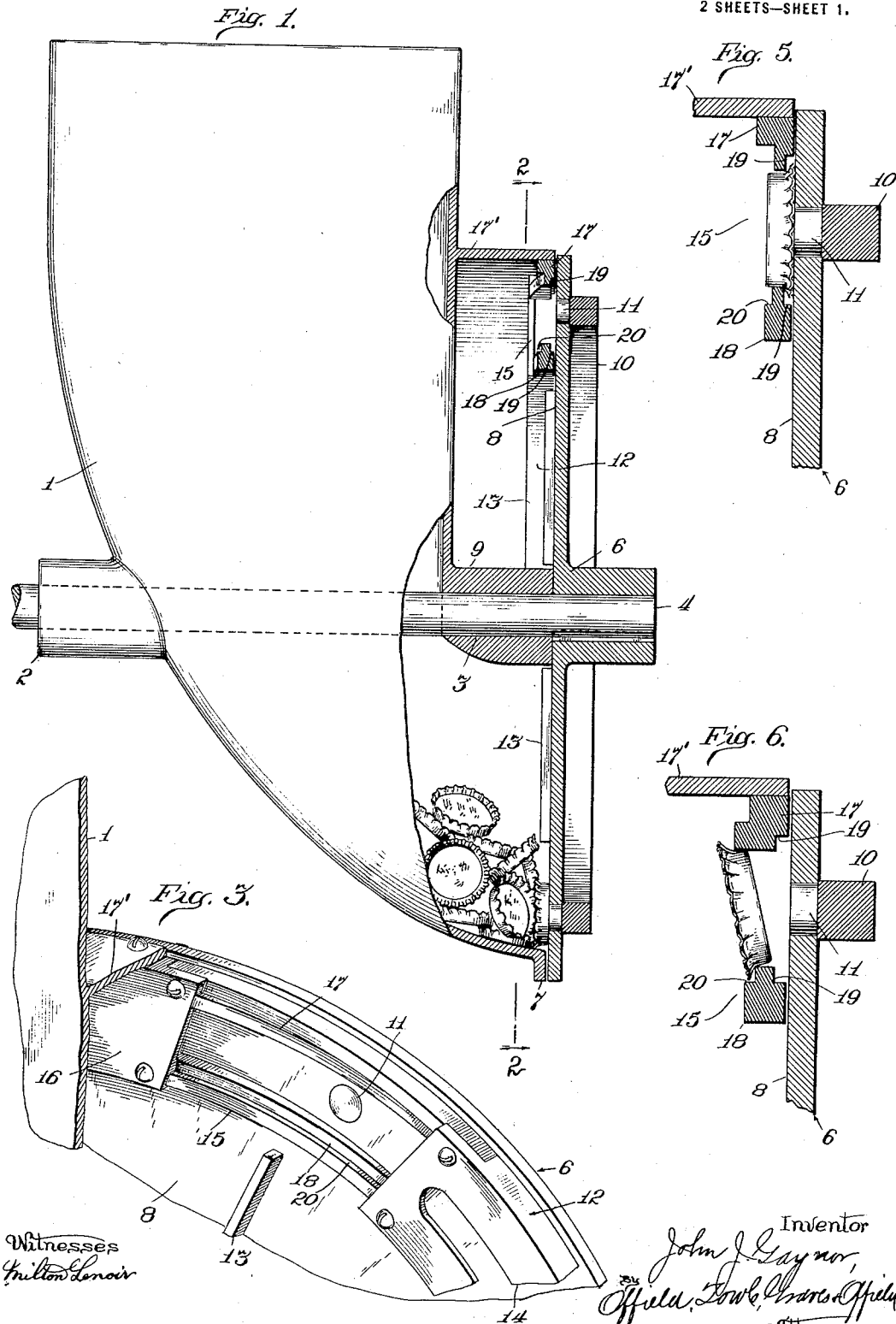


J. J. GAYNOR.
MAGNETIC CROWN CAP SELECTOR.
APPLICATION FILED MAR. 28, 1918.

1,358,725.

Patented Nov. 16, 1920.

2 SHEETS—SHEET 1.



Witnesses
Hulton Lenoir

Inventor
John J. Gaynor,
By Offield, Towle, Evans & Offield,
Attorneys

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Fig. 2.

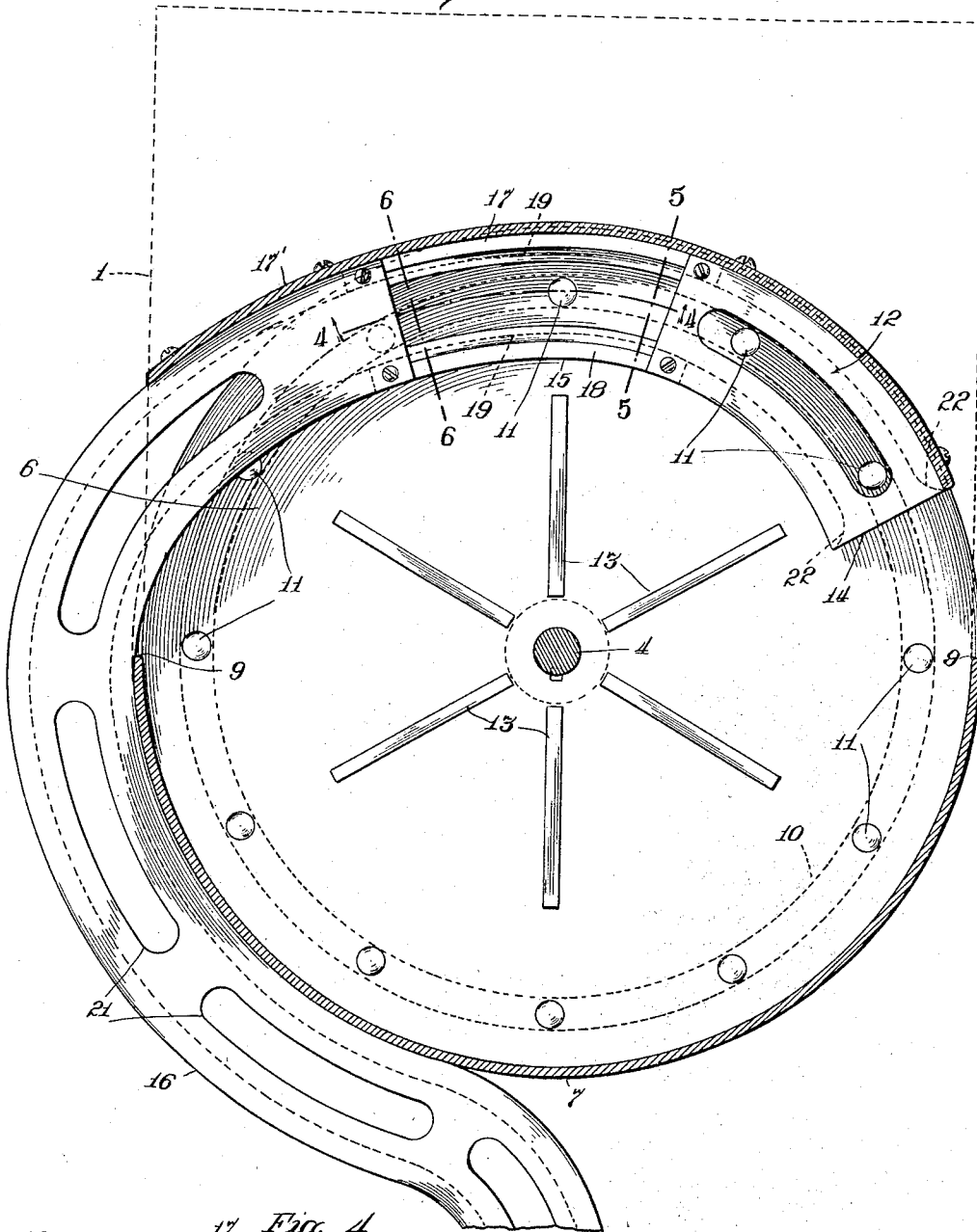
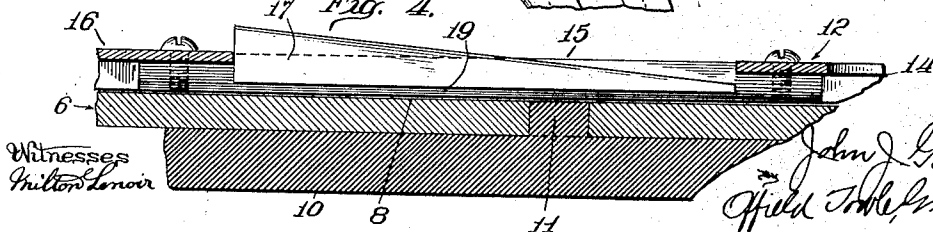


Fig. 4.



Witnesses
Hilton Lenoir

Inventor,

John J. Gaynor,
Attorney

UNITED STATES PATENT OFFICE.

JOHN J. GAYNOR, OF CHICAGO, ILLINOIS, ASSIGNOR TO ARROW BOTTLERS MACHIN-
ERY COMPANY, TRUSTEE, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MAGNETIC CROWN-CAP SELECTOR.

1,358,725.

Specification of Letters Patent. Patented Nov. 16, 1920.

Application filed March 28, 1918. Serial No. 225,310.

To all whom it may concern:

Be it known that I, JOHN J. GAYNOR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Magnetic Crown-Cap Selectors, of which the following is a specification.

This invention relates to improvements in magnetic crown cap selectors for selecting and feeding crown caps to bottle capping machines and it has for its object to provide an extremely simple mechanism in which all tendency to clog is eliminated; in which the reliability of feed is improved and which, by reason of its simplicity and elimination of complicated and moving parts, is extremely economical, both in the matter of original cost and durability.

The invention will be readily understood from the following description, reference being had to the accompanying drawings in which:

Figure 1 is a view partly in side elevation and partly in vertical axial section of my improved device;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows;

Fig. 3 is a detail view showing in perspective a part of the separator chute;

Fig. 4 is a sectional view on a line concentric with the axis of the machine and through the middle part of the central part of the separator chute;

Fig. 5 is a cross sectional view on line 5—5 of Fig. 2;

Fig. 6 is another cross sectional view on line 6—6 of Fig. 2.

Referring to drawings, 1 designates as a whole, a suitable hopper to receive the caps, which hopper is suitably mounted upon the machine to be fed and is provided at opposite sides near its lower ends with suitable bearings 2 and 3, through which extends a drive shaft 4 that operates the selecting wheel or disk designated as a whole 6. The vertical side 7 of the hopper, which extends parallel with and close to the face of the feed disk 8, is open from the bottom of the hopper up to the jog or off-set 9, but the remainder of the height of the hopper is closed, so much of the hopper as is represented by said off-set 9 is also open so that

caps falling down from the upper part of the feed disk fall back into the mass of caps in the hopper.

Feed disk 8 is keyed or otherwise secured upon the shaft 4 to rotate therewith. The main body of the disk is made of brass or other non-magnetic material.

10 designates as a whole a ring magnet or permanently magnetized steel, which fits against the back of the disk 8 concentrically with the case of the latter and is provided with a plurality of pole projections 11 fitted to project through the body of the disk 8 and having therein faces flush with that face of the disk toward the hopper. These magnetic pole pieces pick up the caps from the mass contained in the hopper and carry them up to, into and through a chute designated as a whole 12, about to be described. To insure suitable stirring of the caps in the bottom of the hopper, the face of the disk 8 is desirably provided with radial stirrer ribs 13.

The chute 12, although continuous throughout its length, may be designated as consisting of three portions, viz., an entrance portion 14, a separator portion 15 and delivery portion 16. All parts of the chute are stationary and are mounted upon suitable supports 17 extending from the hopper.

As best seen in cross sectional Fig. 6, the interior of the chute is channel shaped and opened at the back, the passage being of such dimensions as to easily accommodate a crown cap faced with its hollow side against the feed disk (this being the correct position) or faced oppositely. The part of the chute 16 is or may be of the same cross sectional shape and dimensions as the part 14. The parts 14 and 15 of the chute are concentric with the axis of the feed disk and the longitudinal center of the chute coincides with the ring magnet, so that the exposed faces of the pole pieces traverse the central line of the open back of the chute. The section of the chute designated 15 constitutes the separator and this part is open at the front as well as the rear and is formed by a pair of parallel bars 17, 18, each of which, as shown in cross sectional view Fig. 5, is provided at its back side with a rabbet 19 so that together these bars form an under-cut passage-way wherein those crown caps which have their flanges faced

properly are retained by the engagement of the flanges with the under-cut ribs 19. The bars 17 and 18 are both of increasing thickness from one end to the other, in the direction in which the caps travel; the thickness of the bars at the points where the caps enter between them being less than the thickness of the caps over all, so that the flanges of those caps which face open side outwardly, engage the inclined outer faces of the bars and in their onward progress are thus carried out of the chute.

Preferably and as shown, the upper and radially outer bar 17 is made somewhat thicker than the opposite bar so that its inclined surface diverges more rapidly from the plane of the chute, thus imparting to the caps a tilting movement, tending to cause them to tumble out of the chute instead of sliding out. To further insure the tumbling action of the caps, the lower bar 18 is provided in its outer face with a rabbet or ledge 20, wide enough so that the periphery of the caps roll upon the ledge at the moment they start to tumble out of the chute.

The part 16 of the chute is closed and is in construction substantially like part 14. Simply as a matter of facilitating inspection, the parts 14 and 16 are provided with side openings 21 in their front face plates.

The operation of the apparatus will be clear from the preceding description of its construction, but may be briefly re-stated:

A quantity of caps being in the bottom of the hopper and the feed disk rotated steadily by the drive shaft, the several pole pieces 11 of the magnet ring, as they rise toward the mass of caps, attract and carry up a cap into the entrance of the chute section 14. It will be noted that the entrance end of the chute passage is flared at its sides as indicated at 22 so as to facilitate the centering of the caps within the chute as they enter. Those caps which adhere to the pole pieces and lie flat against the disk, are carried into the chute regardless of which side faces outwardly; all others are knocked off by the end of the chute and fall back into the hopper; the intervals between the pole pieces constitute substantially non-attractive sections permitting the caps to drop off and avoiding all tendency to accumulate at the entrance of the chute. Those caps which rest with their flanges against the face of the feed disk are carried onwardly through the separator section 15 of the chute, into the extension portion 16 and by gravity down through the latter. Those caps which face with their flanges away from the feed disk ride up the inclined faces of the ejector bars 17 and 18 and fall back into the hopper.

While I have herein shown and described a preferred embodiment of my invention, it will be understood that the details thereof

may be somewhat modified without departing from the invention.

I claim as my invention:

1. In a magnetic cap feed mechanism, a hopper, a feed wheel, one or more magnets traveling with the wheel, a chute adapted to receive caps delivered thereto edgewise when faced either way, if coinciding with the plane of the chute, and means intermediate the length of the chute for selectively removing the caps from the wheel.

2. In a magnetic cap feed mechanism, a hopper, a feed wheel having a flat peripheral portion facing the hopper opening, the magnet poles inset in said wheel and having their faces flush with said peripheral portion, a chute adapted to receive caps delivered thereto edgewise when faced either way, if coinciding with the plane of the chute, and selective discharging means intermediate the length of the chute for removing the caps from the wheel.

3. In a magnetic cap feed mechanism, a hopper, a feed wheel having its peripheral portion formed chiefly of non-magnetic material, a magnet ring associated with the peripheral portion of said wheel and provided with pole projections flush with the exposed face of the wheel, a chute adapted to receive caps delivered thereto edgewise by the said magnet poles and selective discharging means associated with the chute at a point behind the entrance end thereof for removing the caps from the wheel.

4. In a cap feed mechanism, a hopper, a feed device for delivering caps to a chute, a chute provided intermediate its length with a discharge opening and guides associated with the opening for engaging the flanges of the caps and thereby determining their retention in the chute or discharge therefrom through said opening.

5. In a cap feed mechanism, a hopper, a feed device for delivering caps to a chute, a chute provided intermediate its length with a discharge opening and guides associated with the opening for engaging the flanges of the caps and thereby determining their retention in the chute or discharge therefrom through said opening, said guides comprising members forming lateral sides of the otherwise open chute, provided with overhanging guide portions adapted to confine correctly faced caps within the chute and provided with inclined outer guide portions adapted to eject incorrectly faced caps.

6. In a magnetic cap feed mechanism, a hopper, a disk-formed feed wheel having its peripheral portion formed of non-magnetic material and provided with a ring magnet having pole pieces inset in said disk, a cap chute mounted in proximity to the disk with its upper end near the upper periphery of the disk and in alinement with the path of travel of the magnet poles, a discharge

opening intermediate the length of said chute, parallel guides mounted one at each side of the path of travel of the caps through the chute, and forming an undercut passageway at the back of the chute receiving the flange peripheries of the caps to retain the same in the chute, the outer faces of said guides being inclined forwardly and outwardly to engage the flange peripheries of the caps to eject the same.

7. In a cap feeding device, the combination of a hopper, a carrier operable to remove caps one-by-one from a disordered mass of caps in the hopper and means for selectively removing the correspondingly facing caps from the carrier.

8. In a cap feeding device, the combination of a hopper, a carrier for removing caps from the hopper, a chute for feeding caps from the carrier, and means for selectively removing from the carrier caps facing correspondingly thereon, and delivering same into the chute, and for returning caps on the carrier faced otherwise to the hopper.

9. In a cap feeding device, the combination of a hopper, means for removing caps singly and reversely arranged thereon from the hopper, a chute for delivering the caps from said cap removing means, means for selectively feeding correspondingly arranged caps from the cap removing means to the chute, and means for ejecting reversely arranged caps on the cap removing means therefrom.

10. In a cap feeding device, the combination of a hopper, a feed wheel having means for holding caps thereon and removing same from the hopper in reversely arranged positions thereon, means for collecting and discharging correspondingly arranged caps from the feed wheel, and means for peripherally engaging and thereby diverting reversely arranged caps on the wheel from said collecting and discharging means.

11. In a cap feeding device, the combination of a hopper, a rotary member for removing the caps in reversely arranged positions thereon from the hopper, a chute having an open side adjacent the face of the rotary member, and adapted to receive the caps correspondingly arranged on the rotary

member therefrom, and a deflector for diverting caps reversely arranged on the rotary member from the chute.

12. In a device for feeding caps having a flanged open end, the combination of a hopper for the caps, a carrier for removing the caps from the hopper, and means adjacent the carrier engaging the flanges of the caps for removing the caps from the carrier.

13. In a device for feeding caps having a flanged open end, the combination of a hopper for the caps, a carrier for removing and elevating caps from the hopper in reversely arranged positions thereon, a chute adjacent the face of the carrier having means for engaging the flanges of correspondingly arranged caps on the carrier and discharging same therefrom through the chute, and having an outlet through which reversely arranged caps on the carrier are diverted from the chute.

14. In a device for feeding bottle caps having a flanged open end, the combination of a hopper for the caps, a carrier for removing and elevating the caps from the hopper, and a chute adjacent the face of the carrier having two sets of guides for engaging the flange of the caps and selectively directing correspondingly arranged caps on the carrier through the chute, and reversely arranged caps on the carrier.

15. In a cap feeding device, the combination of a hopper, a carrier having means for magnetically holding caps on the carrier and removing same from the hopper, and a chute adjacent the carrier having means engaging the caps thereon for selectively discharging caps correspondingly arranged on the carrier into the chute, and diverting caps otherwise arranged on the carrier therefrom.

16. In a device for feeding caps having a flanged open end, the combination of a hopper, a disk having a plurality of magnetized elements for holding caps against the disk and removing same from the hopper, and means adjacent the face of the disk comprising two sets of guides for engaging the flanges of the caps on the carrier and selectively removing caps facing in opposite directions on the carrier.

JOHN J. GAYNOR.