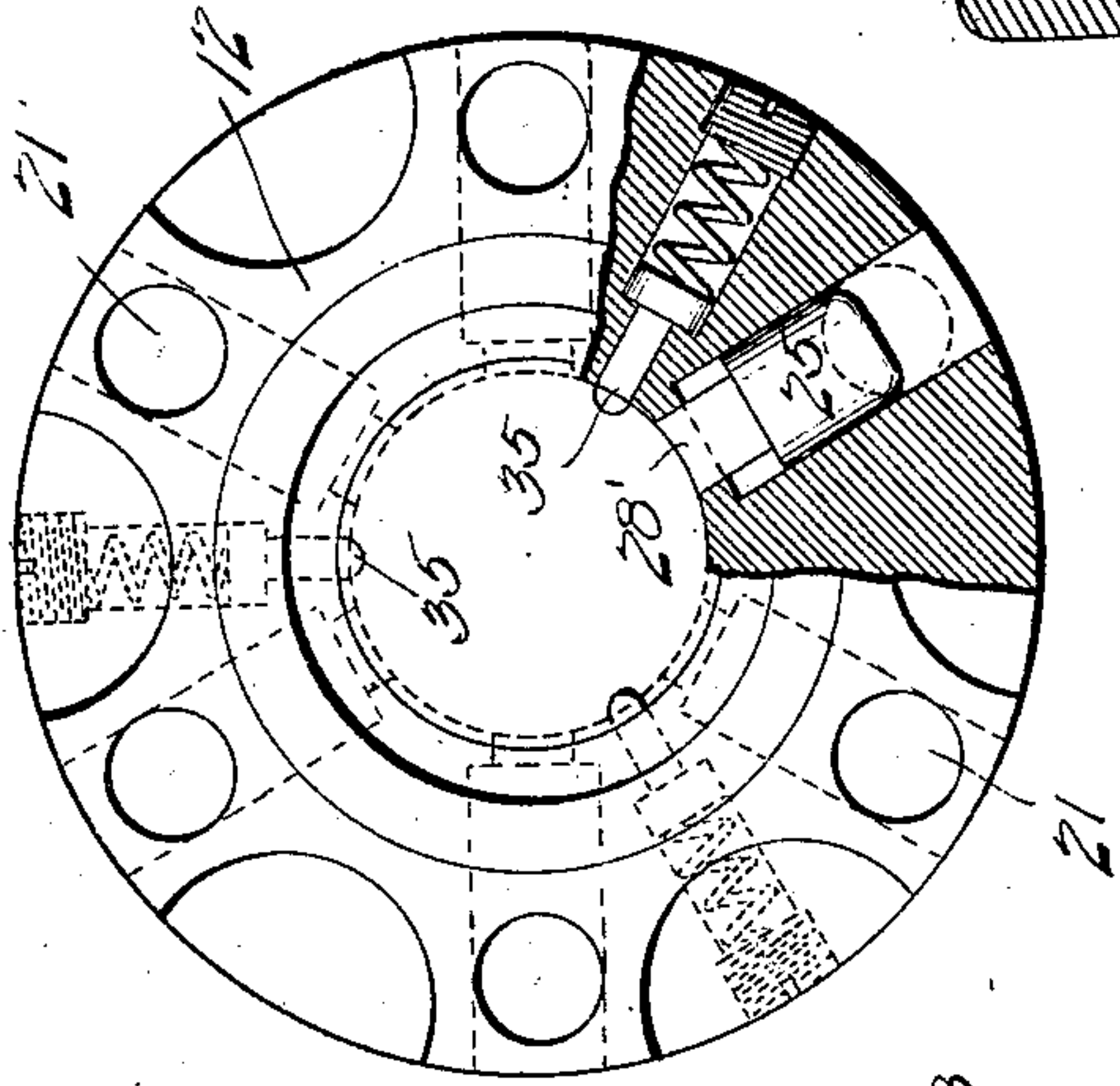


Fig. 7.

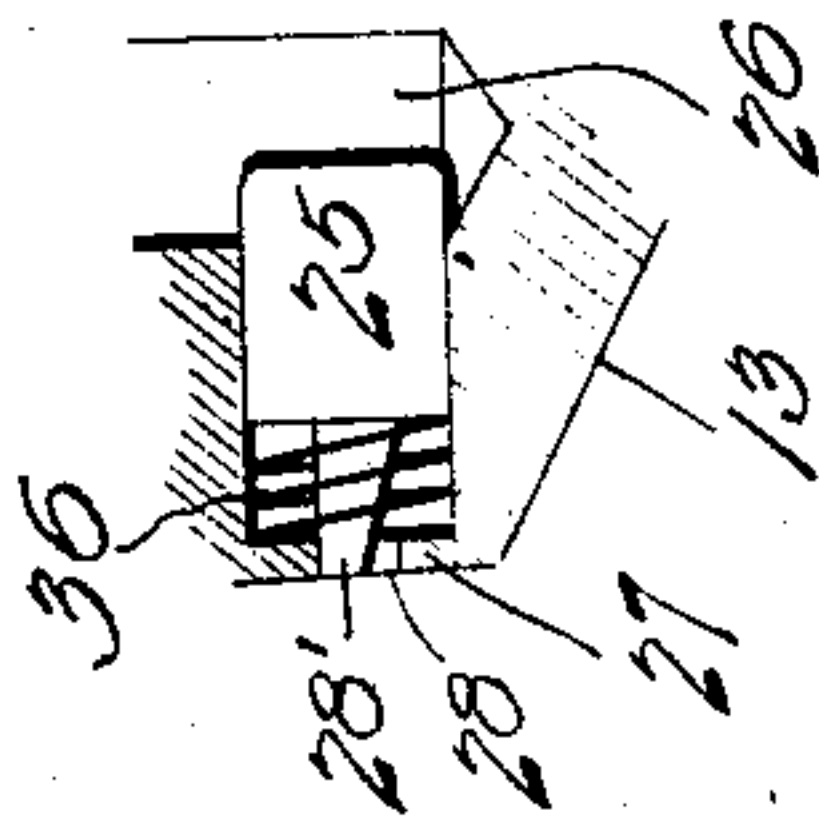


Fig. 2.

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UNITED STATES PATENT OFFICE.

EDWARD D. SCHMITT, OF BROOKLYN, NEW YORK, ASSIGNOR TO MONARCH SEAL COMPANY,
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MACHINE FOR APPLYING BOTTLE-CAPS.

No. 880,407.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed May 23, 1907. Serial No. 375,341.

To all whom it may concern:

Be it known that I, EDWARD D. SCHMITT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Applying Bottle-Caps, of which the following is a specification.

This invention relates to improvements in machines for applying bottle caps, and more particularly to the construction of the sealing head of such machine.

The invention contemplates the provision of a sealing machine whereby the cap is applied with the required pressure to effect an hermetic seal between the cork or other disk of elastic material in the cap and the lip of the bottle or other like vessel, and to lock the flange of the cap into holding engagement with the shoulder or locking surface of the vessel.

In the drawings:—Figure 1 is a side elevation of a machine of which my sealing head may form a part; Fig. 2 is a central vertical section of the head with the parts in normal position, a bottle cap being shown in dotted lines in proper position in the seal cavity of the plunger; Fig. 3 is a similar view showing a capped bottle therein, the parts being in the position they assume at the moment of locking the flange of the cap under the locking shoulder of the bottle; Fig. 4 is a plan view of the plunger, broken away to show the cap locking pins and the means for holding the seals preparatory to their application to the bottles; Fig. 5 is an end and side elevation of the pins, which operate the seal locking devices; Fig. 6 is an end elevation and plan of one of the seal locking pins or devices; and Fig. 7 is a detail sectional view of a portion of the plunger, showing a means for normally retracting the seal locking pins.

Referring to the drawings, the numeral 1 designates the frame of the machine, with a broadened base 2, and a tubular column 3 through which passes the head carrying vertically movable rod 4, which is suitably connected with a treadle 5, by which the head may be depressed.

The numeral 6 designates a seat or support for the bottle. This seat may be of any approved construction, and in fact, it should be understood at the out-set that this invention does not reside in the construction of the frame, or the means for raising and lowering

the heads and that the head may be employed in connection with any suitable machine by which the desired sealing pressure is to be brought about. It may be stationary or it may move vertically, or be mounted upon a rotatable carrier and brought at proper times to position to apply the seal as the requirements in a particular case may demand or make desirable.

The numeral 7 indicates the head casing preferably cylindrical in form and composed in the main, of two parts 8 and 9. The upper section 8 is internally threaded at its upper end for the reception of the threaded portion of a cap 10, and at its lower end externally threaded to receive the internal threads of the part 9, whereby said latter part may be readily detached to have access to the plunger and seal locking devices, or for placing them in the casing or for removing them therefrom. The part 9 is provided with an inwardly projecting ledge 11, which supports and limits the downward movement of the plunger as is clearly shown.

The numeral 12 designates the plunger, circular in form to fit snugly in the bore of the lower part of the head, in which it is movable vertically.

The under face of the plunger is inclined inwardly from the bottom as shown at 13, forming a continuation of the bottom line of the ledge 11, so that the bottle will center itself correctly in the sealing cavity 14 in the center of the plunger. The upward movement of the bottle seal, in placing it in the plunger is limited by a threaded plug 15, whose threads are received in the threads 16 of the inner wall of the plunger, rendering the plug adjustable and thereby making it possible to in effect, vary the sealing pressure, which is highly advantageous. The under face of the plug is cupped out as indicated at 16' to conform to the dome or upper part of the seal, and since the flange of the seal which the head is especially adapted to apply has in its application a flaring action, I slightly incline the wall of the seal cavity as indicated at 17 to permit this action. The numeral 18 designates a hollow extension of the plunger, upon which rests a flanged cap 19, between which and the under face of the screw cap 10 is interposed the sealing spring 20 which holds the plunger normally seated on the ledge 11 of the part 9. It is against the influence of this spring that the plunger moves

vertically or yields in the sealing operation. Outside of this extension the plunger is provided with a series of sockets 21 that receive the cam pins 22, each formed with a cam surface 23 which co-acts with the cam or rounded surface 24 of a corresponding number of locking pins 25, arranged in radial recesses 26, which recesses intersect the sockets 21. The recesses 26 extend from the periphery of the plunger whereby the seal locking pins may be readily inserted and a thin wall 27 is left between the seal cavity and each recess, through which walls, I provide an opening 28, through which the reduced inner ends 28' of the seal locking pins extend when the pins are projected forward to indent and lock the flange of the bottle seal under the locking shoulder on the bottle, as will appear more clearly in a description of the operation which will be given later.

The numeral 29 designates a ring which surrounds the extension 18, which ring rests upon a shoulder 30 in the lower part of the casing, and is provided with openings 31 for the passage of the cam pins 22. Each cam pin has a flange 32 that normally rests upon the upper surface of the ring, whereby the downward movement of the pins is limited. Each cam pin is provided with a socket for the reception of a spiral spring 34, which springs bear upon the lower edge of the part 8 of the head casing, whereby the pins are forced downward.

As clearly shown in Fig. 4, I provide between the seal locking pins a number of radially arranged spring-backed pins 35, with their ends projected slightly within the seal cavity. These are for the purpose of temporarily holding the seal preparatory to the sealing operation. As shown in Fig. 7, I may employ light springs 36 for holding the seal locking pins normally retracted.

In operation, a seal is placed in the sealing cavity where it will be held by the pins 35. A bottle is placed upon the bottle support and the head depressed and when the sealing pressure is applied, the bottle will force the plunger upward against the action of the sealing spring 20. This upward movement of the plunger will cause the cam surface of the pins 22 to yieldingly (due to the springs 34), engage the cam surfaces of the pins 25, but the pins 25 are not, upon the initial movement of the plunger projected through the openings 28, but upon a further upward movement of the plunger, and when the required or desired sealing pressure has been applied and the seal seated so that the lower portion of its flange is opposite the locking surface of the bottle, the cam surface of the pins 25 will have ridden downwardly against the cam surface of the pins 22, sufficiently to project the said pins 25 forward where their inner reduced ends indent the flange into firm locking engagement with the flange

of the seal, forcing it under the head or locking shoulder of the bottle. The pins 25 may be of such length and be capable of such movement that they will be forced entirely into their recesses, as when the bottles to be capped are uniform in diameter, but it will be seen that should a bottle be larger than is usual, the pins would not be forced all the way into the recesses, and the reaction resulting from the engagement of the pins with the cap on such large bottle will be taken up automatically by the springs 34, which will be compressed somewhat and the cam surfaces of the pins 25 will only ride upon the cam surfaces of the pins 22 a sufficient distance to yieldingly effect a lock and eliminate the danger of crushing the bottle. When the plunger returns to normal position, the pins 22 will be forced downwardly by the springs 34, until their flanges rest upon the ring 29, which obviously, limits the downward movement of the pins.

Modifications in the described construction may be made within the spirit of this invention, and while I have described the sealing head as especially adapted for applying hard metal flanged caps to bottles having an annular locking surface or shoulder adjacent to their mouths, it will be understood that the heads would be equally adapted for applying caps or covers to vessels other than bottles, such as glass jars, cans, etc., it being obviously only necessary to vary the dimensions of the head parts to accommodate them to such additional uses.

Claims.

1. In a machine for applying bottle seals, a yielding seal applying plunger formed with a seal holding cavity and a plurality of radially arranged recesses therein, said recesses having apertured walls separating them from said cavity, a slidable seal locking device in each recess formed with a seal indenting point guided in the apertures in said walls, a vertically yielding device for each locking device, each of said yielding devices having a cam surface co-acting with the locking devices, whereby when the plunger is moved upward, the seal locking devices are projected forward to bring their indenting points into engagement with the flange of a seal to lock the same at intervals upon the locking shoulder of a bottle.

2. In a machine for applying bottle seals, a yielding seal applying plunger formed with a seal holding cavity and a plurality of substantially radially arranged recesses therein, said recesses having apertured walls separating them from said cavity, a slidable seal locking device in each recess formed with a seal indenting point guided in the apertures in said walls, a vertically operating yielding device for each locking device, each yielding device having a cam surface co-acting with the locking device,

whereby when the plunger is moved upward, the seal locking devices are projected forward to bring their indenting points into engagement with the flange of a seal to lock the same at intervals upon the locking shoulder of a bottle, and means for limiting the downward movement of the yielding devices when the plunger returns to normal position, substantially as and for the purpose set forth.

3. In a machine for applying bottle seals, a yielding seal applying plunger formed with a seal holding cavity and a plurality of substantially radially arranged recesses therein, a slidable seal locking device in each recess and formed with a seal indenting point, a yielding device for each locking device, each yielding device having a cam surface co-acting with a locking device, whereby when

the plunger is moved upward, the seal locking devices are projected forward to bring their indenting points into engagement with the flange of a seal to lock the same at intervals upon the locking shoulder of a bottle, a ring within the head and limited as to downward movement and surrounding the plunger and provided with a series of apertures through which the yielding devices pass, and means carried by said yielding devices adapted to engage the ring to limit the downward movement of said devices as the plunger returns to normal position.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD D. SCHMITT.

Witnesses:

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OTTO A. SCHMITT.