

UNITED STATES PATENT OFFICE.

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BOTTLE-STOPPER.

974,444.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES J. STAUFFIGER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

This invention relates to a bottle stopper which is more particularly designed for milk bottles but which may also be used for bottles containing other liquids.

Bottles in which milk is now commonly dispensed are usually closed by a paper disk. This disk when once removed to empty part of the contents of the bottle cannot be again securely applied to the bottle so as to properly protect the remaining contents thereof and permit of aerating such contents and also reliably pouring the same from the bottle without again removing the disk from the bottle.

The object of this invention is to produce a bottle stopper which may be substituted for the disk stopper or stopper now in use, which can be readily opened for pouring out the contents of the bottle without detaching the stopper from the bottle, which guards the bottle against the entrance of any foreign matter, and which can be so adjusted as to leave the bottle slightly open for aerating the contents when the bottle is set away in an upright position and opened more fully to permit of discharging the contents of the bottle upon tipping the same.

In the accompanying drawings: Figure 1 is a longitudinal section of a bottle equipped with my improved stopper and showing the position of the parts when tipping the bottle and pouring out its contents. Fig. 2 is a fragmentary vertical section of the neck of the bottle and the stopper locked in its closed position. Fig. 3 is a similar view showing the cover in its partly opened position. Fig. 4 is a horizontal section in line 4-4, Fig. 2, looking upward. Fig. 5 is a horizontal section in line 5-5, Fig. 3, looking upward. Fig. 6 is a horizontal section in line 6-6, Fig. 3, looking downward.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents a bottle such as now in general use for dispensing milk the same being provided in its neck with an annular rabbet *a*.

My improved stopper comprises an open-work or skeleton frame having an annular ring D, a central hub *d* and a plurality of radial arms *c* connecting the ring and hub. This frame is placed within the neck of the bottle so that its ring rests at its inner side on the outwardly facing shoulder of the rabbet *a*. The frame is held frictionally in this position by means of a packing ring or washer of rubber or other elastic material, this packing ring comprising a cylindrical body B which fits frictionally with its periphery into the bore or wall of the rabbet and an annular internal flange *b* arranged at the inner edge of the body and fitting in an annular groove *e* in the periphery of the ring D of the frame, as shown in Figs. 1, 2 and 3. The height of the body of the packing ring is such that when the frame ring rests on the bottom or shoulder of the rabbet the upper edge of the packing ring body will be above the top of the neck of the bottle.

F represents the cover of the stopper which is preferably constructed in the form of a downwardly dished disk and of a diameter larger than the packing ring body. This cover is arranged axially above the frame and packing and adapted to be moved axially toward and from the same. When fully depressed the cover engages its underside with the upper edge of the packing body and cuts off communication between the interior of the bottle and the exterior, as shown in Fig. 2, thereby sealing or closing the bottle and preventing pouring or spilling of its contents. Upon raising the cover more or less from the packing ring an annular space is produced between the packing ring and cover through which air may enter the bottle and the contents thereof may be poured out.

Various means may be employed for guiding the cover in its axial movements and holding the same in a closed or a more or less open position but the means shown in the drawings for this purpose are suitable and are constructed as follows:

G represents an upright guide and supporting rod slidable lengthwise in a central opening *g* in the hub of the frame and secured at its upper end to the cover by means of a square part *h* on the rod engaging with a correspondingly shaped opening in the center of the cover and a screw nut *i* engaging with the upper screw threaded end of the guide

rod and bearing against the upper side of the cover. At its lower end the guide rod is provided with an oblong locking head *j* which is adapted to engage with a correspondingly shaped socket or recess *J* in the lower end of the hub of the frame.

Upon depressing the cover so that it engages with the packing the head is arranged with its upper side below the hub and upon now turning the cover, rod and head, so that the latter is arranged out of register or at an angle to the socket, as shown in Figs. 2 and 4, the head will engage with the underside of the hub and hold the cover in its closed position, thereby preventing pouring or spilling of the contents of the bottle. Upon turning the cover, rod and head so that the latter is in line or register with the socket, the same is free to move upwardly into the socket and permit the cover to move away from the packing, thereby opening the bottle and permitting the contents of the same to be poured out, as shown in Fig. 1.

In order to limit the turning movement of the locking head on the underside of the hub and thus permit of conveniently locking the cover in its closed position, a stop device is provided which preferably consists of two stop pins or lugs *k* depending from the lower end of the frame hub and adapted to be engaged by the locking head when the same is turned at an angle to its socket, as shown in Fig. 4. In the absence of such stops it would require more care to turn the cover the proper extent to lock the same in its closed position.

When a bottle of milk is set away in an upright position it is often desired to leave the same slightly open so as to ventilate the interior thereof and aerate the milk and still guard against the easy entrance of flies or foreign matter. To permit of doing this conveniently, a spring is employed which is arranged between the cover and hub and which is preferably constructed in the form of a spider and comprises a central eye *l* arranged on the guide rod and resting on the upper end of the hub, and a plurality of arms *m* radiating from said eye and bent so that their outer ends are higher than their inner ends. This spring is so proportioned that when the cover is pressed downwardly against the packing ring the arms of the spring are straightened and strained, as shown in Fig. 2, but upon releasing the cover when the locking head is in line with the locking socket or recess, the resilience of the spring arms raises the cover just sufficient to produce a slight space between the packing and cover, as shown in Fig. 3, through which air can enter the bottle but flies or other insects are excluded from the bottle. This spring, however, does not interfere with the full opening of the cover which latter is pushed outwardly its full extent by the pres-

sure of the liquid escaping from the bottle on tipping the latter, as shown in Fig. 1.

I claim as my invention:

1. A bottle stopper comprising a frame adapted to be placed in the neck of a bottle and having an annular groove in its periphery, a packing having a cylindrical body adapted to engage the interior of the bottle neck and provided with an internal flange engaging with the groove of the neck, and a cover guided on the frame and movable toward and from the upper edge of the packing.

2. A bottle stopper comprising a frame adapted to be arranged in the neck of a bottle, a packing interposed between said frame and the bottle neck, a cover movable toward and from the outer side of the packing and operating to close and open the bottle and a rod guided in said frame and carrying said cover.

3. A bottle stopper comprising a frame adapted to be arranged in the neck of a bottle, a packing interposed between said frame and the bottle neck, a cover movable toward and from the packing, a rod guided in said frame connected with the cover by means of a square part on said rod engaging with a correspondingly shaped opening in the cover, and a screw nut engaging with the threaded upper end of the rod and engaging with the upper side of said cover.

4. A bottle stopper comprising a frame adapted to be arranged in a bottle neck and having a hub provided on its underside with an oblong socket, a rod having inner and outer ends and guided in said hub and provided at its inner end with an oblong locking head adapted to be moved into and out of engagement with said socket, and a cover mounted on the outer end of said rod.

5. A bottle stopper comprising a frame adapted to be arranged in a bottle neck and having a hub provided on its underside with an oblong socket, a rod having inner and outer ends and guided in said hub and provided at its inner end with an oblong locking head adapted to be moved into and out of engagement with said socket, a cover mounted on the outer end of said rod, and a stop on said frame for limiting the turning of said head below the frame.

6. A bottle stopper comprising a frame adapted to be arranged in a bottle neck and having a hub provided on its underside with an oblong socket, a rod having inner and outer ends and guided in said hub and provided at its inner end with an oblong locking head adapted to be moved into and out of engagement with said socket, a cover mounted on the outer end of said rod and a spring for holding said cover yieldingly in an elevated position.

7. A bottle stopper comprising a frame adapted to be arranged in a bottle neck and

having a hub provided on its underside with an oblong socket, a rod having inner and outer ends and guided in said hub and provided at its inner end with an oblong locking
5 head adapted to be moved into and out of engagement with said socket, a cover mounted on the outer end of said rod, and a spring for holding said cover yieldingly in an elevated position comprising an eye surrounding
10 said rod and resting on the upper side of

said frame and upwardly bent arms radiating from said eye and adapted to engage with the underside of said cover.

Witness my hand this 27th day of April, 1910.

CHARLES J. STAUFFIGER.

Witnesses:

THEO. L. POPP,
E. M. GRAHAM.