

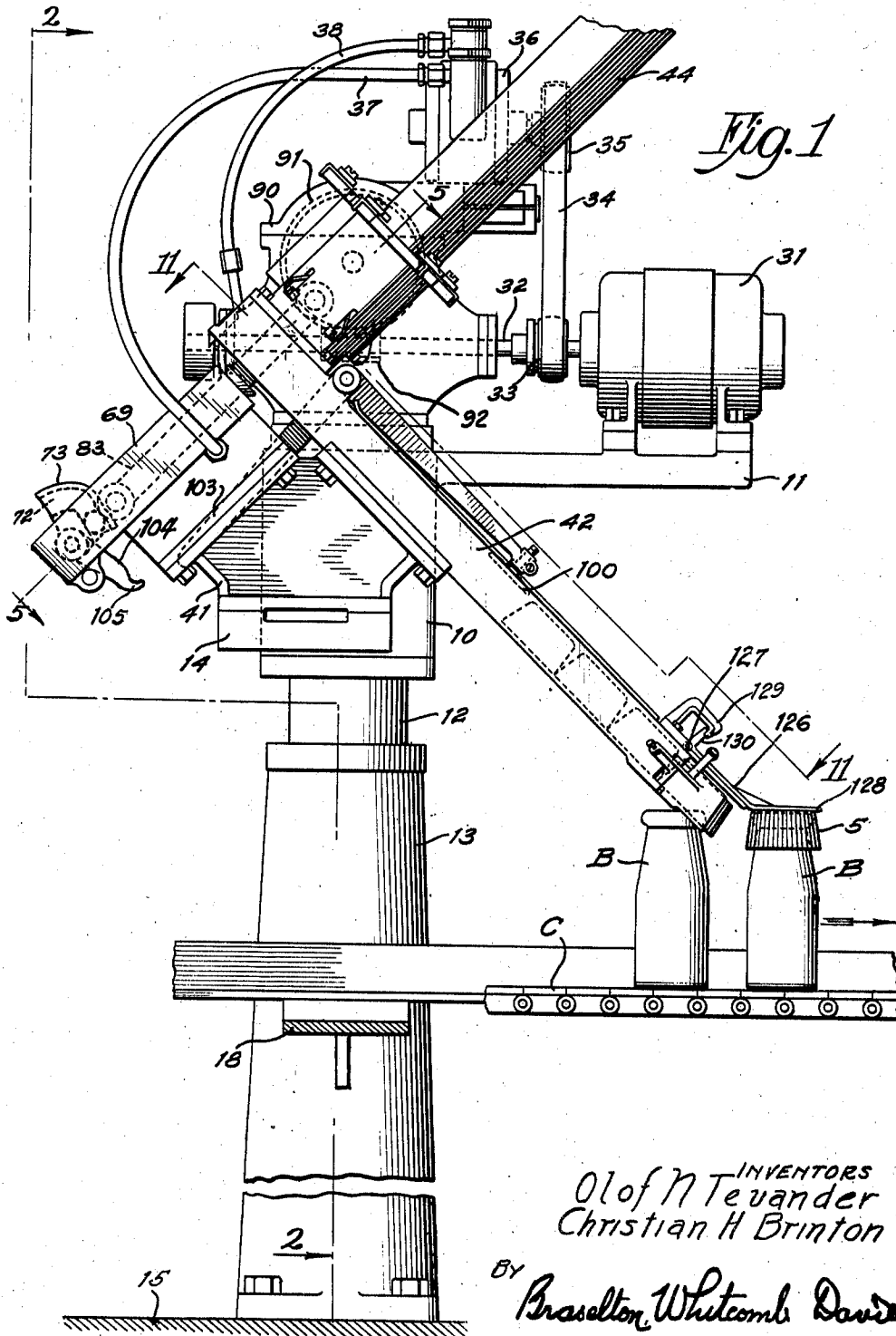
March 23, 1937.

O. N. TEVANDER ET AL
BOTTLE CAPPING MECHANISM

2,074,815

Filed June 3, 1931

5 Sheets-Sheet 1



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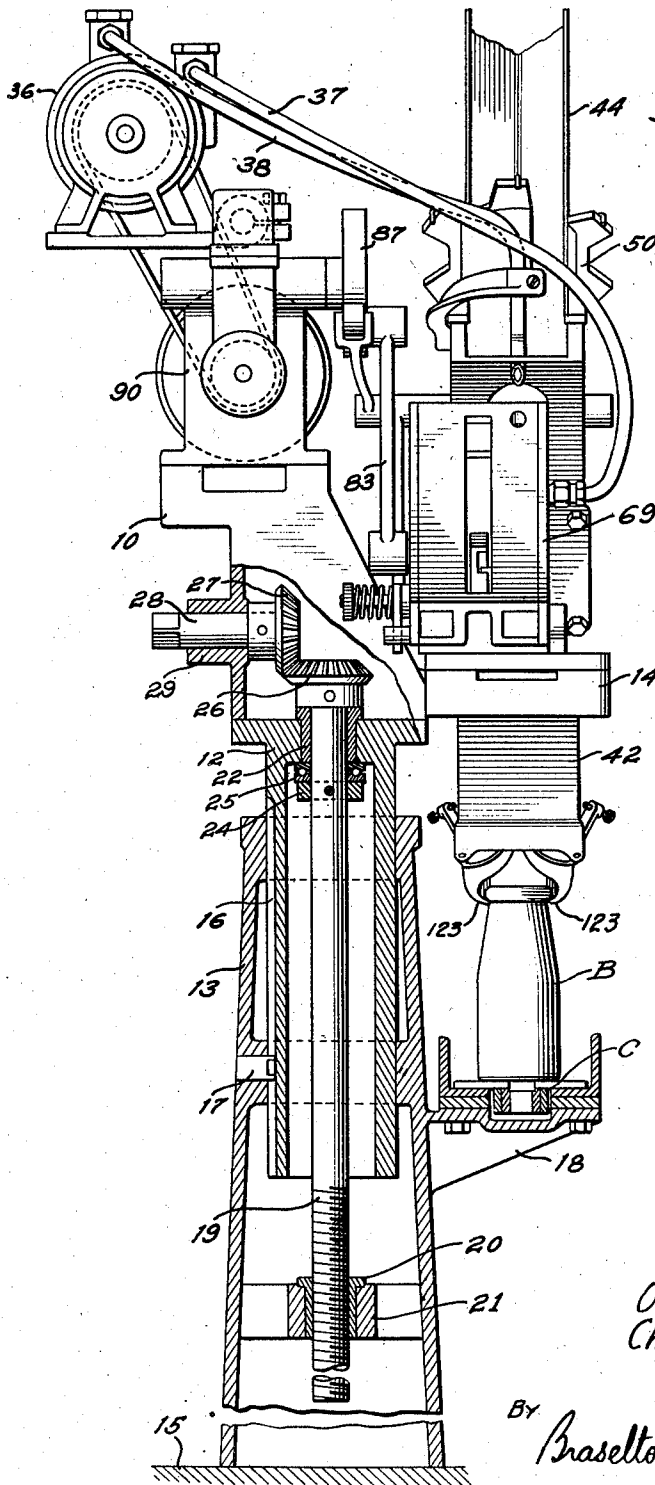


Fig. 2

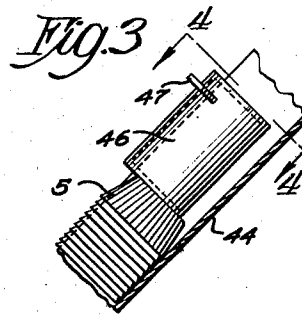


Fig. 3

Fig. 4

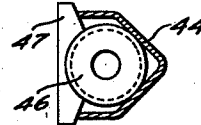
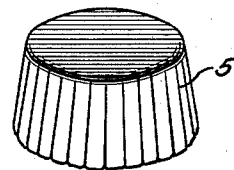


Fig. 15.



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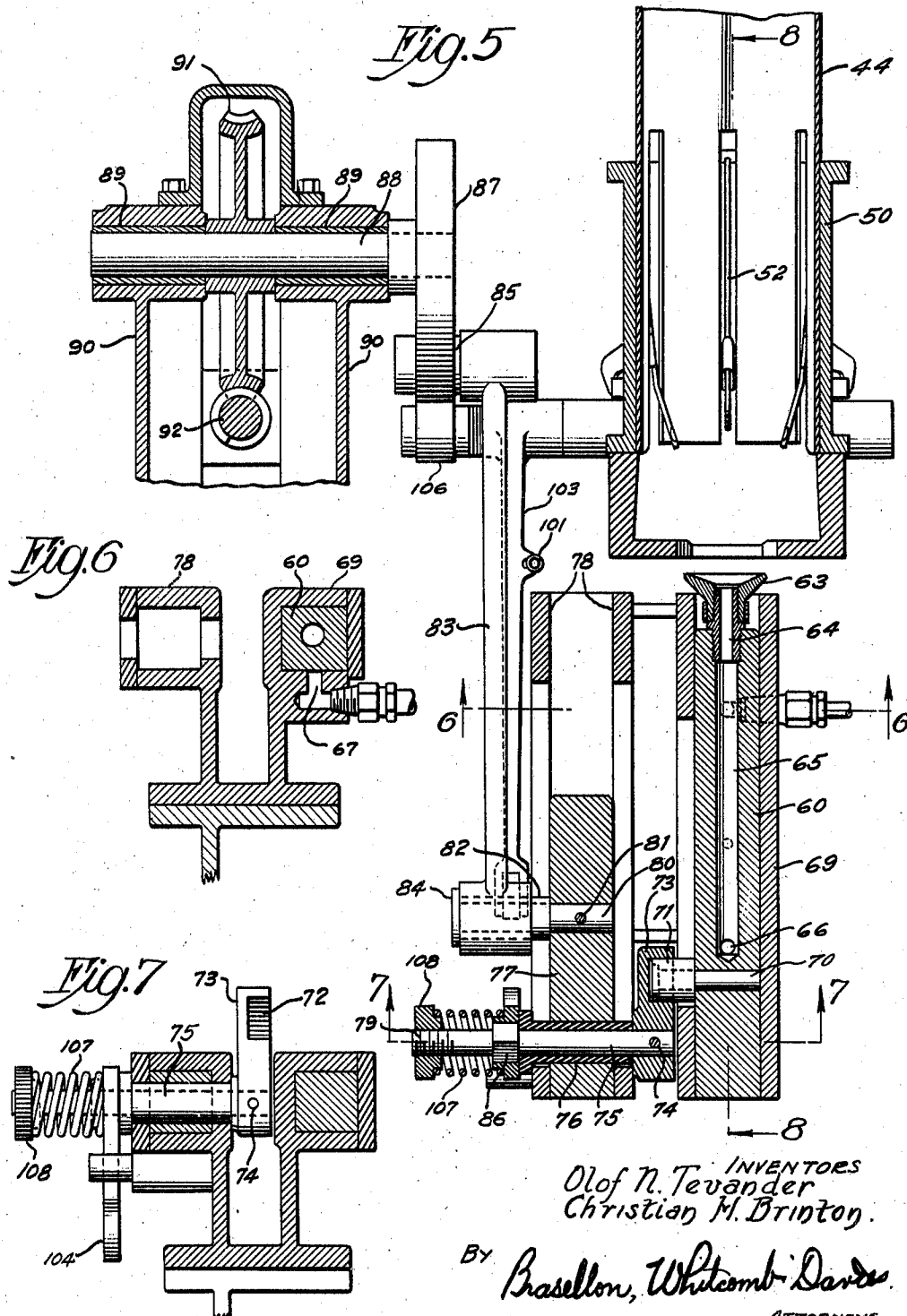
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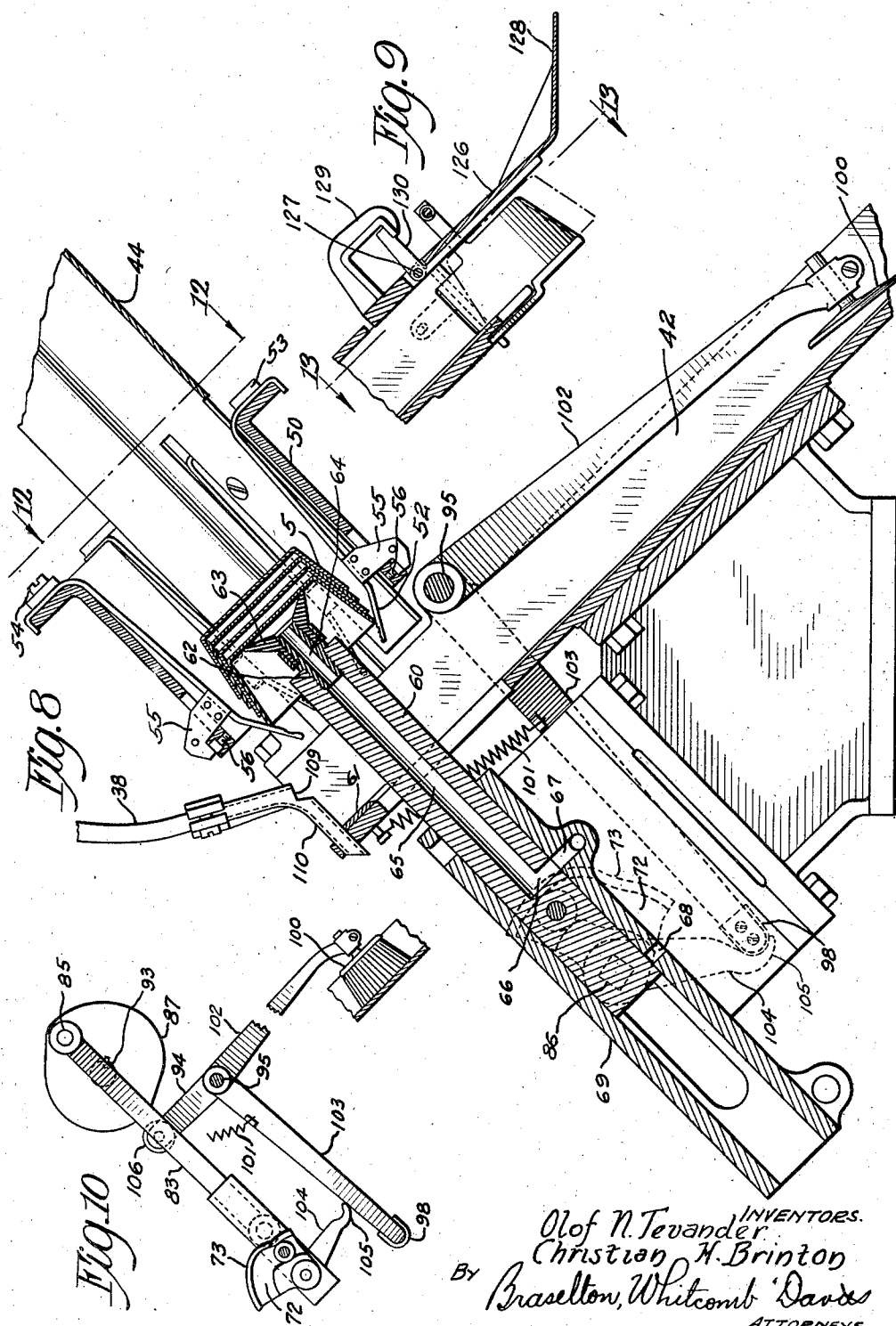
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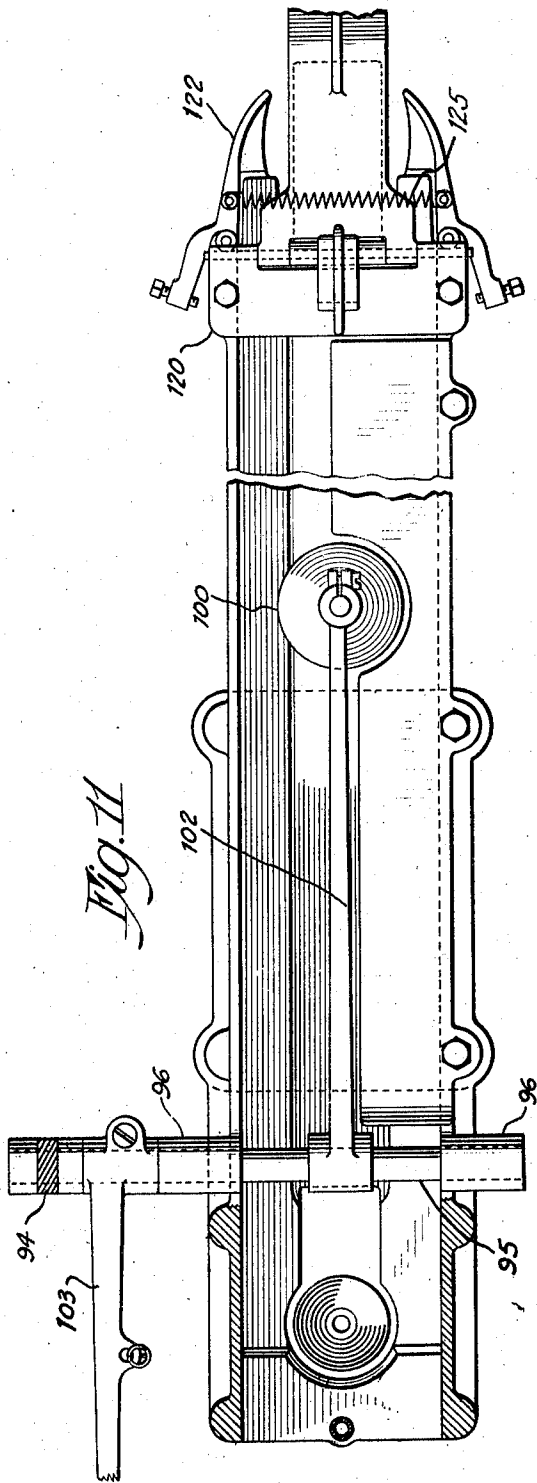


Fig. 11

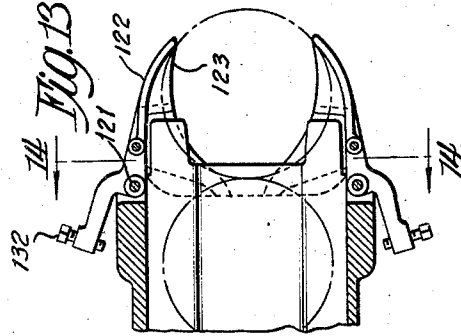


Fig. 13

Fig. 14

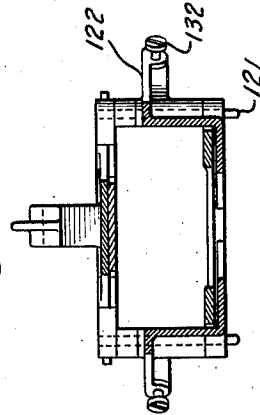
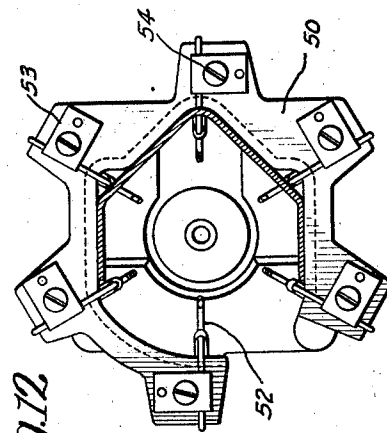


Fig. 12

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2,074,815

BOTTLE CAPPING MECHANISM

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Application June 3, 1931, Serial No. 541,773

25 Claims. (Cl. 226—88.1)

This invention relates to a method and means for periodically serving or delivering objects and particularly to a method and means for selectively discharging the same.

5 The invention contemplates the provision of means and apparatus for selectively serving caps or closures to containers, for example, milk bottles, subsequent to the filling operation wherein the entire process of applying the closures to the
10 bottles is entirely automatic.

The invention further embraces the provision of a mechanism of this character in which the presence of a closure or predetermined number of closures in a serving device will automatically
15 temporarily prevent the delivering of additional closures to the serving means pending a subsequent disposition of one or more of the closures in the serving device.

The invention embraces the provision of a machine of unitary construction which may be used
20 with or incorporated in any container or bottle filling mechanism and which may be disposed for use at any particular step or stage in the process without interrupting any of the other steps in
25 the process.

Another object is the provision of a machine of this character which is adapted and readily adjustable for use in applying closures to various types and sizes of containers.

30 A further object of the invention is the provision of improved and reliable means for selectively manipulating closures or other objects from a source of supply whereby the same are subsequently and automatically applied to con-
35 tainers.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawings of a form of the invention, which may
40 be preferred, in which:

Figure 1 is a side elevational view of the apparatus of our invention illustrated as used for applying closures to the mouths of bottles;

50 Figure 2 is an end view of the machine, the parts being in section taken substantially on the line 2—2 of Figure 1;

Figure 3 is a fragmentary view of a portion of the supply chute showing a plurality of nested caps or closures therein;

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 3;

Figure 5 is a fragmentary detail sectional view taken substantially on the line 5—5 of Figure 1;

60 Figure 6 is a detail sectional view through the

cap actuating mechanism taken on the line 6—6 of Figure 5;

Figure 7 is a fragmentary sectional view taken substantially on the line 7—7 of Figure 5;

Figure 8 is a transverse vertical sectional view taken substantially on the line 8—8 of Figure 5;

Figure 9 is a fragmentary vertical longitudinal sectional view through the extremity of the cap serving device showing the mechanism therein;

Figure 10 is a fragmentary detail view showing part of the operating mechanism of my invention;

Figure 11 is a sectional plan view taken substantially on the line 11—11 of Figure 1 particularly illustrating the cap serving chute and its associated mechanism;

Figure 12 is a transverse sectional view through the cap supply chute taken upon the line 12—12 of Figure 8;

Figure 13 is a longitudinal sectional view taken substantially on the line 13—13 of Figure 9;

Figure 14 is a transverse vertical sectional view through the cap serving mechanism, the section being taken substantially on the line 14—14 of Figure 13;

Figure 15 is a perspective view showing one of the skirted closures or caps particularly adapted for use in the embodiment of our invention as illustrated.

We have illustrated one form of our invention particularly adapted for use in serving or applying skirted caps or closures which may be of paper, fiber or other suitable material to milk bottles or other containers, but it is to be understood that our invention is susceptible of use with any mechanism where it is desired to selectively or periodically deliver one or more objects for various other purposes, and that the embodiment herein shown and described, is illustrative only of one use to which our invention may be employed.

Referring to the drawings in detail, the device of our invention is constructed as an adjustable or portable unit and comprises a frame member 10 secured to a vertically movable cylindrical member 12, the latter acting as a support for the complete structure. The member 12 is slidable vertically in a tubular supporting pillar 13 preferably carried upon a suitable support or base 15, the container filling machine with which our invention may be associated not being shown. The member 12 is provided with a longitudinal axially parallel groove 16 into which projects a member 17 for preventing rotation of, but permitting vertical sliding movement of member 12. The means for adjusting the structure comprises a screw shaft 19 positioned axially of the member 12 having threaded engagement with a correspondingly threaded bushing 20 carried in a support 21 forming a part of the pillar support 13. The upper extremity of the shaft 19 is journaled

in a suitable bushing 22 fixed in the upper extremity of the member 12, the shaft also being provided with a fixed collar 24 which supports an anti-friction bearing 25, the latter adapted to absorb the thrust set up by the weight of the structure carried by the member 12. Fixed to the upper extremity of the shaft 19 is a bevel gear 26 meshing with a similar gear 27, the latter fixed upon one end of a stub shaft 28 journaled for rotation in a hub portion 29 forming an integral part of the frame 10, the outer extremity of the shaft 28 being squared or otherwise formed to receive an operating crank (not shown).

In the embodiment illustrated rotation of the stub shaft and corresponding rotation of shaft 19 through the gears 26 and 27 will elevate or lower the member 12 and the structure carried thereby with respect to the conveyer mechanism C, a portion of the conveyer being supported by a projecting bracket 18 formed upon pillar 13, this adjustment being particularly advantageous in rendering the machine adaptable for use in capping bottles or containers of various heights.

Mounted upon an arm 11, forming an integral part of frame 10, is a motor 31 which is preferably electrically operated and furnishes the source of power to actuate mechanism to be hereinafter described. The motor 31 is provided with a shaft 32 upon which is mounted a pulley 33 adapted to be connected by means of a flexible belt 34 to drive a pulley 35, the latter being connected to operate a pneumatic or vacuum producing pump 36 which is used for purposes to be later explained, the pump having inlet and discharge pipes 37 and 38 respectively.

Mounted upon an arm 14, preferably forming an integral part of member 10, is a bracket 41 which forms a suitable support for a cap delivery or serving chute 42 and a magazine or cap supply chute 44. The magazine 44 particularly illustrated in Figures 1 to 4 inclusive is preferably channel shaped and inclined as illustrated in Figure 1. The caps designated 5 are positioned in nested formation as particularly illustrated in Figures 3 and 8, the uppermost cap being engaged by a substantially cylindrical weight 46 having a guiding member 47 to prevent relative rotation thereof in the channel 44, this weight serving to force the caps downwardly into engagement with the cap manipulating or withdrawing mechanism to be hereinafter described.

Positioned adjacent the lower extremity of the chute 44 and embracing the same is an irregular shaped sleeve like member 50 which supports a plurality of resilient fingers 52 fixedly secured at their upper ends by means of clamps 53 held in place by screws 54, the lower ends of the fingers flaring inwardly and having serrated extremities adapted for engagement with the lowermost caps in the channel 44. The tension or inherent flexure in the strips 52 serves to urge them to their innermost position toward the axis of movement of the caps 5, the inward movement of the members 52 being limited by means of stop members 55 engageable with adjustable screws 56.

If it is desired to adjust the innermost limited movement of the arms 52, it is only necessary to change the relative positions of screws 56 to effect such an adjustment. Certain of the strips or fingers 52 are of different lengths which difference in lengths serves a very important function in the successive feeding of caps to the chute or cap server 42, as the lowermost cap of the series will be engaged by the longest of

strips 52, thus leaving the shorter strips to engage the next succeeding cap to prevent a withdrawal of more than one cap with each operation of the cap withdrawal plunger 60.

We have provided novel and effective means for selectively and periodically withdrawing caps from the chute 44 to be deposited in the inclined serving chute 42. This mechanism comprises a reciprocable plunger 60, the upper extremity being provided with a fitting 62, the latter supporting a conically shaped flexible or yielding member 63, formed of rubber or other suitable material and utilized in a manner to be hereinafter explained. The fitting 62 and plunger 60 are provided with communicating bores 64 and 65, the latter bore terminating in a transverse opening 66 which is adapted to periodically register with an opening 67 in the wall of the plunger guiding means 68, the opening 67 being connected to the inlet pipe 37 of the pump 36.

Fixed to the plunger 60 is a transversely projecting pin or tenon 70 carrying a roller 71 which is received into an irregular shaped cam slot 72 formed in a member 73, the latter being pinned as at 74 or otherwise secured to the projecting end of a shaft 75 journaled in a bearing 76 fixed in the lower extremity of a reciprocable member 77 slidably mounted in guide ways 78.

Member 77 is provided with a transversely projecting stub shaft 80 pinned or otherwise secured thereto as at 81. Surrounding the projecting portion of the shaft 80 is a bushing 82 of suitable anti-friction material which forms a bearing for connecting the lower extremity of a pitman or connecting link 83 thereto, the pitman being retained on the bearing 82 by means of an enlarged head 84 formed upon the outermost end of the stub shaft 80, the upper end of the pitman 83 being suitably journaled upon a pin 85 fixed in a disc-like cam member 87, the latter in turn being fixed upon one end of a shaft 88 journaled in bearings 89 supported in a portion of the frame 90 of the machine. The shaft 88 is rotated by means of a worm wheel 91 fixedly secured thereto, the worm wheel meshing with an actuating worm 92, carried upon the motor shaft 32 which is actuated by the motor 31. It will be obvious from the foregoing that the normal vertical reciprocatory movement of plunger 60 and member 77 is equal to twice the distance from the axis of shaft 88 to the axis of shaft 85.

We have provided means whereby the feeding of caps from chute 44 into the serving chute 42 will be interrupted when there is a predetermined number of caps in the serving chute 42 arising by reason of the fact that the number of bottles B travelling on the conveyer C are insufficient in number to withdraw the caps fed into the chute 42 as rapidly as the mechanism can normally feed the caps to the serving chute. To this end the reciprocating cap feeding mechanism is, therefore, preferably controlled by means of the number of caps in the chute 42 through the medium of a pad 100 adjustably supported upon the end of an arm 102 fixed to a shaft 95 journaled in bearings 96 carried by the frame of chute 42. Fixed to shaft 95 is a depending arm 103 carrying at its extremity a member 99 of fiber or other suitable sound damping material which is adapted to be intermittently or periodically engaged by the hook like extremity 105 of arm 104. The arm 104 is secured to a squared portion 86 of shaft 75 and is held in place by means of a spring 107 whose tension may be adjusted by means of a nut 108 carried upon a

threaded extension 79 of shaft 75, the spring acting to hold arm 104 in place and to take up any lost motion between the parts.

As illustrated in Figure 10, when a cap is positioned beneath pad 100, the arm 103 is retained out of the path of the hook portion 105 of arm 104. The maximum uppermost extent of movement of plunger 60 by reason of rotation of the cam 87 acting through pitman 83 will not be sufficient to bring the flexible cup member 63 into engagement with the lowermost cap of a series of caps contained in the supply chute 44 so that a withdrawal of the cap will not be accomplished. The withdrawal of the cap is accomplished only when the arm 103 engages the hook portion 105 of arm 104, thus rotating the cam member 73 about the axis of shaft 75 to cause an actual lengthening of the distances between the axes of shaft 75 and the roller 71, thus increasing the uppermost movement of plunger 60 to bring the portion 63 into engagement with the lowermost cap.

We have provided means when the plunger 60 is in this position to cause the lowermost cap to adhere to the flexible member 63 so that when the plunger 60 moves downwardly, the cap will be carried with it into the serving chute 42. To this end the passages or bores 62, 65, 66 and 67 communicate by means of a tube 37 to one side of a pump 36 or other suitable means for producing a normally reduced pressure, i. e., creating a partial vacuum as compared with atmospheric pressure. This vacuum or reduced pressure is communicated to bore 66 when the plunger 60 has been moved to its uppermost position in which the bore 66 registers with the bore 67 whereby the pressure within the bore 64 is materially reduced and the atmospheric pressure associated upon the upper surface of the lowermost cap in engagement with the flexible member 63 causes the latter to be gripped to the member 63 so that when the latter moves downwardly, the cap will be moved therewith until one portion of the edge of the cap skirt engages a member 61 arranged in the serving chute 42, which member causes the cap to be tipped or inclined, in which position the plunger has reached the point wherein the passage 66 registers or communicates with a vent opening 68 in the wall of the member 61 so that the pressure within the openings or bores in the plunger 60 and associated parts is immediately raised to atmospheric, the equalization of pressure and the inclination of the cap automatically releasing the latter from engagement with the flexible member 63, thus positioning the cap within the upper end of the serving chute 42.

The equalization of pressure within the bores in the plunger 60 takes place before the latter has moved to its lowermost position as illustrated in Figure 5, and out of the path of the cap previously deposited by the plunger in the serving chute 42. A tube 38 is associated with the exhaust side of the pump 36 so that a jet of air is extruded through an opening 109 into the serving chute 42 and drives the prepositioned cap downwardly toward the discharge mouth of the chute. The opening 109 as illustrated is a notch in the wall of the tube 38, the lower end of the tube being bent down as at 110 so that the excess air instead of being discharged into the chute 42, passes downwardly through the portion 110 exteriorly of the chute 42.

The mechanism for discharging the caps from the serving chute 42 and placing the same upon the bottles B is particularly illustrated in Fig-

ures 1, 2, 9, 11, 13 and 14. The walls of the extremity of the chute 42 are enlarged as at 120 and to the respective side walls of which are pivoted, as at 121, wing-like members 122 having curved portions 123 which are adapted to engage the neck portion of the bottles B as they pass under the cap applying means. These wing-like members 122 are preferably held in their innermost positions by means of the comparatively light tension of a spring 125.

The members 122 serve a dual purpose of not only positioning the bottles properly in the path of the cap affixing or applying means, but also to release the caps as they are engaged by the moving bottles. A pad-like member 126 is pivoted as at 127 and has a forwardly extending horizontal portion 128 which pivots in a counter-clockwise direction during the application of a cap to the bottle. The pivotal motion of member 126 is limited by means of a stop 129 engaging an upwardly projecting portion 130 of the pad member 126. The normal opening movement of members 122 may be regulated by means of adjustable stub screws 132.

Operation

The bottles which have been previously filled and ready for capping are transferred from the filling machine (not shown) by means of a conveyer C travelling beneath the serving chute 42. Each successively arranged bottle is moved by the conveyer into contact with the wing-like members 122 and should the bottles upon the conveyer be slightly out of alignment with the axis of the serving chute 42, the members 122 will move the bottles to a central position upon the conveyer. Further movement of the conveyer carries the bottle to a position wherein the forward upper portion or neck of the bottle engages one of the skirts or depending portions of a cap 5 causing the latter to be deposited upon the mouth of the bottle, the cap being released by the outward movement of the members 122 as the bottle moves therebetween. The horizontal portion 128 of the pad member 126 is caused to pivot counter-clockwise and presses the skirted cap 5 upon the bottle B thus completing the cap applying operation.

With particular reference to Figure 1, the discharge of a cap 5 upon a bottle permits the series of caps in the chute 42 to slide downwardly until the rearmost cap of the series has passed from beneath the pad 100. When this takes place, spring 101 acts to swing arm 102 downwardly thus moving the arm 103 into the path of reciprocation of the arm 104. It is to be understood that the motor 31 is constantly actuating the vacuum producing pump 36 and the cam 87 which constantly causes a reciprocatory movement of member 77 and plunger 60, the normal reciprocatory movement of plunger 60 however being insufficient to carry the member 63 into engagement with a cap in the chute 44. The clockwise movement of arm 102, however, brings member 103 into engagement with the hook portion 105 of arm 104 causing a partial rotation of cam member 73 about the axis of shaft 75 to thereby cause an increased uppermost reciprocatory movement of plunger 60 to a point such that member 63 is caused to engage a cap in supply chute 44 and the bore 66 to register with the passage 67 so as to create a normally reduced pressure or partial vacuum beneath the lowermost cap 5 and the member 63. Continued rotation of the cam 87 moves plunger 60 downwardly car-

rying the cap into the upper end of the chute 42. As soon as bore 66 registers with the vent opening 68, and one edge of the cap engages the member 69, the pressure between member 63 and the cap is equalized, i. e., brought to normal atmospheric pressure, thus effecting a release of the cap from the member 63.

The exhaust air from the pump 36 passing downwardly through tube 38 moves the cap 10 downwardly into the serving chute 42 after the plunger 60 and member 63 have been moved downwardly out of the chute 42. Simultaneously with the equalization of pressure in member 63 to release a cap projection, the high or raised portion of cam 87 engages roller 106 carried by an arm 94 fixed to a projecting portion of a shaft 95 which forms the pivotal support for the arm 102, thus raising the latter to permit the discharged cap to pass under the pad 100. After the cam has moved through a predetermined angular relationship with respect to the reciprocating plunger 60, roller 106 is freed of engagement with cam 87 such that pad 100 carried by arm 102 will rest upon the cap under the influence of spring 101, the portion 103 being held out of the path of arm 104 as long as there is a cap beneath pad 100 so that further discharge of caps from the supply chute 44 into the serving chute 42 will be prevented as long as there is a cap under pad 100.

It is apparent that, within the scope of the invention modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What we claim is:

1. In a device of the character disclosed, in combination, means for retaining a plurality of articles; mechanical means for removing articles from said retaining means; pneumatic means for rendering said mechanical means effective; and pneumatic means for imparting further movement to said articles.

2. In a device of the character disclosed, in combination, means for retaining a plurality of skirted articles; a delivery chute; combined mechanical and pneumatic means for moving said articles longitudinally of said retaining means; and pneumatic means to move said articles in said chute.

3. In a device of the character disclosed, in combination, means for retaining an article; a delivery chute; a member adapted for engagement with said article; a constantly operative source of normally reduced pressure and means for periodically connecting said source of a normally reduced pressure with said member for transpositioning said article from said article retaining means to said delivery chute.

4. In a device of the character disclosed, in combination, means including a plurality of adjustable springs of different lengths for retaining a plurality of articles having laterally projecting portions; a member adapted for selective engagement with the surface bounded by said projecting portions; and means for utilizing a normally reduced pressure cooperating with said member for selectively transpositioning said articles.

5. In a device of the character disclosed, in combination, means including a plurality of resilient elements of different lengths for retaining a plurality of hood shaped articles, the depending portion of said articles extending toward a

transpositioning mechanism associated therewith; means utilizing a normally reduced pressure for selectively transpositioning said articles; and means for periodically rendering said article transpositioning means ineffective.

6. In a device of the character disclosed, in combination, means for retaining a plurality of articles; a chute; intermittently operative mechanical and continuously operative pneumatic means for selectively transpositioning said articles from said retaining means to said chute; and means in said chute for rendering said article transpositioning means ineffective.

7. In a device of the character disclosed, in combination, means for retaining an article; a member adapted for engagement with said article; a chute adjacent to said member; and means for utilizing a normally reduced pressure cooperating with said member for transpositioning said article from said retaining means to said chute; means to disconnect said normally reduced pressure from said member whereby said article is released from engagement with said member and deposited in said chute upon predetermined movement of said member; and means to initiate the movement of said articles in said chute.

8. In a device of the character disclosed, in combination, means for retaining a plurality of articles; a flexible member; means for moving said flexible member into successive engagement with said articles; and means periodically utilizing continuously operative normally reduced pressure connected with said flexible member for selectively transpositioning said articles, said last named means being controlled by the repositioned articles for effecting the periodic operative connection between said flexible member and the normally reduced pressure.

9. In a device of the character disclosed, in combination, means for retaining a plurality of articles; a flexible member; means for moving said flexible member into successive engagement with said articles; means utilizing continuously operative normally reduced pressure in cooperation with said flexible member for selectively transpositioning said articles; and means controlled by the repositioned articles for periodically disconnecting said reduced pressure from said flexible member for rendering said article transpositioning means ineffective.

10. In a device of the character disclosed, in combination, means for retaining a plurality of superimposed articles having laterally projecting portions; a delivery chute; a member adapted to selectively engage said articles; means utilizing a normally reduced pressure to cause one of said articles to adhere to said member; means to move said member and said article relative to said retaining means to a position in said delivery chute and in axial alignment with said retaining means; means to disconnect said reduced pressure from said member to release said article from said member; and means to initiate the movement of said articles in said chute.

11. In a device of the character disclosed, in combination, means for retaining a supply of articles; means utilizing normally reduced pressure for selectively transpositioning said articles to a serving chute; and means controlled by the articles in said serving chute for rendering said article transpositioning means ineffective.

12. In a device of the character disclosed, in combination, a supply chute for retaining a plurality of nested articles; a member; a source of

normally reduced pressure cooperating with said member for selectively depositing said articles in a serving chute; means for moving said articles to a predetermined position in said serving chute; means for releasing the articles from said serving chute; and means controlled by the articles in said serving chute for rendering said article transpositioning means ineffective.

13. In a device of the character disclosed, in combination, a supply chute for retaining a plurality of nested articles; a member; a source of normally reduced pressure cooperating with said member for selectively depositing said articles in a serving chute; means for moving said articles to a predetermined position in said serving chute; means controlled by the number of articles in said serving chute for rendering said article transpositioning means ineffective; and means for initiating the operation of said article transpositioning means upon release of an article from said serving chute.

14. In a device of the character disclosed, in combination, means for retaining a plurality of articles; a source of continuous reduced pressure; a reciprocable member adapted to be brought into engagement with said articles; means associated with said member for intermittently connecting said source of reduced pressure with said member for engaging one of said articles; means controlled by an article in said device to move said member and said articles with respect to said retaining means; means for releasing said articles from said member at a position in axial alignment with said article retaining means, and means for subsequently moving said repositioned articles into a chute positioned angularly with respect to the axis for said reciprocable member.

15. In a device of the character disclosed, in combination, means for retaining a plurality of paper hood caps; a source of normally reduced pressure; a reciprocable member having a flexible element adapted to be brought into engagement with the interior of said hood caps; means associated with said member for intermittently connecting said source of normally reduced pressure with said member and said flexible element for engaging one of said hood caps; means to move said member and said hood cap with respect to said retaining means; means for releasing said hood cap from said member and pneumatic means for subsequently moving the repositioned hood caps to another position.

16. In a device of the character disclosed, in combination, means for retaining a plurality of articles; a movable member adjacent to said retaining means; a source of normally reduced pressure intermittently connected with said member for engaging said articles; stationary means in the path of movement of said member cooperating to release said articles from said member upon continued movement of said member; and pneumatic means for subsequently moving said released articles to another position.

17. In a device of the class described, a magazine for receiving a plurality of separable nested articles; and resilient means for retaining said nested articles in said magazine comprising: releasable spring means for retaining one only of said articles adjacent one end of said magazine and separate releasable spring means of different lengths for engaging the remainder of said articles, and means to vary the initial tension of said spring means.

18. In a device of the class described; the combination of a magazine for receiving a stack of articles adapted to be successively withdrawn therefrom and a plurality of movable spring fingers of different lengths, certain of said fingers engaging the lowermost article of said stack and other fingers engaging the next article thereof, and means to vary the initial tension of said spring fingers.

19. In a device of the character disclosed, in combination; means for retaining a plurality of articles; means to produce a source of normally reduced pressure, including a continuous suction means having an exhaust; a reciprocable member adapted to be brought into engagement with said articles; means associated with said member for intermittently connecting said source of normally reduced pressure with said member for engaging one of said articles; means to move said member and said articles with respect to said retaining means, and means for utilizing said exhaust for releasing said articles from said member.

20. In combination, a support for a stack of closures; a chute; a member for selectively removing a closure from said support and delivering it to said chute; a source of reduced pressure to render said member effective; a closure actuated member for controlling said reduced pressure means for delivering containers adjacent said chute; and means actuated by a container to release a closure from said chute.

21. In combination, a magazine for closures; a chute; a closure withdrawing member; vacuum controlled means associated with said member for delivering closures to said chute; means actuated by a closure in said chute for controlling said vacuum means; means for delivering containers adjacent said chute; and means actuated by a container to release a closure from said chute.

22. In combination, a support for a stack of closures; a chute; pneumatic means for selectively engaging one of said closures for delivery to said chute; and means actuated by a predetermined number of closures in said chute for rendering said pneumatic means ineffective.

23. In combination, a support for a stack of closures; a chute; pneumatic means for selectively transpositioning said closures; spring fingers associated with said support to permit a single closure to be released upon effective operation of said pneumatic means; mechanical means rendered effective by the absence of a closure in said chute for controlling said pneumatic means; and means adjacent the termination of said chute allowing a closure to be released therefrom.

24. In a device of the character disclosed, in combination, means for retaining a plurality of articles; combined mechanical and pneumatic means movable with said articles to move the same in one direction; and pneumatic means for moving said articles in another direction.

25. In a device of the character disclosed, in combination means for retaining a plurality of hood caps; combined mechanical and pneumatic means to move said hood caps in one direction; and pneumatic means to move said hood caps in another direction.

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