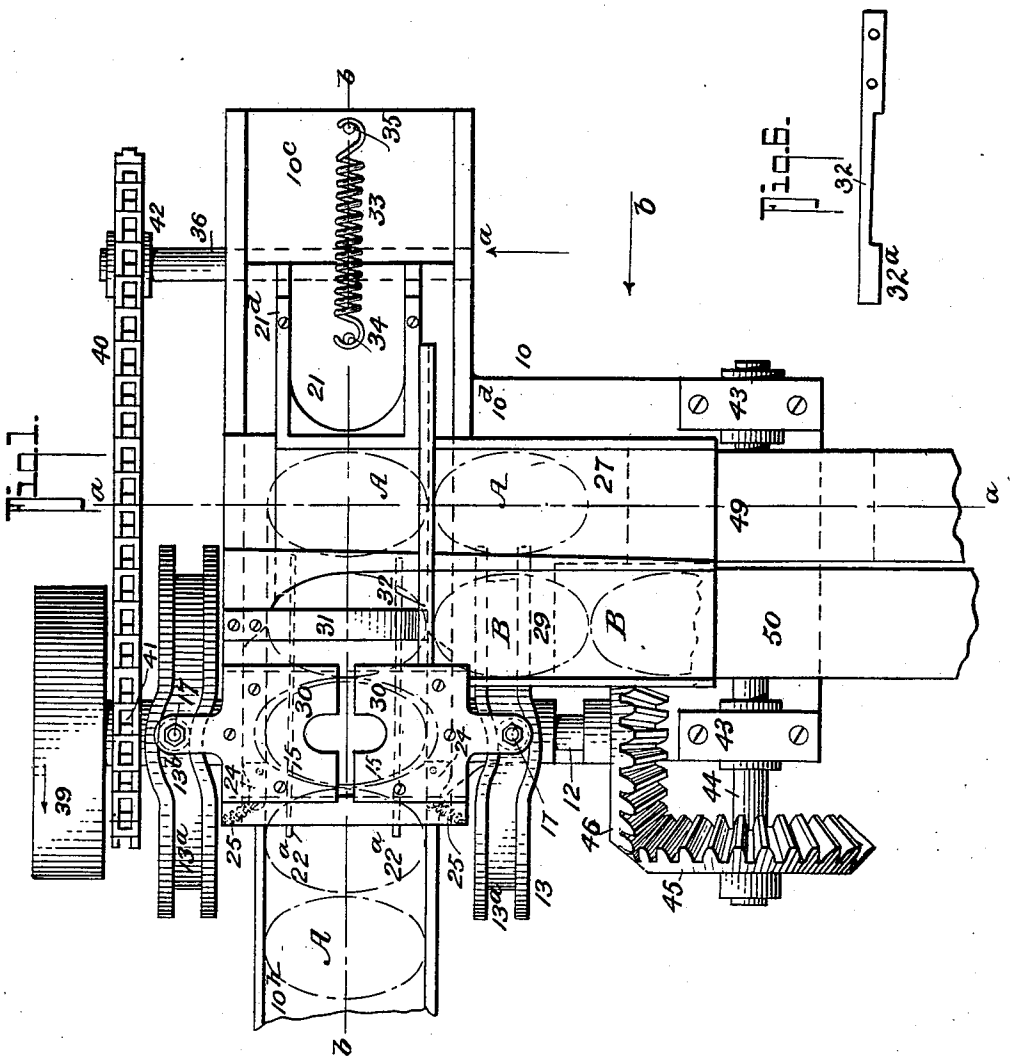
No. 666,573. Patented Jan. 22, 1901.

P. SWENSON.

CAN CAPPING MACHINE.

(Application filed June 13, 1900.)

(No Model.) 3 Sheets—Sheet 1.



WITNESSES:

A. E. Dieterich

Louis Dieterich

INVENTOR

Paul Swenson

BY

Fred G. Dieterich

ATTORNEY

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FIG. 3.

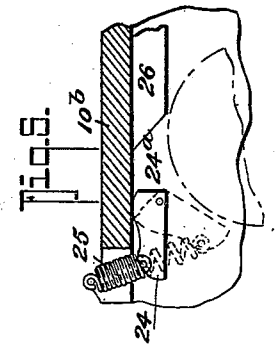
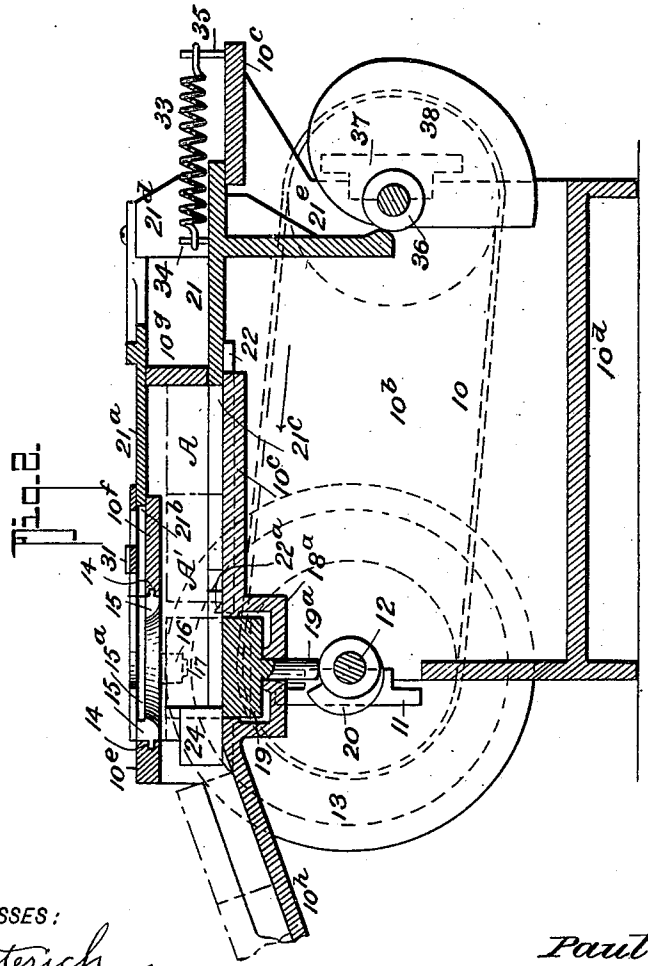


FIG. 2.



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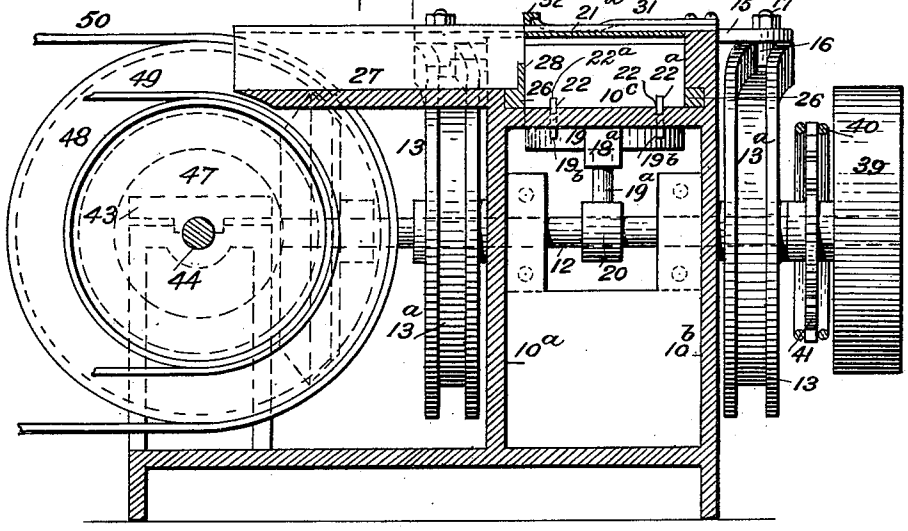
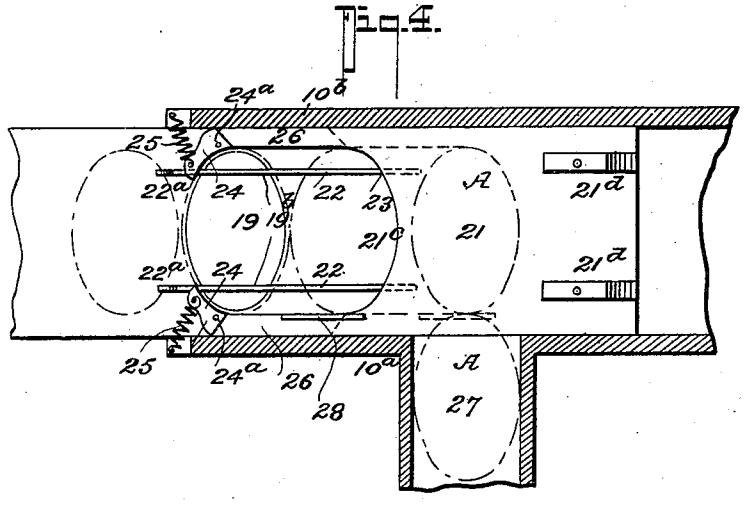


Fig. 4.



WITNESSES:

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Louis Dieterich

INVENTOR

Paul Swenson

BY

Fred G. Dieterich

ATTORNEY

UNITED STATES PATENT OFFICE.

PAUL SWENSON, OF WESTHAM ISLAND, CANADA.

CAN-CAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,573, dated January 22, 1901.

Application filed June 13, 1900. Serial No. 20,187. (No model.)

To all whom it may concern:

Be it known that I, PAUL SWENSON, a citizen of the Dominion of Canada, residing at Westham Island, in the Province of British Columbia, Canada, have invented a new and useful Can-Capping Machine, of which the following is a specification.

My invention particularly relates to improvements in machines for applying the covers to oval and irregular-shaped cans, although it may also be successfully employed in capping round cans; and my object is to provide a machine that is cheap and simple of construction and that will apply the covers to a large number of cans in a short space of time and that will also apply the bottoms to can-bodies in the manufacture of cans of various forms and dimensions. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan showing the general arrangement of the mechanism comprising my machine. Fig. 2 is a vertical sectional elevation of the machine, taken on the line *b b* and viewed from the direction of the arrow marked *a*. Fig. 3 is a cross-section on the line *a a* viewed in the direction of the arrow marked *b*. Fig. 4 shows a plan detail taken on a plane above the vertical movable disk or lifting-block that pushes the can into its cap. Fig. 5 is an enlarged detail of one of the stops for arresting the can on the vertical movable lifting-block, and Fig. 6 is a detail view of the cover or cap stop member hereinafter referred to.

Similar characters refer to similar parts throughout the several views.

The numeral 10 designates the framework of my machine, which is provided with vertical side webs 10^a and 10^b, tied across the top by a horizontal web 10^c and near the bottom by a web 10^d, which lower web extends outwardly at one side of the machine for a purpose to be shown presently.

Suitably mounted in bearings 11 at one side of the machine is a shaft 12, and fixed near each end of this shaft, on opposite sides of the machine, are cam-wheels 13, having an irregular groove 13^a around the peripheries thereof.

Slidably arranged in grooves 14 in cross-bars 10^e and 10^f, integral with the opposite upper parts of the sides of the frame and over and between the cam-wheels 13, are jaws 15. The central portion of the outer ends of these jaws 15 are extended outward and are provided with antifriction-rollers 16, mounted on fixed pins 17, depending into the grooves 13^a in the cam-wheels.

From the foregoing it is shown that as the shaft 12 is rotated the jaws 15 will be opened at intervals or at each time the deflected parts, as 13^b, of the groove 13^a engage the rollers 16.

Disposed between the jaws 15 and formed within the web 10^c of the frame is an opening 18, through which plays a lifting-block 19, having a pendent central stem 19^a, which extends through the aperture in the pendent frame portion 18^a, that extends across the bottom of the opening 18, as clearly shown in Fig. 2.

Secured on the shaft 12 at the point directly beneath the stem 19^a of the lifting-block is a cam 20, designed to push the block up with each revolution of the shaft, the object of which will be made clear directly.

Arranged at the outer end or rear of the machine is a slidable frame 21, which is designed to rest on a horizontal web 10^c. The forward upper portion of this frame 21 comprises a plate 21^a, which rests upon the cross-web 10^f and a vertical cross-web 10^g, and the front edge of this plate 21^a is provided with a concaved surface 21^b of the contour of one side of the can cap or cover to be operated upon, and the front surface of the edge of the part of said frame 21, which rests on the web 10^c, is provided with a like concaved surface, as 21^c. Integral with the forward under part of said plate of the frame 21, resting on the web 10^c, are strips 22, which lie in grooves 23 in the web 10^c and like grooves 19^b in the lifting-block 19, and on the end of these strips 22 are upwardly-projecting nibs 22^a, which push a can that has been operated upon from the block 19 at each forward movement of the said frame. Pivotally fixed at the opposite front side of the lifting-block 19 are stops 24, which are normally held back from the path of the cans by springs 25, secured to their loose ends and to the outer walls 10^a and 10^b of the frame 10. The pivoted ends of these stops 24 are beveled off at an angle, as 24^a, and projected forward at each side of the frame 21 are strips 26, having their ends

beveled in a similar manner to the said stops, which when pushed forward, as shown in Fig. 4, cause the loose ends of the stops to be thrust out into the path of a can, and the can-engaging contour of said stops when so thrust out coincide with the forward wall of the lifting-block 19. This stops and holds a can on the lifting-block until it is pushed up into its cover.

As shown in Fig. 4, the can A is pushed into the machine through a laterally-disposed chute 27 and one is taken on the upper surface of the slidable frame 21 while said frame is pushed forward, and when it is withdrawn, as shown in Fig. 2, the can drops on the web 10^c in front of the concaved edge 21^c and is pushed forward by the next stroke to the position A′, while the can on the lifting-block 19 is pushed forward by the nibs 22^a on the strips 22 beyond the sweep of the stops 24, such stops being open until about the extreme thrust of the stroke of the frame 21 is reached. While the frame 21 is drawn back a can cannot enter the machine by reason of a strip 28, extending upward integral with the strip 26, which lies across the opening in the chute 27. This prevents a can being pushed into the machine except at the forward stroke, which is the proper time.

The caps or covers B of the cans are fed into the machine through a chute 29 on a plane with the upper surface of the plate 21^a when such plate is forward, and when it is drawn back the cover drops onto the web 10^f in front of the concaved edge 21^b of the plate 21^a and at the next stroke it is pushed into a seat 15^a on the upper side of the jaws 15. Said jaws are covered by plates 30, rigidly fixed thereto to resist the upthrust of the can A.

31 indicates a flat spring secured to the opposite side of the machine from the chute 29 and lying over the center of the position the can occupies when pushed onto the plate 21^a. This spring is designed to engage the top of the cap when pressed forward, so that said cap will be forced down onto the web 10^f when the frame 21 withdraws. Secured to that side of the plate 21^a adjacent to the delivery-mouth of the chute 29 is a strip 32, which is provided with a pendent portion 32^a, (see Fig. 6,) which portion 32^a when the plate 21^a is drawn back acts as a stop-flange and extends across the discharge end of the said chute 29 in a manner similar to the strip 28. That acts as a stop for the cams. The portion 32^a of the strip 32 therefore prevents a cover or cap from entering the machine until the forward movement of the slide 21 takes place, as will be readily understood by reference to Figs. 1 and 3. The said plate 21^a is preferably connected to the frame 21 by rearwardly-projecting arms secured to pedestals 21^d integral with the outer end of said frame, and the frame is normally held back by a coil-spring 33, attached to a stud 34 in the frame, and a stud 35, fixed in the rearward part of the cross-web 10^c, and depending downward from the frame 21 through a slot in the web 10^c is a bracket 21^e.

36 indicates a shaft mounted in suitable bearings 37 on the rearward end of the machine parallel to the shaft 12. Secured on this shaft 36 and designed to engage the depending bracket 21^e is a cam 38. This cam as the shaft 36 rotates pushes the frame 21 forward, and the spring 33 withdraws the same.

A pulley-wheel 39 is mounted on the end of the shaft 12 on the opposite side of the machine from which the cans and caps are fed, and a sprocket-belt 40 takes around a wheel 41 on said shaft and around a like wheel 42 on the shaft 36. This provides that these two shafts turn at exactly the same speed, which is an essential feature, as will appear presently.

Mounted in bearing 43, arranged on suitable pedestals on the extended horizontal web 10^d of the machine, is a shaft 44, having secured on its end a beveled gear-wheel 45, which meshes with a like wheel 46, secured on the end of the shaft 12. Mounted on the shaft 44, between the bearings thereof, are pulleys 47 and 48, and taking around these pulleys are belts 49 and 50, the upper surfaces of which are on a plane with the can and cap chutes 27 and 29, respectively.

In the operation of my invention the machine is set in motion in the direction of the arrow by a belt taking around the pulley 39, and the cans are placed on the belt 49, and the covers or caps are placed on the belt 50, which push them along into their respective chutes, while the frame 21 is pushed forward. As the frame withdraws the cap drops onto the web 10^f in front of the concaved edge of the plate 21^a and the can-body drops onto the web 10^c in front of the concaved edge 21^c of said frame, whence the can-body A is pushed forward to the position A′, and the cap is pushed into the seat 15^a between the jaws, which are held in a closed position by the cam-wheels 13. As this forward movement of the can A takes place the can-body that was in the position A′ is pushed onto the lifting-block 19 and the can that was on the block 19 is pushed forward by the nibs on the strips 22, after which the stops 24 are engaged by the angle-pointed strips 26, which throw their loose ends out and aline the can. The block 19 is now pushed up and the can consequently pushed into its cover. The frame 21 now returns by reason of the major axis of the cam 38 having passed the engaging points of the arm 21^e, and thus allows the nibs 22^a on the strips 22 to return beneath the can held up by the block 19. The jaws now open, and the block 19, supporting a capped can, drops, the cam 20 having passed its major axis, and at the backward stroke of the frame 21 a cover and a can take their respective places to be pushed forward. As shown in Figs. 1 and 2, there are always two cans in front of the jaws, while there is only

one cap in front of the jaws. Consequently the intermediate can-body adjacent to the block 19 will stay in the machine until another can pushes it forward. When discharged from the machine, the cans are delivered to a suitable sloping plate 10^h, when they may be carried away by belt or hand.

It is manifest that by changing the form of jaws and by other slight adjustments in the different parts the machine may be adapted to apply the covers to cans of various forms, cylindrical or irregular, which is a decided improvement over the rotary machines now in use.

Although I have specifically described the various details in the construction of my improved machine, I do not wish to be understood as confining myself strictly to such details, as modifications may be made by the manufacturer without departing from the spirit of my invention.

Having now described my invention, what I claim, and desire to have protected by Letters Patent of the United States, is—

1. In a machine of the character described, a main frame having a slideway for the passage of the cans, means for feeding the cans and the can-covers onto the slideway, a member for holding the covers above the cans when the cans and covers are slid onto the slideway, pusher mechanism for forcing the cans and covers simultaneously forward in their different horizontal planes, plunger devices for moving the cans vertically to engage the covers at predetermined intervals, automatically-operating means for clamping the covers and holding them at a fixed point, as the cans are moved up into engagement therewith, the aforesaid pusher devices operating to engage the open cans, and by movement of the said cans discharge the capped cans when the can-lifting devices are dropped to their normal position, as set forth.

2. In a machine for applying the covers to cans having a suitable frame 10; laterally-disposed chutes on different planes for the cans and covers to feed at one side of the machine; a slideway for the cans to move through the machine approximately at right angles to the feed-chute; a vertical movable block 19 arranged in the slideway; laterally-movable jaws arranged over the block 19; a slideway for the covers parallel to the can-slideway but directly over the same communicating with seats in the jaws; a frame 21, having plates on which the cans and covers rest when pushed forward, designed to move in the said slideways; concaved surfaces on the forward edges of the plates in which the cans are received; laterally-movable stops on the forward side of the vertical movable block 19; strips connected with the frame 21 designed to engage said stops and force same into the path of the cans; a strip designed to prevent a cover from entering the machine and a similar strip to prevent a can from entering the machine except when the frame 21 is thrust forward; a shaft 12 arranged beneath the vertical movable block at right angles to the slideway in the machine, and a like shaft placed parallel to the other end of the machine; a cam 20 fixed on the shaft 12 designed to push the block 19 up and a can into the jaws; cam-wheels on said shaft at opposite sides of the machine designed to hold the jaws closed except when the block 19 descends; a cam fixed on the shaft 36, designed to engage a depending bracket on the frame 21 and force the frame forward, and a spring for returning said frame, and means for imparting movement to said shafts.

3. In a machine of the class described having a suitable frame 10; the frame 21, designed to move in alinement with can-cap and can-body slideways; cap and can feeding chutes 29 and 27 respectively communicating with the slideways; a forwardly-projecting strip 32 connected to the upper plate 21^a of the frame 21 designed to act as a fence between the cap-chute and the machine while the frame is drawn back, and a strip 28 designed to prevent can-bodies from entering the machine except when the frame 21 is thrust forward; a shaft 36 mounted in the rearward part of the machine, and a cam 38 fixed on said shaft designed to engage a depending arm on the frame 21, and means for imparting movement to the shaft 36 whereby the cans and caps will be allowed to enter the machine and will be pushed forward, as and for the purposes specified.

4. In a machine for the purposes described having a suitable frame 10, and a frame 21 moving in a can-slideway therein; extended strips having angled ends on the opposite sides of the frame 21, which are designed to engage the angled ends of stops 24 at the opposite sides of such slideway; extended strips 22 secured to the inner side of the frame 21 and designed to lie in grooves 23 in the support of said frame and grooves 19^b in a lifting-block 19, and upwardly-projecting nibs 22^a on the ends of the said strips.

5. In a can-capping machine, jaws 15 arranged over a slideway in a suitable frame; a vertical movable block 19 beneath said jaws; stops 24 pivotally arranged on the opposite sides of the slideway adjacent to the forward side of the block 19, and angle-pointed strips 26 fixed to a frame designed to move forward and force the loose ends of the stops into the path of a can.

6. In a machine for applying the caps or covers to cans of various forms, the combination of the frame 10, said frame having a slideway portion 10^c, for the cans, a block vertically movable in the forward end of the said slideway, the parallel grooves 19^b, formed in the upper side of the slideway 10^c, the slide-frame 21, the strips 22, having upwardly-projecting nibs 22^a on the front ends thereof, said strips being secured to the frame 21 and movable therewith, means for forcing the frame forward while the aforesaid block is

down, and means for lifting the block and for returning the frame 21, when the block is up, whereby a can will be pushed from the block with the forward movement of the frame 21, and the can placed upon the said block will not be disturbed by the return of the nibs on the strips 22, of the frame 21, as specified.

7. In a suitable frame 10, the combination of a frame 21 to move in can and cap slideways, having concaved can and cap engaging ends; chutes at right angles to the slideways for delivering cans and caps to the slideways; jaws in the forward end of the slideways over the can-slideway and designed to hold a can-cap; a vertically-movable block 19 beneath the jaws; a shaft 12 beneath such block 19 having a cam fixed thereon for engaging same; cam-wheels 13 on opposite sides to engage the can-holding jaws and hold them closed while the frame 21 moves forward and while the block 19 is lifted, and adapted to release the said jaws while the block descends, as and for the purposes set forth.

8. In a machine for the purposes set forth having a frame 10 with a slidable frame arranged to move in can and cap slideways, arranged one above the other, in combination with cap and can chutes 29 and 27 respectively communicating with the said slideways, strips 32 and 28 integral with the slidable frame and designed to prevent caps and cans from entering their respective slideways except while the frame 21 is thrust rearward.

9. In a machine as described the combination with the main slideway and the chute 29, disposed at right angles to the slideway and discharging onto the said slideway, of the spring-pressure plate 31, projected across the slideway in the longitudinal plane of the chute, said plate having its end next the chute-face and its opposite end made fast to the stationary part of the frame, substantially as shown and described.

10. In combination with a suitable frame having a slideway therein for can-caps and a slideway therein for can-bodies directly beneath the slideway for the can-caps, a cap-feeding chute 29 communicating with its respective slideway, and a like chute for the cans communicating with its respective slideway; a shaft 44 journaled on suitable bearings 43; pulleys 48 and 47 fixed on said shaft, and belts taking therearound having their upper surfaces in a plane with the cap and can chutes; means for causing an even movement to the said shaft, and means for allowing a cap and can to enter their respective slideways, substantially as specified.

11. In a machine for the purposes set forth, a frame 10 having slideways for caps and cans, the slideway for the caps being over the slideway for the cans; a slidable frame 21 designed to move the caps and cans forward, and a jaw and lift mechanism in the forward part of the slideways, in combination with can mechanism 13 and 20 for operating the jaws and the lift respectively, and a cam 38 at the rear end of the machine for pushing the slidable frame forward, the movements being in such relation to each other that a can-cap and can-body are pushed forward while the jaws are closed and the lift is at its lowest plane, and when said frame returns the lift is up when the jaws open.

PAUL SWENSON.

Witnesses:
W. G. TRETHEWEY,
ROWLAND BRITTAIN.