E. H. WEATHERHEAD & T. H. SCHUTT.

MECHANISM FOR FEEDING BOTTLES AND SIMILAR ARTICLES.

APPLICATION FILED MAR. 5, 1915.

1,250,256.

Patented Dec. 18, 1917

2 SHEETS—SHEET 2.

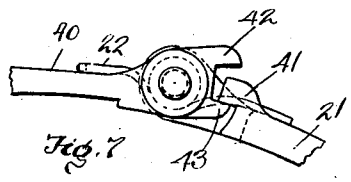


Fig. 7

Fig. 3

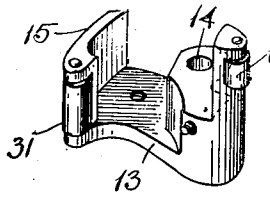


Fig. 5

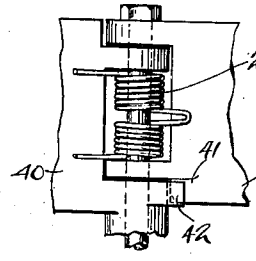


Fig. 4

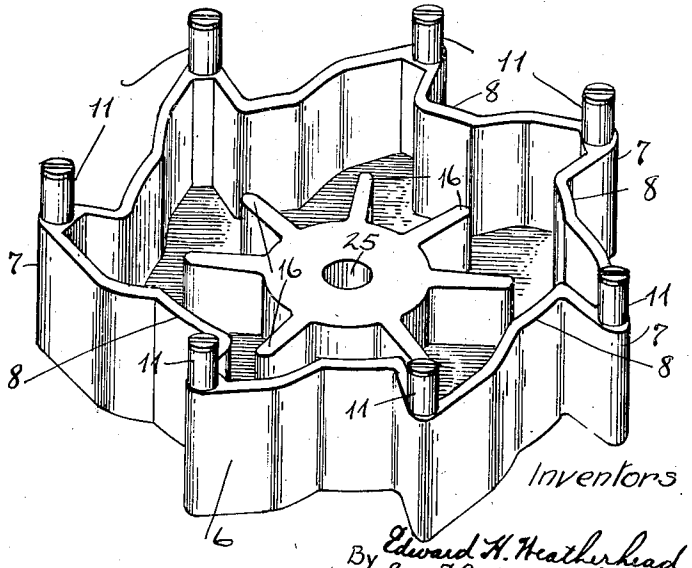


Fig. 6

Witnesses=
O. M. Kappler.
Thos. H. Fay

Inventors
By Edward H. Weatherhead and Theodore H. Schutt
Fay, Sherlin and Fay Attorneys-

E. H. WEATHERHEAD & T. H. SCHUTT.

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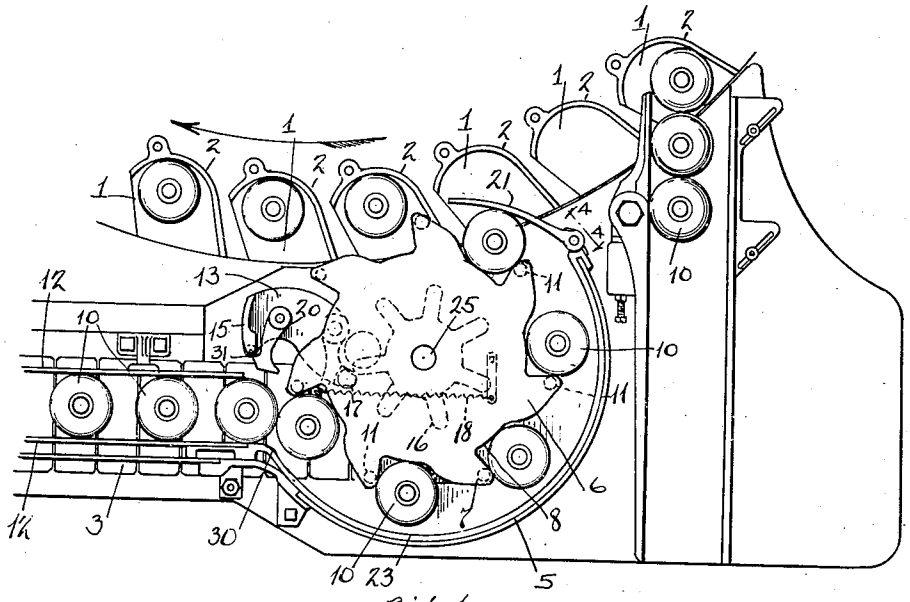


Fig. 1

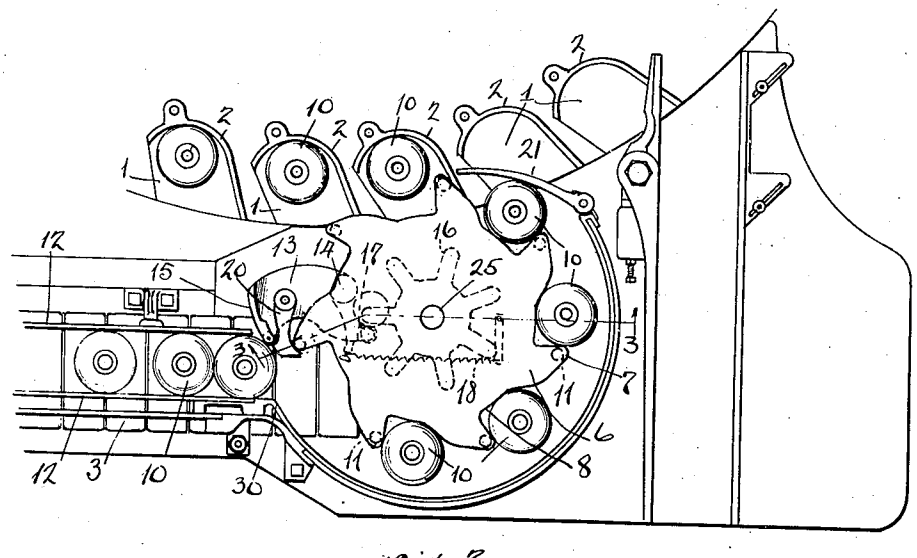


Fig. 2

Witnesses=
O. M. Kappler
Thos H Fay

Inventors
Edward H. Weatherhead
and Theodore H. Schutt
By Fay, Oberlin and Fay
Attorneys—

UNITED STATES PATENT OFFICE.

EDWARD H. WEATHERHEAD AND THEODORE H. SCHUTT, OF CLEVELAND, OHIO, ASSIGNORS TO THE BISHOP-BABCOCK-BECKER COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

MECHANISM FOR FEEDING BOTTLES AND SIMILAR ARTICLES.

1,250,256. Specification of Letters Patent. Patented Dec. 18, 1917.

Application filed March 5, 1915. Serial No. 12,284.

To all whom it may concern:

Be it known that we, EDWARD H. WEATHERHEAD and THEODORE H. SCHUTT, citizens of the United States, and residents of Cleveland, county of Cuyahoga, State of Ohio, have jointly invented a new and useful Improvement in Mechanism for Feeding Bottles and Similar Articles, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements relate in general to bottle filling machines, and more particularly to means for feeding the bottles to the filling machine proper. The usual method of transferring bottles to the holders of a filling machine is to pass the bottles adjacent to the machine upon a suitable conveyer, and to then provide means which are adapted to transfer the bottles from this conveyer to the holders. For this purpose a positively actuated mechanism is of course preferable, but if such a mechanism is used it is necessary to have not only a moving member, but also a fixed guideway adapted to coöperate with the member to transfer the bottles, and as the bottles vary greatly in size, even those that are rated at the same capacity, and as the rotatable member is provided with a plurality of projections, it has heretofore been practically impossible to provide transferring mechanism of this positive type which will not occasionally crush a bottle between one of the points of the rotating members and the guideway. It is the object of the present invention to provide a positively actuated transfer mechanism provided with means which render it impossible for the mechanism to ever seize and crush a bottle during the transferring operation. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Figure 1 is a plan view showing the movable holders, one end of the conveyer, and the transferring mechanism between the same; Fig. 2 is a similar plan view, but showing the mechanism in a different operative position; Fig. 3 is a section on the line 3—3 in Fig. 2; Fig. 4 is a section on the line 4—4 in Fig. 1; Fig. 5 is a perspective view of the swinging gate which forms a part of the bottle spacing mechanism; Fig 6 is a bottom plan view of the rotating element of the transferring means here shown as a starwheel; and Fig. 7 is a bottom plan view of one of the details of the machine.

In Fig. 1 there are shown the holders 1 of the filling machine, such holders being conjointly movable in a circular direction as indicated by the arrow, and having side rails 2 formed as shown. Adjacent to the holders there is provided a conveyer 3 which may be of any suitable type, although preferably constructed as here indicated, and consisting of a plurality of metal plates or links flexibly joined together.

Intermediate the holders and the conveyer there are provided bottle transferring means comprising a curved guideway 5 surrounding a rotatable element 6 which is preferably in the form of a starwheel having a plurality of equally spaced projections 7 and a similar number of recesses 8 formed between the projections, each recess or pocket being adapted to receive a bottle 10. Mounted on the lower side of each projection 7 is a roller 11 adapted to be contacted by the extending side 2 of the holder upon the movement of the two into a certain position, each holder thus rotating the starwheel through a certain angle. The starwheel is thus positively driven in synchronism with the holders, and the recesses in the starwheel are brought into accurate coöperating position with respect to the holders so that bottles may be moved from the starwheel onto the holders in the manner indicated in the three holders at the left of Fig. 1. The starwheel engages the bottles as they are brought along the conveyer 3, each recess in the starwheel receiving a single bottle, which is then moved around against the curved guideway 5 until positioned on the holder.

The bottles are placed upon the conveyer by operators who do not always take time to space the bottles accurately, and it is thus necessary to provide bottle spacing means for regulating the supplying or feeding of

the bottles by the conveyer to the transferring mechanism. The necessity for such means lies in the fact that if a bottle has been brought on the conveyer to a point directly between the corner 30 of the guideway 5 and the nearest projection 7 on the starwheel, the latter, when rotating, will seize the bottle between these two points and crush the same. This difficulty may of course be obviated by the use of a yielding corner at this point in the guideway, but this merely permits the bottle to be pushed out of position and the resilient mounting of this yielding corner causes the bottle to be snapped back as soon as the point on the starwheel has passed, which often upsets the bottle and causes it to break in its fall.

We have accordingly provided means which positively prevent a bottle from being moved into the starwheel by the conveyer except when a pocket or recess on the starwheel is alined with the path of movement of the bottles on the conveyer, such path being determined by guides or sides 12 on the latter. Such means include a pivoted gate or arm 13 pivoted at the point 14, and adapted to be normally maintained with the arm 15 extending into the path of movement of the bottles as indicated in Fig. 2. At the end of such arm is mounted a roller 31 for contacting the bottles. The gate is maintained in this position by means of suitable resilient means, preferably in the form of a spring 18. The starwheel is provided with a plurality of cams or fingers 16 on its under side, there being one such finger for each projection or point on the starwheel. These projections are adapted to successively engage a roller or post 17 mounted upon the gate, and to then temporarily swing the gate into the position shown in Fig. 1, at which time a pocket in the starwheel will be alined with the path of movement of the bottles on the conveyer, and a bottle will accordingly be moved into each pocket at this time. As soon as this pocket in the starwheel is passed out of line with the conveyer the spring 18 will return the gate 13 to its extending or bottle-blocking position, thus preventing movement of another bottle onto the starwheel until the next succeeding cam 16 engages the roller 17.

It is also highly desirable that the bottles be moved into contact with both sides of the recess or pocket in the starwheel in order that the starwheel may properly act to position the bottles upon the holders, and we therefore provide upon the pivoted gate 13 an arm 20 which is pivoted thereon and free to swing across the same for the purpose of forcing back any bottle which may have been moved into such position when the gate 13 is inoperative. A bottle might otherwise prevent the return of the gate which is entirely spring actuated on its return and this bottle would then be too near the starwheel and would be moved too far into the same. The action of this arm 20 is as follows: Upon the return of the gate 13 by the spring this arm 20 will be swung into a position at an acute angle to the position of the arm as shown in Fig. 2. Upon the movement of the next point of the starwheel into substantial alinement with the upper of the guides 12, the roller 11 beneath this point will engage the curved outer surface of the arm 20 and will swing the same into contact with the lower edge of the rail 15 on the gate 13. This action of the arm will move back any bottle which may have been positioned between the gate 13 and the side of the guideway, thus maintaining such bottle in such a position that upon the removal of the gate the conveyer will move it into its proper position in the recess in the starwheel alined therewith.

It is equally important that the bottles be moved smoothly onto the holders and be properly positioned thereon, and for this purpose we provide a second pivoted arm or gate 21 which is normally maintained in contact with the bottles as they come around the guideway in the recesses in the starwheel by means of a coil spring 22, the construction and position of which will be readily seen from Fig. 4. Thus, as each bottle is moved around the guideway 5 by the point on the starwheel, it is forced back into the recess until it has been moved to the back of the holder 1. The pressure of the starwheel on one side and of the gate 21 on the other prevent any wabbling of the bottle as it is moved from the starwheel onto the holder.

The arm or gate 21 is pivotally attached to the end of the outer guideway 40 as stated. In order to prevent excess movement by the arm, which would cause it to strike a bottle with great force, there are provided limiting means, preferably in the form of a jaw or lug 41 on the arm operating between two spaced stops or jaws 42 and 43 on the guideway. The action of these stops will be readily understood, their sole function being to be engaged by the jaw 41, thus limiting the angular swing of the arm 21 to the desired arc to give the most satisfactory operation with the bottles.

The lower guide 12 and the inner liner 23 of the guideway 5 are made removable in order to accommodate different sizes of bottles, and the starwheels will similarly be made readily removable from the central bearing post 25 for the same purpose. It will, however, be unnecessary to change the bottle spacing means, which will still operate as before, since the bottles will still be in contact with the upper one, of the guides 12 and will still be brought to the same position with respect to the gate 13 as before.

Our improved transferring means operate effectively to shift the bottles from the conveyer onto the holders or stirrups as they are sometimes termed and although in use on a number of machines, no case of breakage has ever occurred, nor have any bottles been upset during the movement onto the holders.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. The combination with a machine of the character described, having a series of conjointly movable holders for bottles and the like; of a conveyer passing adjacent to the path of movement of said holder, bottle transferring means coöperative with said conveyer and said holder, resiliently actuated means having movement into and out of the path of movement of bottles on said conveyer, said means being adapted to retard the progress of bottles therealong, and other means adapted to position the foremost bottle retarded by said first-named means in a predetermined position.

2. The combination with a machine of the character described having a series of conjointly movable holders for bottles and the like; of a conveyer passing adjacent to the path of movement of said holders; a star-wheel provided with a plurality of radial projections and bottle receiving recesses therebetween; a fixed guideway disposed about said wheel and coöperative therewith to transfer bottles from said conveyer to said holder; a pivoted spring-pressed gate adapted to be normally actuated into a position in the path of movement of the bottles on said conveyer, thereby preventing the feeding of the bottles to said star-wheel; a pivoted arm mounted on said gate and adapted, when actuated in one direction, to force back a bottle on said conveyer to a position behind said gate; cams mounted on said star-wheel and adapted to actuate said gate into an inoperative position when one of such recesses is directly in line with said conveyer; and other cams mounted on said star-wheel beneath the projections on the same and adapted to actuate projecting bottles to permit of movement of said gate into its fully extending position.

3. The combination with a machine of the character described having a series of conjointly movable holders for bottles and the like; of a conveyer passing adjacent to the path of movement of said holder, bottle transferring means coöperative with said conveyer and said holder, resiliently actuated means adapted to move transversely of said conveyer to retard the passage of bottles therealong, and positively actuated means also adapted to move transversely of said conveyer to retard the passage of bottles therealong.

4. The combination with a machine of the character described having a series of conjointly movable holders for bottles and the like; of a conveyer passing adjacent to the path of movement of said holder, bottle transferring means coöperative with said conveyer and said holder, initially resiliently actuated means adapted to move transversely of said conveyer to retard the passage of bottles therealong, and positively actuated reinforcing means for said first named means.

5. The combination with a machine of the character described having a series of conjointly movable holders for bottles and the like; of a conveyer passing adjacent to the path of movement of said holder, bottle transferring means coöperative with said conveyer and said holder, a spring-pressed gate adapted to be swung transversely across said conveyer to prevent the passage of bottles therealong, and a stop pivotally mounted on said gate and positively actuated by said transferring means, said stop being adapted to positively prevent the passage of bottles along said conveyer.

6. The combination with a machine of the character described having a series of conjointly movable holders for bottles and the like; of a conveyer passing adjacent to the path of movement of said holder, a rotating star-wheel coöperative with said conveyer and said holder to transfer bottles from the former to the latter, a spring-pressed gate adapted to be swung transversely across said conveyer to prevent the passage of bottles therealong, and a stop pivotally mounted on said gate and positively actuated by the points of said star-wheel into a position across said conveyer adapting it to prevent the movement of bottles therealong.

Signed by us, this 4th day of March, 1915.

EDWARD H. WEATHERHEAD.
THEODORE H. SCHUTT.

Attested by—
J. W. BURT,
B. P. HUNTER.