

941,357.

Patented Nov. 30, 1909.
3 SHEETS—SHEET 1.

Fig. 1

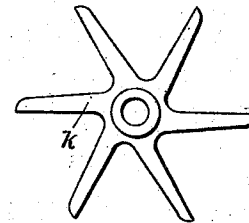
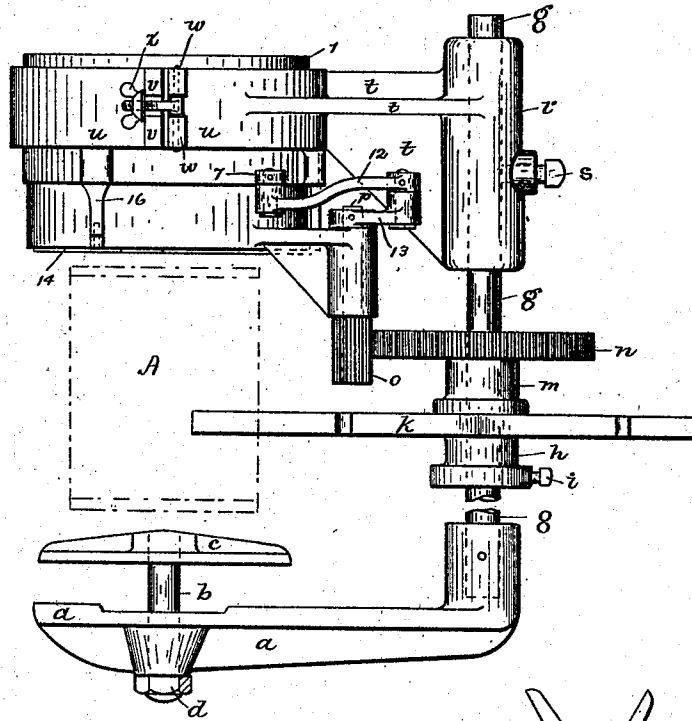


Fig. 3

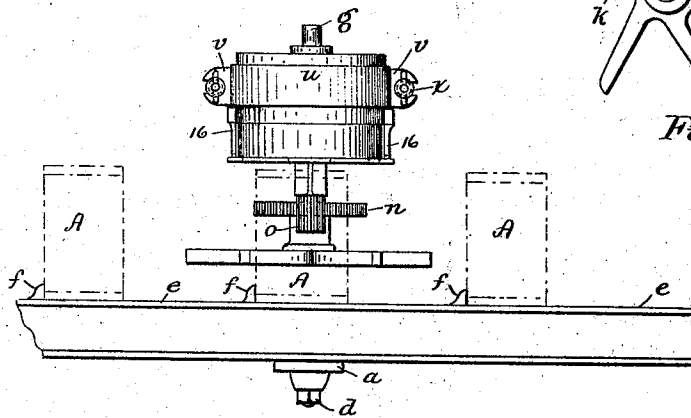


Fig. 2

Witnesses:

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Emm M. Cobb
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CAN CAP DROPPER.

APPLICATION FILED FEB. 23, 1907.

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3 SHEETS—SHEET 2.

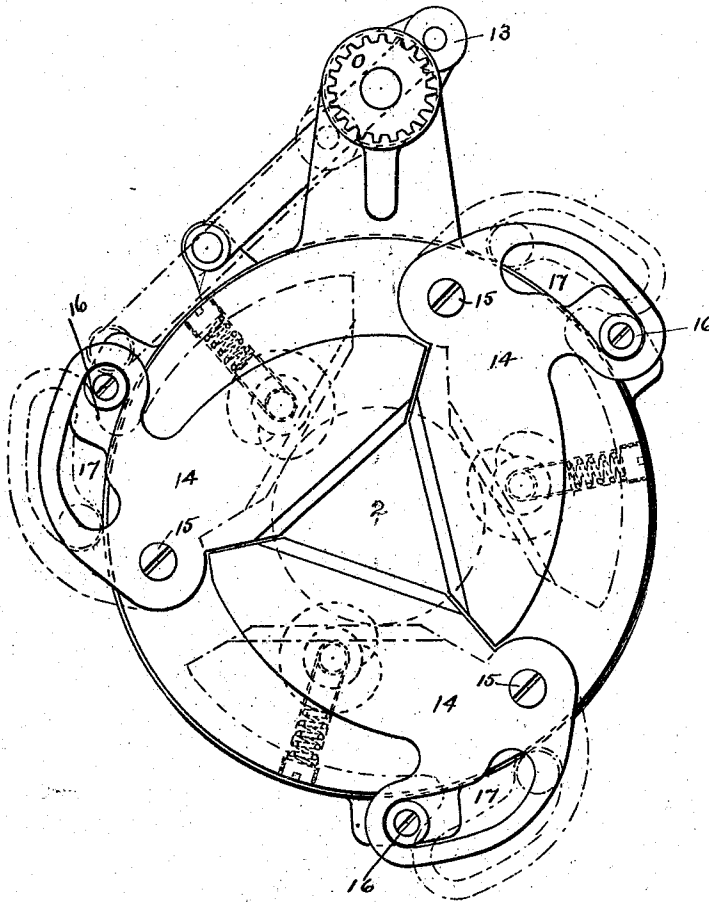


Fig. 4

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3 SHEETS—SHEET 3.

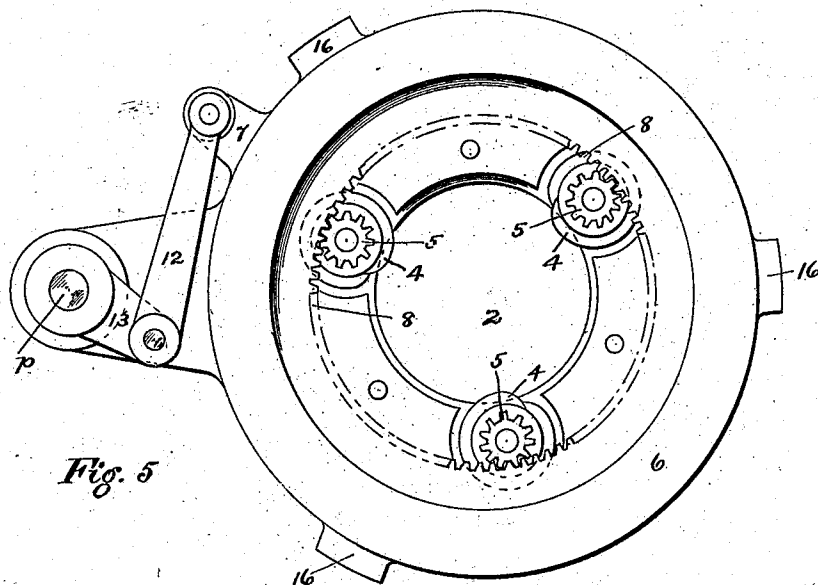


Fig. 5

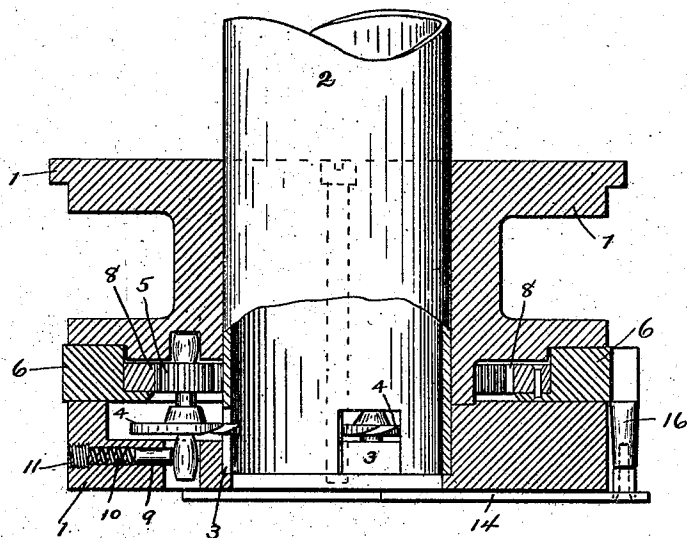


Fig. 6

Witnesses:

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UNITED STATES PATENT OFFICE.

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CAN-CAP DROPPER.

941,357.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed February 23, 1907. Serial No. 358,844.

To all whom it may concern:

Be it known that I, ELMER M. COBB, a citizen of the United States, residing at South Portland, in the county of Cumberland and State of Maine, have invented an Improved Can-Cap Dropper; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to devices for dropping caps, either hemmed or unhemmed, upon the grooves of cans used for hermetically packing goods.

It comprises means whereby a column of caps may be maintained in the required position, means whereby the lowermost cap of the column may be dropped therefrom, means whereby the can may be held automatically beneath said column, the center of the can being below the center of the cap and means whereby the cap may be dropped into the groove.

In the drawing: Figure 1 is a front view of my machine, the tube or cap holder being removed; Fig. 2 is a side elevation of the same; Fig. 3 is a detail showing a top plan of the feed; Fig. 4 is a view of the under side of the mechanism for dropping the cap upon the can; Fig. 5 is a top plan of the cap dropper (the upper section of the casting 1 being removed) showing the mechanism used for supporting and separating the lowermost cap from the column; and Fig. 6 is a detail showing the tube or cap holder with the adjacent parts in vertical transverse section.

The device shown in the drawing and hereinafter described is intended to be used in connection with the carrier or endless belt used in canneries for the transmission of the cans from one point to another in the process of the work and the whole of the mechanism shown in Fig. 1 is supported upon a bracket *a* which is provided with the bolt *b* fixed to the plate *c* which by means of the nut *d* may be securely clamped to the lower rail or support of such carrier, see Figs. 1 and 2. This carrier is indicated by the letter *e* in Fig. 2 and is provided at uniform intervals with dogs or projections *f f*, see Fig. 2, which are disposed at convenient intervals upon the carrier. At the rear of the bracket *a* is fixed in suitable bearings the rod *g* which carries the operative mechanism of

the cap dropper. Somewhat above the bracket upon the rod *g* is a sleeve *h* which is fixed to the rod by the set screw *i*, the upper surface of this sleeve is somewhat above the plane of the upper surface of the carrier. Upon this sleeve rests the six fingered feed *k* arranged to revolve freely upon the rod *g*. Fixed to the upper surface of the feed *k* is the sleeve *m* which carries the gear *n* which intermeshes with the geared pintle *o* on the shaft *p*. Some distance above the gear *n*, see Fig. 1, is the sleeve *r* which is fixed to the rod *g* by the set screw *s*. This sleeve sustains through the bracket *t* two semi-circular bands or collars *u u*, one of which is provided at the ends with lips *v v* and the other at the ends with the projections *w w* provided with swinging bolts and nuts *x x* whereby they may be secured together.

The band or collar *u u* is made of such shape within as to receive and support the upper part of the casting 1 1, see Fig. 6. The casting 1 1 may for convenience be made in two parts, the upper and lower, as shown in Fig. 6. Centrally located within it is the cap holder or tube 2, the interior diameter of which is slightly larger than the diameter of the cap to be operated on. It should be so located that its center will be directly over the center of a can placed in front of the dog *f* upon the carrier *e* as the can passes beneath the mechanism under description. Three similar horizontal slots 3 3 are provided near the bottom of the tube for the reception of the pathway cams 4 4. These pathway cams, see Fig. 6, are carried by a circular body provided with pintles at the top and bottom and beneath the upper pintle with the gear 5 somewhat beneath which is located the pathway cam 4 above referred to. This pathway cam consists of a ledge nearly continuous. The upper surface of this ledge at one end is removed for a considerable portion of a circle forming a gradually descending path, while from the other end the under surface of the ledge is removed so that at the end it presents practically a sharp edge which gradually increases to the normal depth of the ledge. Inserted beneath the upper and lower portions of the frame *a* surrounding the tube 2 is the annular plate 6 which is provided on one side with the arm 7. This annular plate 6 has a sufficient opening to permit the

installation of the pathway cams 4 4 within it as hereafter described and this opening is provided on the inner side with the gear 8 adapted to intermatch with the gear 5 of the pathway cam. The pintle of the pathway cams are stepped or journaled in suitable openings in the frame 1, the opening for the lower pintle being sufficiently large to allow adjustment by means of the rod 9 which is controlled by the spring 10 against the screw 11. The arm 7, see Fig. 1, is pivoted to the bent arm 12, the other end of which is pivoted to the arm 13, the other end of which arm (13) is fixed to the shaft *p*. Located beneath the casting 1 are three valves or wings 14 14, see Fig. 4, which are of like size and construction and are pivoted to the frame 1 by the pivots 15, 15 which are located at points equidistant from the center of the pathway cams on either side. Each of these valves or wings are provided with ears which extend outside the circumference of the casting 1 and each is provided with a cam pathway 17, 17, see Fig. 4, into which project downward from the annular plate 6 pins or rods 16, 16, the lower end being adapted to play in the cam-shaped pathway 17.

The operation of the device is as follows: Assuming that the carrier or endless belt is removing the cans from the filler to the capping machine, the device shown in Fig. 1 is connected by means of the bolt *b* and nut *d* with the under portion of the support of the carrier at a convenient point beneath the filler and the capping machine. The tube or holder 2 is filled with caps, the lowest cap resting upon the ledges 4, 4. As the can is carried forward by the dog *f*, it comes in contact with one of the fingers of the feed *k* which causes rotation of the gear *n* and the pintle *o* which through the arms 13 and 12 causes the annular plate 6 to rotate which in turn, by means of its internal gear 8, rotates the pathway cams 4, 4 simultaneously permitting the lowest cap of the column in the holder 2 to pass through the pathway in the cam and rest upon the wings 14, 14, as the center of the can approaches its central position beneath the center of the tube 2, the pins 16, 16 moving in the cam pathways 17 cause the wings or valves 14, 14 to open and assume the position shown in dotted lines in Fig. 4, when the cap is dropped upon the groove around the stud of the can. As the can passes onward, the fingers of the feed *k*, continuing to revolve, returns the annular plate 6 to the position which it occupied before the can came in contact with the fingers of the feed *k*. The next can comes in contact with the next finger, when the operation is repeated and so on indefinitely. As the dropper is operated by the can, if by any mistake or omission one of the spaces upon the carrier

should not be occupied by a can, no cap will be dropped.

The intervals between the cans upon the carrier need not be regarded except that the cans must not be placed so near as to prevent the full operation of the finger *k* before another can contacts with the next finger. It should be noted that the wall of the casting 1 containing the holder or tube 2 constitutes a continuation of the holder from its lower end almost to the level of the valves so that the position of the cap within cannot be disturbed by the action of the valves until they are fully opened, nor can the cap be turned in dropping the slight distance between the top of the valve and the stud of the can.

In the foregoing description of my device and in its operation it has been considered and described with reference to its function as a cap dropping machine. It will be apparent, however, that the device may be used for a great variety of other purposes, such as the dropping of disks of metal, pasteboard, cork and other substances, nor is the operation of the machine restricted to disks or other objects of circular outline as it may also be adapted and used for the separation and dropping of objects square, oval and hexagonal or of other shapes and may, therefore, be of use in other processes or arts than that of packing goods or providing material therefor.

What I claim is:

1. The combination of means for supporting a column of objects to be fed one at a time, devices for separating the lowest object in said column from the rest, means for movably supporting said separated object, mechanism for moving the parts of said supporting means away from each other, and thereby allowing said separated object to drop through said means at a predetermined time and traveling means for operating said mechanism, substantially as described.

2. The combination of means for supporting a column of objects and feeding them one at a time, and means for carrying articles which set in motion the said feeding mechanism, said supporting and feeding mechanism including means for supporting a column of objects to be fed one at a time, means for separating the lowest object in said column from the rest of the column, movable devices for supporting said separated object, and means for operating said movable devices at the proper time, allowing the separated object to fall, substantially as described.

3. The combination of means for supporting a column of objects and feeding them one at a time, and a movable carrier adapted to carry articles which set in motion the feeding devices, said feeding devices including means for separating the lowest one of

said column of objects from said column, movable supports or wings for holding said separated object, and means for separating said movable supports or wings, thereby allowing the separated object to drop at the proper time, substantially as described.

4. The combination of means for supporting a column of caps and for feeding them one at a time, and an endless carrier for carrying cans which set in motion said feeding devices, said feeding devices including means for separating the lowest cap from the column, a plurality of movable valves or wings for supporting the separated cap, and means for moving said valves at the proper time allowing the separated cap to drop, substantially as described.

5. The combination of a carrier whereby cans or other objects may be advanced at intervals, two or more valves located above said carrier, means whereby a cap or other object may be held until over the desired portion of said can or other object and means operated by the advance of a can whereby said valves may be opened automatically to permit said cap or other object to drop upon the desired portion of said can or other object and then closed, substantially as described.

6. In a mechanism having means for advancing a series of cans, the combination of two or more valves located above said means, means whereby a single cap or other object may be fed from a supply thereof upon the upper surface of said valves and means whereby said valves may be opened in order to permit said object to drop into position upon the stud of the can, said means for feeding said cap or other object and for opening and closing said valves being operated automatically by the advances of said can, substantially as described.

7. The combination of a holder provided with openings in its wall adapted to receive similar objects, ledges provided with similarly inclined openings and projecting through said openings, means whereby said ledges may be operated in such manner as to allow the lowermost object resting thereon to be carried through said inclined openings simultaneously and discharged from said tube, substantially as described.

8. The combination of a holder provided with openings in its wall and adapted to receive similar objects, ledges projecting through said openings and adapted to sustain the column of said objects in said holder, said ledges being provided with similarly inclined openings through the same and means whereby said ledges may revolve in such manner that the lowermost of said objects with each revolution will pass simultaneously through said inclined openings or paths and from said holder, substantially as described.

9. The combination of means adapted to support a column of caps and feed them one at a time, and a carrier adapted to be moved in proximity to said means and to carry cans which set in motion the operating parts of said feeding mechanism, said feeding mechanism including devices for separating the lowest cap from said column, a plurality of movable supports or wings located beneath the cap, supporting means, and means for moving said supports away from each other, thereby allowing the separated cap which rests thereon to fall at the proper time upon the can on the carrier beneath, substantially as described.

10. The combination of an endless carrier adapted to carry cans, means for supporting a column of caps above said carrier, and means set in motion by the cans carried by said carrier for feeding said caps, one at a time, upon the cans on said carrier, said means including devices for separating the lowest cap in said column from the other caps, a plurality of movable supports or wings for supporting the said separated cap, and devices for moving the said wings away from each other, allowing the cap to fall between them upon the can below, said devices including a star wheel adapted to be struck by the cans upon the carrier, substantially as described.

11. The combination of means for supporting a column of caps, an endless carrier passing beneath said means and adapted to carry cans, and means set in operation by the cans carried along by said carrier for feeding said caps one at a time, said means including devices for separating the lowest cap in said column from the remainder, movable wings or supports for temporarily supporting the separated cap, and means for operating said movable wings or supports at the proper time to allow the separated cap to drop on the can beneath, including a star wheel, gearing operated thereby for successively operating the means for separating the lowest cap in the column from the others, and for opening said supports or wings, allowing the separated cap to drop at the proper time, substantially as described.

12. In a cap dropping machine, the combination of means for supporting a column of caps, means for feeding said caps from said column one at a time, an endless carrier adapted to travel in proximity to said cap supporting means and to carry cans which operate said feeding means, said feeding means including a plurality of wheels for separating the lowest cap in said column from the remainder, a plurality of movable supports or wings for temporarily holding said separated cap, and devices for successively operating said separating means, and said supports or wings consisting of a star

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wheel, gearing operated thereby for operating said separating means, and devices operated by said gearing for opening said valves or wings at the proper time, substantially as described.

5 In testimony, that I claim the foregoing as my invention I have hereunto set my

hand this twenty-first day of February, A. D. 1907.

ELMER M. COBB.

Signed in presence of—

GEO. E. BIRD,

EDWARD M. LANG, JR.