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BOTTLE FILLING APPARATUS

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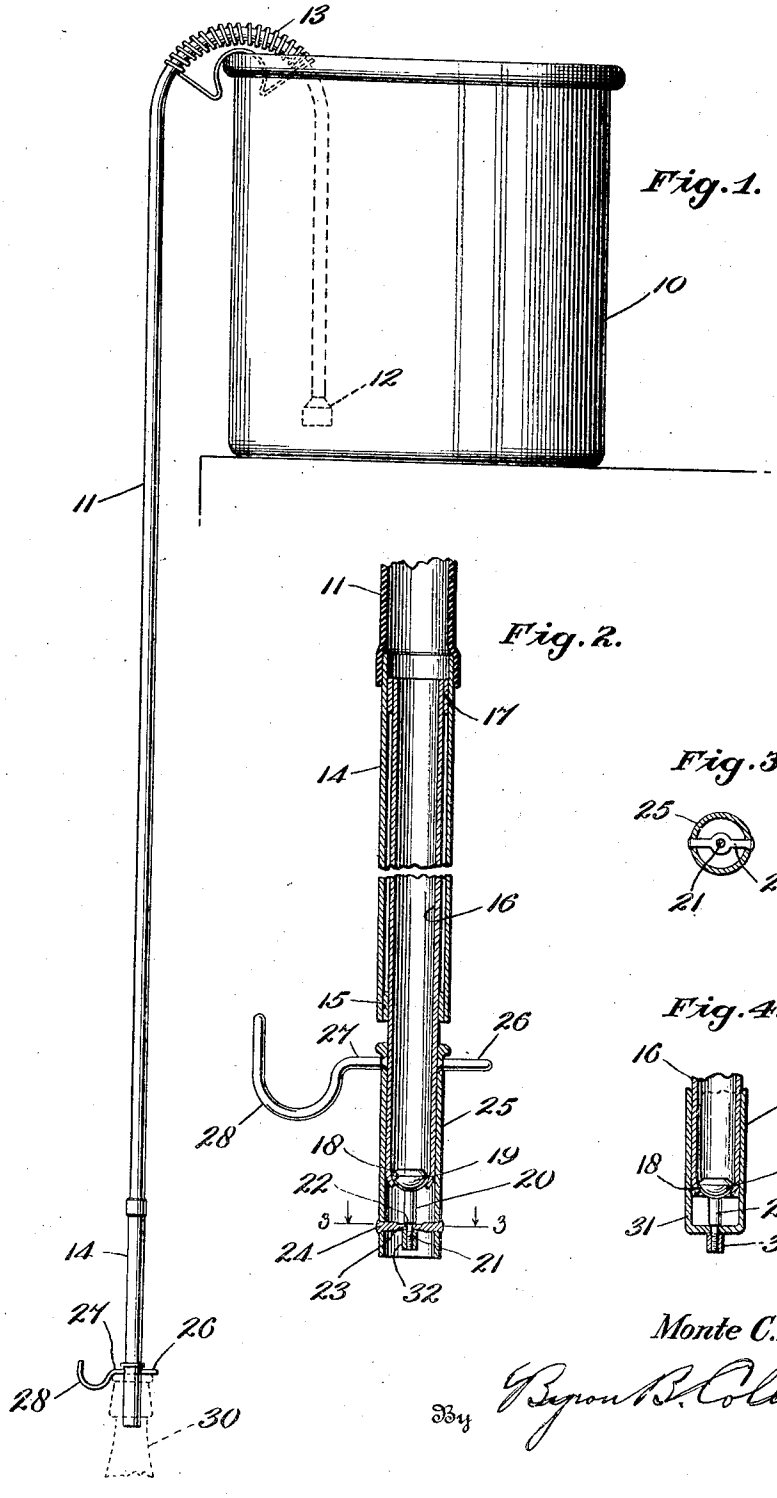


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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BOTTLE-FILLING APPARATUS.

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This invention relates to bottle filling apparatus and has for one of its objects to provide a device of this character which will be simple in construction, comparatively inexpensive to manufacture and more efficient in use than those which have been heretofore proposed.

A further object of the invention is to provide a comparatively simple and inexpensive device which is particularly adapted for home use in transferring birch beer, root beer, sarsaparilla, or other similar drinks, ordinarily prepared in the home, from the vessels or containers in which they are initially prepared, into suitable bottles for storage until they are consumed.

With the above and other objects in view which will appear as the description proceeds, the invention consists in the novel details of construction and combinations and arrangements of parts more fully hereinafter disclosed, and particularly pointed out in the appended claims.

Referring to the accompanying drawings, forming a part of this specification, in which like reference characters designate like parts in all the views;

Fig. 1 is an elevational view of a bottle filling device constructed in accordance with the present invention, illustrating the same in use for transferring a liquid from a container to a bottle;

Fig. 2 is an enlarged central vertical sectional view of the lower portion of the device;

Fig. 3 is a horizontal cross sectional view taken approximately upon the plane indicated by the line 3—3 of Fig. 2, looking down; and,

Fig. 4 is a fragmentary sectional view of a slightly modified form of the invention.

Referring more particularly to the said drawing, the numeral 10 indicates a vessel or container in which the drink or liquid to be bottled has been prepared. The device constituting the present invention comprises a rubber or other similar flexible tube 11, one end of which is provided with a suitable straining device 12, which is adapted to be introduced into the liquid within the vessel 10 and the said tube 11 may also be provided intermediate its ends with a suitable anti-kinking device 13 to prevent the undesired restriction of the tube where it passes over the edge of the vessel.

The other end of the tube 11 is slipped over a metallic or other similar rigid tube 14, the lower end of which is provided interiorly with a thimble or bushing 15 which may be brazed, welded or otherwise rigidly secured within the said tube 14.

Slidably mounted within the said sleeve or bushing 15 and snugly fitting the same, is a tube 16, the upper end of which has rigidly secured to it, as by brazing or welding, a otherwise suitably formed to constitute a partially spherical valve seat 18 which is sleeve or bushing 17. The said sleeves 15 and 17 being rigidly secured to the tubes 14 and 16, respectively, constitute stops for limiting the movements of the tube 16, relative to the tube 14 as will be readily understood.

The lower end of the tube 16 is spun or adapted to receive a valve member 19, having a valve stem 20. The said stem is provided with a reduced end 21 thereby providing a shoulder 22 and the said reduced end passes through an aperture 23 formed in a cross bar or valve supporting member 24 which latter extends diametrically across and is rigidly carried by a tube or sleeve 25 which is freely slidably mounted upon the lower end of the tube 16 substantially as shown. The upper portion of the tube or sleeve 25 is provided with the diametrically opposed pins or projections 26 and 27, the latter of which is preferably bent to form a curved hook portion 28 as will be clear from Figs. 1 and 2.

The manner of using the device will be readily understood by those skilled in the art from the foregoing description but it may be briefly summarized as follows:

With the parts in the positions shown in Fig. 1, for instance, assuming the container 10 to be filled with liquid, if the tube or sleeve 25 is grasped in one hand while the tube 14 is held in the other hand, and a reciprocating motion is imparted to the said tube or sleeve 25 upon the downward movement thereof, such motion will be transmitted through the cross bar 24 to the valve stem 20 and the valve 19, and thence to the inner tube 16, which will also be caused to move downwardly. Such downward mo-

tion, due to the fact that the valve 19, seated, will create a partial vacuum within the flexible tubing 11, which will, of course, through the well known action of the air pressure on the surface of the liquid in the container 10, cause a portion of said liquid to be sucked into the tube 11.

Upon the return or up stroke of the sleeve 25, motion will be transmitted as before through the cross bar 24 to the valve stem 20 and valve 19 which will have the effect of first lifting the valve from its seat 18, thereby permitting free escape of the air trapped within the tube 11, past the said valve. Continued upward movement of the sleeve 25 will bring the cross bar 24 into engagement with the extreme lower end of the tube 16, after which further upward movement of the sleeve 25 will be transmitted to the said tube 16, thereby returning it to the position illustrated in Fig. 2.

In other words, the parts shown in Fig. 2 constitute a suction pump for exhausting the air from the tube 11, whereby the liquid within the vessel 10 may be sucked into the said tube to an extent sufficient to create a siphonic action in the said tube. Of course, after the siphon starts, it will be unnecessary to further manipulate the members 25 and 16 and so long as the column of liquid within the outside portion of the tube 11 remains unbroken, the siphon will continue to transfer liquid from the vessel 10.

So long as the sleeve 25 remains in the position shown in Fig. 2, however, the valve 19 will remain on its seat 18 and no liquid will flow past the same. However, if the said sleeve 25 is introduced into the mouth of a bottle, such as 30, (see Fig. 1), until the pins 26 and 27 engage the upper edge of the bottle mouth, the said sleeve 25 will be moved relative to the tube 16 to unseat the valve 19 and thereby permit the siphonic action within the tube 11 to transfer the liquid from the container 10 into the said bottle 30.

When the bottle is filled, by merely withdrawing the device from the mouth thereof, the sleeve 25 will return under the influence of gravity to the position shown in Fig. 2, thereby seating the valve and preventing the flow of liquid when the said sleeve or nozzle 25 is not within the bottle.

The hook portion 28 of the pin 27 may be effectively employed to support the device in an inoperative position without destroying the siphonic action, by merely hooking the same over the edge of the container 10 while the bottles are being changed, during which time, of course, the valve 19 will be kept seated as will be readily understood.

The form of the device shown in Fig. 4 is substantially the same as that shown in Fig. 2, except that in this case the valve stem 20 of the valve 19 is mounted in a substantially U-shaped extension 31 which depends from the lower edge of the sleeve or nozzle 25. Any suitable securing means, as for example the nut 32 may be employed for retaining the reduced portion 21 of the valve stem within the aperture of the cross member.

It will thus be seen that the present invention provides a simple and effective device for transferring liquids from one container to another which is composed of relatively few parts which is not likely to get out of order and in which the possibility of leakage of the liquid is reduced to a minimum.

It is obvious that those skilled in the art may vary the details of construction as well as the precise arrangements of parts without departing from the spirit of the invention, and, therefore, it is not wished to be limited to the above disclosure except as may be required by the claims.

What is claimed is:

1. A device of the class described comprising a siphon member; means for starting siphonic action therein, including a barrel, a hollow plunger slidably mounted therein, and a valve closing one end of said plunger; an actuating sleeve freely slidably surrounding said plunger; and connections between said sleeve and valve, said connections and said valve alternately engaging said plunger to transmit motion from said actuating sleeve thereto.

2. A device of the class described comprising a siphon tube; means for starting siphonic action therein, including a barrel and a tubular plunger slidably mounted therein, said plunger having its lower end turned inwardly to form a valve seat; an actuating sleeve freely slidably surrounding said plunger; a valve having a stem and a head, coacting with said seat; and connections between said sleeve and said valve stem, said connections and said valve head alternately engaging said inturned end of said plunger to transmit the motions of said sleeve thereto.

3. A device of the class described comprising a flexible tube constituting a siphon member; a pump, comprising a barrel and a hollow plunger slidably mounted therein, connected to one end of said siphon member, said plunger being provided with a valve seat; a valve adapted to coact with said seat; an actuating member freely slidably mounted on said plunger; and connections between said actuating member and valve whereby the latter may be seated and unseated by movements of the former, and such movements may also be transmitted to said plunger when the limit of movement of said valve in either direction is reached.

4. In a device of the class described, a siphon member; means connected to said member for exhausting the air therefrom; means for actuating said exhausting means;

a valve carried by said actuating means for controlling the flow of fluid from said member, said actuating means being operable by gravity, in the operative position of said siphon member to close said valve and cut off said flow; and a hook carried by said actuating member for engaging a receiving receptacle to automatically open said valve when said member is introduced into said receptacle, said hook being also adapted, when the exhausting means is inverted, to engage an extraneous member to maintain said valve closed and the siphon unbroken.

In testimony whereof I affix my signature.

MONTE C. MERKER.