No. 800,288. PATENTED SEPT. 26, 1905.

H. L. FULENWIDER.

FEEDING HOPPER FOR BOTTLE CAPPING MACHINES.

APPLICATION FILED SEPT. 8, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

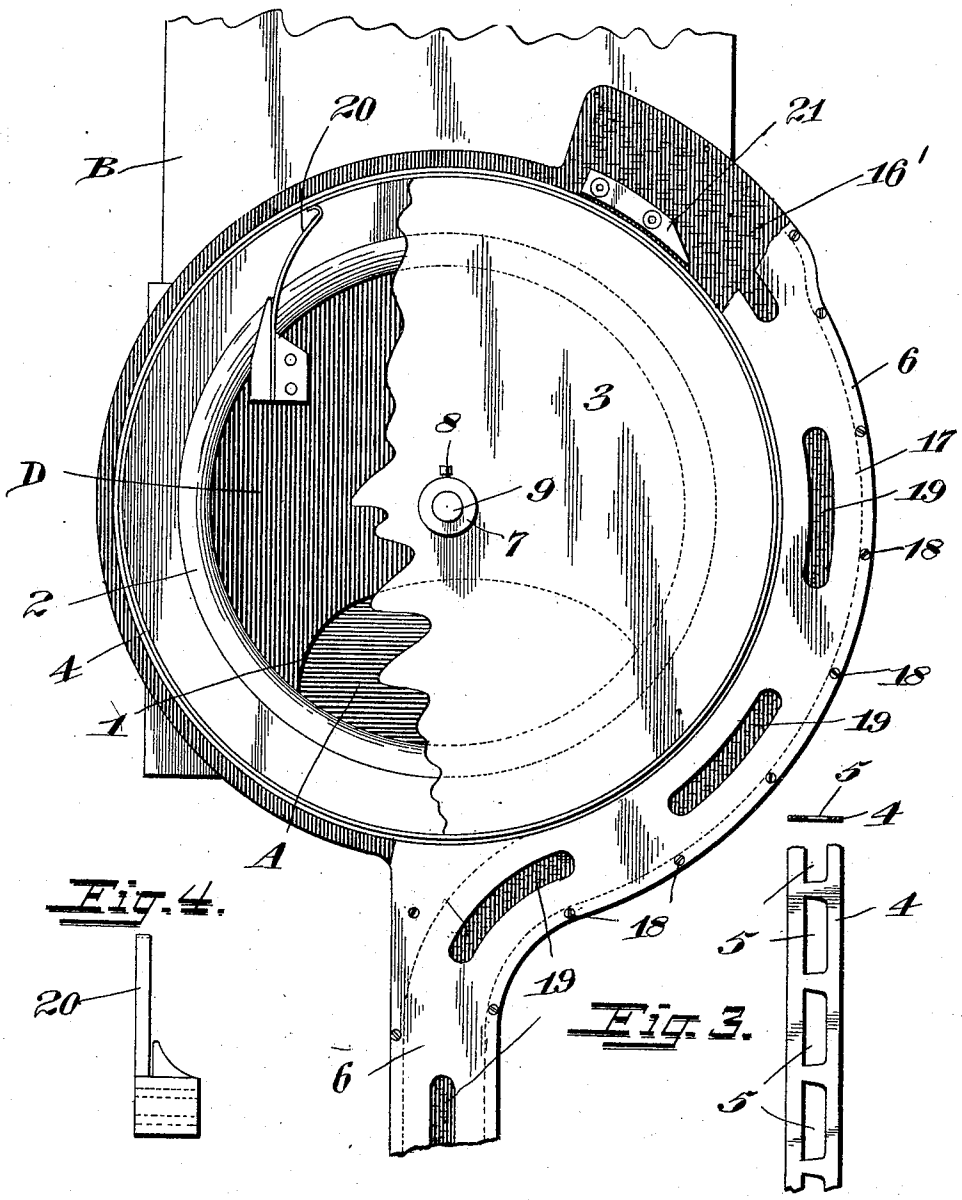

Fig. 4.

Fig. 3.

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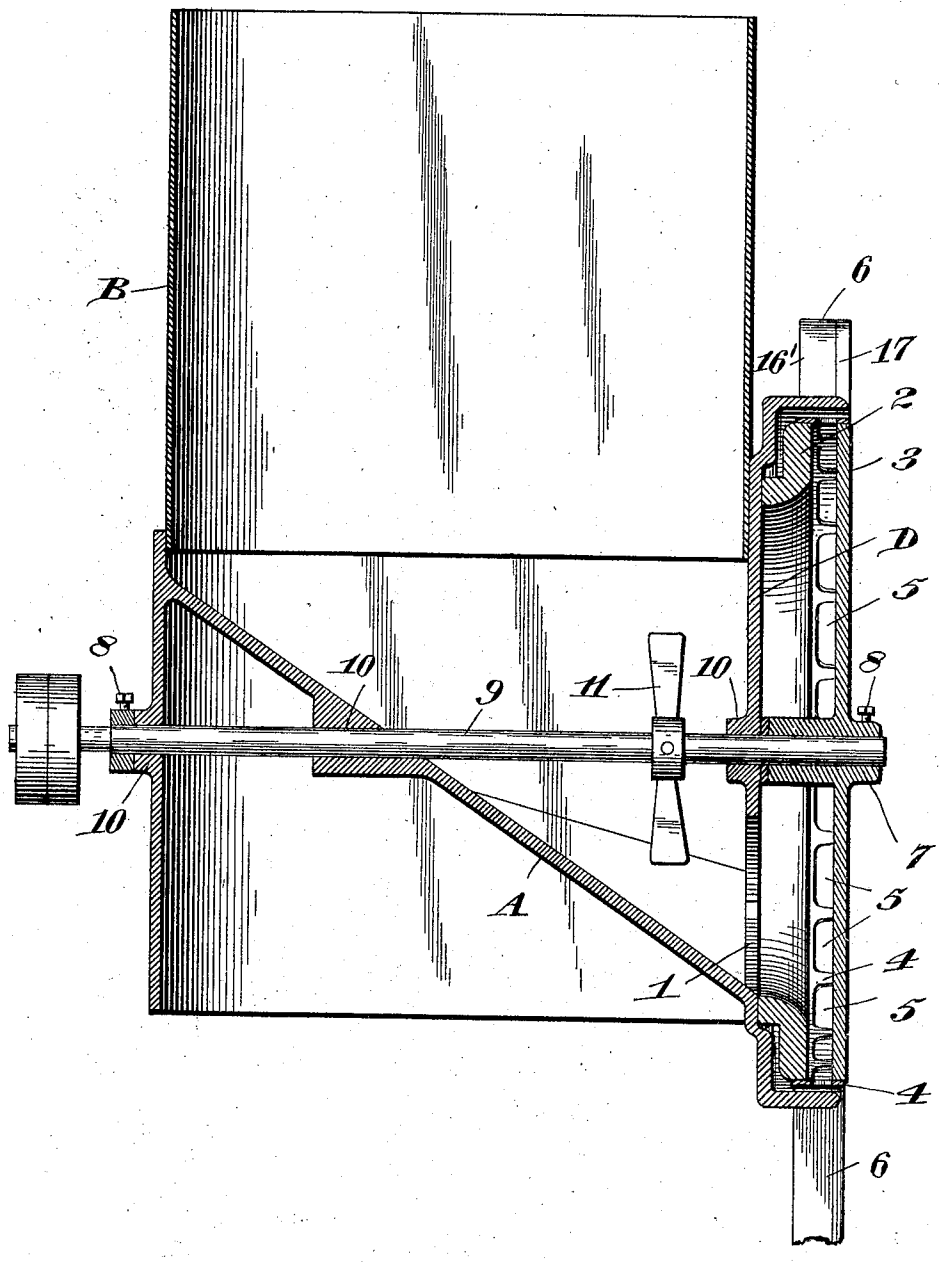
3 SHEETS—SHEET 2.

Fig. 2.



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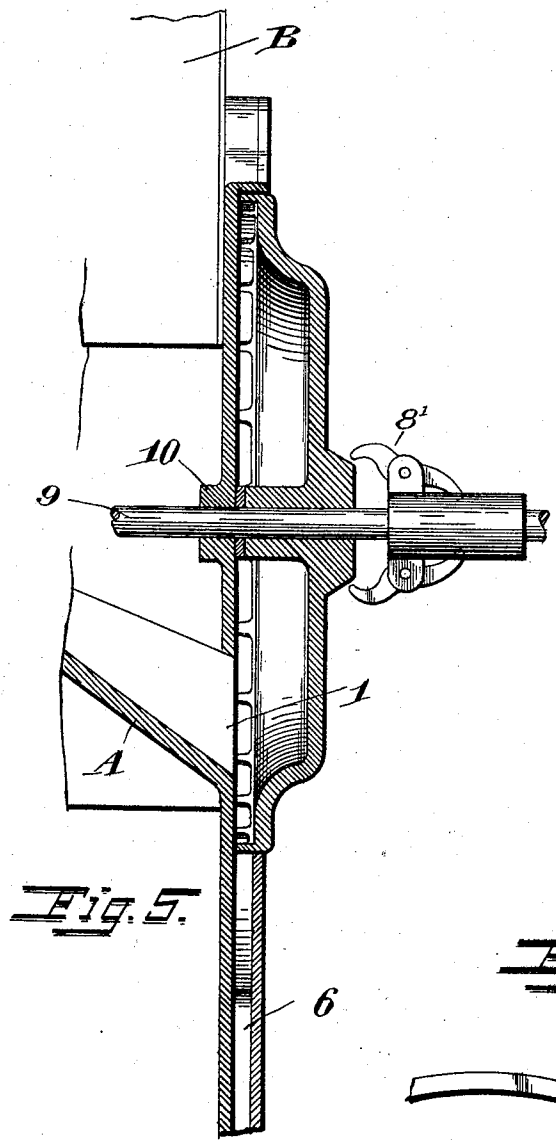


Fig. 5.

Fig. 6

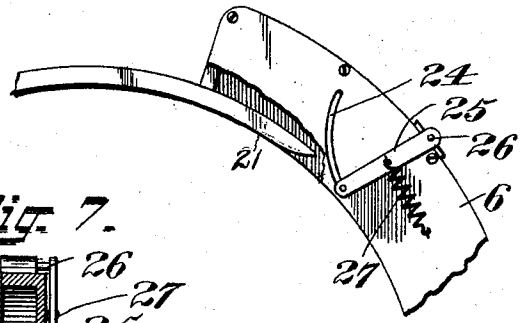
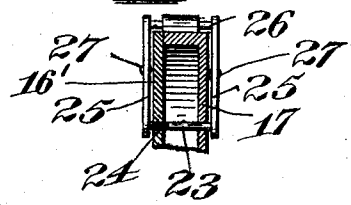


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY L. FULENWIDER, OF WILMINGTON, DELAWARE, ASSIGNOR TO NATIONAL CORK AND SEAL COMPANY, A CORPORATION OF MAINE.

FEEDING-HOPPER FOR BOTTLE-CAPPING MACHINES.

No. 800,288. Specification of Letters Patent. Patented Sept. 26, 1905.

Application filed September 8, 1904. Serial No. 223,800.

To all whom it may concern:

Be it known that I, HENRY L. FULENWIDER, a citizen of the United States, residing at the city of Wilmington, in the county of Newcastle and State of Delaware, have invented certain new and useful Improvements in Hoppers for Automatically Feeding Bottle-Caps to Bottle-Capping Machines, of which the following is a specification.

My invention relates to an improvement in hoppers for automatically feeding bottle-caps to bottle-capping machines; and the primary object is to sort and feed the caps to the bottle-capping machine in proper position to be applied and fastened to the bottle; and with this object in view my invention consists in certain novel features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front view of my improved hopper, parts being broken away. Fig. 2 is a longitudinal vertical section. Fig. 3 is a detail of the gage-band. Fig. 4 is a detail of the device for returning the caps to the hopper when they become caught or jammed in the slots of the gage-band. Fig. 5 is a modification; and Figs. 6 and 7 are detail views, in plan view and cross-sectional view, respectively, of a modified form of device for forcing the caps through the slots of the gage-band when they become stuck on their way through them.

A represents the bottom of the hopper, preferably made of cast metal and sloping at about an angle of forty-five degrees, as shown, and B is the upper end of the hopper, preferably made of sheet metal, which is removably fitted into the cast-metal portion of the hopper. The front face D of the hopper is provided with an opening 1, through which to discharge the contents of the hopper into the feed-wheel, and said face is also provided exteriorly thereof with a shoulder d' and an inclosing flange d^2. The feed-wheel comprises two parts 2 and 3, respectively, secured together at a suitable distance apart by means of the gage-band 4, which latter has a plurality of slots 5 5 therein, shaped, as shown in Fig. 3, to conform to the shape of the bottle-cap and insure its delivery to the chute 6 in a certain position. Section 2 of the feed-wheel is merely a rim which turns in contact with face-plate D and within the shoulder d', the rim being provided with a projecting annulus $2'$, extending across the shoulder and terminating within the flange d^2, whereas section 3 is in the form of a disk, with a hub 7, which is secured by a set-screw 8, key, clutch $8'$, or other suitable means, to a shaft 9, which latter is journaled in boxes 10 10 in the bottom, face-plate, and rear wall of the hopper, and this shaft preferably carries an agitator 11, secured in any convenient manner thereon. The purpose of this agitator is to loosen the caps and insure their feed to the outlet 1 into the feed-wheel.

The caps fall indiscriminately through the outlet 1 into the feed-wheel, which latter revolves at the required speed. When a cap is in the right position, it will enter and find its way through one of the slots 5 and be delivered in proper position through chute 6 preparatory to being used by the bottle-capping machine. Chute 6 is partly formed—that is to say, its rear plate $16'$ is an extension of the face-plate D. An outside plate 17 is held in place to form the outside of the chute by means of screws or similar devices 18 18, and this plate 17 is provided with slots 19 19, through which to observe the condition of the caps in the chute.

Sometimes a cap becomes jammed in one of the slots, and to remove it and throw it back into the wheel a spring-catch 20 is provided. (Shown in detail in Fig. 4.) Also as a means for helping the cap through when caught part way in one of the slots 5 the cam 21 (shown in Fig. 1) is provided. Another form of remover is shown in Figs. 6 and 7, in which a rod 23 extends across the chute through curved slot 24, it being connected with arms 25 25, pivoted at 26 and yieldingly sustained by spring 27. This latter form of cap-remover may be employed in connection with the rigidly-secured cam 21, as shown.

In the modification shown in Fig. 5 the feed-wheel is made in a single casting, thus dispensing with the gage-band 4, the outer edge of the wheel running in contact with the face-plate and the slots really being in the reverse position of those in the other form.

While I have shown clutch $8'$ in connection with the feed-wheel in Fig. 5, it is evident that it might also be shown in similar relation in Fig. 2. Likewise it is evident that it might be applied to the driving-pulleys instead of to the feed-wheel, although I have not so illustrated it. Its purpose is obvious. It sometimes happens that a cap catches in the wheel

and would cause something to break if there was not a clutch or similar device whose resistance would be less than that of the cap, obstructing the movement, so that it would yield to such obstruction rather than cause damage.

It is evident that other slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a hopper provided with a face-plate having an opening therein, of a feed-wheel mounted adjacent the opening, a flange inclosing the feed-wheel, the flange being offset at one portion to form a chute partially surrounding the feed-wheel, a rigidly-secured cam located in the chute, one end of the cam being beveled to engage and release the caps caught in the feed-wheel, the chute provided with a cover-plate, the cover and face plate provided with registering slots located in advance of the cam, pivotally-supported arms, a rod secured in the free ends of the arms and passing through the slots, and means for yieldingly retaining the arms and rod at one limit of their movement.

2. The combination with a hopper, a feed-wheel in communication therewith and a chute partially surrounding the feed-wheel, the chute provided with registering slots located adjacent the periphery of the feed-wheel, a rod passing transversely across the chute and received in the slots, pivotally-supported arms to which the ends of the rod are secured and means for normally retaining the arms and rod at one limit of their movement.

3. The combination with a hopper, a feed-wheel in communication therewith and a chute to which articles are fed from the hopper, of a spring-catch located within the circumference of the feed-wheel, the free end of the catch adapted to engage the inner periphery of the feed-wheel to remove articles caught therein and permit them to drop back within the wheel.

4. The combination with a hopper, of an apertured face-plate forming a portion thereof, a shoulder formed in the face-plate, a flange carried by the shouldered portion of the face-plate, the flange and face-plate offset throughout an arc of a circle, a feed-wheel received adjacent the face-plate and surrounded by the flange, the offset portion of the flange and face-plate constituting a chute extending partially around the feed-wheel, the feed-wheel comprising an annular rim abutting the face-plate, within the shouldered portions thereof, a laterally-projecting annulus carried by the rim and extending over the shouldered portion of the face-plate and within the flange, a rotating shaft journaled in the face-plate, a disk secured to the shaft and spaced away from the rim and a perforated gage-band secured to the peripheries of the annulus and disk.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY L. FULENWIDER.

Witnesses:

JOHN F. NEARY,

P. A. HORT.