No. 627,657. Patented June 27, 1899.

R. P. DE SENNEVOY.

APPARATUS FOR STOPPERING BOTTLES.

(Application filed Apr. 2, 1897.)

(No Model.)

Fig. 4.

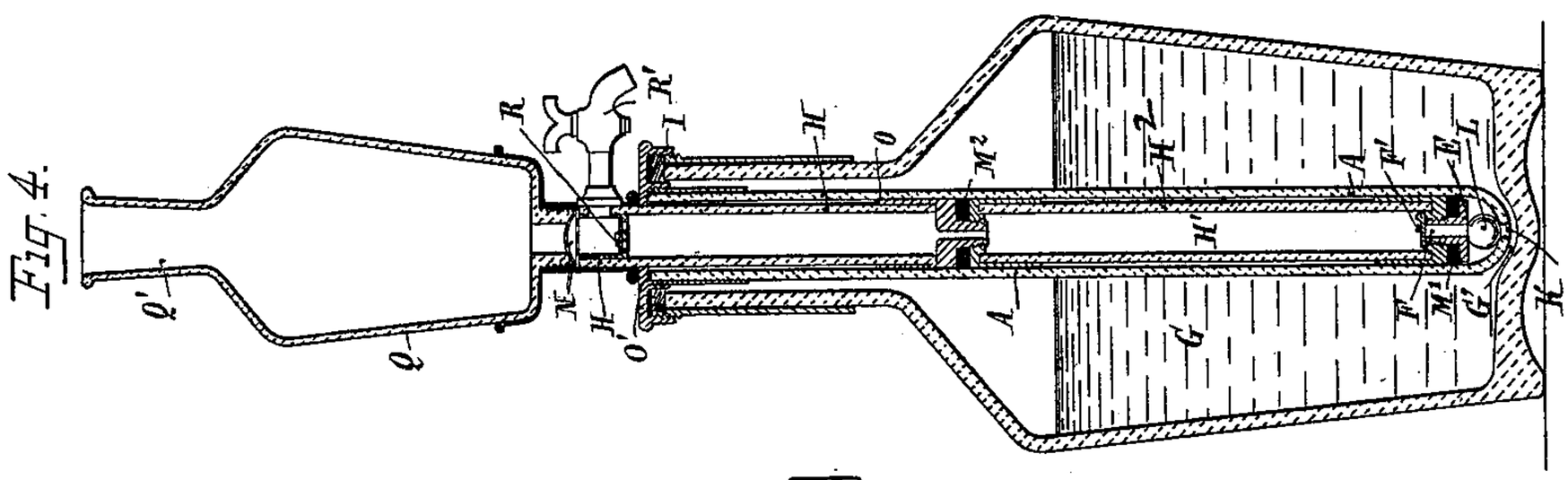


Fig. 5.

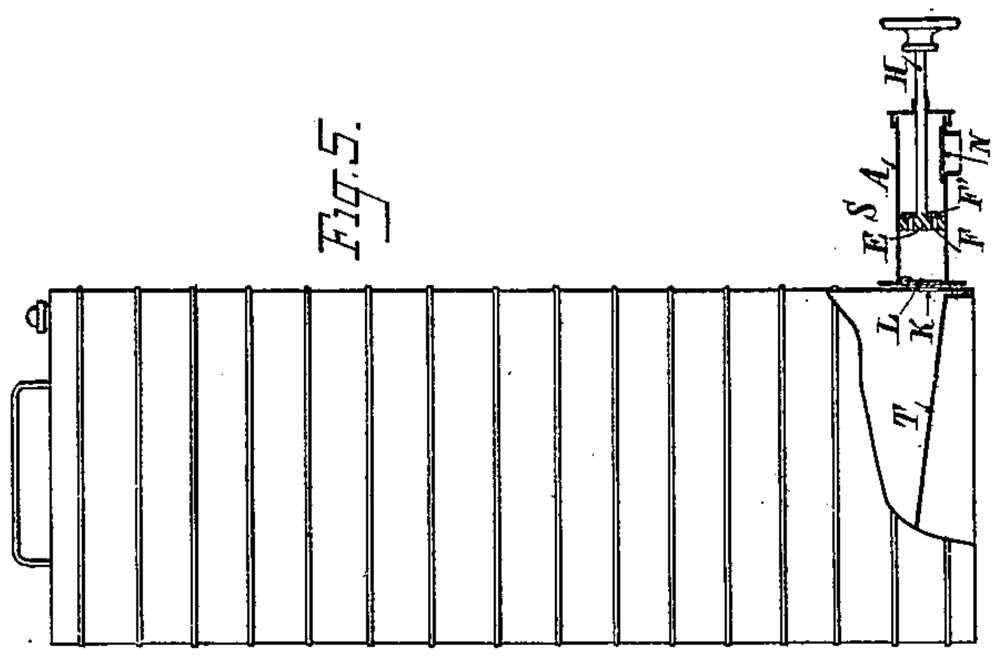


Fig. 6.

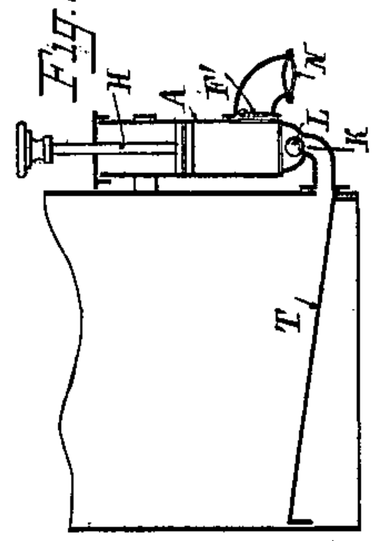


Fig. 2.

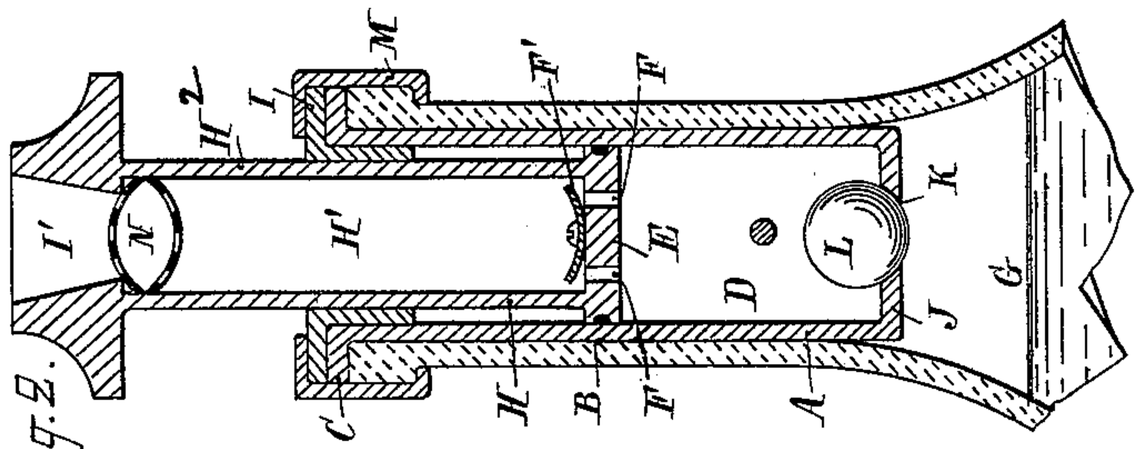


Fig. 1.

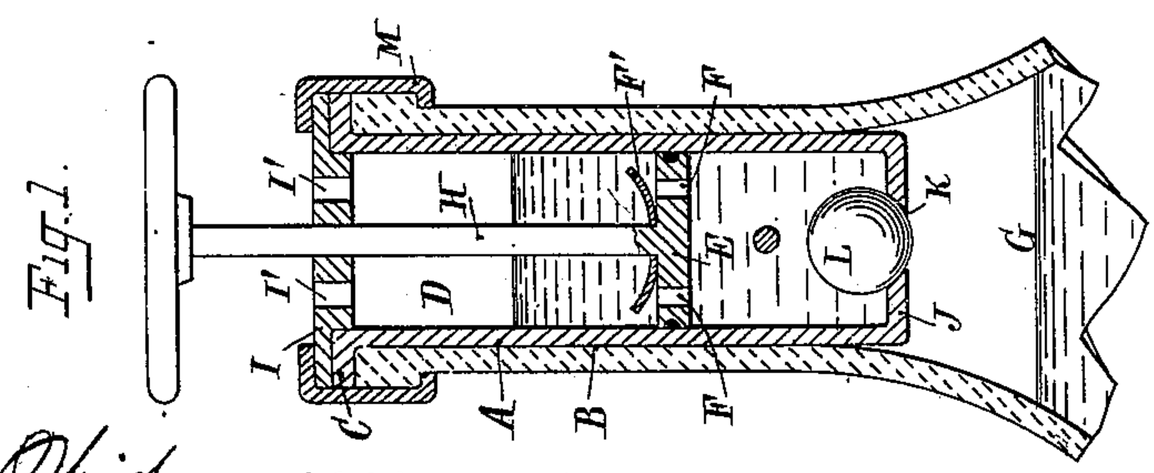
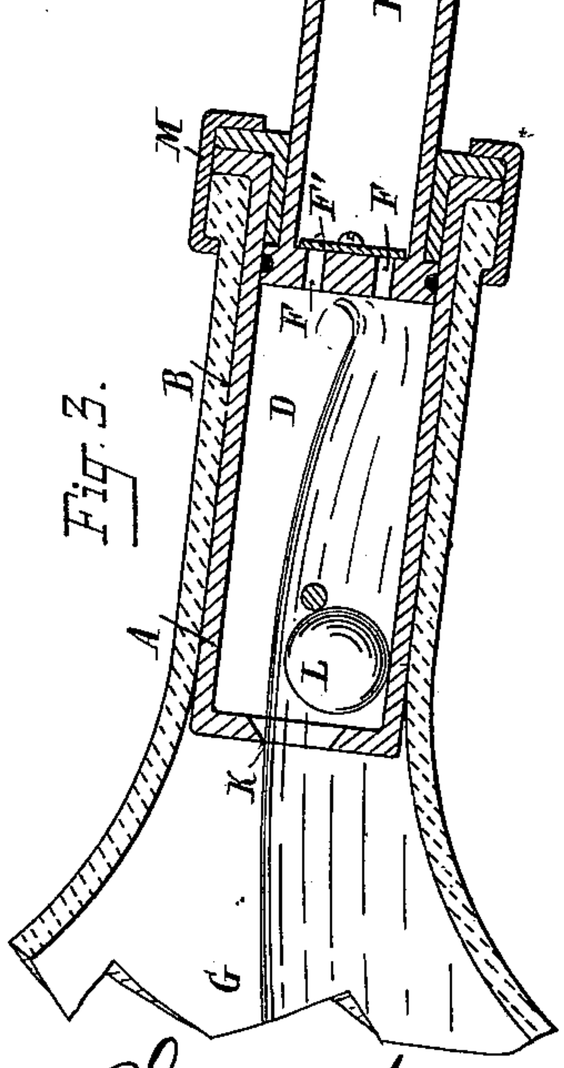


Fig. 3.



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UNITED STATES PATENT OFFICE.

ROBERT PERSONNE DE SENNEVOY, OF PARIS, FRANCE.

APPARATUS FOR STOPPERING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 627,657, dated June 27, 1899.

Application filed April 2, 1897. Serial No. 630,417. (No model.)

To all whom it may concern:

Be it known that I, ROBERT PERSONNE DE SENNEVOY, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in or Relating to Apparatus for Stoppering, Closing, and Discharging the Contents of Bottles, Vessels, and the Like, (for which I have obtained Letters Patent in France, No. 261,229, dated the 12th of November, 1896,) of which the following is a specification.

This invention relates to improvements in stoppering, closing, and discharging the contents of bottles and liquid-containers and by which vessels which have contained such liquids are prevented from being filled up again except after completely removing the stoppering device forming the subject of the present application and described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional view showing my device applied to an ordinary bottle. Fig. 2 is a similar view showing a modification; Fig. 3, a sectional view illustrating the manner of withdrawing liquid from the bottle. Fig. 4 is a sectional view showing a further modification in which the device extends to the bottom of the receptacle. Fig. 5 is a side view, partly in section, of an ordinary tank having my invention applied to the bottom thereof; and Fig. 6 is a broken sectional view showing a modification of the device shown in Fig. 5.

As will be seen from Fig. 1 of said drawings, the safety stoppering device according to the present invention, which is placed in the neck of the bottle or vessel like an ordinary cork, consists, chiefly, of a socket A, fitting the neck of the vessel and formed with an upper flange C, which rests on the upper edge of said bottle. In the interior of the socket A, which forms a chamber D, is arranged a piston E, with ports F and valves F′ closing said ports and opening only when the piston is forced inward. The ports F establish communication between the portions of the chamber D above and below the piston E. The piston-rod H is long enough to project to a sufficient extent outside the neck of the bottle, said rod passing through a disk I, which holds and guides it and which closes the upper open end of the chamber D, which disk fits into this portion and rests on the flange C of the socket A. The disk I is provided with openings I′, placing the interior of the chamber D above the piston E in communication with the atmosphere. The socket A has a bottom J provided with an opening K, by means of which the chamber D is in communication with the interior of the vessel G. This opening has a valve, a ball L, or other device which opens only inward into the chamber D. The stoppering device thus arranged in the neck of the bottle is combined with any suitable sealing or retaining device (a ring M or otherwise) arranged so as to enable the separation of the vessel from its stoppering device to be easily effected, but only by destruction or removal of the sealing material, thus rendering any fraud impossible, owing to the devices described making it impossible to fill a vessel provided with the improved device without completely separating the vessel from the latter.

In order to draw off liquid contained in the vessel G, the piston E is raised to the end of its stroke or to any desired extent, the vessel G is inclined, and the ball or valve L opening the passage K under the influence of actions hereinbefore explained the liquid passes through said passage K and fills the space formed in the chamber D under the piston E. The vessel G is then slightly or completely righted in order to cause the valve L to close the opening K. Then it is only necessary to press down the piston E, whereby the liquid under it becomes compressed and completely closes the valve L, while the valves F′ open and enable the liquid from under the piston E to pass through the ports F, so that the liquid may then be drawn off and distributed, as desired, through the openings I′ of the disk I.

It will be seen from the preceding that the device may be used for measuring liquids, as the quantities of liquid in the chamber D will exactly correspond to the different levels occupied by the piston E in the chamber. It is evident that these levels may be determined so as to exactly correspond to certain volumes of liquid under the piston E in the chamber

D by graduating the rod H and by combining it, for instance, with an index provided in the corresponding outer edge of the disk.

Fig. 2 of the accompanying drawings shows a modified construction of a device according to the present invention, the main features of which have been described with reference to Fig. 1. In the modification the rod or stem of the piston E is tubular and of a considerably larger diameter, its bottom being formed by the piston E, provided with passages F, having valves F'. The upper disk I is in this case used only to support and to guide the hollow tube or hollow stem H^2, the escape of the liquid taking place through the upper end of the hollow stem H^2, which is formed into a bottle-neck I', said passage I' being provided with a sieve or grating N, enabling the liquid to pass, but preventing any fraudulent tampering with the internal parts or valves.

Fig. 3 shows the modified device represented in Fig. 2 in the position corresponding to the first stage of the operation of using—that is to say, the piston E has been drawn outward and the bottle inclined in order to enable the valve L to open and the liquid to pass into the space of the chamber D under said piston E. In Fig. 2, as well as in Fig. 1, is shown the second stage—that is to say, the bottle righted or nearly so, the piston E in the act of being forced down, and the liquid passing from the space under it into that above it. In the modification shown in Fig. 2 the liquid passing into the space above the piston E is stored up and ready to be poured out through the orifice I' instead of occupying the space in the chamber D around the rod H, as in the arrangement shown in Fig. 1. The method of operation remains, however, the same in both the modifications.

The inclining of the bottle for the purpose of actuating the device could be avoided by providing the passage K with a tube passing into the liquid, similar to those used in siphons, and through which the liquid would be drawn simply by the upward movement of the piston E; but in this case the working would be possible only if air were again admitted, which can only be effected if some of the useful properties of this device are dispensed with, among which properties is included the control of the supply of the liquid, and this is mainly based on the total exclusion of any communication between the interior of the vessel and the exterior, even at the moment of working. Taking this into consideration, and in order to obtain the greatest advantages of this device when the partial turning of the bottle is to be avoided, the device is combined with the vessel and arranged as illustrated in the modification shown in Fig. 4. In this modification the tube or socket A is continued down to the bottom of the vessel G, which is provided with a recess or depression G', the shape of which corresponds to that of the lower end of the tube or socket A, which is provided with a hole K, closed by a valve L, said recess G' enabling the vessel G to be emptied to the last drop. The tube or socket A in this modification being so long, the piston H in its interior is also long and is provided with two packing-rings M' M^2 and a passage F and valve F', enabling the liquid to pass from the tube or socket A into the chamber H' of the hollow stem or piston H^2. The upper edge O of the ring M^2 forms a stop by means of which the upward stroke of the hollow piston H^2 may be regulated, said edge striking at the end of the stroke against the ring O', which joins the upper end of the tube or socket A with the cap T, closing in an air-tight manner the upper orifice of the vessel G, and which may be secured to it by seals, so as to guarantee the security of the contents for the purpose specified.

In order to enable sufficiently-large quantities of liquids to be drawn off and collected by means of the hereinbefore-described devices, I add to said devices, as may be seen in Fig. 4, a vessel Q, supported on the upper end of the hollow piston H^2 and communicating with the latter in such manner that said vessel Q, which may be of any desired shape and size and be graduated as desired, receives and collects the liquid successively removed from the vessel G by the combined action of the cylinder-piston H^2 and tube or socket A until the desired quantity has been obtained, which can then be distributed in any desired manner through the upper orifice Q' of the said vessel Q. A non-return valve R, similar to the lower one F' and working in exactly the same manner as the latter, may be arranged in the cylinder H^2 at a suitable height, thus, together with the safety-sieve N, insulating or cutting off from the exterior a relatively large quantity of liquid which may have remained in the cylinder H^2. This arrangement enables the liquid to be exactly measured in the vessel Q without necessitating complete emptying of the cylinder H^2. In this modification the piston compresses the liquid against which it moves to cause it to be delivered into the outer vessel, the chamber of the piston being in this way filled. Complete emptying of the vessel may be effected even without the introduction of air, care being taken that the valve L is placed as near the bottom of the vessel as possible and that the piston acts by compression when it does not draw any more, owing to the equal pressure in consequence of the vacuum produced in the vessel. The liquid is thus discharged without decreasing—on the contrary, increasing—the vacuum if an air-space has been left, owing to incomplete filling of the vessel. Such discharge is also effected without having to uncork the vessel, which is of importance in many cases.

Sometimes it is desirable to avoid inclining the vessel even to pour out the extracted liq-

uid collected and measured in the upper vessel Q. This is effected simply by adding at the part of the cylinder H^2 projecting outside the vessel G a cock R′, communicating with the portion of said cylinder H^2 comprised between the valve R and the grating N. It is clear that by means of this cock R′ all the liquid drawn out and collected over the valve R may be drawn off without moving the vessel G.

Fig. 5 shows another of the many uses for which the present apparatus may be applied. It represents the device applied to a tank of petroleum-oil, &c. On such case I consider it preferable to apply my device as shown at S—that is to say, at the bottom T of the tank, which bottom may be sloping, as shown, in order to enable the tank to be completely emptied.

It is clear that without departing from the scope of the invention the valve F′, carried by the piston E, as shown in Fig. 5, could be dispensed with and replaced by a valve F′, working in a similar way, arranged at any suitable point in the cylinder A—for instance, as shown in Fig. 6, in which case the piston E does not allow the liquid, on which it always acts by compression, to pass through it.

It will be easily understood that in the two last modifications, Figs. 5 and 6, the control of the apparatus is guaranteed by the fact of the liquid being discharged without admission of air at a level where the piston meets the liquid and forces it out by compression.

It is also evident that devices according to the present invention may be applied for the purpose specified to any vessel whatsoever which can receive these devices and that it is sufficient to slightly vary the general arrangement according to the vessels, their contents, and the manner in which these contents are distributed, retaining the main characteristic features.

Having now particularly described and astained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

The combination with a bottle or similar receptacle, of a tube or socket within the neck of the receptacle and having a flanged upper end seated upon the upper end of the bottle-neck, said socket having an opening in its bottom, a disk seated upon the flanged end of the socket and provided with an aperture, a ball-valve within the socket and adapted to normally close the opening in the bottom of the socket and to open toward the upper end of the socket to uncover said opening to admit liquid from within the body of the bottle to within the socket, a piston slidingly arranged within the socket above the ball-valve and provided with an aperture, a stem connected with the piston, said stem being in the form of a hollow tube extending upwardly through the disk, a valve carried by the piston on its upper side and adapted to close the opening in the piston when the latter is moved outwardly and to uncover said opening in the piston only when the piston is moved inwardly against a body of liquid within the socket beneath said piston whereby to permit such liquid to pass to the upper side of the piston, and a seal upon the exterior of the bottle-neck and securing the disk and socket to the bottle-neck and to each other.

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

ROBERT PERSONNE DE SENNEVOY.

Witnesses:

LOUIS FULLIGER,

EDWARD P. MCLEAN.