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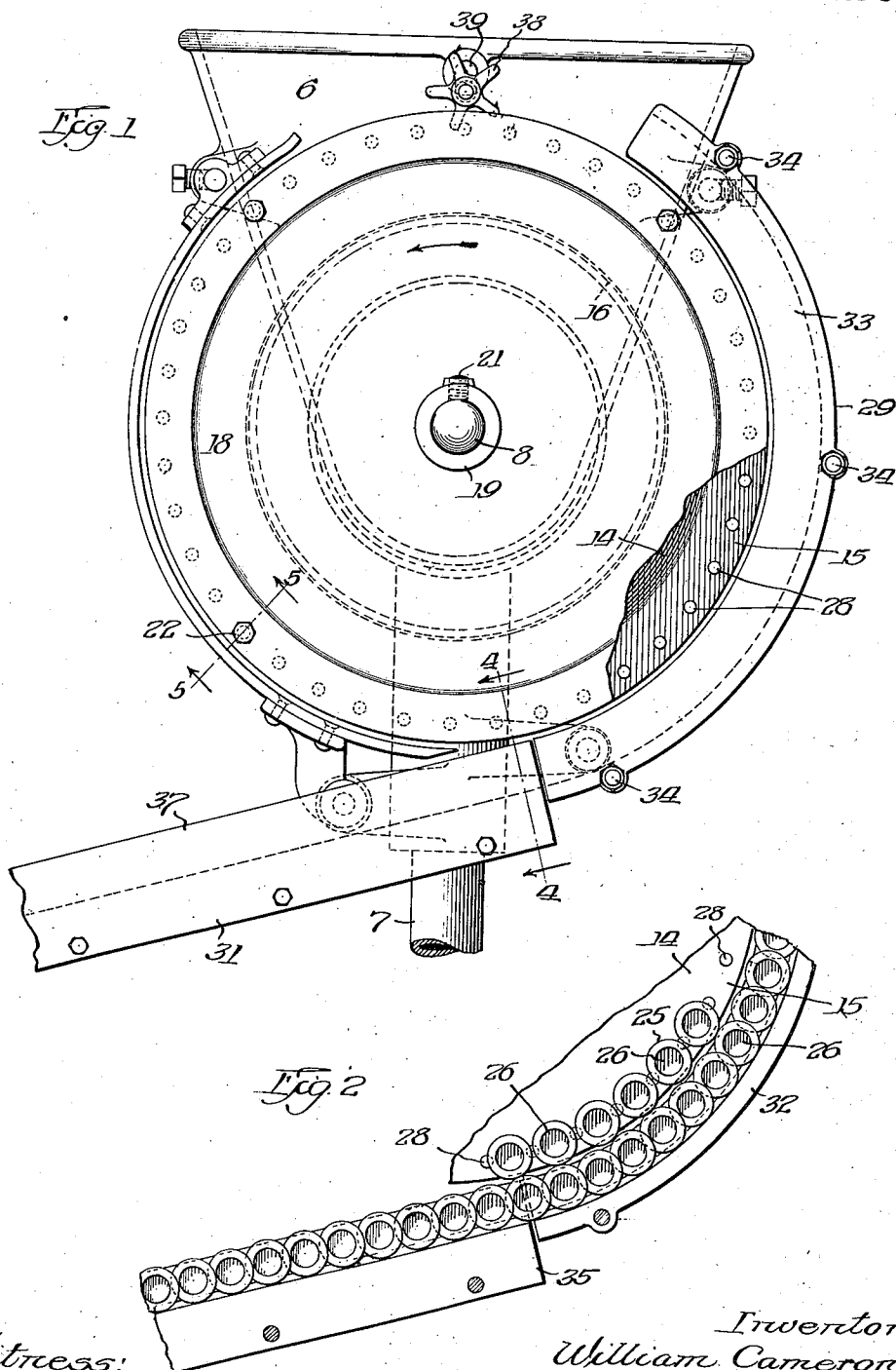
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CAP SELECTING AND FEEDING MECHANISM

Filed May 7, 1924

2 Sheets-Sheet 1



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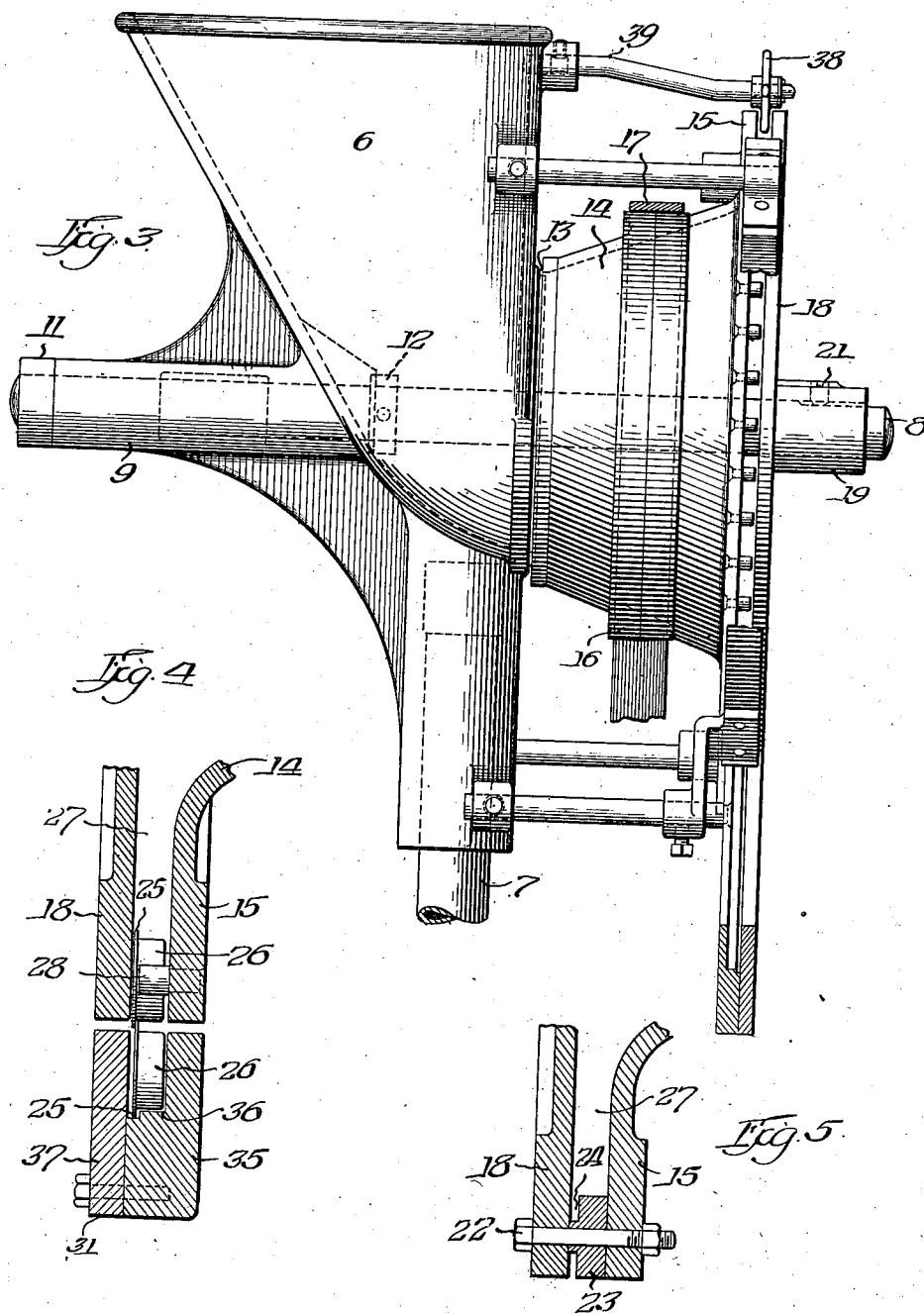
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE.

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## CAP SELECTING AND FEEDING MECHANISM.

Application filed May 7, 1924. Serial No. 711,535.

This invention pertains to mechanism for selecting and feeding caps or other similar articles and while the principles thereof are capable of embodiment in machines designed for various purposes, the particular form of the invention shown therein is adapted to be used in conjunction with a cap thread rolling machine such as is disclosed in my co-pending application Serial No. 653,059, filed July 23, 1923.

The caps which my present invention is designed to handle are cylindrical in shape, closed at one end and provided at the other end with a radially projecting peripheral flange, and are made of sheet metal or other preferred material preferably by a stamping operation.

These caps in various stages of completion are fed to machines which perform some operation upon the caps. In order that the caps may be properly presented to the machine which operates upon them it is essential that they be fed to the machine with their open ends all facing in one direction.

The primary purpose of my present invention, therefore, is to provide a mechanism which will not only feed the caps but will first select the caps from a magazine so that only those which are properly faced will be fed while the others will be retained in the magazine until they assume the required position.

Another purpose of my invention is to provide a mechanism which, while operating slowly so as to require but little power and be subject to very slight wear, will select and deliver the properly positioned caps with great rapidity. The machine, therefore, is capable of delivering properly positioned caps in large quantities.

A further object of the invention is to provide a machine which can be accommodated to handle caps of various sizes and dimensions by simply removing the selecting cylinder and replacing it by another cylinder equipped with studs of a different length or differently spaced apart.

To facilitate an understanding of my invention a preferred embodiment thereof is shown on the accompanying drawings, referring to which:—

Fig. 1 is an end elevation of a selecting and feeding mechanism embodying my invention,

Fig. 2 is a similar fragmentary view with the outer wall of the feed chute removed,

Fig. 3 is a side elevation of the construction shown in Fig. 1, and

Figs. 4 and 5 are fragmentary sectional views taken on the lines 4—4 and 5—5, respectively, of Fig. 1.

Referring now to the drawings more in detail, reference character 6 indicates generally a magazine or hopper into the open upper end of which the caps are dumped. This magazine may be supported in any suitable manner as, for instance, upon an upright post 7. Through the hopper a shaft 8 extends, which is rotatably journaled in a bearing 9 formed integrally with the hopper and is held therein against longitudinal displacement by collars 11 and 12.

The lower portion of the hopper is provided with a laterally discharge opening disposed concentrically with the shaft 8 and a bearing ring 13 projecting laterally from the margin of this opening affords a bearing for the inner end of a tapered cylinder, shell or barrel 14, as will be apparent from Fig. 3. This cylinder increases in diameter towards its outer end to provide a shell of substantially truncated cone shape and is sharply flared at its extreme outer end to provide the marginal flange 15. Upon its periphery the cylinder is shaped to provide a belt pulley 16 by which the cylinder is rotated in the direction indicated by the arrow in Fig. 1 through the intermediary of a belt 17.

The outer end of the cylinder is closed by a circular substantially flat plate 18 provided with a hub 19 adapted to be slipped onto the end of the shaft 8 and securely locked thereto by a set screw 21 or other preferred means. This end plate is also secured to the marginal flange 15 of the cylinder by a series of bolts 22 (Figs. 1 and 5) and is maintained in spaced relation with respect to the flange 15 by spacing members 23 carried by the bolts 22, as will be apparent from Fig. 5. These spacing members are circular in shape and their outer ends are cut away to provide recesses 24 adapted to accommodate the flanges 25 of the caps 26 when the caps are properly positioned in the groove, or as I may term it, radial slot 27 formed between the flange 15 and the end plate 18.

The flange 15 is provided between the

spacing members 23 with studs 28 arranged in spaced relation circumferentially of the flange and projecting toward the plate 18.

The spacing of these studs is such that the bodies of the caps 26 will pass between them. The flanges 25 of the caps being of greater diameter than the space between adjacent studs, the cap will not be permitted to drop from the magazine unless the cap be positioned in the slot, as shown in Fig. 4, with the flange 25 opposed to the plate 18 so that it will clear the ends of the studs 28.

A delivery chute consisting of an arcuate portion 29 and a straight portion 31 is arranged to receive the caps from the cylinder. The arcuate portion comprises a grooved plate 32 and a side wall 33 secured to the plate by bolts 34 or other means. The plate 32 is grooved to accommodate the caps 26, the bottom of the groove being shaped similarly to the bottom of the groove in the portion 31 of the chute and from Fig. 4 it will be observed that this portion of the chute comprises a plate 35 having a step shaped groove 36, the outer face of which is closed by the plate 37. The straight portion 31 of the chute extends to a machine to which the caps are delivered or is adapted to deliver the same into a basket or other receptacle as desired.

In the operation of my improved mechanism the caps to be selected and fed are dumped into the open top of the hopper 6 from which they fall into the revolving cylinder 14.

The width of the groove 27 is slightly greater than the axial length of the caps so that the caps will readily fall by gravity into this groove. Such caps as are positioned in the groove with their flanges toward the end plate 18 will be permitted to pass through between adjacent studs into the delivery chute while those caps which are reversed endwise, that is, are positioned with their flanges 25 opposed to the flange 15, will be retained by the studs in the cylinder and prevented from entering the chute. It will be apparent, therefore, that only those selected caps which are positioned with the open ends in the desired direction are permitted to enter the chute and these selected caps are delivered all faced in the same direction from the lower end of the chute.

For the purpose of dislodging any caps which might become caught or bound between adjacent studs 28 I have provided at the top of the magazine a star wheel 38 mounted on an arm 39 projecting laterally from the hopper, this wheel being positioned so that its prongs can enter between the studs of the selecting cylinder as the cylinder is revolved and be thereby rotated. Any cap, therefore, which may become lodged between the studs is pushed inwardly and freed from the studs so that it will drop back into

the revolving cylinder and eventually be discharged into the chute.

It is believed that the construction, operation, and many of the attendant advantages of this invention will be apparent from the foregoing without further description; and while I have shown and described a preferred embodiment, obviously the structural details are capable of wide variation without exceeding the scope of the invention, as defined in the following claims.

I claim:—

1. A selecting and feeding mechanism for caps and the like, comprising a rotatable cylinder flared at one end, an end plate secured thereto and spaced therefrom to provide a peripherally opening delivery slot of a depth greater than the radius length of said caps and the like, and selector studs projecting into said slot, the said slot constituting a guiding means for feeding only properly disposed caps to the said selector studs to thereby prevent an accumulation of improperly positioned caps upon the selector studs.

2. In a selecting and feeding mechanism, the combination of a stationary hopper having a circular discharge mouth in a substantially vertical plane, a horizontally disposed shaft, a tapered cylindrical shell communicating at its smaller end with said hopper and mounted on said shaft to rotate concentrically with said hopper mouth, means at the larger end of said shell for selecting and permitting the delivery of selected articles, a delivery chute positioned to receive said articles, and means for rotating said shell.

3. A selecting and feeding mechanism comprising a rotatable cylindrical shell outwardly flanged at one end, a hopper having a discharge mouth in continuous communication with the opposite end of said shell, a member arranged in conjunction with the said flange to provide a slot therebetween, and selecting devices in said slot.

4. A selecting and feeding mechanism comprising a rotatable cylindrical shell outwardly flanged at one end, a hopper having a discharge mouth forming a continuous passageway with the opposite end of said shell, a member spaced from said flange to provide a slot therebetween, selecting devices in said slot and toward the bottom thereof, and a wheel having projections cooperatively arranged with said shell for rotation upon rotation of said shell for dislodging improperly placed articles in said selecting means.

5. A selecting and feeding mechanism comprising a rotatable cylindrical shell having an outwardly projecting peripheral flange at one end thereof, a hopper having a discharge mouth forming a continuous passageway with the opposite end of said shell, a member co-operating with said peripheral

flange to provide to slot therebetween, selecting devices arranged in said slot and spaced from one side thereof whereby properly disposed articles will be passed by said selecting devices and improperly disposed articles will be returned by said selecting devices, and means projecting into said slot and operable upon rotation of said shell for dislodging articles stuck in said slot.

6. In a cap selecting and feeding mechanism, a rotatable shell of truncated cone shape with the axis thereof horizontally disposed, a hopper adjacent and adapted to feed articles into the small end of said shell, the large end of said shell having an outwardly flanged periphery, a member opposed to the large end of said shell to provide a slot of a depth to receive a cap and of a width greater than the length of a cap circumferentially of the shell, and means within said slot for permitting the discharge of properly positioned caps and for preventing the discharge of improperly positioned caps.

7. In a device of the character described, a hopper having a substantially cylindrical discharge opening, a rotatable cylindrical shell having one end adjacent to and concentrically arranged with the discharge opening of and in constant communication with said hopper, whereby articles discharged from said hopper will be continuously received in said shell, selecting devices in connection with said shell, and means for rotating said shell.

8. In a selecting and feeding mechanism, the combination of a hopper, a tapered cylindrical member communicating at its smaller end with said hopper and provided at its larger end with a radially disposed circumferential flange, an end plate opposed to but spaced from said flange to provide a peripheral slot of substantial radial depth, studs projecting from said flange within said slot and a predetermined distance toward said plate, and a grooved delivery chute mounted in co-operative relation to the flanged end of said cylinder.

9. In a selecting and feeding mechanism, the combination of a hopper provided with a lateral opening, a shaft extending concentrically through said opening, a tapered cylindrical member rotatably mounted with its smaller end in constant communication with the hopper, an end plate secured on said shaft and opposed to but spaced from the larger end of said cylindrical member, studs projecting into the space between said member and said end plate and spaced from said end plate, a delivery chute positioned to receive articles passing between said studs, and means for dislodging articles lodged between said studs.

10. In a selecting and feeding mechanism, the combination of a rotatable cylindrical member provided at one end with a circum-

ferential radially disposed flange, means for delivering caps or the like into the opposite end of said member, a plate opposed to the flanged end of the member and forming in conjunction with said flange a slot adapted to receive and guide caps from the cylindrical member, and selecting means disposed in said slot remote from the inner receiving mouth thereof for preventing the discharge from the mechanism of improperly positioned caps while permitting the discharge of properly positioned caps, said slot constituting guiding means for delivering caps to the selecting means only when the caps are in their properly aligned positions, to thereby prevent an accumulation of caps in various improper positions from resting and accumulating on said selecting means.

11. In a selecting and feeding mechanism, the combination of a cylinder open at one end for the reception of caps to be selected and provided at its other end with a radially disposed discharge slot adapted to receive and guide caps from the cylinder, and means in said slot spaced radially outwardly from the receiving end thereof for selecting caps disposed in the slot, said slot constituting a guiding means for delivering only properly aligned caps to said selecting means, to thereby prevent an accumulation of caps in various improper positions from resting upon the said selecting means.

12. In a selecting and feeding mechanism, the combination of a cylinder open at one end for the reception of caps to be selected and provided at its other end with a radially disposed discharge slot adapted to receive and guide caps from the cylinder, and pins projecting into said slot from one wall thereof and remote from the receiving mouth of the slot for selecting caps disposed in the slot, said slot constituting a guiding means for feeding caps to the selecting means only in their properly aligned position, to thereby prevent an accumulation of improperly positioned caps upon the said remotely positioned selecting pins.

13. In a selecting and feeding mechanism, the combination of a rotatable cylinder open at one end for the reception of caps and provided at its other end with a radially extending circumferential delivery slot through which said caps are delivered, studs spaced apart circumferentially of the cylinder and extending into said slot so as to prevent the delivery of improperly positioned caps and permit the delivery of properly positioned caps, and means comprising fingers adapted to project inwardly between the successive studs as the cylinder is rotated for dislodging caps retained by the studs, said slot constituting a guiding means for delivering only properly aligned caps to the said selecting studs to thereby prevent

an accumulation of improperly positioned caps upon the selector studs.

14. In a selecting and feeding mechanism, the combination of a hollow rotatable member open at one end for the reception of caps and provided at its other end with a radially extending discharge slot, selecting studs arranged in spaced relation in said slot, and a rotatable dislodging device comprising a plurality of fingers adapted to project into said slot between successive studs as the cylinder is rotated, whereby caps retained by the studs are dislodged, said slot constituting a guiding means for delivering only properly alined caps to the said selecting studs to thereby prevent an accumulation of improperly positioned caps upon the selector studs. 15

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