

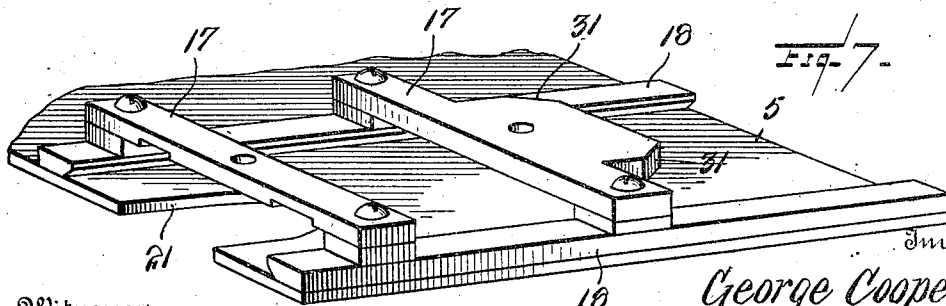
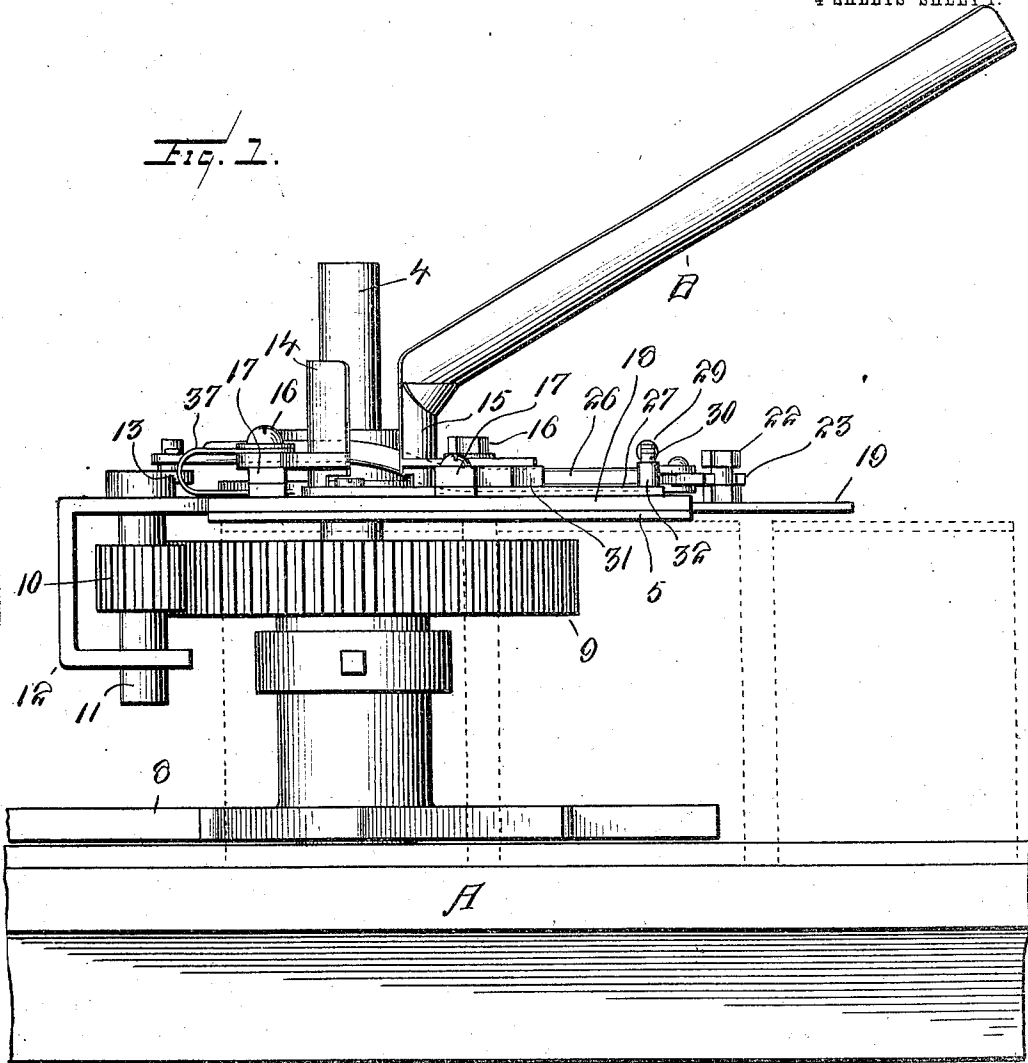
G. COOPER.
CAN CAP FEEDING MACHINE.
APPLICATION FILED JUNE 11, 1910.

985,008.

Patented Feb. 21, 1911.

4 SHEETS—SHEET 1.

Fig. 7.



Witnesses
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4 SHEETS-SHEET 2.

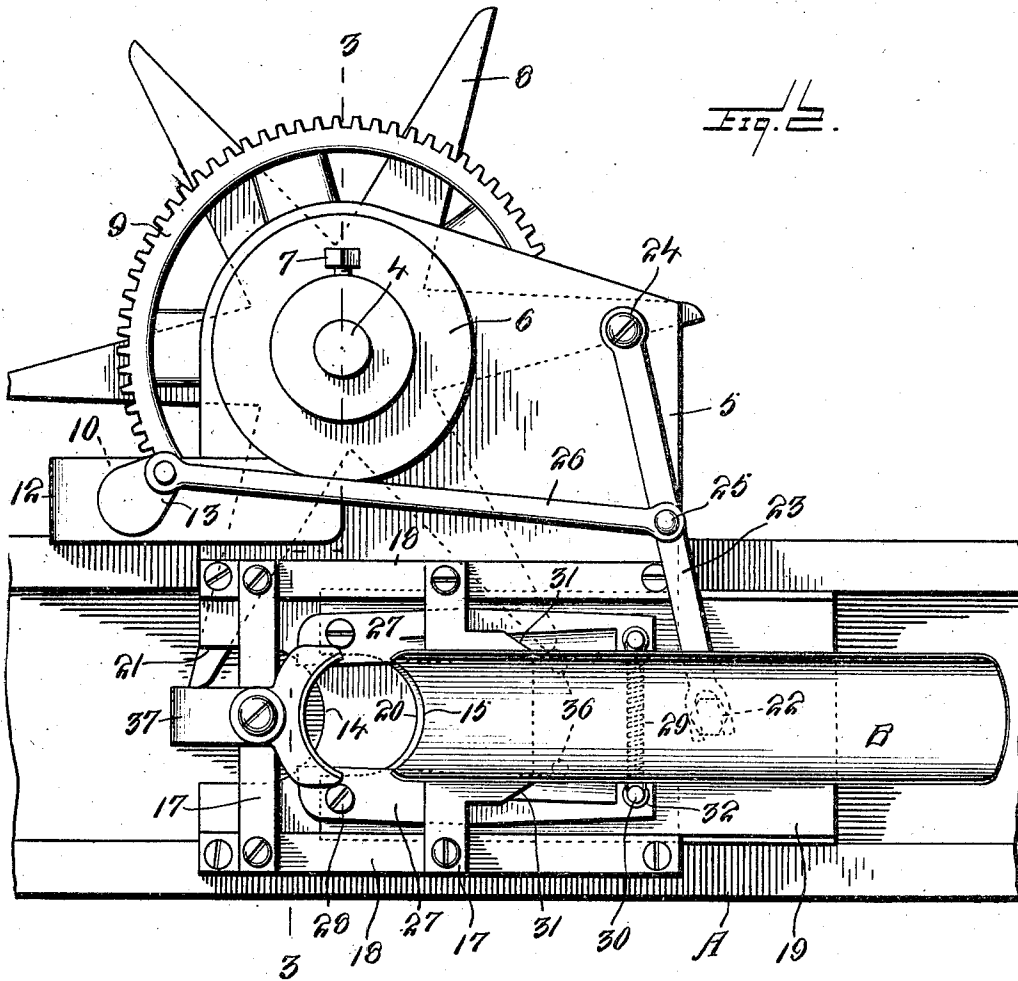
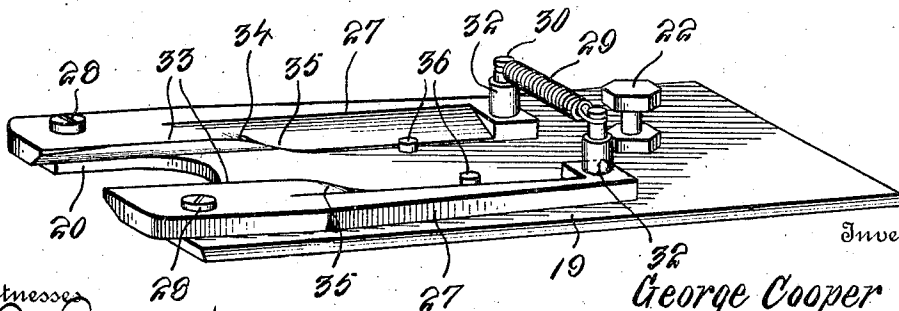


Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

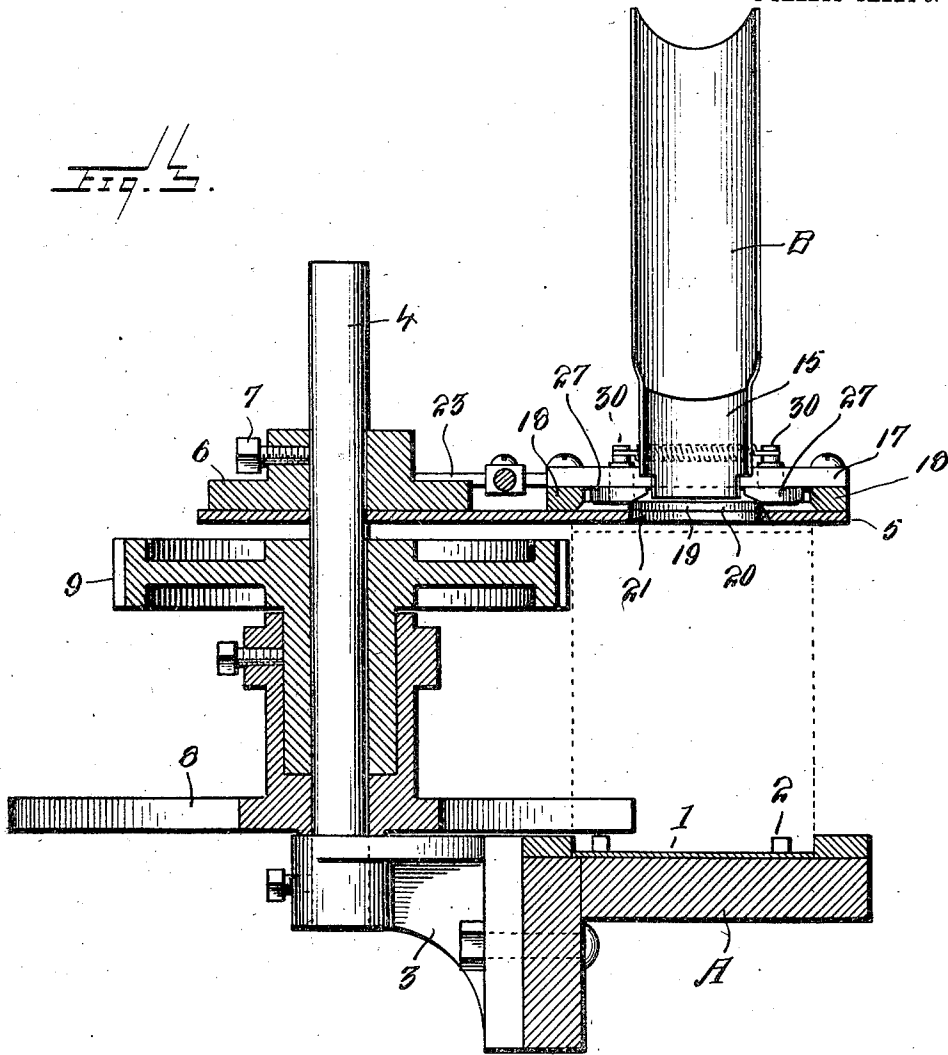
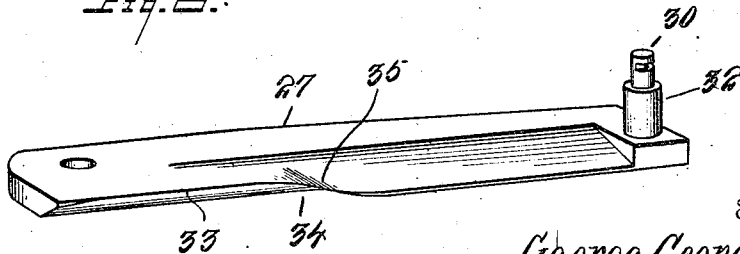


Fig. 4.



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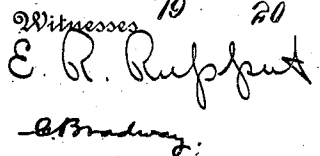
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CAN CAP FEEDING MACHINE.

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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

GEORGE COOPER, OF SOUTH LEBANON, OHIO, ASSIGNOR OF ONE-FOURTH TO LOUIS W. LUEDEKE, OF HOPKINSVILLE, OHIO, AND ONE-FOURTH TO JESIAH ELLIS CLARK, OF SOUTH LEBANON, OHIO.

CAN-CAP-FEEDING MACHINE.

985,008.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed June 11, 1910. Serial No. 566,360.

To all whom it may concern:

Be it known that I, GEORGE COOPER, a citizen of the United States, residing at South Lebanon, in the county of Warren and State of Ohio, have invented new and useful Improvements in Can-Cap-Feeding Machines, of which the following is a specification.

This invention relates to a machine of that type which automatically drops caps upon cans fed successively through the machine.

The invention has for one of its objects to improve and simplify the construction and operation of machines of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use, and composed of comparatively few parts.

Another object of the invention is the provision of an improved cap-dropping device whereby the caps are dropped one by one in timed relation to the feed of the cans.

A further object of the invention is the provision of a comparatively simple and effective operating means for the jaws that control the feed of the caps from the magazine or cap holder.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts, which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a side view of the machine. Fig. 2 is a plan view thereof. Fig. 3 is a transverse section on line 3-3, Fig. 2. Fig. 4 is a longitudinal section on line 4-4, Fig. 2, showing the lowermost cap separated from the pile in the magazine tube and just prior to being dropped on the can. Fig. 5 is a similar section showing the parts in the opposite extreme position when the cap-feeding jaws are open to permit the next cap to pass between them. Fig. 6 is a perspective view of the feeding jaws and the cap-ejector or slide on which they are mounted. Fig. 7 is a perspective view of a portion of the top supporting plate with the jaws and slide removed. Fig. 8 is a perspective view of one of the cap-feeding jaws. Figs. 9, 10

and 11 are diagrammatic views showing different positions of the jaws in the process of dropping a cap. Figs. 12 to 14 are plan views of the jaws and ejector, the figures corresponding respectively to Figs. 9, 10 and 11.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the runway or track of the can-capping machine, and passing along this track is an endless conveyer or belt 1 that has spaced can-engaging lugs 2 whereby the cans are carried forwardly with the belt. Mounted in coöperative relation with the track is the can-dropping mechanism that is operated automatically by the cans, so that each time a can passes, a cap will be deposited thereon. Secured to the track A is a bracket 3 in which is fastened the lower end of a standard or post 4 which forms a part of the frame of the machine. Fastened to the upper end of this standard or post is a horizontal plate 5 which overhangs the track A, so that the cans will pass under the plate, the said plate having secured thereto a ring 6 through which the standard 1 extends, and in this ring is a set screw 7 which binds on the standard or post so that the plate can be secured in any vertical position of adjustment. Disposed between the bearing or bracket 3 and plate 5 is a star wheel 8 that is so arranged that its arms will extend partly over the track to be engaged by the cans and rotated thereby as they are fed through the machine by the belt 1. Secured to this star wheel is a gear wheel 9 that meshes with a pinion 10 fastened on a vertical shaft 11 which is journaled in a bracket 12 fastened to and extending forwardly from the plate 5. On the upper end of this shaft 11 is a crank 13 which serves to operate the cap-feeding mechanism.

The caps to be fed are held in an inclined magazine or holder B which is mounted on the plate 5 in a plane coincident with the track. The lower part of the magazine is vertical and consists of two sections 14 and 15 which are approximately semi-tubular and oppositely disposed so that the caps in the lower parts of the magazine tube will be supported one on another in a vertical

line, while in the upper portion of the magazine they are disposed at an angle to the vertical line. The two sections 14 and 15 are secured by bolts 16 to cross bars 17 that are detachably fastened to the plate 5. The plate 5 is provided with spaced guideways 18 between which moves a slide or ejector 19 in the form of a flat plate which moves longitudinally on the plate 5 and parallel with the track A. This slide has at its front end a recess 20 which is of sufficient width to permit the caps to pass therethrough, and in the plate at the front edge thereof is a recess or opening 21 that coincides with the opening 20 of the slide so as to permit caps to pass through the plate to the cans moving thereunder. The rear end of the opening 21 in the plate 5 terminates in front of the axis of the vertical portion of the magazine, so that when the slide or ejector is completely retracted, the cap about to be dropped will rest on the plate 5 that forms a seat for the cap. When the cap is thus seated on the plate 5, it will be in the same plane with the slide or ejector 19, and as the latter advances or moves to the front, the cap will be engaged by the inner end of the recess 20 and caused to move with the ejector until it drops out of the recess 21 in the plate 5, or cap seat. This slide or ejector 19 is connected at 22 with a lever 23 which has one end fulcrumed at 24 on the plate 5 at a point behind the standard 4, and this lever has its intermediate portion connected at 25 with the rear end of a pitman 26 that is connected with the crank 13. The gearing between the star wheel and crank shaft is so proportioned that the crank will make one revolution every time a can feeds through the machine, and consequently the slide or ejector 19 will move forwardly and rearwardly to eject the caps successively in timed relation to the cans.

To control the feed of the caps from the magazine to the ejector, a pair of bar-like jaws 27 are arranged between the lower end of the magazine and the ejector. These jaws are spaced apart and disposed at opposite sides of the axis of the magazine or pile of caps and have their forward ends pivotally connected by screws 28 to the slide or ejector 19 at opposite sides of the opening 20 therein, and these jaws extend rearwardly on the slide and are connected together by a helical extension spring 29. The ends of the spring are connected to upstanding posts or lugs 30 on the rear ends of the jaws so as to draw the latter together. The jaws move back and forth with the slide and freely pass under the bars 17 that support the two sections of the magazine and on the bar that carries the rear or main section of the magazine is an abutment formed of beveled surfaces 31 which are disposed in the path of the lugs 30 on the rear ends of the jaws, so that as

the ejector moves forwardly to drop a cap, the lugs will strike the abutment and cause the jaws to move open so that the next succeeding cap can drop upon the top surface of the slide or ejector 19. In order to reduce the wear between the lugs 30 and abutment surfaces 31, the lugs are provided with sleeves or rollers 32 that freely turn, and it will be noted that the spring 29 is supported high enough so as to pass over the abutment with which the rollers engage. Each jaw has its inner edge beveled upwardly from the bottom to form a knife edge 33 which extends from the front extremity of the jaw to an intermediate point 34, and from the point 34 to the rear end of the jaw, the inner edge thereof has a downwardly-sloping bevel 35. To limit the closing movement of the jaws, the slide or ejector 19 is provided with stops 36 with which the jaws engage. Mounted on the front cross bar 17 is a guide or deflector 37 in the form of a bent spring which insures the dropping of the caps if they should tend to stick in the machine.

The operation of the machine will now be briefly described, and assuming that the magazine is filled with caps and that the cans are feeding through the machine, the cans will turn the star wheel continuously and as the result the caps will drop one at a time on the successive cans. During the forward movement of the slide or ejector, the cap which has been dropped into the opening 20 of the ejector will be ejected and at the same time the jaws will be opened so that the next cap can pass between them and drop on the top of the ejector, the edge of the cap sliding down the beveled surfaces 35 of the jaws. During the return stroke, the jaws will close and the knife edges 33 thereof will pass between the lowermost cap resting on the slide and the next cap, and by this action, the column of caps in the magazine will be supported. Finally, the lowermost cap, which has been separated, will drop upon the plate 5 as the slide or ejector recedes, since the rear section of the magazine will prevent the said cap from receding with the ejector. The ejector now reverses its movement and causes the separated cap to drop through the opening 21 of the plate 5, and while this occurs, the knife edges 33 pass from under the lowermost cap in the magazine so that the whole column can move one step downwardly by the lowermost cap dropping between the open jaws. These operations are repeated continuously as long as the machine is in use.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the

invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim is:—

1. In a cap feeding machine, the combination of a holder for a column of caps, bar-like jaws extending transversely to and disposed at opposite sides of the axis of the holder and movable longitudinally back and forth along opposite sides of the discharge end of the holder and in a plane parallel with the caps, and means for opening and closing the jaws to permit the caps to feed successively from the holder.

2. A cap-feeding machine comprising a fixed magazine open at its bottom and constructed to hold a plurality of caps flat on each other in superimposed relation, jaws movable longitudinally along opposite sides of the magazine and in the plane parallel with the plane of the caps, and means for moving the jaws laterally toward and from each other during their longitudinal movement to feed caps successively.

3. A cap-feeding machine comprising a fixed magazine disposed vertically for holding a pile of caps, a pair of bar-like jaws movable lengthwise and disposed at opposite sides of the magazine at the discharge end thereof, a carrier on which the jaws are pivotally mounted and movable horizontally under the magazine and transversely to the axis thereof, and coacting devices for opening the jaws when they have reached different points in their longitudinal movement to permit caps to feed successively from the magazine.

4. A can-capping machine comprising a magazine, a slide disposed under the same and having an opening through which caps feed, bar-like jaws mounted on the slide and movable transversely to the magazine at opposite sides thereof, each jaw being pivoted at one end to the slide and means for opening and closing the jaws upon the movement of the slide to feed caps successively from the magazine.

5. A can-capping machine comprising a magazine, a slide movable back and forth under the discharge end thereof, bar-like jaws pivotally mounted on the slide and movable therewith, said jaws being spaced apart at both ends, a fixed device for opening the jaws when the slide is in one position, and means for closing the jaws when the slide is in another position.

6. A can-capping machine comprising a magazine, an ejector disposed under the magazine, cap-feeding jaws mounted on the ejector and movable inwardly and out-

wardly under the magazine to feed caps successively, means for moving the jaws longitudinally in a plane transverse to the magazine, and means for supporting the ejector movably in a plane parallel to the longitudinal movement of the jaws.

7. A can-capping machine comprising an ejector, a magazine disposed above the same, bar-like jaws mounted on the ejector and movable therewith, a yielding device tending to hold the jaws closed to maintain caps within the magazine, and means for opening the jaws in opposition to the said device to permit a cap to pass between the jaws.

8. A can-capping machine comprising a magazine, a sliding ejector movable back and forth thereunder, bar-like jaws pivotally mounted on the ejector and disposed at opposite sides of the magazine, a spring connected with the free ends of the jaws to hold the latter in closed position, and an abutment with which the jaws engage during the ejecting action of the ejector to permit the jaws to open for feeding a cap to the ejector.

9. A can-capping machine comprising a magazine, an ejector, cap-feeding jaws mounted thereon, a spring connected with the jaws for holding the same closed, a fixed abutment disposed above the jaws and intermediate the ends thereof, and means on the jaws arranged to engage the said abutment when the ejector reaches a certain position to open the jaws for permitting a cap to pass the same.

10. A can-capping machine comprising a magazine, an ejector, spaced bar-like jaws movable longitudinally across the magazine at opposite sides, pivots for connecting the jaws with the ejector, a yielding means connected with the jaws tending to hold the same closed, members on the jaws, and an abutment with which the members engage to open the jaws.

11. A can-capping machine comprising a plate-like ejector, a magazine disposed over the ejector, bar-like jaws disposed parallel with the ejector and located at opposite sides of the magazine, said jaws being connected with the ejector and movable longitudinally, and means for opening and closing the jaws by the movement of the ejector, said jaws having their inner opposed portions formed with knife edges spaced above the ejector to permit a cap to pass between the edges and the ejector.

12. A can-capping machine comprising a magazine, means under the magazine for supporting a cap preparatory to ejection, and spaced jaws having approximately parallel knife edges spaced above the said means a distance approximately the same as the thickness of a cap, means for moving the jaws longitudinally, and means for opening and closing the jaws simultaneously with

their longitudinal movement to feed caps successively from the magazine.

13. A can-capping machine comprising a magazine open at its bottom, a pair of jaws 5 movable transversely to the magazine and disposed at opposite sides thereof, each jaw having its inner portion oppositely beveled, means for moving the jaws longitudinally, and means for moving the jaws toward and 10 from each other simultaneously with their longitudinal movement to cause the jaws to successively separate the lowermost cap from the pile in the magazine.

14. A can-capping machine comprising a 15 magazine open at its bottom, a slide movable under the magazine and having a recess extending inwardly from one edge and disposed in alinement with the magazine, a fixed support under the slide to form a cap 20 rest when the slide is retracted, means for actuating the slide to move the cap from the said support, and a pair of jaws movable longitudinally and at the same time inwardly or outwardly to control the feed of caps from 25 the magazine.

15. A can-capping machine comprising a magazine, an ejector disposed under the magazine, and oppositely-disposed jaws between the magazine and ejector and mounted 30 for longitudinal and lateral movement to feed caps successively from the magazine, said jaws being spaced apart at both ends and each having its inner edge made in two portions arranged in different planes to 35 separate caps by the longitudinal movement of the jaws.

16. A can-capping machine comprising a supporting plate having a recess at one end, a magazine mounted at the inner end of the 40 said recess, an ejector slidable on the supporting plate under the magazine, bar-like jaws mounted on the top of the ejector and movable longitudinally in a plane transverse to the axis of the magazine and at opposite 45 sides thereof, and means for simultaneously moving the jaws toward and from each other during their longitudinal movement to feed caps successively from the magazine.

17. A can-capping machine comprising a 50 frame, a magazine mounted thereon, an ejector slidable back and forth under the

magazine, devices for controlling the feed of caps to the ejector, a lever connected with the ejector, a crank and pitman device connected with the lever for operating the same, 55 and means actuated by caps feeding through the machine for actuating the said device.

18. A can-capping machine comprising a track, a post mounted at one side of the track, a plate secured to the post and 60 overhanging the track, a magazine mounted on the plate, an ejector disposed under the magazine and slidable on the plate, means for feeding caps from the magazine to the ejector, a lever fulcrumed on the 65 plate and connected with the ejector, a pitman connected with the link, a crank shaft connected with the pitman, a star wheel disposed in cooperative relation with the track to receive rotation from the cans traversing 70 the latter, and a gearing between the star wheel and crank shaft.

19. A can-capping machine comprising a supporting frame, an ejector mounted thereon, a magazine composed of two sections, 75 means for separately supporting the sections on the frame at a point above the ejector, cap-feeding jaws mounted on the ejector and movable under the magazine, means for operating the ejector, and means for opening 80 and closing the jaws by the movement of the ejector.

20. A can-capping machine comprising a supporting frame, an ejector mounted thereon, a magazine composed of two sections, 85 means for separately supporting the sections on the frame at a point above the ejector, cap-feeding jaws mounted on the ejector and movable under the magazine, means for operating the ejector, a fixed abutment disposed 90 over the ejector, means on the jaws for engaging the abutment as the ejector moves in one direction to open the jaws, and means for automatically closing the jaws as the ejector moves in the opposite direction. 95

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

GEORGE COOPER.

Witnesses:

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ROBERT J. SHAWHAN.