E. C. MILLER.

CLOSURE FOR BOTTLES, JARS, AND OTHER VESSELS.

APPLICATION FILED OCT. 9, 1914.

1,221,350.

Patented Apr. 3, 1917.

Fig. 1

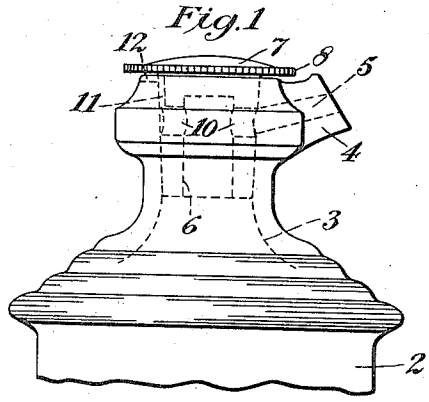


Fig. 2

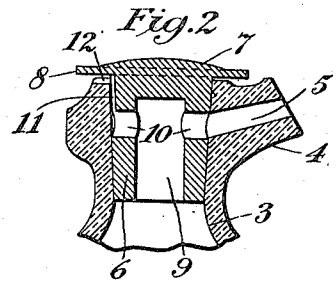


Fig. 3

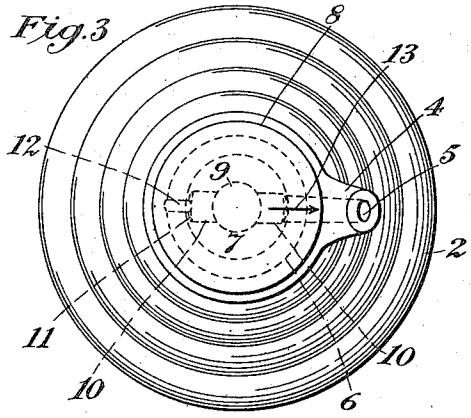


Fig. 4

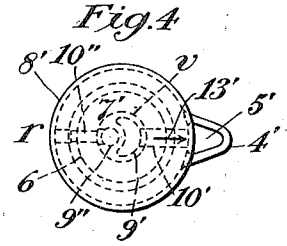


Fig. 5

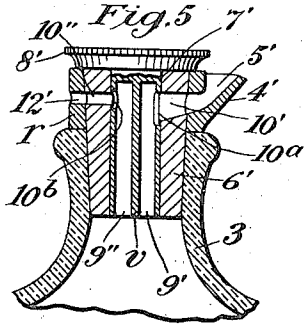
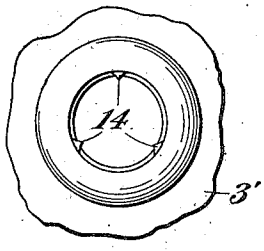


Fig. 6



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UNITED STATES PATENT OFFICE.

EMIL C. MILLER, OF NUTLEY, NEW JERSEY, ASSIGNOR TO SANITARY SPOUT COMPANY, A COPARTNERSHIP CONSISTING OF SAID MILLER AND ALBERT M. AYERS, OF WEST NUTLEY, NEW JERSEY.

CLOSURE FOR BOTTLES, JARS, AND OTHER VESSELS.

1,221,350. Specification of Letters Patent. Patented Apr. 3, 1917.

Application filed October 9, 1914. Serial No. 865,790.

To all whom it may concern:

Be it known that I, EMIL C. MILLER, a citizen of the United States, and a resident of Nutley, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Closures for Bottles, Jars, and other Vessels, of which the following is a specification.

This invention relates to a closure for bottles, jars, and other vessels, and the main object of the invention is to provide a closure, particularly adapted for sealing bottles and similar receptacles, by means of which the vessel may be securely sealed when the device is in one position so that it would be impossible to pour out liquid when the closure is in that position; but which may be turned in such a manner that a large or small quantity of the liquid contained in the vessel may be poured out when the closure is in such new position; a further object of the invention being to provide a closure of this general class of such a construction that the rate at which the contained liquid flows out when the closure is in an open position may be regulated from a stream of maximum capacity of the outlet or pouring nozzle to a drop by drop escape if desired.

Other features of the invention not hereinbefore referred to will be hereinafter described and claimed and are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the upper portion of an ink-bottle or similar vessel having my closure applied thereto;

Fig. 2 is a substantially central, vertical section of the upper portion or neck of said bottle;

Fig. 3 is a plan of the same showing the parts in the wide open position of the closure, that is, the pouring position as in the previous views;

Fig. 4 is a plan of a modified type of closure illustrating a valved closure proper associated with a separate or detachable nozzle adapted to be applied to a different style of bottle;

Fig. 5 is a substantially central, vertical section of the same applied to a plain bottle, and

Fig. 6 is a detail of a cork-engaging element which will be hereinafter described.

Similar characters designate like parts in all the figures of the drawings.

Referring first to the structure shown in Figs. 1 to 3 inclusive, 2 designates a bottle or other suitable vessel having a neck portion, such as 3, to which my improved closure is to be applied. In these views the vessel illustrated is of the neck bottle type and has an integral pouring nozzle, 4, the opening in which is designated by 5. This opening extends from the extreme outer end of the nozzle longitudinally through the center of the integral projecting nozzle 4 into the interior of the neck 3 and intersects the neck opening, as will be clear.

Any suitable type of closure may be applied to this vessel neck to seal the same, provided it is so constructed as to close the opening in the neck 3 when in one position and prevent any escape of liquid through the passage 5, and to permit the flow of the liquid through said opening 5 when turned to another position. In the construction shown in these views the closure is illustrated as a stopper, 6, having a head, 7, preferably with a roughened or knurled edge, such as 8, to facilitate turning of the closure. The closure may be made in one or more parts and may be of any material suitable for the purpose, such as metal, glass, wood, cork, etc. Here the closure is illustrated as made in one piece with a body that preferably tapers to assure a tight fit in the neck of the vessel, the bore of which is also preferably slightly tapered to correspond to the taper of the stopper portion of the closure.

The closure considered as a whole is intended to perform not only the function of an ordinary closure or stopper, that is, to seal the neck of the vessel against escape of contents therefrom, but also, without withdrawal or removal from the vessel, to serve as a means for permitting the escape of such contents, this escape being preferably regulated also by the manner in which the closure is manipulated. It will be evident from this that one portion of the closure must serve as a valve for controlling the escape of the contents of the vessel. This valve is in the construction illustrated preferably a turning valve and so combined with the other parts that when turned to one position it will open communication between the interior of the bottle and the passage 5 through the outlet nozzle 4, while in another position it will entirely cut off

communication of the interior of the bottle to said outlet passage 5. The valve illustrated particularly in Figs. 1 and 2 has a longitudinal opening or bore, 9, intersected by a transverse or diametrical bore, 10, one end of which is adapted to come into alinement with the inner end of the passage 5 for the purpose of opening communication between said passage and the interior of the bottle. This alone, however, would not assure a free flow of liquid through the nozzle 5 when desired, particularly in the case of a moderately thick or heavy liquid. For this reason it is desirable to vent the stopper or closure and this venting may be accomplished in any suitable manner. In the construction particularly illustrated in Fig. 2 the body portion 6 of the stopper is shown as having a relatively shallow air-vent, 11, which communicates when the parts are in the positions shown in Figs. 1, 2 and 3 with an opening formed by a groove, 12, in the neck of the bottle, this groove being substantially diametrically opposite the outlet 5 in the particular construction illustrated.

When it is desired to pour out part of the contents of a bottle 3 closed by a device of the type shown in Figs. 1 to 3 inclusive, the head 7 of the closure is first turned to the proper position for causing the opening 10 to register with the passage 5. In order to facilitate this I prefer to place in the proper position on the head of the closure an indicator, such as the arrow-head 13, which when centered upon the pouring nozzle 4 indicates that the closure is in the correct position for pouring out the contents of the vessel. In this position it will be seen by reference to Fig. 2 that the vent-openings 8, 11, 10 and 9 and the pouring openings are all in communication with one another and that in this position the liquid may be poured out freely. If it is desired to regulate the size of the stream flowing out, this may be done by slightly turning the stopper so as to reduce the area of the inner end of the passage 5, that is uncovered by the forward end of the opening 10. By turning the stopper properly the rate of efflux of the contents of the bottle may be regulated from a full stream down to a drop by drop flow, if desired. When it is desired to fully close the neck of the bottle the stopper is of course turned far enough to the right or to the left of the position shown in Fig. 2 to close the openings 5 and 12 entirely.

In the alternative type of structure shown in the other views, 3′ designates a plain neck of a bottle or similar vessel, that is, a neck having no integral pouring nozzle, such as the neck of the bottle of Fig. 2 has; and 4′ designates a separate pouring nozzle projecting in this case from one side of a ring, r, of any suitable material, here shown as metal, detachably applied to said bottle neck. As in the construction shown in the previous views, a stopper is employed for closing the opening in the neck of the bottle and this stopper has suitable means for opening and closing communication between the interior of the bottle and the opening 5′ in the pouring nozzle 4′. In these views, however, the closure or stopper is not made in a single piece as it is in the construction shown in Fig. 2, but it is made of a plurality of pieces one of which is in this case the stopper proper, and is designated by 6′, while the other is a valve, v, preferably integral with and depending from a head, 7′, having a roughened or knurled edge, 8′, for turning the valve. Thus, the principal differences between the structure shown in Fig. 5 and that shown in Fig. 2 are that the nozzle in Fig. 5 is a separate article carried by a separate ring attachable to the bottle-neck instead of being integral therewith, as in Fig. 2, and the closure proper comprises at least two parts instead of being made in one piece, one of the two parts being the stopper proper and the other being a valve for sealing and unsealing the pouring opening.

The stopper proper 6′, as here illustrated, is a long and preferably tapered cork, which should be held against turning movement, as for example, by projections, such as 14, in the bore of the neck, and this cork has suitable openings, such as 10′ and 10″, for communication respectively with the opening 5′ in the nozzle and with an air-vent, 12′, in the ring r. In a similar manner the valve proper depending from the part 7′ is so constructed as to have communication with the openings 10′ and 10″. In the device illustrated a long depending valve is passed through a corresponding central bore in the cork 6′ and is intended to fit in it with a fair degree of tightness, but so as to be capable of turning therein. The valve v is shown as having two longitudinal openings, 9′ and 9″, in communication at their lower ends with the interior of the bottle and communicating near their upper ends through openings, 10^a and 10^b, with the openings 10′ and 10″ in the cork or stopper 6′ when in alinement therewith. The manner in which this alternative form of device is employed is similar to that before described. Normally the stopper or cork 6′ is held in the neck of the bottle in such a manner as not to turn therein, its passages 10′ and 10″ registering respectively with the nozzle opening 5′ and with the air-vent 12′ in the ring r. When the head of the closure is in the position shown in Figs. 4 and 5, that is, with the indicator 13′ in line with the center of the pouring nozzle, the outlet opening 10^a for the escape of the liquid and the air-opening 10^b for venting the bottle, will also register

respectively with the passages 10′ and 10″ and hence will be in communication with the passages 5′ and 12′, that is to say, the parts will be in the proper relative positions for permitting the contents of the bottle to be poured out through an outlet of maximum capacity. Of course the area of the outlet may be reduced from the maximum down to the minimum, as in the manner before described, by properly turning the head 7′ to the desired angular position. When turned far enough either to the right or to the left of the position shown in Fig. 4 communication between the openings 10′—10ª and 10″—10ᵇ will be cut off and the bottle will be securely held against escape of contents.

In this type of device the ring and nozzle construction is intended to adapt the other parts for application to the neck of any ordinary bottle, as it will be evident that the ring and nozzle will be held down on the bottle neck in the desired position by the head 7′, which with the ring and nozzle will be prevented from rising by the grip of the periphery of the cork 6′ on the walls of the bore in the bottle neck.

The specific constructions shown illustrate but two of many species of bottle closure involving the general principle of sealing a pouring nozzle by a stopper closing the bore in the bottle neck and adapted to turn between two positions, in one of which pouring of the liquid is permitted and in the other of which such pouring is prevented. The two species chosen for illustration represent the two main types, in one of which the pouring nozzle is integral with the bottle and in the other of which it is a separate part adapting any ordinary bottle for use in connection with my invention.

What I claim is:

1. The combination with a bottle, of a plug-like stopper having a co-axial rotatable valve, said valve having a head portion lying over the end of said stopper, and a ring-like spout member encircling the upper portion of the stopper and held directly against the mouth of the bottle by said head portion on the valve, said stopper and spout member having registering discharge passages, and the valve being capable of controlling the discharge of liquid from the bottle through said passages.

2. The combination with a bottle, of a plug-like stopper having a co-axial rotatable valve, said valve having a head portion lying over the end of said stopper, and a ring-like spout member encircling the upper portion of the stopper and held directly against the mouth of the bottle by said head portion on the valve, said stopper and spout member having registering discharge passages, and also registering vent passages and the valve being capable of controlling the discharge of liquid from the bottle through said discharge passages and the ingress of air through said vent passages.

Signed at New York in the county of New York and State of New York this 28th day of September, A. D. 1914.

EMIL C. MILLER.

Witnesses:
C. S. CHAMPION,
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