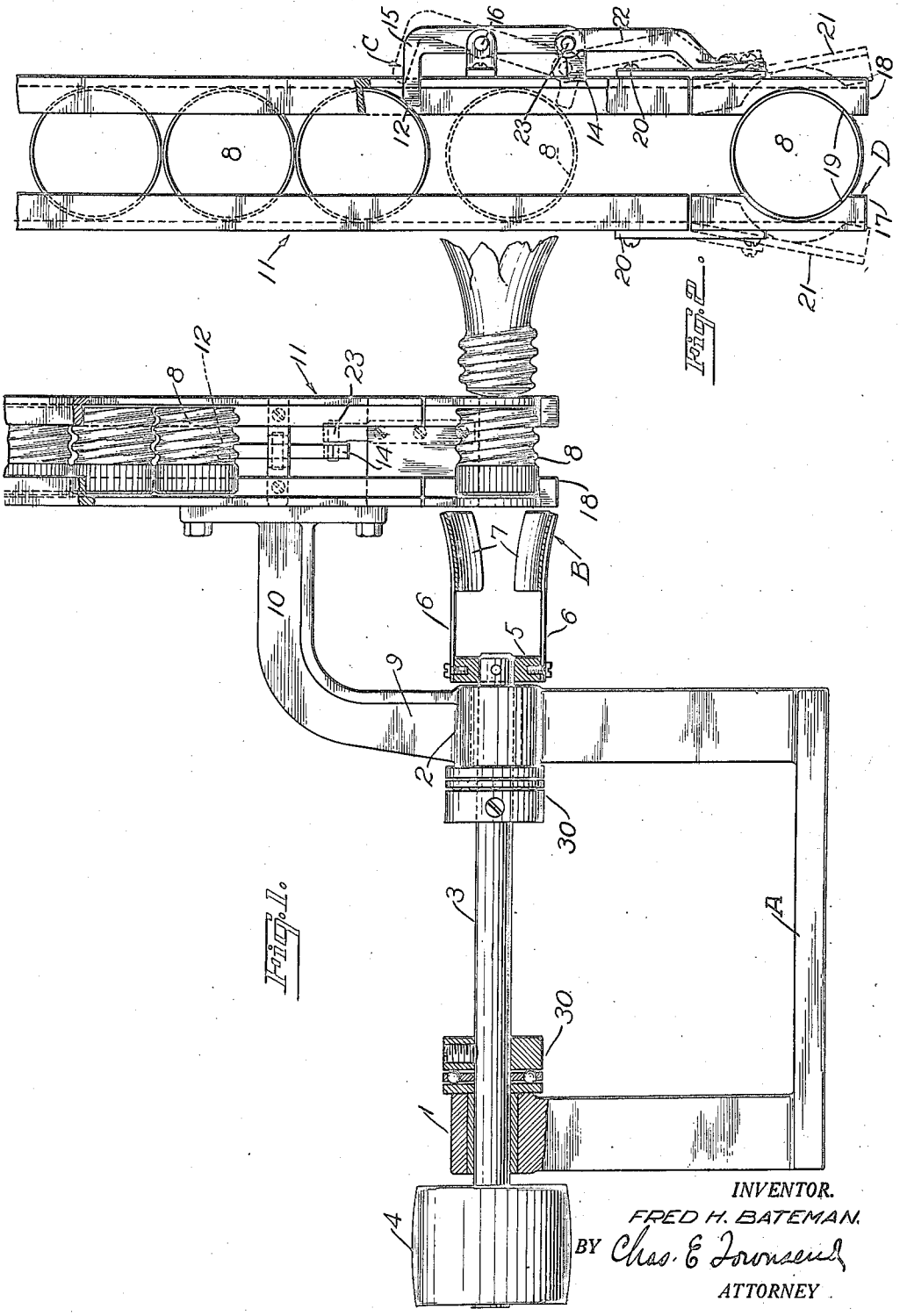
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SCREW CAP FEEDING AND APPLYING MACHINE

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FRED. H. BATEMAN, OF HAYWARD, CALIFORNIA.

SCREW-CAP FEEDING AND APPLYING MACHINE.

Application filed June 16, 1920. Serial No. 389,519.

To all whom it may concern:

Be it known that I, FRED. H. BATEMAN, a citizen of the United States, residing at Hayward, in the county of Alameda and State of California, have invented a new and useful Improvement in Screw-Cap Feeding and Applying Machines, of which the following is a specification.

This invention relates to a screw cap feeding and applying machine.

One of the objects of the present invention is to provide a simple, substantial and easily operated machine for factory use whereby screw caps such as are used on catsup bottles and the like may be quickly and readily applied after the bottles have been filled, sealed, etc.

Another object of the invention is to provide a rotating friction chuck adapted to receive and apply the screw caps when the bottles are delivered thereto; further to provide a feeding device whereby the screw caps are automatically delivered one by one to a receiver positioned in alignment with the chuck.

Other objects will hereinafter appear.

The invention consists of the parts and the construction, combination and arrangement of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Fig. 1 is a side elevation of the machine partly in section.

Fig. 2 is a front view of the cap chute and the receiver.

Referring to the drawings in detail, A indicates a base plate, on which is formed a pair of journal members 1 and 2. Supported by said journals is a shaft 3, and mounted on one end of the shaft is a screw cap applying chuck generally indicated at B. This chuck is continuously rotating when the machine is in operation and power should therefore be transmitted to the shaft 3 in some manner or as here shown by a pulley 4.

The chuck B consists of a head member 5 and a pair of spring arms 6. Secured on the outer ends of the arms is a pair of gripping jaws 7 which are approximately semi-circular in cross section and which are flared to present an open mouth for the reception of a screw cap generally indicated at 8. Forming an extension of the journal member 2 is an upright 9, and formed integral therewith is a bracket 10, to which is secured a cap delivering chute 11. Caps are delivered to the upper end of the chute in any suitable manner and are successively advanced in a downward direction by a trip mechanism generally indicated at C (see Fig. 2), the caps being automatically delivered to a receiver D at the lower end of the chute, which is mounted in direct alignment with the gripping jaws of the chuck B.

The chute proper is rectangular in cross section to present an interior through which the caps 8 may pass. The caps are normally supported by an upper pawl 12, and when advanced are next supported by a second pawl 14, the pawls 12 and 14 being formed on a lever 15 which is centrally pivoted in a bearing member 16 secured on one side of the chute.

The receiver consists of a pair of side sections 17 and 18, the lower ends of which are hook-shaped as at 19 to prevent a cap from dropping therethrough when delivered. The side sections are secured to the lower end of the chute by a pair of spring arms 20, said spring arms normally maintaining the side sections in closed position as shown. The spring arms however permit spreading of the side sections as indicated by dotted lines at 21, when the bottle neck is inserted, as will later be described. One of the side sections carries an operating arm 22. This arm is pivotally attached as at 23 to the lower end of the pawl carrying arm 15 and therefore transmits a rocking movement thereto when the side sections 17 and 18 are spread. A cap supported by the upper pawl 12 will therefore become released and will drop downwardly through the chute until stopped by the lower pawl 14. This pawl will in turn release the cap and permit it to drop downwardly into the receiver when the side sections assume normal position, and the upper pawl will in turn form a stop for the lowermost cap in the chute. In other words the pawls 12 and 14 operate in a manner similar to a detent as they permit the caps to drop one by one into the receiver and simultaneously serve the function of stop members to support the superposed caps delivered to the chute.

The present machine is particularly intended for factory use and is especially designed for handling screw caps such as are used on catsup bottles and the like. The bottles to be capped are first filled, sealed, etc., and are then delivered to the capping

machine here illustrated. The capping operation takes place in the following manner: An operator placed in front of the machine grasps a bottle and inserts the neck portion thereof inwardly between the side sections 17 and 18 of the receiver. A screw cap is in position within the receiver when this operation takes place and it is therefore forced by the bottle neck inwardly between the gripping jaws 7 on the revolving chuck. The gripping jaws will in this manner frictionally engage the screw cap and impart a rotating movement thereto, and as the bottle neck is threaded as indicated, it is obvious that the screw cap will be quickly, or so to speak, almost instantaneously applied. The bottle when capped is removed and a new bottle inserted. Insertion of a bottle neck causes spreading of the side sections 17 and 18 of the receiver and thereby releases the lowermost cap in the chute and advances it to the lower pawl 14. Removal of a bottle when capped permits the side sections to assume normal position and thereby transmits a movement to the arm 22 which will swing the upper pawl into engagement with the lowermost cap in the chute and simultaneously release the one supported by the pawl 14. This cap will therefore drop into the receiver in readiness for the next bottle to be inserted.

From the foregoing it can be seen that the caps are automatically delivered to the receiver by the operation of inserting and removing the bottle neck. In fact the operator need not be concerned in any way with the mechanism, as everything is automatically accomplished, that is the caps are delivered one by one to the receiver as the bottle necks are inserted and the continuously rotating chuck applies the caps. The mechanism employed is exceedingly simple and chances of breakage or careful adjustment or attention on the part of the operator is avoided.

Another important feature of the present invention is the provision of a chuck which frictionally engages and applies the caps. This is important, as a cap when forced into the gripping jaws of the chuck is frictionally engaged and in this manner imparts a rotary movement which applies the cap. The moment the cap is applied however, it can be seen that the gripping jaws will revolve about the cap, and as frictional engagement only is maintained, it is obvious that damaging of the cap will not take place if it should be held between the jaws longer than necessary.

Another feature which might be considered is the provision of thrust bearings such as indicated at 30. These bearings are of the anti-friction type and are only provided for the purpose of taking up end thrust when a bottle is inserted.

While certain features of the present invention are more or less specifically illustrated, I wish it understood that various changes in form and proportion may be resorted to within the scope of the appended claims, similarly that the materials and finish of the several parts employed may be such as the experience and judgment of the manufacturer may dictate or varying uses may demand.

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

1. In a device of the character described, a receiver including oppositely disposed members formed to provide oppositely disposed lateral openings, said members constructed to spread apart to permit the passage of a bottle neck horizontally through the openings of the receiver, and means adjacent the innermost opening and spaced slightly therefrom to receive the cap and the neck from the receiver and automatically apply the cap to the neck.

2. In a device of the character described, a receiver for bottle caps and including oppositely disposed members mounted to spread apart and to form oppositely disposed lateral openings so as to permit the passage of a bottle neck horizontally through the receiver, the insertion of the bottle neck into the receiver forcing the cap therein in a horizontal direction out of the receiver through the innermost opening, and means adjacent the inermost opening of the receiver to receive the cap projected through the innermost opening of the receiver and operable to automatically apply the cap to the neck.

3. In a device of the character described a screw cap receiver, a chute connected with the receiver, a pair of movable side sections forming a part of the receiver for the reception of a bottle neck, means for normally maintaining the side sections in a closed position, and means actuated by the closing and the separation of the side sections for automatically delivering screw caps one by one to the receiver.

4. In a device of the character described, a screw cap receiver, a chute connected with the receiver, a pair of movable side sections forming a part of the receiver for the reception of a bottle neck, means for normally maintaining the side sections in a closed position, and means actuated by the closing and the separation of the side sections for automatically delivering screw caps one by one to the receiver, said means comprising a detent member and an arm on one of the movable side sections adapted to rock the detent member.

5. In a machine of the character described, a screw cap delivering chute, a pair of spring arms secured on the lower end of the

chute, a pair of side sections, one secured to each arm, hook-shaped projections formed on the lower end of each side section for the reception and support of the screw cap, said side sections adapted to be closed by the tension of the spring arms and adapted to be opened when a bottle neck is inserted, and means actuated by the movement of the side sections for delivering screw caps thereto one by one.

6. In a machine of the character described, a screw cap delivering chute, a pair of spring arms secured on the lower end of the chute, a pair of side sections, one secured to each arm, hook-shaped projections formed on the lower end of each side section for the reception and support of the screw cap, said side sections adapted to be closed by the tension of the spring arms and adapted to be opened when a bottle neck is inserted, an arm secured to and movable in unison with one of the side sections, a detent member connected with and adapted to be rocked by said arm, and a pair of pawls on said detent member alternately engageable with screw caps delivered to the chute to drop the caps one by one downwardly between the movable side sections.

7. In a device of the character described a frame, including a bracket, a chute supported by the bracket, a receiver connected to the chute and having oppositely disposed lateral openings to permit the passage of a bottle neck horizontally through the receiver, means for transferring caps one at a time from the chute to the receiver, whereby upon the passage of the neck through the openings of the receiver the cap in the receiver is carried horizontally out of the receiver through the innermost opening of the receiver, and a rotatable chuck journaled in the frame below said bracket and disposed adjacent said innermost opening of the receiver to receive the bottle neck and cap and apply the cap to the neck.

8. In a device of the character described, a frame including an upwardly and laterally directed bracket, a chute secured to the bracket, a receiver communicating with the chute and having spaced openings arranged in parallel planes and opening outwardly horizontally to permit the passage of a bottle neck horizontally through the receiver, means whereby to feed caps one at a time from the chute to the receiver, the cap in the receiver being removable therefrom in a horizontal direction through the innermost opening of the receiver and toward the frame upon the passage of the neck horizontally through the receiver, a rotatable shaft journaled in the frame below said bracket, a chuck secured to the shaft under the laterally projecting part of the bracket and spaced slightly from the receiver adjacent the innermost opening of the receiver to receive the cap and the neck when projected through the innermost opening of the receiver to automatically apply the cap to the neck.

9. In a device of the character described, a receiver, for the reception of screw caps, said receiver having a lateral opening formed therein for the insertion of a bottle neck, a chute leading to the receiver for the passage of caps to the receiver, means for automatically applying a screw cap to the bottle neck, and means having connection with the chute and actuated upon the withdrawal of the bottle neck subsequent to the capping operation to deliver a cap from the chute to the receiver.

10. In a device of the character described, a rotating friction chuck, a cap receiver positioned in alignment therewith, said receiver having a lateral opening adapted to receive the neck of the bottle to which the cap is to be applied, a cap delivering chute connected to and communicating with the receiver at the top of the latter, and means actuated by the insertion and removal of the bottle neck through the lateral opening of the receiver for delivering caps one by one to the receiver.

11. In a device of the character described, a horizontally disposed shaft, a friction chuck mounted at the inner end of said shaft, a cap receiver positioned in horizontal alignment with the chuck, the receiver having oppositely disposed lateral openings for the passage of a neck of a bottle to which the cap is to be applied, a cap delivery chute connecting with the receiver and communicating therewith at the upper end of the latter, and means actuated by the insertion and removal of a bottle neck through said openings in the receiver for affecting delivery of caps one at a time from the chute to the receiver.

12. In a device of the character described, a rotating friction chuck, a cap receiver positioned adjacent the chuck and adapted to receive the neck of the bottle to which the cap is to be applied, a cap delivering chute connected with the receiver, and means actuated by the insertion and removal of the bottle neck to and from the receiver for delivering caps one at a time to the receiver, said means including a detent pivoted intermediate its ends on the chute and having its opposite ends projecting alternately into the chute for the support and release of the caps one at a time from the chute for passage into the receiver.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRED. H. BATEMAN.

Witnesses:
E. M. MacKusas,
J. S. Melo, Jr.