

April 6, 1937.

C. H. BRINTON

2,076,116

BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

9 Sheets-Sheet 1

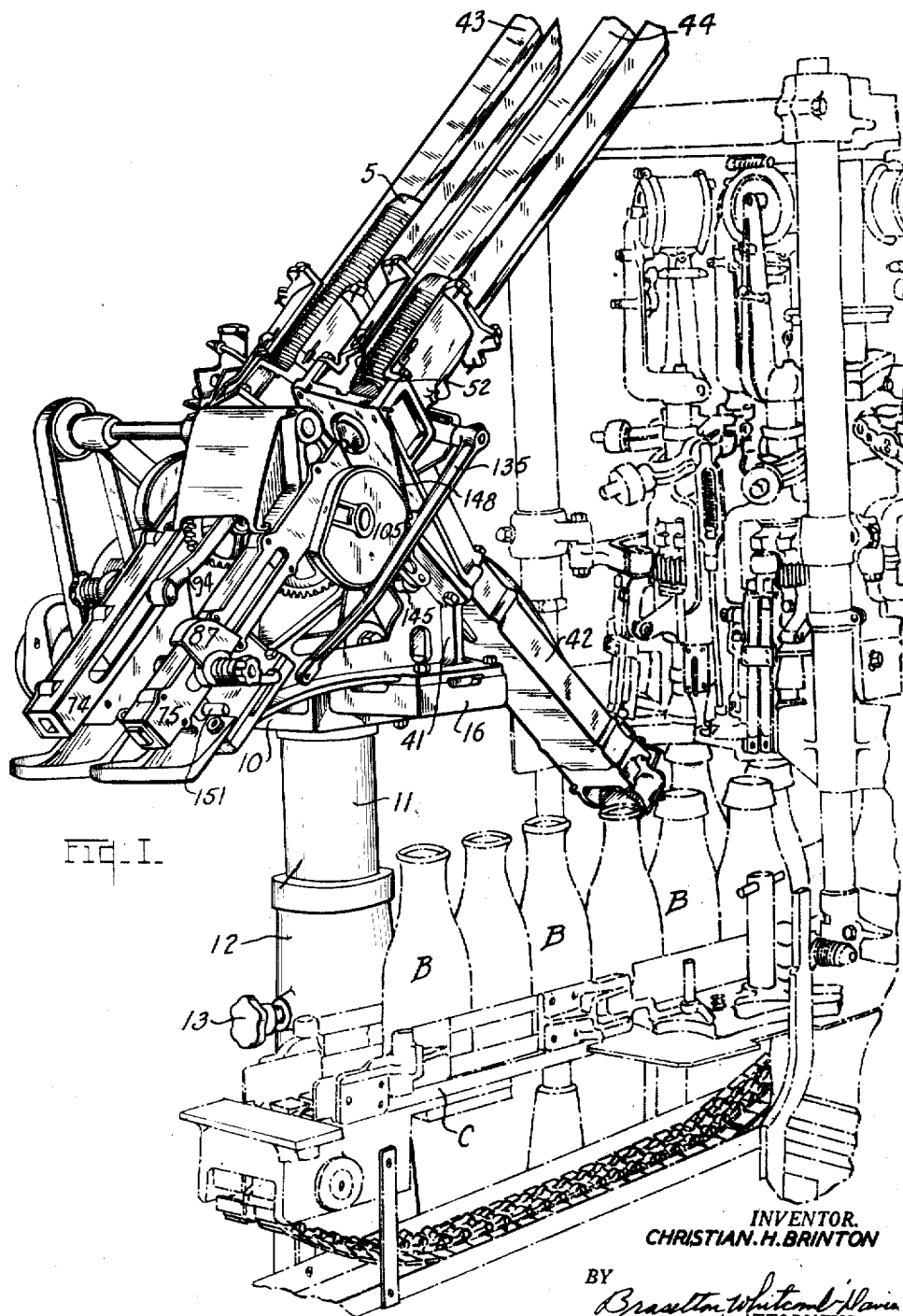


FIG. 1.

April 6, 1937.

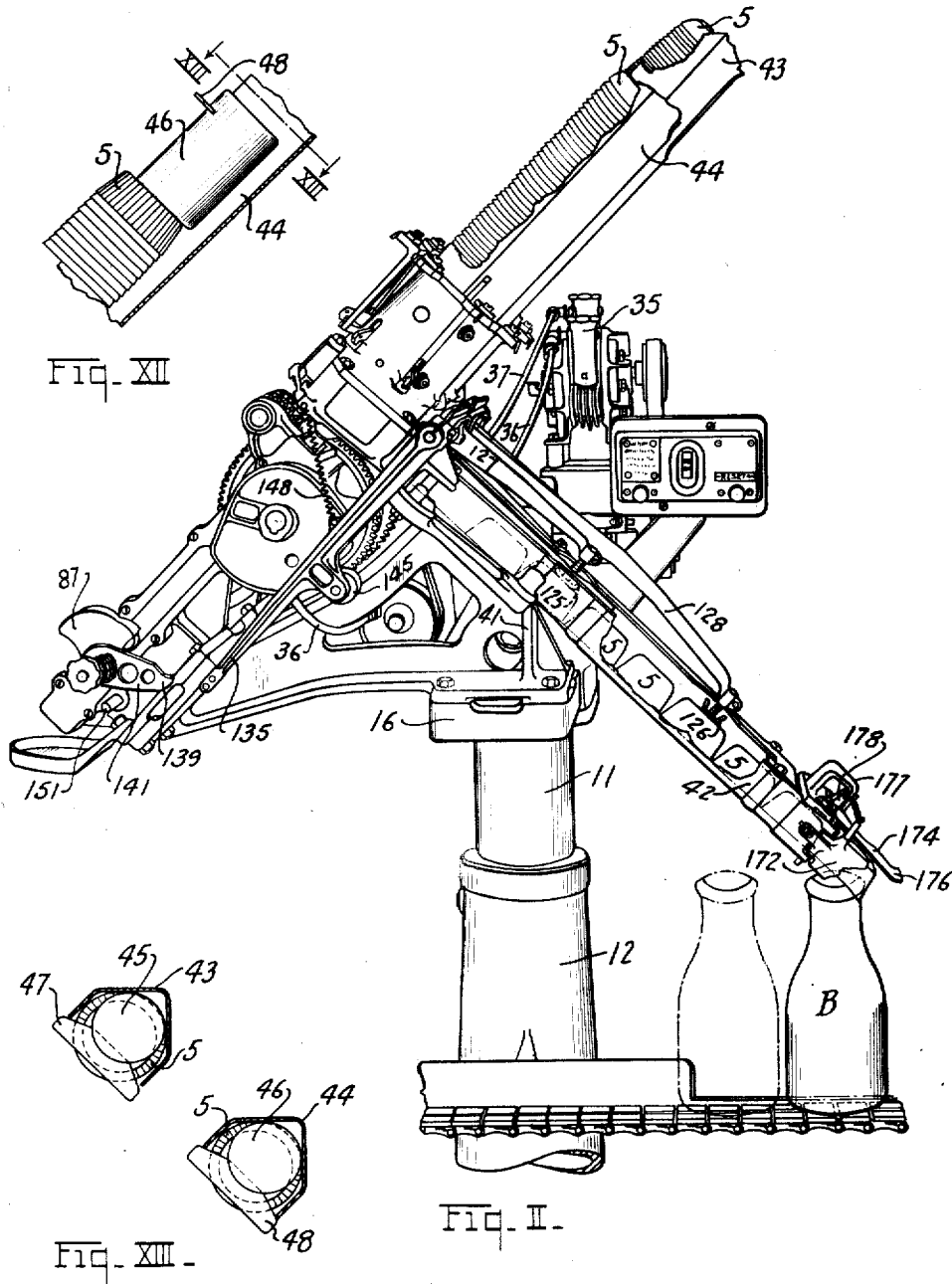
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BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

9 Sheets-Sheet 2



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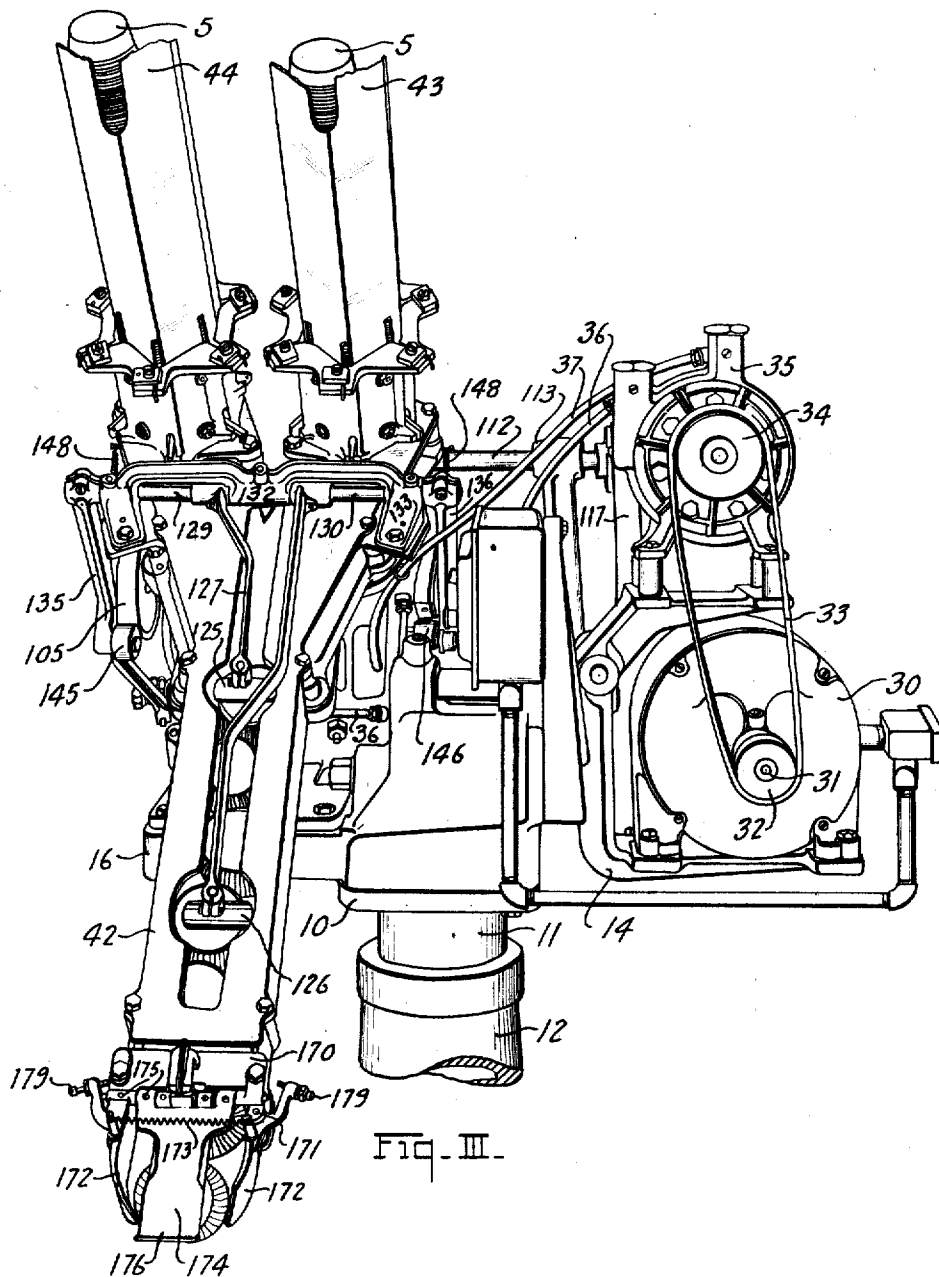
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BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

9 Sheets-Sheet 3



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2,076,116

Filed Sept. 5, 1933

9 Sheets-Sheet 4

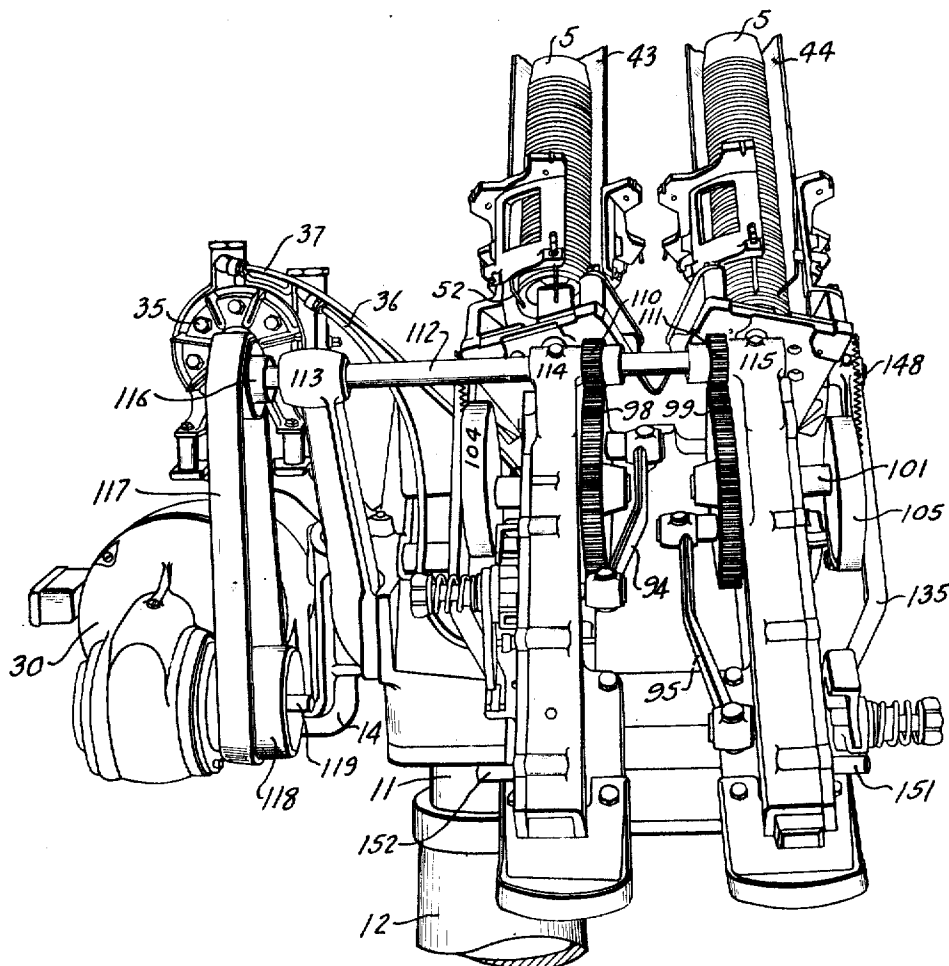


FIG. IV.

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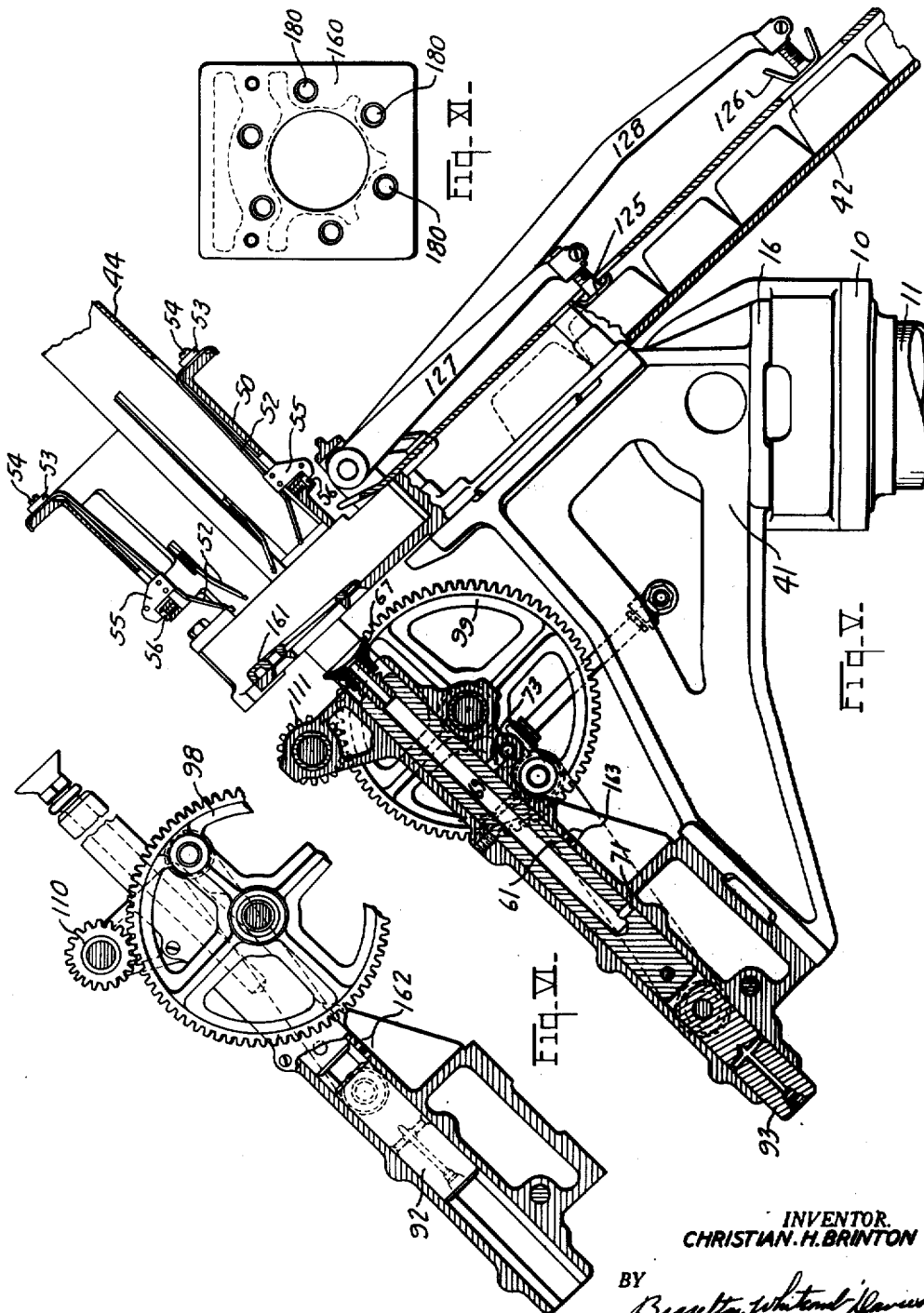
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BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

9 Sheets-Sheet 5



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BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

9 Sheets-Sheet 6

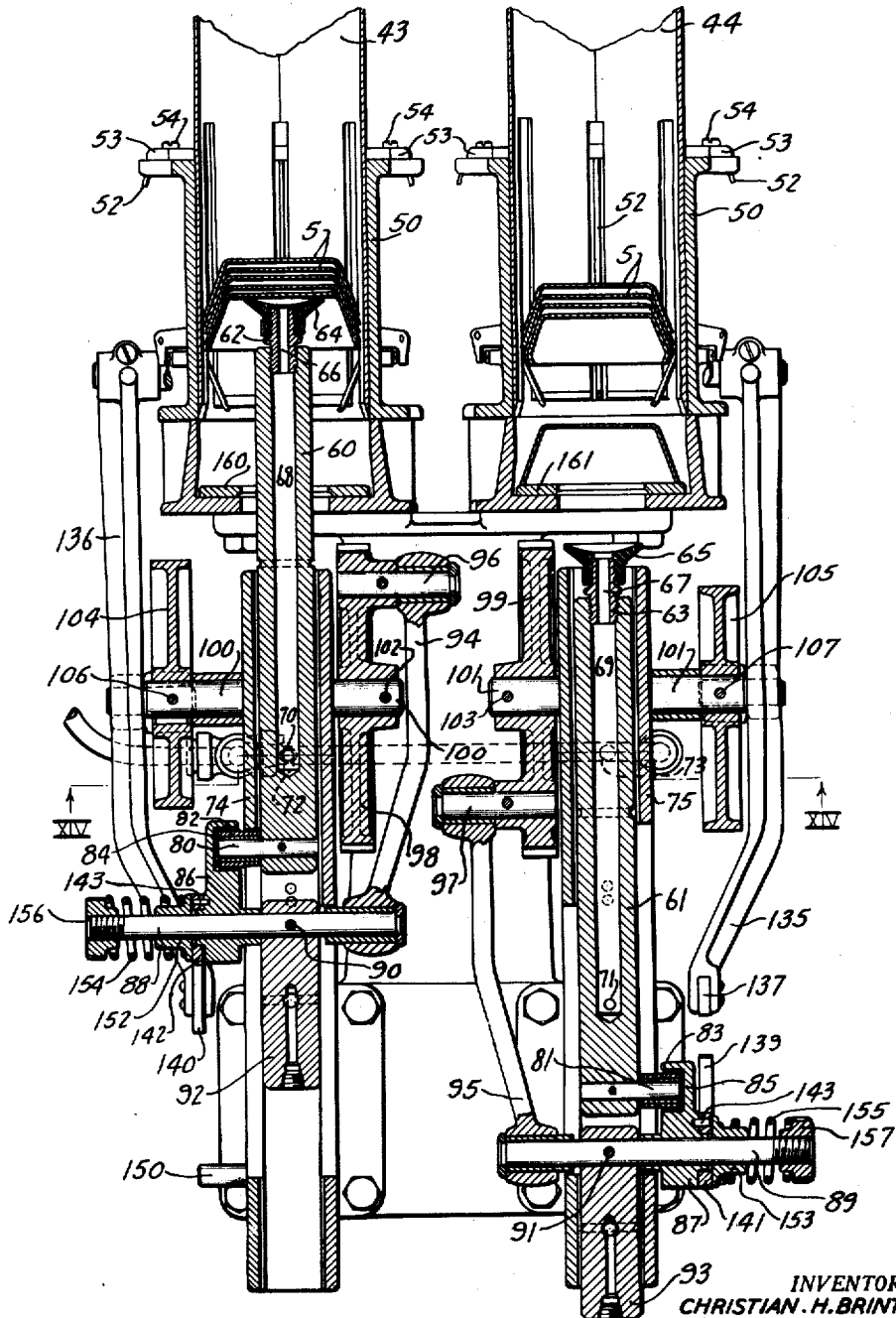


Fig. VII.

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BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

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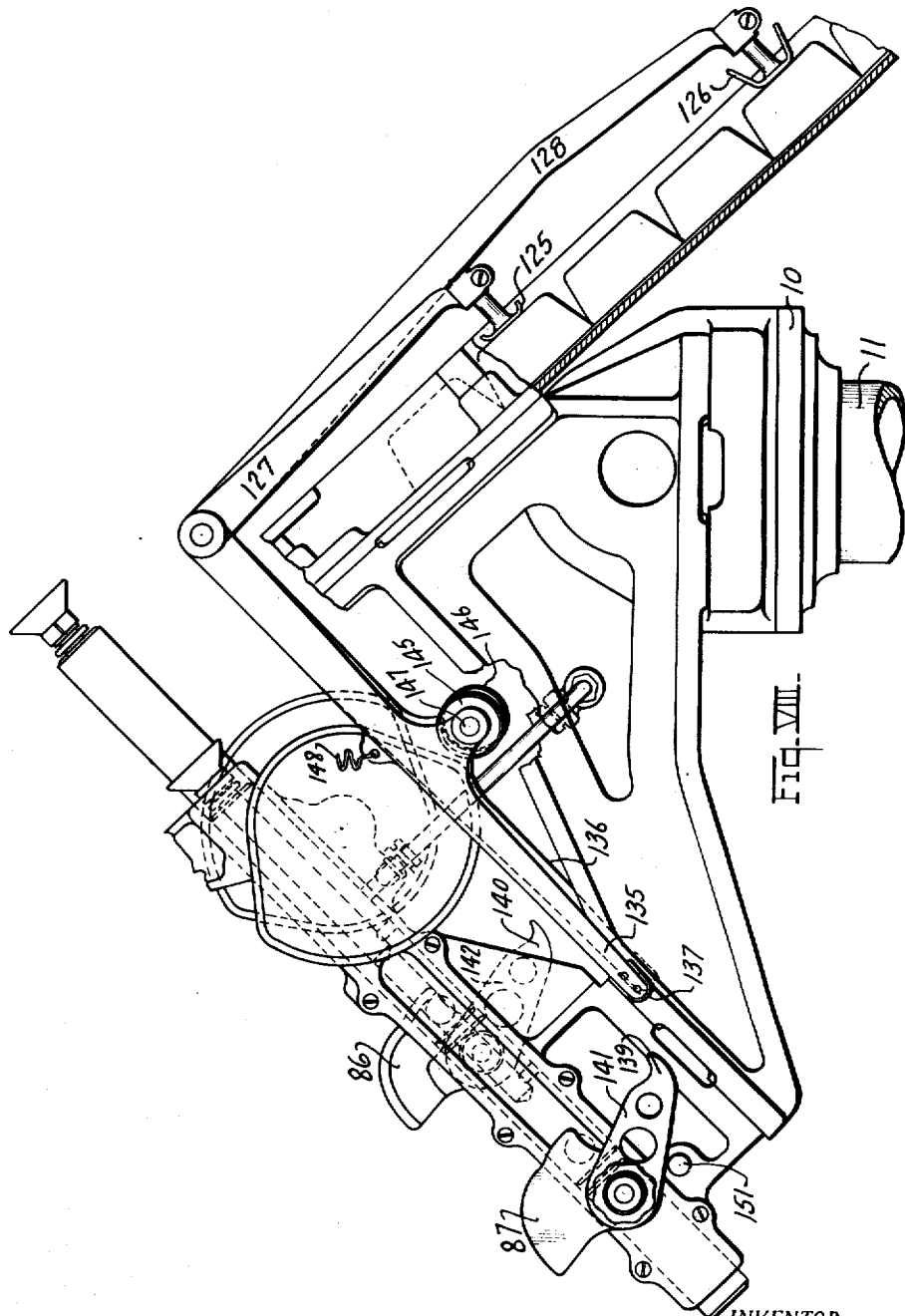


FIG. VIII.

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BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

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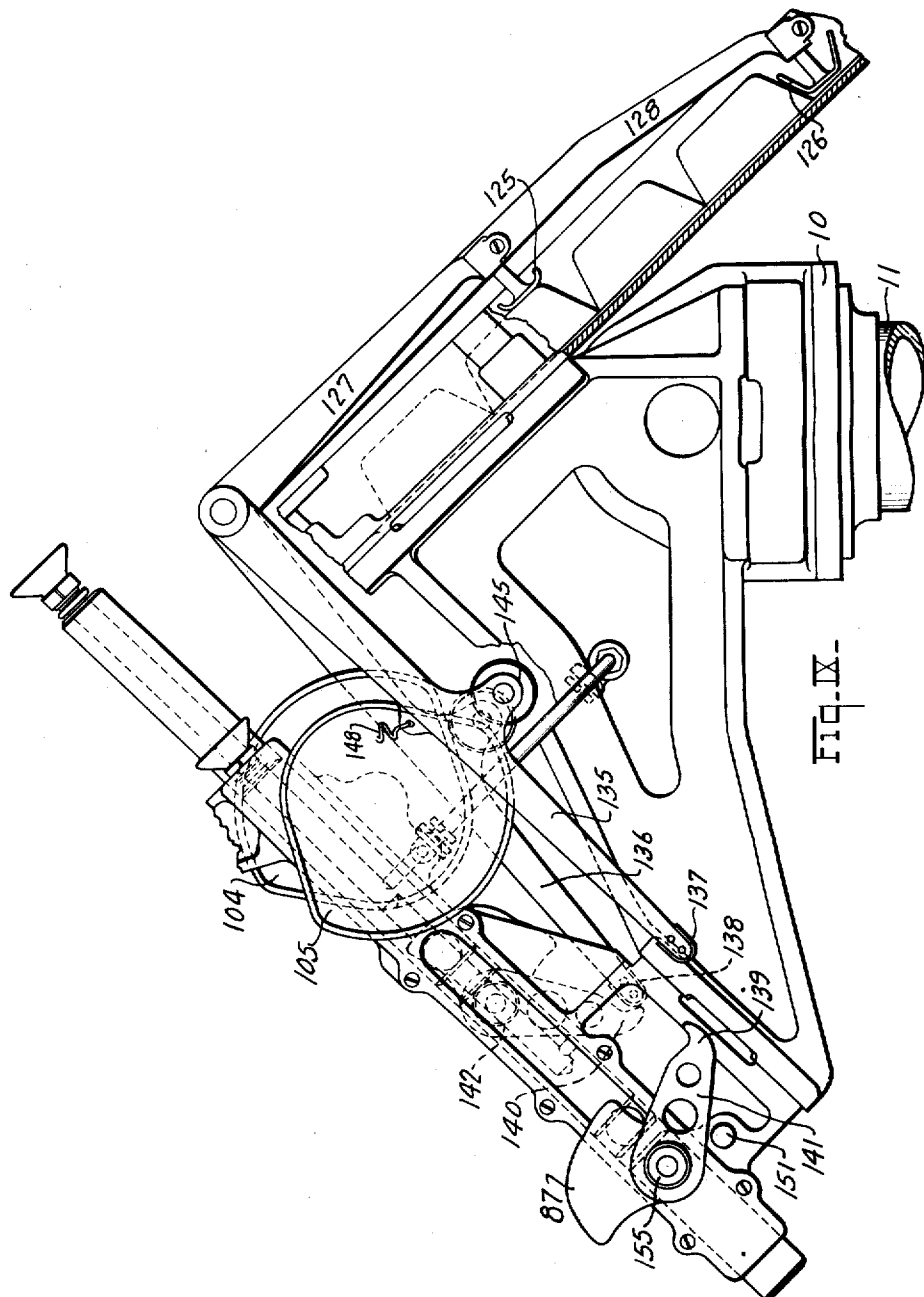


FIG. IX.

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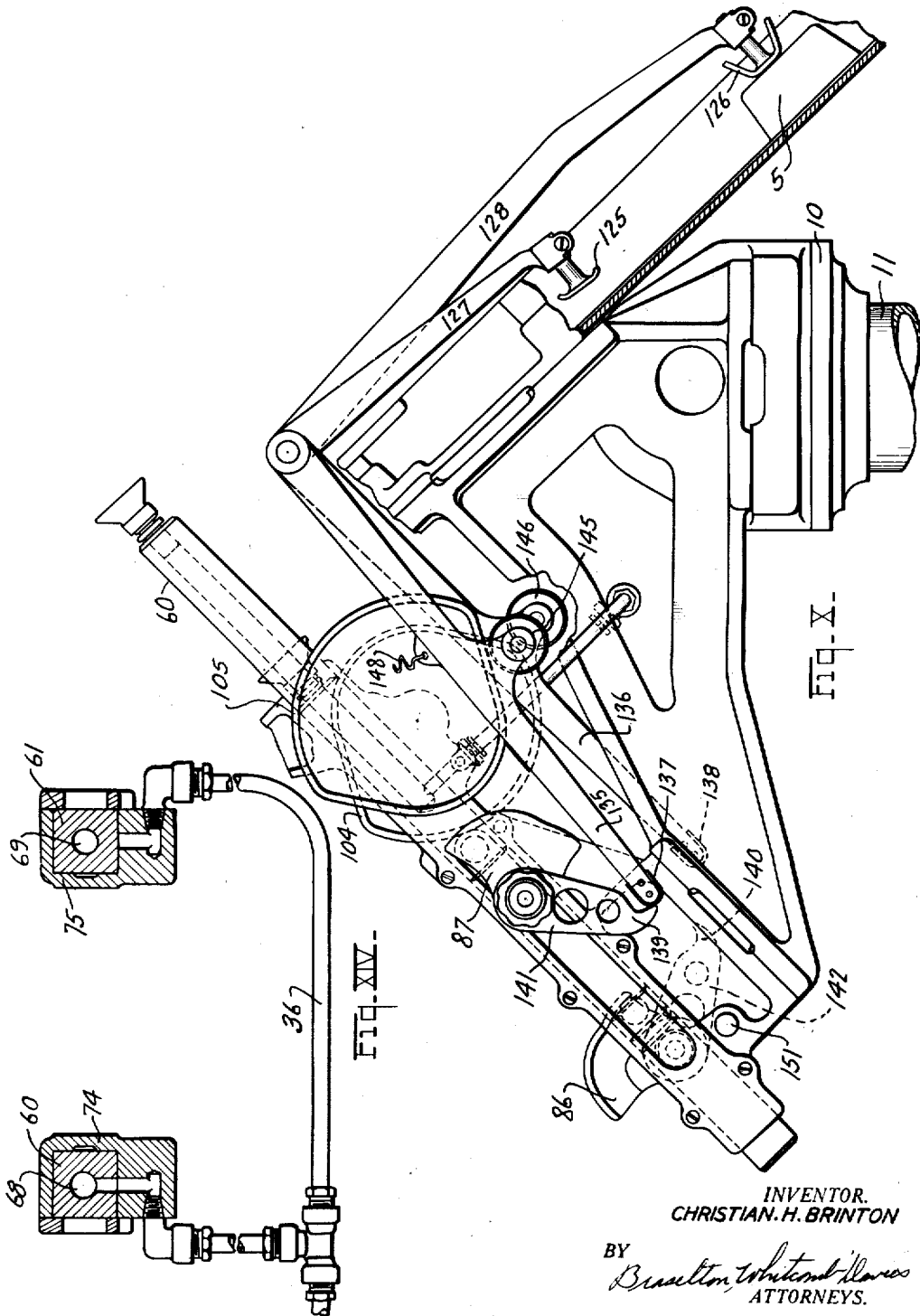
C. H. BRINTON

2,076,116

BOTTLE CAPPING MECHANISM

Filed Sept. 5, 1933

9 Sheets-Sheet 9



UNITED STATES PATENT OFFICE

2,076,116

BOTTLE CAPPING MECHANISM

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Application September 5, 1933, Serial No. 688,100

18 Claims. (Cl. 226—38.1)

This invention relates to mechanism or apparatus for increasing the speed of the single delivery of separate articles to a container or bottle mouth to be capped or covered thereby.

Thus, the invention particularly includes means and apparatus for intermittently serving objects from multiple supply means to a common delivery chute and to an apparatus and means for selectively discharging the same.

This invention contemplates the provision of mechanism for selectively serving caps or closures to bottles or other receptacles with great rapidity and without injury to the cap or coating thereon, subsequent to the filling operation.

Moreover, the invention contemplates the provision of such apparatus wherein the entire process of selectively delivering and applying the closures to the bottles is entirely automatic.

This invention embraces the provision of mechanism of this character for selectively manipulating closures or other objects from a dual or multiple source of supply, whereby the same are subsequently and automatically fed to and through a single or common delivery device, from which the same are applied to the bottles serially.

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

A further object is the provision of a machine of the character which is adapted and readily adjustable for use in applying closures to various types and sizes of bottles.

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 be preferred, in which:

Figure I is a perspective view of a form of machine or apparatus of the invention, shown for adoption in use with, for example, a bottle sealing machine, which latter machine is shown in outline;

Figure II is a side view of the capping applying mechanism shown in Figure I;

Figure III is a front view of the mechanism shown in Figure I;

Figure IV is a rear view of the capping mechanism in perspective, the guard being removed from gears for purpose of illustration;

Figure V is a side elevation of the machine shown in Figure II with portions broken away and parts in section for purpose of illustration;

Figure VI is a fragmentary detail view of a portion of the mechanism shown in Figure V, portions broken away for purpose of illustration;

Figure VII is a fragmentary sectional view of the dual mechanism shown in Figure IV;

Figure VIII is a fragmentary detail view showing part of the operating mechanism of my invention, a portion of the delivery chute broken away to show same supplied with closures;

Figure IX is a fragmentary detail view similar to Figure VIII with the upper end of the delivery chute supplied with closures;

Figure X is a fragmentary detail view similar to Figure IX with the lower end of the delivery chute supplied with closures;

Figure XI is a plan view of the bunter-plate as shown in section in Figure V and Figure VII;

Figure XII is a fragmentary view of a portion of the supply chute showing a plurality of nested caps or closures therein, held in contact with each other by means of a weight forming part of the invention;

Figure XIII is a detail sectional view taken on line XIII—XIII of Figure XII;

Figure XIV is a fragmentary detail view showing the suction pipe line in conjunction with operating parts, and taken substantially on line XIV—XIV of Figure VII.

I have illustrated one form of my invention particularly adapted for use in serving or applying skirted caps or closures which may be of paper, fibre, transparent cellulose material or other suitable material for milk bottles or other containers, but it is to be understood that my 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 my invention may be employed.

Referring to the drawings in detail, my invention is preferably constructed as an adjustable unit and comprises a pedestal 10 secured to a vertically moving cylindrical member or post 11 which is the support for the complete structure,

The post 11 is slidable vertically in a tubular supporting pillar 12 and held in place by means of locking bolt 13. This adjustment is particularly desirable for rendering the machine adaptable

for use in capping containers of various heights. Mounted upon an arm 14, forming an integral part of frame 10, is a motor 30 which is preferably electrically operated and furnishes the source of power to actuate mechanism to be hereinafter described. The motor 30 is provided with a shaft 31 upon which is mounted a pulley 32 adapted to be connected by means of a flexible belt 33 to drive a pulley 34, the latter being mounted on a shaft to operate a pneumatic or vacuum producing pump 35 which is used for purposes to be later explained, the pump 35 having suction and discharge pipes 36 and 37 respectively.

Mounted upon an arm 16, 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 dual magazine or cap supplying chutes 43 and 44 respectively. Said magazines which are particularly illustrated in Figures I to VII inclusive are preferably channel shaped and inclined as illustrated in Figures I and XIII. The caps designated 5 are positioned in nested formation as particularly illustrated in Figures VII and XII, the uppermost cap in each chute being engaged by substantially cylindrical weights 45 and 46, having guiding members 47 and 48 respectively to prevent relative rotation thereof in the channels 43 and 44, these weights serving to force the caps downwardly into engagement with the cap manipulating or withdrawing mechanism to be hereinafter described.

Positioned adjacent the lower extremities of the chutes 43 and 44, and embracing the same, are common irregular shaped sleeve like members 50, shown in Figures V and VII, which support 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 channels 43 and 44. The tension or inherent flexure in the fingers 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 length, as shown in Figure VII, which difference in length 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 fingers 52, thus leaving the shorter fingers to engage the next succeeding cap to prevent a withdrawal of more than one cap with each operation of the cap withdrawal plunger 60.

I have provided novel and effective means for selectively and periodically withdrawing caps from the chutes 43 and 44 to be deposited in the inclined serving chute 42. This mechanism comprises a pair of reciprocable plungers 60 and 61, the upper extremity of each being provided with fittings 62 and 63, which support conically shaped flexible or yielding members 64 and 65, best shown in Figure VII, said members being formed of rubber or other suitable material and utilized in a manner to be hereinafter explained. The fit-

tings 62 and 63 are provided with communicating bores 66 and 67 respectively. Said bores communicating with bores 68 and 69 which in turn communicate with transverse openings 70 and 71 which are adapted to periodically register with openings 72 and 73 in the wall of the plunger guiding means 74 and 75, as shown in Figures V and VII, the openings 72 and 73 being connected to the common suction line 36 of the pump 35 by dual connection lines.

Fixed to the plunger 61 is a transversely projecting pin or tenon 81 carrying a roller 83 which is received into an irregular shaped cam slot 85 formed in a member 87, shown in Figure VII, the latter being free to rotate on shaft 89 which is pinned at 91 to the lower plunger 93. Freely mounted on the end of shaft 89 is a crank arm 95 which is freely connected by means of tenon 97 to gear 99 which is rigidly mounted on shaft 101 by pin 103. On the opposite end of said shaft 101 is rigidly mounted a timing cam 105, fixed by means of pin 107 as shown in Figure VII. The adjoining cap feeding mechanism has similar parts such as plunger 60, tenon 80, roller 82, cam slot 84, member 86, shaft 88, pin 90, lower plunger member 92, crank arm 94, tenon 96, gear 98, shaft 100, pin 102, timing cam 104 and pin 106. Gears 98 and 99, well shown in Figure IV, are driven by spur pinion gears 110 and 111, rigidly mounted on shaft 112 supported in bearings 113, 114 and 115. Shaft 112 is driven through means of pulley 116 mounted on one end of said shaft, which is driven by means of flexible belt 117, and pulley 118, said pulley mounted on shaft 119 geared with motor 30.

I have provided means whereby the feeding of caps from chutes 43 and 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" traveling on the conveyor "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 pads 125 and 126 adjustably supported upon the ends of arms 127 and 128 respectively, as shown in Figure VIII, the arms being fixed to shafts 129 and 130. Shaft 129 is preferably journally supported in bearings 131 and 132, while shaft 130 is journalled in bearings 132 and 133 carried by the frame of chute 42.

Fixed to the shaft 129 is a depending arm 135 carrying at its extremity a member 137 of hardened steel, or other suitable material with a hard wearing surface, which is adapted to be intermittently or periodically engaged by the hook-like member 139 of arm 141 which is secured to member 87 by means such as screws 143. Intermediate the ends of lever arm 135 is a roller 145 journalled on shaft 147, the roller 145 travelling on the surface of cam member 105 on shaft 101, as shown in Figures II and III. Tension spring 148 holds roller 145 against said cam 105. Similar parts are connected to shaft 130 such as members 136, 138, 140, 142, and roller 146.

As illustrated in Figure VIII, when the chute 42 is filled with caps 5, causing pads 125 and 126 to be elevated, the arms 127 and 128 are raised, thus retaining both arms 135 and 136 out of the path of the hook portions 139 and

140 of members 141 and 142. Said arms 141 and 142 are normally in positions shown in Figure VIII, for they come in contact with stop members 151 and 152, well shown in Figure IV, thus causing relative movement of members 86 and 87, which in turn shortens the stroke of plungers 60 and 61 respectively through means of rollers 82 and 83 in cam slots 84 and 85. By shortening the stroke of plungers 60 and 61, the flexible cup members 64 and 65 are brought into contact with the lowermost cap, of each nest of caps, contained in the supply chutes 43 and 44, but the ports 70 and 71 do not register with bores 72 and 73, thus a withdrawal of a cap will only be accomplished when either or both of the arms 135 or 136 come in contact with their corresponding hook-like member 139 or 140, which will rotate the corresponding cam shaped member 86 or 87 about the axis of its corresponding shaft 88 or 89, thus causing an actual lengthening of the distance between plungers 60 and 61 and their corresponding slide members 92 and 93, which in turn lengthens the stroke of plungers 60 and 61 causing the flexible cup members to contact with the caps in the supply chutes, permitting registration between ports 70 and 71 and bores 72 and 73, and producing a partial vacuum in cups 64 and 65.

As illustrated in Figure IX the chute is only partially filled with caps, there being no cap under pad 126, the upper end of the chute having the caps. This occurs when the chute is first being filled, or when the caps in the lower end of the chute have been withdrawn. In such an arrangement the pad 125 is riding on top of a cap 5, holding lever 127 in elevated position thus preventing arm 135 with member 137 from coming in contact with hooklike member 139 of arm 141. Since the arm 141 has been moved into position shown, by coming in contact with pin 151 and held in such position by friction cone member 153, governed by spring 155, tension of which is controlled by knurled nut 157, said arm will cause the stroke of plunger 61 to be shortened, therefore no closures will be withdrawn from supply chute 44. However, pad 126 is lowered as shown and allows lever 128 to be lowered thus allowing lever 136 to cause member 138 to come in contact with hook-shaped member 140, which moves arm 142 and cam member 86 on the next upward movement of plunger 60, which lengthens the stroke of plunger 60, causing registration of the vacuum means, and causing caps 5 to be withdrawn from the supply chute 43. Timing cam 105 mounted on shaft 101 makes one revolution each time gear 99 makes one revolution or in other words, each time the plunger 61 is reciprocated. Timing cam 104 makes one revolution each time plunger 60 is reciprocated. The shape and movement of cams 104 and 105 causes levers 127 and 128 to be raised and lowered through a sufficient distance each revolution of said cams to allow caps to pass freely beneath the pads 125 and 126 respectively.

As illustrated in Figure X the chute is partially exhausted of caps 5, caused by rapid withdrawal of caps from the common serving chute, one however remaining under pad 126 thus elevating the lever 128, causing lever arm 136 and member 138 to be held in lowered position and out of position to come in contact with hook-like member 140, thus allowing cam shaped member 86 to remain in the position shown, causing the stroke of plunger 60 to remain short-

ened and preventing caps from being withdrawn from supply chute 43. However, no caps are beneath pad 125 which allows arm 127 to be lowered and causes lever arm 135 to be raised and member 137 to be in position to strike hook-like member 139, thus moving arm 141, on the next upward movement of plunger 61. This lengthens the stroke of plunger 61 and causes caps 5 to be withdrawn from supply chute 44.

From the previous description it will be noted that plungers 60 and 61 function 180° apart in the working cycle. If plunger 60 is in the uppermost position or cap extracting position, plunger 61 will be in lowermost position and vice versa.

It will also be noted that member 126 is made with extended side walls in preference to type shown by pad 125. These extended side walls permit said pad 126 to drop to the position shown in Figure IX, holding back the caps in the upper portion of the chute. Should member 126 not be permitted to drop to said position, and caps continuing to hold pad 126 in elevated position, caps would be fed from supply hopper 44 a greater part of the time since pad 125 would be the first one always to drop to lower position due to its location at rear of discharge chute. With this arrangement and construction, caps are uniformly fed from both supply hoppers 43 and 44.

I have provided means when either of the plungers 60 and 61 are in their uppermost position of travel to cause the lowermost cap in each supply chute to adhere to the flexible members 64 and 65 so that when the plungers 60 and 61 move downwardly the caps 5 will be carried with the same members and deposited into the common serving chute 42. To this end the passages or bores 66, 67, 62, 63, 70 and 71 communicate by means of tube 36 to suction side of pump 35, 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 bores 68 and 69 when the plungers 60 and 61 have been moved to their uppermost position in which said bores register with bores 72 and 73 which are connected with the pipe 36 whereby the pressure within the bores 66 and 67 is materially reduced and the atmospheric pressure associated upon the upper surface of the lowermost caps, in engagement with the flexible members 64 and 65, causes the caps to be gripped by the flexible members 64 and 65 so that when the latter move downwardly, the caps will be moved therewith until the lower portion of the cap skirt engages bunter-plates 160 and 161, shown in Figure V and Figure XI, said plates being so designed and arranged at the upper end of the serving chute 42 to cause the caps to be tipped or inclined. At this point and position of the plungers 60 and 61, their passages 70 and 71 will register with their corresponding vent openings 162 and 163 in the walls of the members 74 and 75 so that the pressure within the openings or bores in the plungers 60 and 61 and associated parts, are immediately raised to atmospheric, the equalization of pressure and the inclination of the caps automatically release the latter from engagement with the flexible members 64 and 65, thus positioning the caps within the upper end of the serving chute 42 serialim.

The equalization of pressure within the bores in the plungers 60 and 61 takes place before said plungers have moved to their lowermost

position, as shown by plunger 61 in Figure VII, and out of the path of the cap deposited by either plunger upon the respective bunter-plate.

Bunter-plate 161 is provided with holes 180, as shown in Figure XI. These holes are directly below fingers 52 and are of the same number, six in this case. As the caps which may, if desired, be provided with a coating of wax or the like, pass by these fingers, small particles of wax may drop downwardly through these holes and thus will not accumulate in the chute 42.

The mechanism for discharging the caps from the serving chute 42 and placing the same upon bottles B is particularly illustrated in Figures I and II. The walls of the extremity of the chute 42 are enlarged as at 170 and to the respective side walls of which are pivoted, as at 171, wing-like members or curved fingers 172 adapted to engage the neck portion of the bottles "B" as they pass under the cap applying means. These pivoted curved fingers are held in their innermost positions by means of comparatively light tension spring 173. The members 172 serve to release the caps as they are engaged by moving bottles. A leveling finger 174 is pivoted as at 175 and has a forwardly extending horizontal portion 176. The pivotal motion of member 172 is limited by means of a stop 177 engaging an upwardly projecting portion 178 of the finger member 172. The normal opening movement of members 172 may be regulated by means of adjustable stub screws 179.

Operation

The bottles which have been previously filled and ready for capping are transferred from the filling machine (not shown) by means of a conveyor C traveling beneath the serving chute 42. Each successively arranged bottle is moved by the conveyor into contact with the wing-like members 172 and should the bottles upon the conveyor be slightly out of alignment with the axis of the serving chute 42, the members 172 will move so as to bring the cap into a central position with the bottle top. Further movement of the conveyor 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 172 as the bottle moves therebetween. The horizontal portion 176 of the pad member 174 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 Figures I and II, the discharge of caps 5 upon bottles 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 126. When this takes place, spring 148 acts to swing arm 127 downwardly thus moving the arm 135 into the path of reciprocation of the arm 141, lengthening the stroke of plunger 61 and causing a cap to be withdrawn from the supply chute 44. Under normal operating conditions the conveyor C carries bottles B under chute 42 at such high rate of speed that two caps are removed from chute 42 before the caps in the upper portion of the chute 42 begin to feed downwardly. As stated before pad 126 is the first of the two pads 125 and 126 to drop, or lower its position, and cause the withdrawing of a cap from its respective supply chute. The pads 125 and 126 are arranged

such that two caps are arranged between the same, see Figure II. There is always one extra cap in the upper part of chute 42 resting in contact with the cap upon which pad 125 is positioned, this is also shown in Figure II. Since plunger 60 in connection with lever arm 128 and pad 126 operate $\frac{1}{2}$ cycle behind plunger 61 and lever 127 with pad 125, approximately two and one half caps have been lowered in the chute 42 before pad 126 is in position to be lowered. This permits lever 128 to be lowered, thus causing lever 136 to come in contact with arm 140 lengthening the stroke of plunger 60 and withdrawing a cap from the supply chute 43. Figure IX shows pad 126 lowered to this position holding back caps in the upper portion of the chute. Upon raising of said pad 126 by cam 104, two caps will slide down the chute and pad 125 will again be lowered. This cycle of operation is continuous, feeding first a cap from supply hopper 44, then one from hopper 43. This varies occasionally due to a cap sticking in the supply hopper or in the discharge chute or when bottles are fed at a very low rate of speed.

It is to be understood that the motor 30 is constantly actuating the vacuum producing pump 35, and the gears 98 and 99 which constantly cause a reciprocatory movement of members 92 and 93, thus the plungers 60 and 61 are also reciprocated. The normal reciprocatory movement of plungers 60 and 61 however being sufficient to carry the members 64 and 65 into engagement with the caps 5 in chutes 43 and 44, but insufficient to bring ports 70 and 71 into communication with ports 72 and 73 connected with vacuum pump 35.

The clockwise movement of arms 127 and 128, however, bring members 135 and 136 into engagement with hook portions 139 and 140 of arms 141 and 142 causing a partial rotation of cam members 86 and 87 about the axis of shafts 88 and 89 respectively, to thereby cause an increased uppermost reciprocatory movement of plungers 60 and 61 to a point that members 64 and 65 are caused to engage a cap in their respective supply chutes 43 and 44, the bores 68 and 69 registering with the passages 70 and 71, the latter with bores 72 and 73 so as to create a normally reduced pressure or partial vacuum beneath the lowermost cap 5, inside members 64 and 65. Continued rotation of gears 98 and 99 moves plungers 60 and 61 downwardly carrying the caps engaged to the bunter-plates 160 and 161. At this position of operating cycle bores 70 and 71 register with the vent openings 162 and 163, the pressure between members 64 and 65, and the caps 5 becomes equalized, i. e., brought to normal atmospheric pressure, thus effecting a release of the caps from members 64 and 65. The exhaust air from pump 35 passes down through tube 37 where the condensation of water and oil is disposed of without further use.

Simultaneously with the release of a cap at the bunter-plate, the portion of maximum diameter of cams 104 and 105 engages rollers 145 and 146 causing arms 127 and 128 to permit the discharge caps to pass under the pads 125 and 126 at the proper time. After the cams have moved through a predetermined angular relationship with respect to the plungers 60 and 61, rollers 145 and 146 are freed of engagement with cams 104 and 105 such that pads 125 and 126 carried by arms 127 and 128, will rest upon the cap be-

neath the same in said chute 42, the pads 125 and 126 being held in place under the influence of springs 148.

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.

10 What I claim is:

1. In a device of the character disclosed, in combination, a plurality of means for retaining a supply of articles; a common receiving chute for retaining a plurality of articles and having a single discharge opening for said articles; a plurality of means whereby articles from said retaining means are alternately removed from said retaining means and delivered to said receiving means; a common source of power for driving each of said delivering means; and means rendering one of said delivering means ineffective and causing another of said delivering means to remove articles from one of said retaining means.

2. In a device of the character disclosed, in combination; a plurality of means for retaining nested articles; means to produce a source of normally reduced pressure, including a continuous suction means; a plurality of reciprocable members adapted to be brought into engagement with said articles; means associated with said members for intermittently connecting said source of normally reduced pressure with said members for engaging successive articles; means to move each member and said articles with respect to said retaining means, means controlled by said articles for rendering said members effective and means for releasing said articles from said member.

3. In combination, a plurality of magazines for closures; a common chute adjacent said magazines; closure withdrawing members; pneumatic means for rendering said members effective to deliver closures to said chute; means actuated by a closure in said chute for controlling said first mentioned means; means for delivering containers adjacent said chute; and means actuated by a container to release a closure from said chute.

4. In a device of the character disclosed, in combination, a plurality of chutes for retaining independent supplies of articles; a common receiving chute for retaining a plurality of articles and having a single discharge opening for said articles; means utilizing normally reduced pressure for withdrawing articles from said retaining chutes and transpositioning said articles to said receiving chute; and means rendering said withdrawing means effective to withdraw articles from one of said retaining chutes.

5. In a device of the character disclosed, in combination, a plurality of supply chutes for retaining nested articles; combined mechanical and pneumatic means for selectively transpositioning said articles; and means controlled by a transpositioned article for rendering said transpositioning means ineffective.

6. In a device of the character disclosed, in combination, a plurality of supply chutes for retaining a plurality of nested articles; a common serving chute; reciprocating members; and a source of normally reduced pressure cooperating with said members for selectively depositing said articles in said serving chute.

7. In a device of the character disclosed, in combination; a plurality of magazines for retaining nested articles; a common serving chute;

means utilizing a source of normally reduced pressure for alternately withdrawing and positioning said articles in said serving chute, and means for rendering said positioning means ineffective.

8. In combination, a dual magazine for closures; a common chute; closure withdrawing members; pneumatic means for rendering said members effective to deliver closures to said chute; and means actuated by a closure in said chute for controlling said vacuum means.

9. In a device of the character disclosed, in combination, a plurality of margins for retaining a supply of articles; a serving chute; means utilizing normally reduced pressure for alternately withdrawing and transpositioning said articles to said serving chute; and means associated with said retaining means to provide positive engagement between said articles and said transpositioning means.

10. In a device of the character disclosed, in combination, a plurality of magazines for retaining a supply of nested articles; a serving chute; means utilizing a source of normally reduced pressure for selectively withdrawing and depositing said articles in said serving chute; and weight means for positively moving said articles into engagement with said depositing means.

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

12. 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; a plurality of reciprocable members adapted to be brought into engagement with said articles; means associated with said members for intermittently connecting said source of normally reduced pressure with said members for engaging said articles; means to move said members and said articles with respect to said retaining means, and means at the termination of said retaining means for releasing said articles from said members upon disconnection of said normally reduced pressure.

13. In combination, a plurality of magazines for closures; a common chute; closure withdrawing members; a source of vacuum intermittently connected to said members to deliver closures to said chute; means actuated by a closure in said chute for rendering said vacuum means ineffective; means for delivering containers adjacent said chute; and means actuated by a container to render said vacuum means effective.

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

15. In a device of the character disclosed, a combination, a plurality of chutes for retaining a plurality of nested articles; a serving chute; a plurality of members; a source of normally reduced pressure cooperating with said members for selectively depositing said articles in said serv-

ing chute; means for releasing the articles from said serving chute; and means controlled by the articles in said serving chute for rendering said article depositing means ineffective.

5 16. In a device of the character disclosed, in combination, a plurality of supply chutes for retaining nested articles; a serving chute; a plurality of members; a source of normally reduced pressure cooperating with said members for selectively depositing said articles in said serving chute; means controlled by the number of articles in said serving chute for rendering said article depositing means ineffective; and means for initiating the operation of said article depositing means upon release of an article from said serving chute.

15 17. In an apparatus of the character disclosed, in combination, a plurality of means for retaining a supply of articles; a serving chute; means utilizing normally reduced pressure for selective-

ly transpositioning said articles to said serving chute; and means to control the number of articles delivered from one of said retaining means.

18. In an apparatus of the character disclosed, in combination, a plurality of means for retaining nested articles; a common delivery chute; a single means for producing a source of normally reduced pressure; a plurality of reciprocable members adapted to be brought into engagement with said articles; means associated with each member for intermittently connecting said single source of normally reduced pressure for engaging one of said articles; means to move each member and said articles with respect to each of said retaining means; and means effective upon disconnection of said reduced pressure for releasing said articles from each member into said common delivery chute.

CHRISTIAN H. BRINTON. 20

CERTIFICATE OF CORRECTION.

Patent No. 2,076,116.

April 6, 1937.

CHRISTIAN H. BRINTON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, second column, line 13, claim 9, for "margins" read magazines; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of June, A. D. 1937.

Henry Van Arsdale

(Seal)

Acting Commissioner of Patents.

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