E. P. WETMORE.

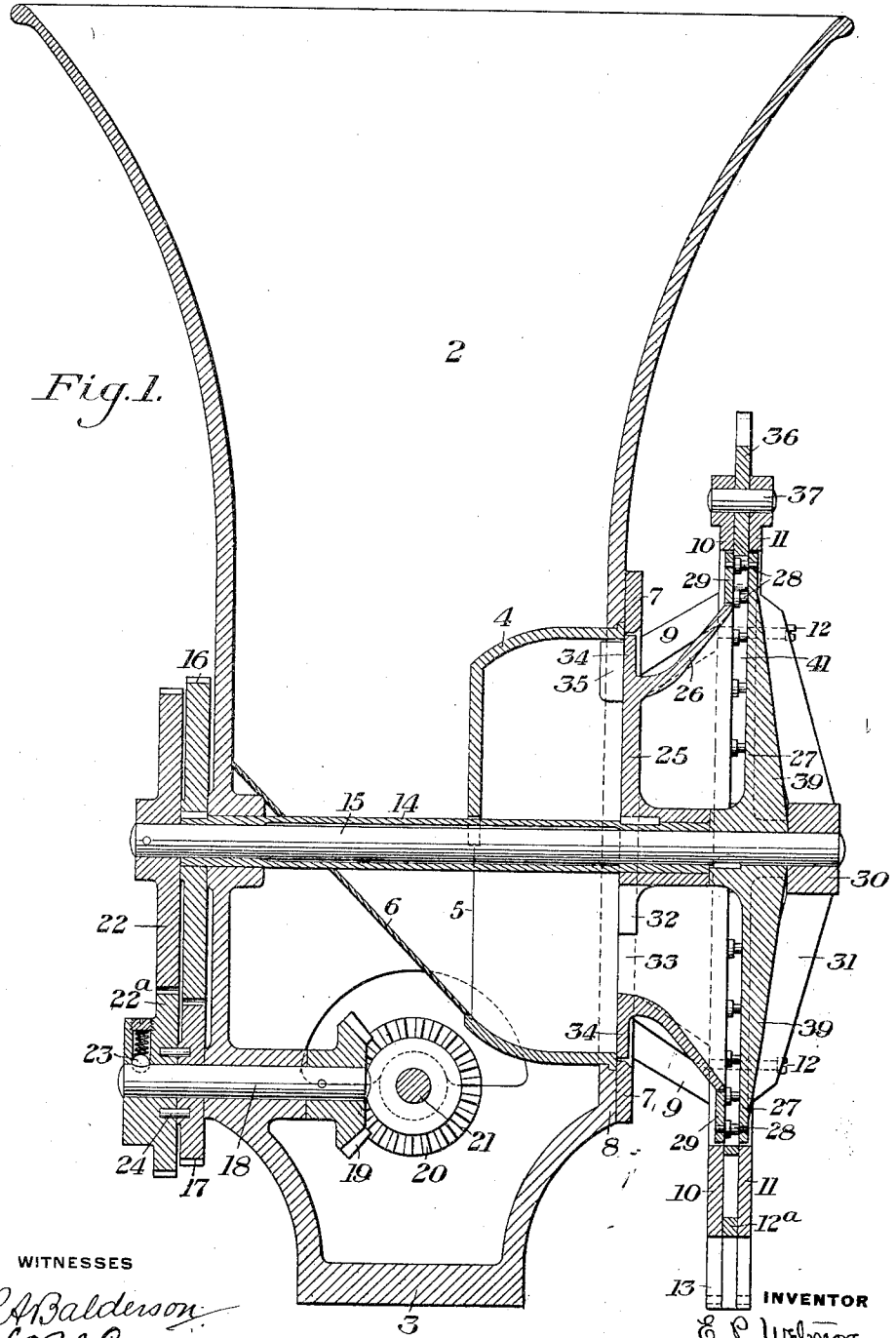
FEEDING APPARATUS FOR BOTTLE CAPS, &c.

APPLICATION FILED APR. 26, 1911.

1,086,429. **Patented Feb. 10, 1914.**

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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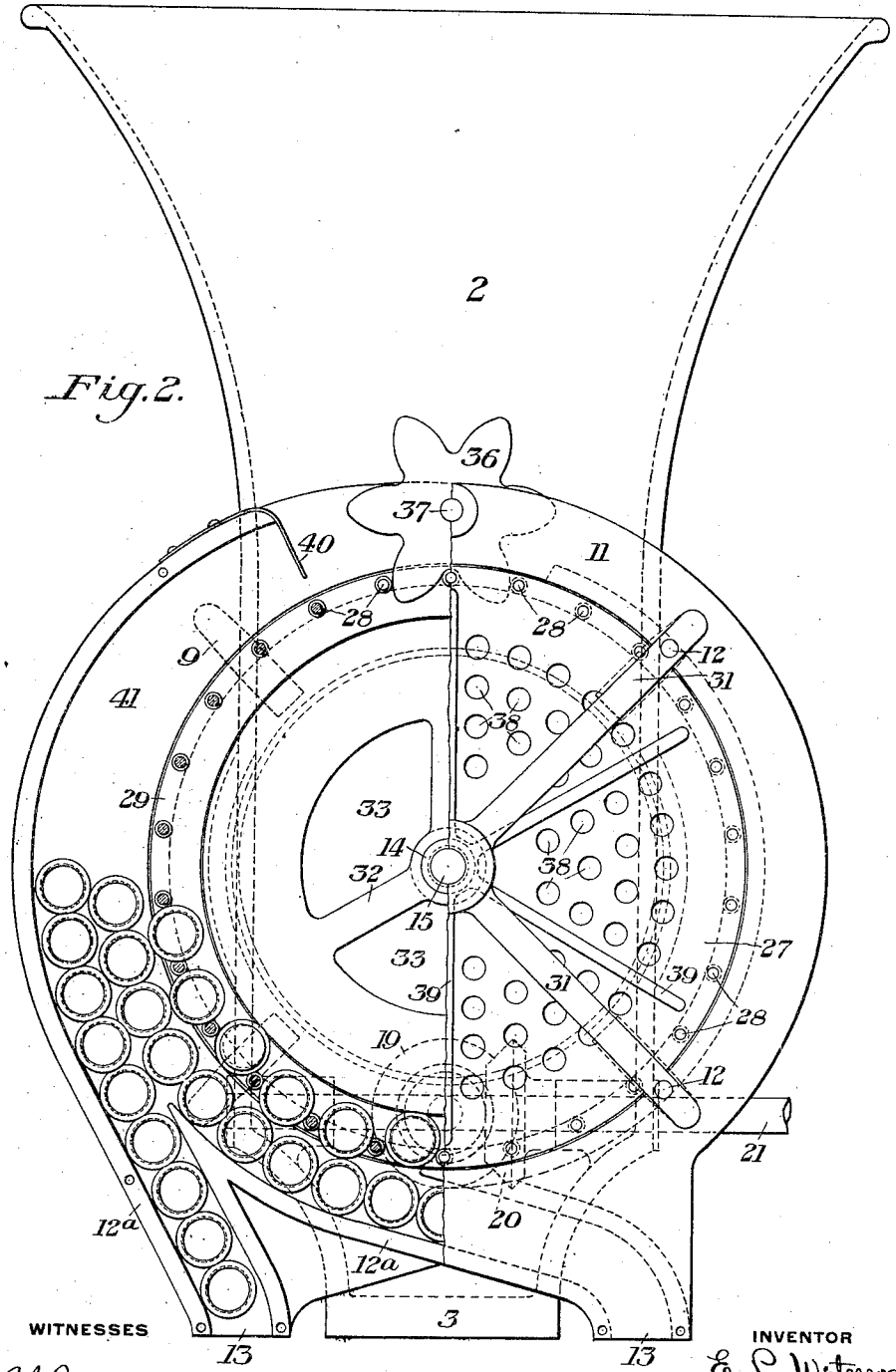
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

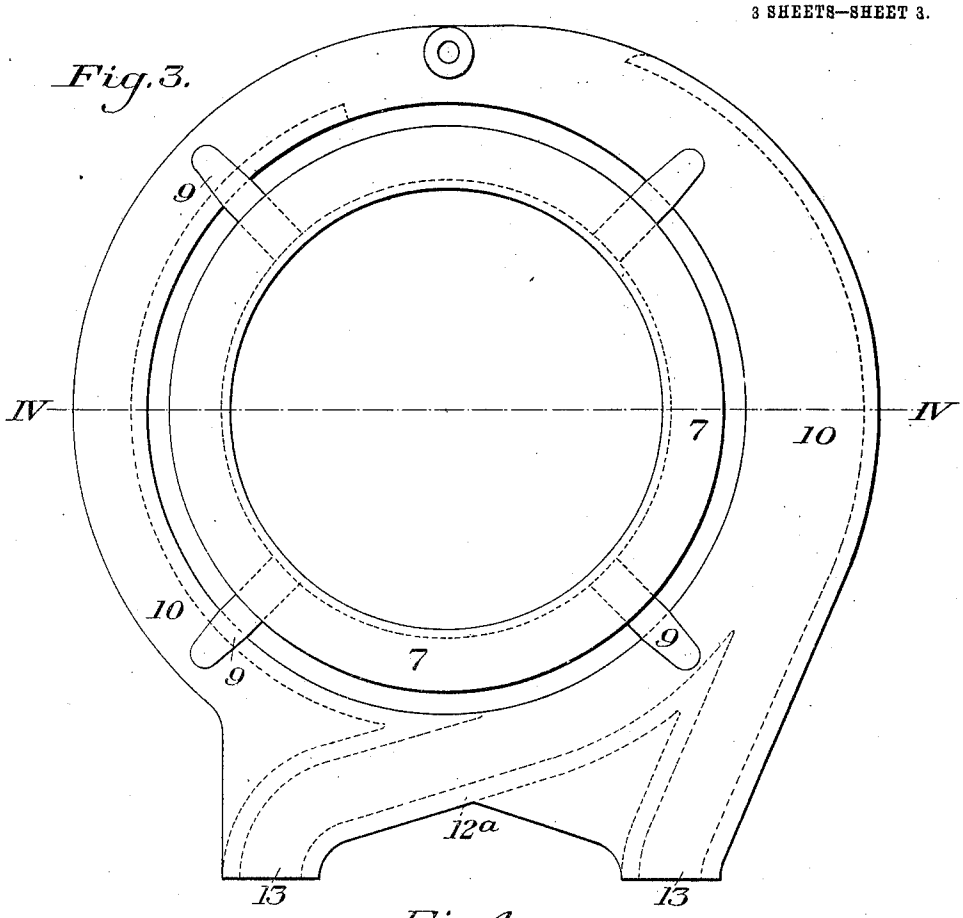


Fig. 4.

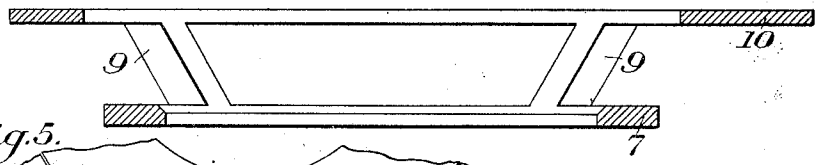


Fig. 5.

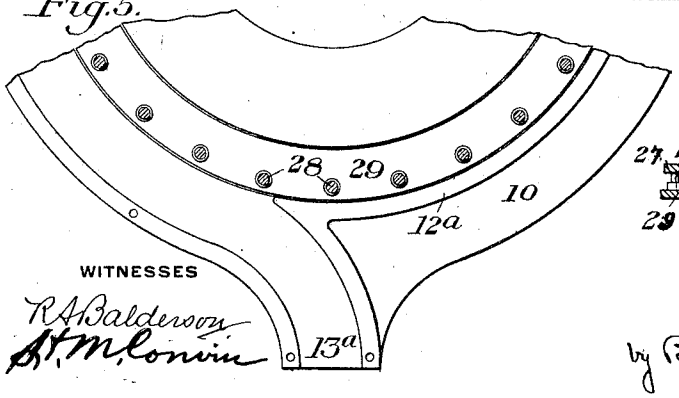
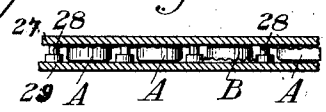


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

EARL P. WETMORE, OF TOLEDO, OHIO.

FEEDING APPARATUS FOR BOTTLE-CAPS, &c.

1,086,429. Specification of Letters Patent. Patented Feb. 10, 1914.

Application filed April 26, 1911. Serial No. 623,497.

To all whom it may concern:

Be it known that I, EARL P. WETMORE, of Toledo, Lucas county, Ohio, have invented a new and useful Feeding Apparatus for Bottle-Caps, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of the preferred form of feeding apparatus embodying my invention; Fig. 2 is a side view of the same, partly broken away; Fig. 3 is a side view showing certain parts; Fig. 4 is a section on the line IV—IV of Fig. 3; Fig. 5 is a view of a portion of the device showing a modification; and Fig. 6 is a sectional view illustrating the selective action on the articles being fed.

My invention has relation to apparatus for feeding articles or blanks which have portions of different diameters, and which must be delivered by the apparatus in a certain predetermined position, being especially adapted to the feeding of metallic caps or seals for bottles, and for the feeding of blanks used in the manufacture of such caps or seals, although it may be used for other purposes.

The nature of my invention will best be understood by reference to the accompanying drawings, which will now be described, it being premised, however, that various changes can be made in the details of construction and arrangement of the parts by those skilled in the art without departing from the spirit and scope of my invention as defined in the appended claims.

In these drawings, the numeral 2 designates a hopper, in which the articles to be fed are deposited promiscuously in bulk. This hopper has a lower supporting portion 3, which is adapted to rest upon any suitable support. Arranged within the hopper at the forward side thereof is a stationary drum or partition 4 of frusto-conical form, and which is set in the forward side of the hopper. The inner end of this drum is cut away at its lower half, as shown at 5, to admit the articles from the hopper, being directed to this opening by an inclined plate 6, which, together with the bottom portion of the drum, constitutes the bottom of the hopper.

7 designates a ring or annulus, which is bolted to a flange 8 at the lower front portion of the hopper, and which is provided with a plurality of forwardly projecting arms or spokes 9, which support a ring 10, which is of larger diameter than the ring 7 and is located in front of the same.

11 is another ring or annulus, which is placed parallel and concentric with the ring 10, and is held in proper relation thereto by means of screws 12 or other suitable means. The two rings 10 and 11 are also separated from each other the proper distance to form cap runways by means of interposed strips 12^a. These strips also form guides, as best shown in Figs. 2 and 3, for directing the caps or other articles into the two feed chutes 13.

14 designates a hollow shaft, which extends through the lower portion of the hopper, and through the central portion of the drum 4. Mounted in this hollow shaft is another shaft 15. The shaft 14 at its rear end, exterior of the hopper, carries a spur gear 16, which is arranged to mesh with a spur gear 17 on another shaft 18 extending into the lower portion of the hopper and carrying a bevel gear 19 which meshes with a bevel gear 20 on a driving shaft 21. The shaft 21 may be driven in any suitable manner (not shown). The shaft 15 has secured thereto a spur gear 22, which meshes with a gear 22^a, which is connected to the shaft 18 by a spring-pressed clutch 23. The gear wheel 17 is loose on the shaft 18, and is connected to the gear wheel 22^a by means of pins 24, whereby both gears 17 and 22^a are driven from the shaft 18. These two gears, together with the gears 16 and 22, are of different diameters, whereby the shafts 14 and 15 will be driven at different rates of speed.

Secured to the front end of the hollow shaft to rotate therewith is a drum 25, which is entirely open at its front end, and which has the flaring wall 26. Secured to the front end of the shaft 15 is a disk 27, having at its peripheral portion a plurality of rearwardly projecting selector pins 28.

29 is a ring, which is placed parallel with the peripheral portion of the disk 27, and which is connected thereto by the selector pins 28. The inner edge of the ring 29 fits more or less closely the outer periphery of the flaring wall 26 of the drum 25. The pins 28 are larger in diameter at one end than at the other, to cause them to have a selecting action upon the articles being fed.

as shown in Fig. 6. In this figure I have shown three bottle caps or seals A, which are in proper position to pass between the pins, a fourth cap B being shown in the wrong position to pass between said pins, inasmuch as its flange of larger diameter than its body is unable to pass between the enlarged portions of the pins.

The shaft 15 is supported at its forward end outside of the disk 27 in a hub 30, which is supported by the arms 31. The drum 25 is supported on the hollow shaft 15 by means of a plurality of spokes 32 (see Fig. 2), which form segmental openings 33, through which the caps or other articles can pass from the drum 4. The rear end of the drum 25 has an exteriorly projecting flange 34, which turns closely adjacent to the front end of the drum 4.

35 is a plate, which is attached to the rear side of the flange 34, and which serves to lift the caps or other articles upwardly from the bottom of the drum 4, so that they will fall through the segmental openings 33, and into the open end of the drum 25.

36 is a sprocket wheel, which is arranged to turn loosely on a pin or shaft 37, between the top portions of the rings 10 and 11, the teeth of this wheel being arranged to mesh with the selector pins 28.

The disk or plate 27 is preferably perforated by a number of holes 38, as shown in Fig. 2, in order to permit observation of the caps within the drum 25, and this plate is also preferably formed with a plurality of strengthening ribs 39.

40 is a spring, which is arranged to project into the upper portion of the cap space 41, outside of the selector pins, and which leads to the chutes 13. The sprocket wheel 36 acts to loosen any caps which may become wedged between the inner edge of the drum 25 and the plate or disk 27. Any such caps will be struck by the teeth of the sprocket and knocked loose, and will fall back into the drum, the sprocket being constantly rotated by its engagement with the selector pins. The spring 40 is added for the purpose of preventing one or more caps from riding on the outside of the selector pin and coming in contact with the sprocket. This only occurs in a case of defective caps, and in such cases, the lower end of the spring has a tendency to snap the caps backwardly and allow them to pass out through the chutes below, or cause them to fall in between two of the selector pins, where the teeth of the sprocket will push them back into the drum. Without the provision of this spring or its equivalent, the caps might possibly become jammed between the selector pins and the teeth of the sprocket, outside of the disk 27.

The operation will be readily understood. By reason of the gearing described, both the drum 25 and the plate or disk 27 will be caused to revolve in the same direction, but either the drum or the plate may be caused to revolve at a little higher speed. As the caps are fed into the drum 25, and are tumbled about so as to present themselves in the proper position to pass between the selector pins, and between the periphery portion of the disk 27 and ring 29, the difference in the speed of the rotation of the drum and plate 27 has a tendency to cause the mass of caps within the rotating drum to rearrange themselves much more readily than is the case where the parts are revolved at the same speed, and practically shows that by the provision of this difference in speed the caps will feed very much faster than is the case when all the parts revolve as a unit. As the caps pass between the selector pins, they enter the cap space or chamber 41, which they fill to a greater or less extent, as clearly shown in Fig. 2, and thence feed by gravity downwardly into the feed chutes 13. The purpose of providing the two feed chutes is to enable the feeder to simultaneously supply two different tools, such as two capping heads of a bottle capping machine. The same apparatus may, however, be arranged to fit a single chute 13^a, as clearly shown in Fig. 5, by a slight change in the construction of the casing and of the guide strips.

My invention provides a feeding apparatus of the character described, by means of which caps, blanks, or other similar articles, may be deposited in bulk promiscuously in the hopper, and may be rapidly fed in the correct position to either one of a plurality of tools for performing further operations on the caps or other articles. It will be understood, of course, that the form of the selecting pins may be modified to suit the particular makes being fed, and that various other changes may be made in the details of construction and arrangement of the several parts without departing from the spirit and scope of my invention, as defined in the appended claims.

What I claim is:—

1. In feeding apparatus of the character described, a rotating drum and a rotating selector plate, together with means for rotating the drum and plate in the same direction at different relative speeds; substantially as described.

2. In a feeding apparatus of the character described, a hopper, a rotary drum into which the articles are delivered from the hopper, and which is open at its forward end, and a selector plate adjacent to the open end of the drum, together with means for rotating said plate and drum in the same direction at different relative speeds; substantially as described.

3. In feeding apparatus of the character

described, a hopper having a stationary drum or chamber within its lower portion, and communicating therewith, a rotary drum into which the first named drum is arranged to discharge, and which is open at its forward end, and a selector plate adjacent to the open end of the drum, together with means for rotating the selector plate and drum in the same direction at different relative speeds; substantially as described.

4. In feeding apparatus of the character described, a feed hopper, a rotary drum having openings communicating with the lower portion of the feed hopper and open at its front end, a selector plate or disk opposite the open front end of the drum and having peripheral selecting passages for the caps, and means for rotating said plate and drum in the same direction at different relative speeds; substantially as described.

5. In feeding apparatus of the character described, a feed hopper, a hollow shaft extending through the lower portion of the hopper, a drum secured on said shaft to rotate therewith, another shaft extending through the hollow shaft, a selector plate carried by the last named shaft and arranged to coöperate with the drum, and gearing for rotating one shaft at one speed and the other shaft at a different speed; substantially as described.

6. In feeding apparatus of the character described, a feed hopper, a rotary drum, through openings in the rear end of which the hopper communicates, said drum being open at its forward end, a selector plate or disk adjacent to the open end of the drum and having a plurality of selector pins, and a sprocket wheel adapted to be engaged and rotated by said pins, and means for rotating the drum at one speed and the selector plate at a different rate of speed; substantially as described.

7. In feeding apparatus of the character described, a feed hopper, a rotary feed drum having openings communicating with the hopper and open at its front end, a selector plate having a plurality of selecting channels at its peripheral portion and arranged adjacent to the open end of the drum, and a cap-receiving space or chamber into which the said channels are arranged to discharge, together with means for rotating the drum at one speed, and the plate at a different rate of speed; substantially as described.

8. In an automatic feeding apparatus for bottle sealing machines, a hopper for the indiscriminate reception of the bottle caps and having an internal chamber, a hopper also having an inclined bottom adapted to lead the caps into said chamber, and a receptacle or drum rotating outside of said hopper and the chamber, said drum having an opening in the end adjoining said chamber adapted to receive the caps indiscriminately from the chamber, said drum having a selector plate forming a closure for its opposite end and provided with a plurality of selector pins spaced and formed in a manner to permit the bottle caps to pass therethrough in one position only, together with means for driving the drum and selector plate in the same direction but at different rates of speed relatively to each other; substantially as described.

In testimony whereof, I have hereunto set my hand.

EARL P. WETMORE.

Witnesses:
M. J. Gavin,
W. H. Minier.