N. A. CURTISS.

PACKAGING MACHINE.

APPLICATION FILED JULY 20, 1917.

1,354,599.

Patented Oct. 5, 1920.

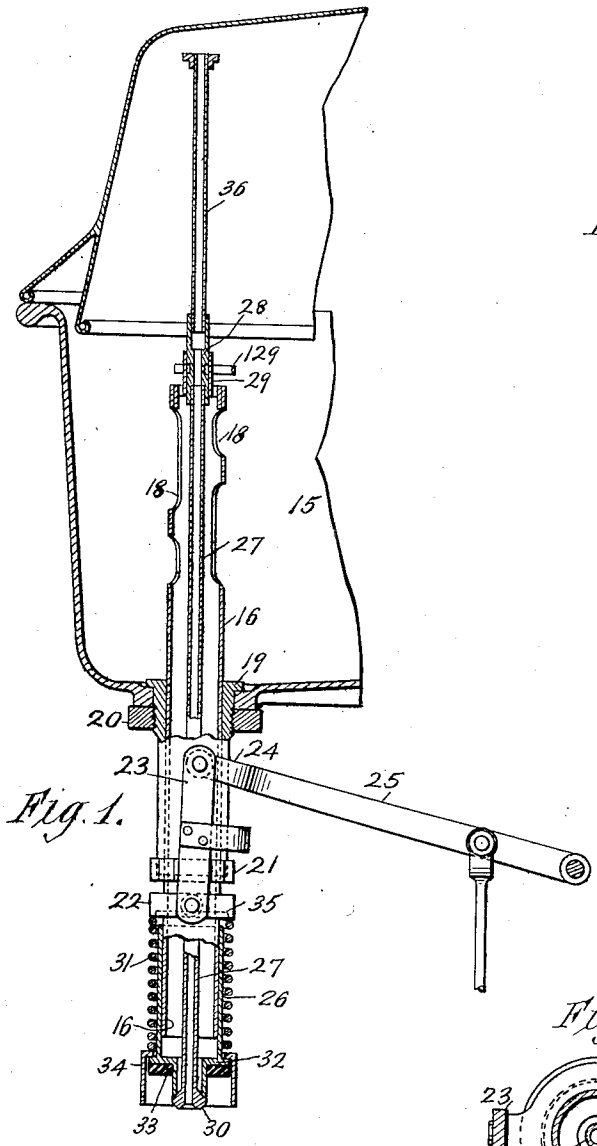


Fig. 1.

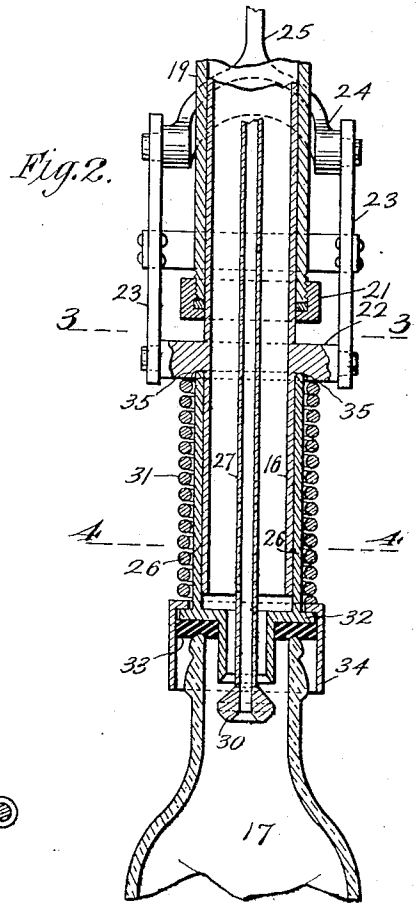


Fig. 2.

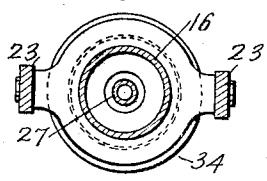
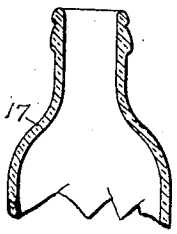


Fig. 3.



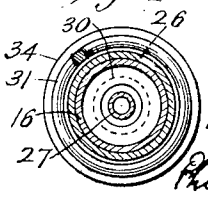


Fig. 4.

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UNITED STATES PATENT OFFICE.

NATHAN A. CURTISS, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE CROWN CORK AND SEAL COMPANY OF BALTIMORE CITY, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

PACKAGING-MACHINE.

1,354,599. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed July 20, 1917. Serial No. 181,721.

To all whom it may concern:

Be it known that I, NATHAN A. CURTISS, a citizen of the United States, residing at Baltimore and State of Maryland, have invented certain new and useful Improvements in Packaging-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in packaging machines.

In the use of packaging machines as heretofore known, particularly in packaging such liquids as milk, there has been much inconvenience, due to the leakage of the liquid in and about the filling heads.

It is the object of the present invention to provide a filling head for a packaging machine, such that the leakage of the liquid being packaged, is effectively eliminated.

The following specification describes and the accompanying drawing illustrates a filling head for packaging machines constructed in accordance with the invention, it being understood that changes may be made in the form, construction and arrangement of the parts without departing from the invention, the form herein described being a preferred embodiment thereof.

In the drawing—

Figure 1 is a vertical cross-sectional view with parts in elevation, of a filling head constructed in accordance with the invention;

Fig. 2 is a vertical cross-sectional view of a portion of the apparatus shown in Fig. 1, showing the filling head in filling position;

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 2, and

Fig. 4 is a similar view, taken on the line 4—4 of Fig. 2.

The drawing illustrates a filling head for a packaging machine for use with liquids generally, but particularly adapted for packaging milk. The milk or other liquid is contained in a reservoir 15 into which extends a valve tube 16 for aiding in directing the liquid to the bottle or other receptacle 17, and having near its upper end a number of lateral openings 18 for the admission of the liquid in the reservoir. The filling head is movable to and from the bottles and to this end the tube is slidable in a guide 19 secured into the bottom of the reservoir by a nut 20, a liquid-tight joint being provided at the bottom by a packing nut 21.

For the reciprocating movement of the filling head, the valve tube which controls the entire head, has mounted thereon a yoke 22 connected by links 23 with the yoked end 24 of an operating lever 25 oscillated by any suitable means such that on the down stroke, the head is impositively impelled.

In the structure shown, associated with the lower end of the valve tube 16 in directing the liquid, and forming in effect a continuation of the tube, is a valve cage 26, and the invention includes means for directing upward any liquid tending to leak out in passage. Although capable of various constructions, in the present embodiment, the valve tube and valve cage are in telescopic relation, the cage being outside the tube. With such a construction any liquid tending to work in between the telescoping parts is directed upward and consequently much leakage is eliminated.

A valve is provided for normally shutting off the flow of liquid, and in addition there is provided means for the automatic operation of this valve. To this end, in the embodiment shown, inside the valve tube, and connected therewith, is a vent tube 27. This vent tube is supplied with a sleeve 28 having therein an annular groove registering with a slot in a guide member 29 in the top of the valve tube, and a spring cotter pin 129 is passed through the slot and groove. At the lower end, this vent tube is provided with a conical shaped valve member 30 normally seating against the rim of the valve cage 26 to shut off the flow of liquid.

The valve cage 26 is pressed downwardly by a coil spring 31 embracing the cage and held between the yoke 22 and a shoulder 32 formed on the valve cage.

For making sealing contact with the bottle to be filled, the valve cage carries a resilient gasket 33 and a guard 34 is provided, held in place by the spring, and having a downwardly extending skirt, for directing downwardly any liquid escaping from a possibly broken lipped bottle.

When the valve tube is moved downward by the operating lever, the vent tube and valve member also move downwardly, and the valve cage being free to follow, descends under the force of the spring. During this

portion of the operation the valve, as will be apparent, is kept closed. This movement continues until the gasket 33 makes sealing contact with the bottle, whereupon the valve cage stops. As the stroke of the lever continues, the valve tube moves on downward, telescoping within the now stationary cage, and carrying with it the valve member. This further movement of the parts compresses the spring 31. As will be apparent, the movement just described displaces the valve member away from its seat and consequently the liquid is permitted to flow down through the tube cage and open valve into the bottle or other receptacle.

Means is provided for sealing the joint between the telescoping tube and cage and in structures embodying the invention to the best advantage, the joint is automatically sealed during the period of greatest flow. Although variable within a wide range, this may be accomplished, for example, by providing a sealing seat for the rim of the valve cage. Although capable of various constructions, in the present embodiment, the lower face of the yoke 22, which is in effect a shoulder on the valve tube, is provided with a groove 35 which serves as a seat for the rim of the valve cage. In the operation above described, therefore, the valve tube and valve descend until the rim of the valve cage enters its seat, which terminates the down stroke of the head. This position of the parts leaves the valve, as shown in Fig. 2, in its most open position, and during this period of greatest flow, the joint between the telescoping tube and cage is effectively sealed by the contact of the cage rim with its seat, thereby preventing any leakage.

During the flow of the liquid into the bottle, the displaced air escapes up through the vent tube 27, and to make sure that the top thereof shall always be above the level of the liquid in the reservoir, the vent tube proper is provided with a removable extension 36.

After the bottle is filled the lever 25 starts its return stroke, thus lifting the valve tube which carries with it the vent tube and valve member. During the first part of this upward stroke, the valve cage is held down against the bottle by the compression of the spring 31, thus holding the gasket in sealing contact with the bottle rim until the valve is closed. Continued movement of the vent tube seats the valve member against the rim of the cage and thus shuts off the flow of liquid. Thereafter the rising valve member being forced against the rim of the valve, raises the latter. Thus, the entire filling head moves away from the bottle until the end of the upstroke of the lever is reached, whereupon the head is ready for its next cycle.

What is claimed is:

1. In packaging machines, a valve tube for directing liquid from a reservoir to the receptacles to be filled, a valve cage in telescopic relation with said valve tube, a yoke associated with the valve tube for reciprocating the same, and a grooved seat in said yoke for receiving the rim of said valve cage.

2. In packaging machines, a valve tube for directing liquid from a reservoir to the receptacles to be filled, a valve cage in telescopic relation with said valve tube, a yoke associated with the valve tube for reciprocating the same, a grooved seat in said yoke for receiving the rim of said valve cage, a shoulder on said valve cage, a bottle guard carried by said shoulder, and a coil spring between said yoke and said shoulder.

3. In packaging machines, a valve tube for directing liquid from a reservoir to the receptacles to be filled, a valve cage telescoping the valve tube outside the latter, a yoke associated with the valve tube for reciprocating the same, and a grooved seat in said yoke for receiving the rim of said valve cage.

4. In packaging machines, a valve tube for directing liquid from a reservoir to the receptacles to be filled, a valve cage telescoping the valve tube outside the latter, a yoke associated with the valve tube for reciprocating the same, a valve member seating against the lower rim of the valve cage and moved by the valve tube, means whereby the valve cage is stopped by contact with the receptacle prior to the end of the stroke of the valve tube, thereby to cause relative movement of the valve tube and valve cage, and a grooved seat in said yoke for receiving the upper rim of said valve cage.

In testimony whereof, I have hereunto set my hand.

NATHAN A. CURTISS.

Witnesses:

H. M. SAITHE,
FRANK L. LLOYD.