Feb. 26, 1935. H. L. COMPTON 1,992,567

HAND CAPPER

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Fig. 1

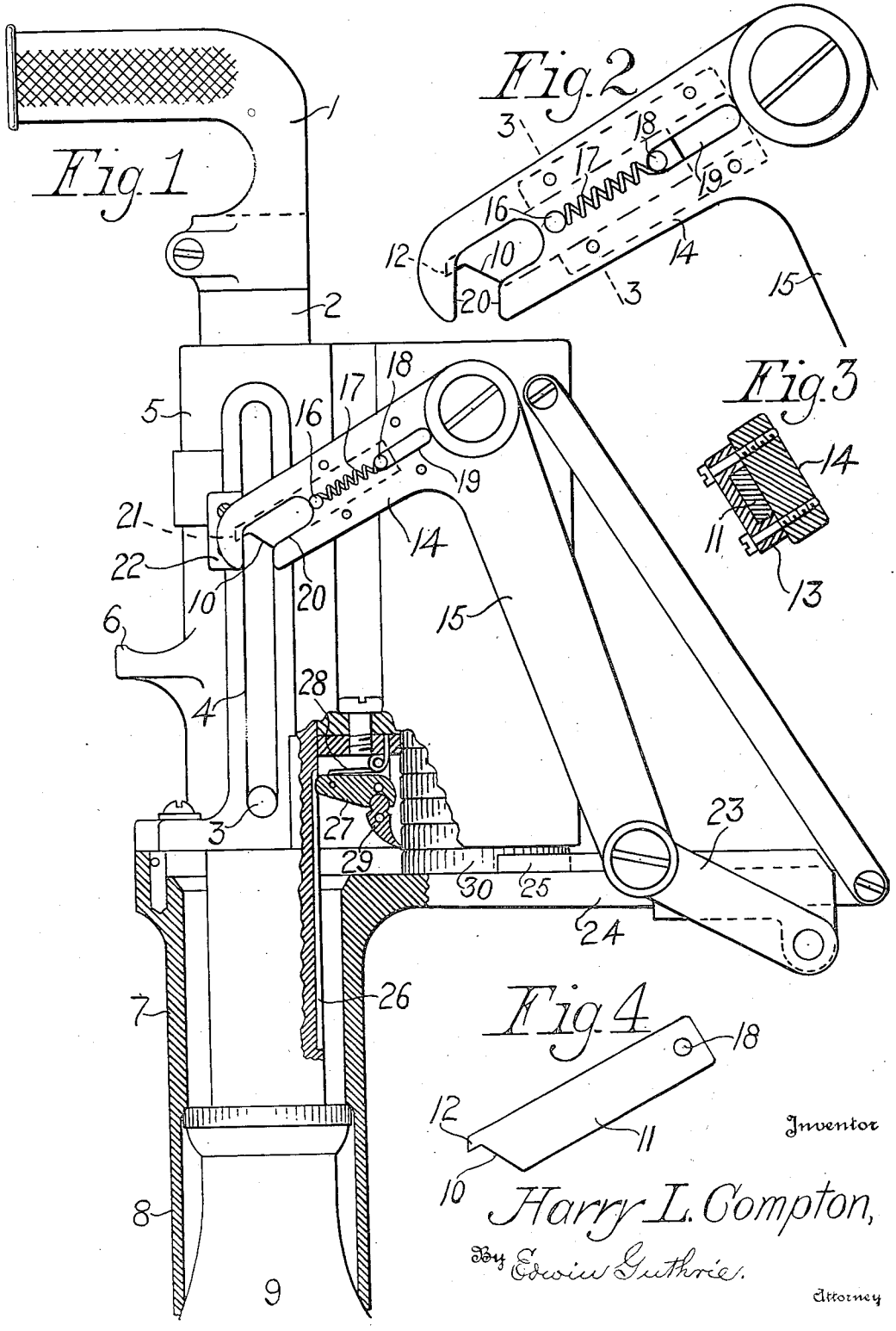


Fig. 2

Fig. 3

Fig. 4

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Fig. 5

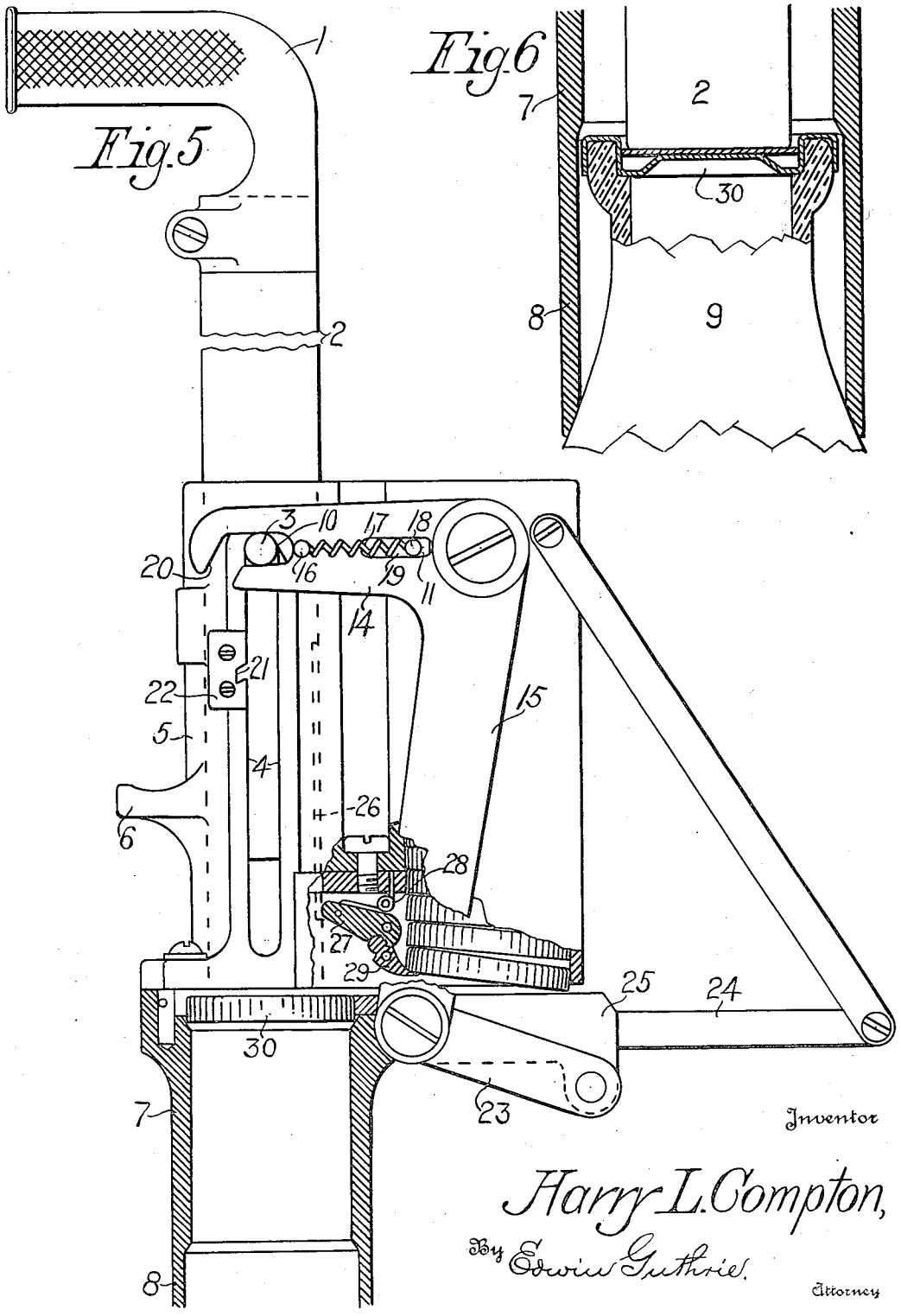


Fig. 6

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HAND CAPPER

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4 Claims. (Cl. 226—92)

This invention relates particularly to hand cappers used in applying coverall or disk caps to milk bottles, and more generally to any mechanical apparatus for like operation.

It is an object of this invention to provide an appliance by which the closure may be placed securely upon the bottle and the capping plunger raised without disturbing the position of the bottle. This is accomplished by means of an extension of the casing or outer portion of the capper comprising a hollow cylinder or the equivalent which admits the top of the bottle and contacts circularly with the enlargement of the bottle below the top. By means of such extension the capper may be held down upon the bottle while the plunger is raised. It is a further object of this invention to construct a capping implement or machine wherein the cap serving mechanism is actuated directly or indirectly by the plunger movements up and down, and wherein the plunger is raised sufficiently to remove it from the path of the cap being served into capping position, in order that there may be no interference with the free and repeated operation. It is again an object of this invention to introduce a pivoted pawl or the like operated by the movements of the plunger and by which the pile of caps in the usual magazine will be temporarily tilted during the serving action to obviate any hindrance due to the nesting of skirted caps sometimes called coverall caps.

The devices comprising this invention, and their arrangement are illustrated in the accompanying drawings, of which Fig. 1 represents a side view of a hand capper constructed in accordance with this invention, partly in section, and setting forth all the parts assembled. Fig. 2 is a front or flatside view of the upper leg of the angular lever, showing the spring controlled locking plate or slide. Fig. 3 is a cross section taken on the broken line 3—3 of Fig. 2 showing the locking plate and its guiding supports in normal position. Fig. 4 is a front or flatside view of the locking plate. Fig. 5 is a side view of this invention similar to Fig. 1, showing the plunger raised, and the pivoted pawl in tilting position. Fig. 6 is a full size vertical section of the downward extension of the casing or body of this invention, showing the manner in which a contact is made with a milk bottle when capped.

Throughout the description and drawings the same number is used to refer to the same part.

It is not intended to limit this invention to the precise forms or sizes of the various parts delineated, and it is held to be within the purview of this invention to manufacture the parts of any suitable metal alloy that will render the whole of adequate strength and resistance to wear, at the same time materially reduce its weight to permit quick and convenient handling and operation.

Considering the drawings, a handle 1 actuates a capping plunger 2 which carries a transverse pin 3 arranged to move up and down in a vertical guide slot 4 in the casing or body 5 of the invention. A finger piece 6 may be provided to hold the implement down upon a bottle when the plunger is being raised.

Extending downwardly from the casing 5 are axially aligned cylindrical extensions 7 and 8. It will be observed that the extension 8 admits a milk bottle and contacts with the same below the top of the bottle exteriorly where the bottle enlarges, as such bottles are commonly formed.

The bottle is referred to by number 9.

As illustrated in Fig. 1, and as shown entire in Fig. 4, a sliding locking plate has an inclined end 10 normally located across the vertical guide slot 4. The plate as a whole is marked 11. It is movably carried in a guiding channeled member 13, and is fashioned with an angular end or nose 12. The member 13 is borne by the shorter leg 14 of the angular lever having the longer leg 15 and constituting an element of the cap serving mechanism actuated by the plunger. The terms employed to designate the different parts are intended only for the purposes of this description. On the lever leg 14 is a projecting headed pin 16 that engages one end of a spring 17 which has its other end coil about a pin 18 projecting from the sliding lock plate 11. The contraction of the spring tends always to project the nose 12 of the locking plate towards the end of the lever leg 14, as will be understood. The pin 18 works in a lengthwise slot 19 in the lever leg.

As best shown in Fig. 2 the lever leg 14 has an L-shaped recess 20 opening downwardly, and when the plunger 2 is raised the pin 3 enters this recess as represented in Fig. 5.

When the parts are positioned as set out in Fig. 1, the nose 12 of the sliding lock 11 engages a locking notch 21 in the edge of a lock plate 22. The notch 21 is best shown in Fig. 5.

Forming a portion of the cap serving mechanism, the link 23 is pivotally connected to the lower end of the long leg 15 of the angular lever, and movable back and forth on a suitable support 24 is the cap serving slide 25. It is not intended to limit this invention to the special cap serving mechanism illustrated, as there are many

such mechanisms in common use which could be readily substituted.

Considering Fig. 1, there will be noted a vertical groove 26 in the plunger 2, and arranged to slightly enter the groove is the lesser end of a rocker piece 27, and a pivoted pawl 29 has a circular head engaging the rocker piece movably. A spring 28 yieldingly holds the rocker piece in the position substantially as set out in Fig. 1. It will be observed in Figs. 1 and 5, that the pivots of the rocker 27 and pawl 29 are in substantially vertical alignment one above another. When the rocker is moved by the plunger from the normal position in Fig. 1 into the raised position in Fig. 5, the engagement of the rounded head of the pawl with its seat in the rocker turns the pawl and causes its point to enter below the cap next to the lowest and tilt the same so that the lowest cap is no longer nested and may be pushed into capping position.

In the operation of this invention it is desired to serve caps 30 into positions such as illustrated in Fig. 5, immediately over the extension 7 and in the path of the plunger. This cap serving must be done repeatedly and without obstruction either from the moving plunger or by reason of the displacement of the capper due to the operation. Therefore, the cap serving movement of the cap slide does not begin until the pin in the plunger rises therewith and begins to lift the leg 14 of the angular lever. It is thought to be clear from the illustrations that the pin will push the sliding locking plate against the controlling spring, and free the nose of the locking plate from the notch of the stationary notched plate secured to the casing. The cap serving mechanism now operates, but the lower end of the plunger has been raised well out of the way of the served cap. On its downward movement the angular lever is moved by the plunger and the sliding lock plate again engages the notch. Thus, during the actual capping action the cap serving mechanism is held against accidental movement, and ready to serve another cap. As the plunger lifts the lower end of the longitudinal groove therein is reached and the rocker piece is rocked so that the end of the pawl slightly tilts the pile of caps above the lowest cap. The end of the plunger rises above the end of the rocker piece which may again assume the position in Fig. 1. But when the plunger descends the rocker piece is rocked downwardly until the groove is again presented to its end as before. It is believed to be now made apparent that in the operation the plunger is raised out of the path of the served cap, and the overlying caps of the pile in the magazine are tilted to clear any nested condition and permit free service of the lowest cap into the desired capping position.

I claim as my invention:—

1. In a bottle capping appliance, a casing, in combination with a plunger movable in the casing, a cap magazine for containing a pile of caps, cap serving mechanism actuated by the plunger, a pivoted pawl for temporarily tilting the pile of caps above the lowest cap, a rocker piece arranged to operate the pawl, and the said rocker piece being operated by the plunger.

2. In a bottle capping appliance, a casing, in combination with a plunger movable in the casing, a cap magazine for containing a pile of caps, cap serving mechanism actuated by the said plunger, a pivoted pawl for temporarily tilting the pile of caps above the lowest cap, a rocking piece arranged to operate the pawl, a spring for holding said rocker piece yieldingly in a predetermined position, and the said rocker piece being operated by the plunger.

3. In a hand capper, the combination with a casing, of a hand operated capping plunger in the casing, cap serving mechanism actuated by the plunger, said mechanism comprising an angular lever having a downwardly extending arm, a cap feeding slide connected with said arm, said lever having an upper arm provided with a slotted end, a sliding lock in the end of said upper arm, a spring controlling said lock, a lock plate carried by the casing and arranged to engage the sliding lock, said casing having a vertical slot, and a pin carried by the plunger and projecting through said slot and adapted to move the said sliding lock and the said angular lever.

4. In a hand capper, the combination with a casing, of a hand operated capping plunger in the casing, cap serving mechanism actuated by the plunger, said mechanism comprising an angular lever having an upper arm provided with a sliding spring controlled lock, said casing having a lock plate arranged to engage the sliding lock, means carried by the plunger for releasing the lock and angular lever, and the said locking devices being constructed and arranged to hold the said cap serving mechanism inoperative during a part of the plunger movement.

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