Sept. 25, 1923. 1,468,887

H. D. STERRICK

FILLING ATTACHMENT

Filed Oct. 10, 1921

Fig. 1.

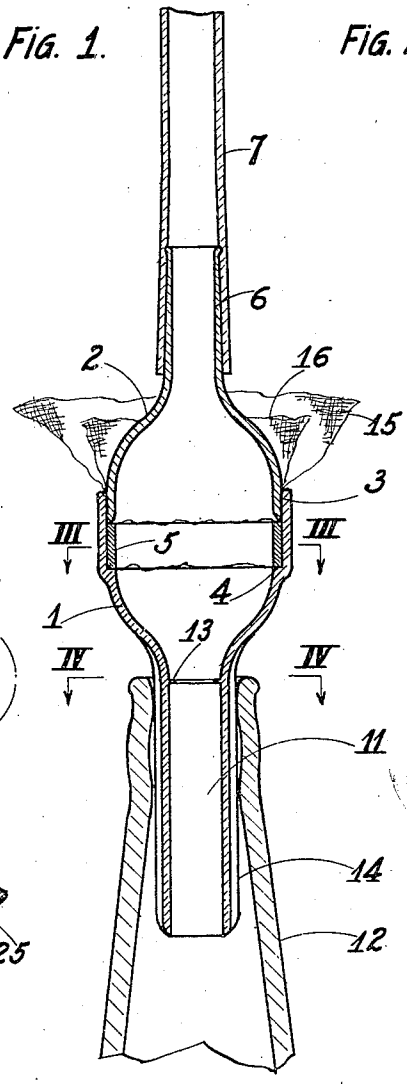


Fig. 2.

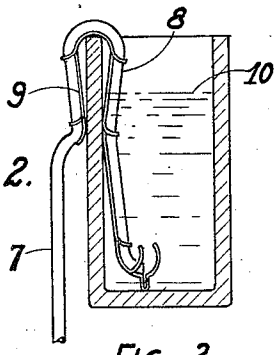


Fig. 3.

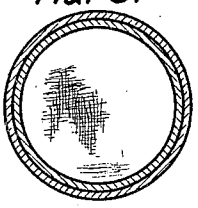


Fig. 7.

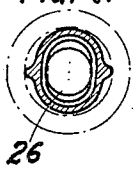


Fig. 8.

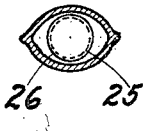


Fig. 4.

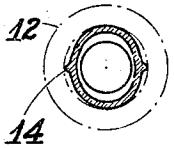


Fig. 6.

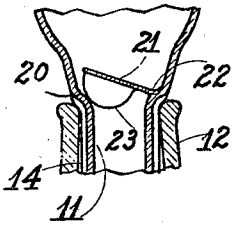
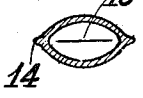


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

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FILLING ATTACHMENT.

Application filed October 10, 1921. Serial No. 506,661.

To all whom it may concern:

Be it known that I, HARRISON D. STERRICK, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Filling Attachments, of which the following is a specification.

This invention relates to a filling attachment and particularly to a bottle filling device and has reference to that type in which liquid is siphoned from a storage reservoir to the bottles or other receptacles being filled.

The objects of the invention are to provide such a device which is simple in construction, inexpensive to manufacture, efficient and automatic in operation, which can be easily assembled and disassembled for cleaning and which is in the form of a filler attachment adapted to be removably attached to a siphon tube.

Special objects of the invention are to provide a device which is self-priming, which is substantially fool-proof in the hands of inexperienced operators, one which automatically starts the flow of liquid by inserting its discharge end in the mouth of the bottle or receptacle to be filled, and which automatically cuts off the flow upon removal of the same therefrom, and one in which little or no liquid will be lost in transferring from one receptacle to another, and which can be transferred with a minimum of effort.

These and other objects of the invention will more readily appear when taken in connection with the following description and the appended claims.

In the accompanying drawings Fig. 1 is a vertical transverse sectional view of the filler attachment showing it in its filling position; Fig. 2 a vertical transverse sectional view through the storage reservoir for holding the liquid to be dispensed; Fig. 3 a transverse sectional view taken on the line III—III of Fig. 1; Fig. 4 a similar view taken on the line IV—IV of Fig. 1, illustrating the walls of the nozzle flexed to a position permitting discharge therethrough; Fig. 5 a corresponding view showing the position which the nozzel normally assumes to prevent discharge therethrough; Fig. 6 a vertical sectional view of a modified form of the invention; Fig. 7 a transverse sectional view of a further modification with the parts in position to permit discharge through the nozzle; and Fig. 8 a view similar to Fig. 7 with the parts in normally closed position.

The filler embodying the invention in its preferred form as illustrated in Figs. 1 to 5 of the drawings comprises a hollow body formed of two sections 1 and 2 which telescope or overlap each other at 3, and which together form a substantially spherical hollow body. Mounted upon a shoulder 4 on the internal surface of the section 1 is an annular spacing ring 5 against which the inner edge of section 2 abuts.

Extending from the section 2, and preferably formed integrally therewith, is a nipple 6 serving to removably attach the filler to the lower end of a siphon tube 7, which in the drawings is shown as an ordinary rubber tube having its upper end 8 supported by a suitable frame 9 and depending below the surface of the liquid contained in the storage reservoir 10.

The section 1 has an integral depending nozzle or discharge portion 11 which is adapted to be inserted in the mouth of the bottle or other receptacle 12 to be filled.

Disposed at the inner end of the discharge nozzle is an elastic diaphragm 13, preferably formed integrally with and of the same material as the nozzle. The sections 1 and 2 including the nipple 6 and nozzle 11, and also the annulus 5 are made of elastic or resilient material such as rubber, the same being of such proportions as to form a comparatively rigid structure capable of performing their respective functions.

The nozzle 11 is non-circular in cross section, being preferably elongated or elliptical as clearly shown in Fig. 5, and is provided at its opposite sides in the plane of its greatest cross sectional dimensions with ribs 14 extending its full length. The slit 13′ of diaphragm 13 is also disposed along the greatest cross sectional dimension of the nozzle and in alignment with the said ribs.

A piece of meshed fabric 15 spans the interior of the filler body, and is held in position by encircling the periphery of the annulus 5, being frictionally bound between the annulus and the inner surface of the wall section 1. A similar meshed fabric

16 also spans the interior of the filler, being held between the sections 1 and 2 at their overlapping portion 3, and between the inner edge of section 2 and the annulus.

The device operates as follows: The liquid to be dispensed is placed in the reservoir 10 and the siphon tube 7 together with the filler attachment is initially filled by causing enough liquid to flow into the long arm of the siphon tube to fill all portions above the diaphragm 13. This filling may be effected by forcibly collapsing and releasing the body of the filler several times until the suction produced thereby draws sufficient liquid from the reservoir to completely fill the parts. The normal position of the nozzle wall and diaphragm are illustrated in Fig. 5 in which the sides of the slit 13′ are in contact, consequently preventing discharge therethrough.

When the nozzle 11 is inserted into the mouth of the bottle or receptacle 12, contact of the sides of the nozzle wall at the points at which the ribs 14 are located, will cause said walls to be flexed to a shape corresponding to that illustrated in Fig. 4. In assuming a shape more nearly circular the diaphragm 13 is stretched causing separation of the sides of the slit 13′ to form an opening through the diaphragm and permit discharge of liquid therethrough.

As soon as the bottle or receptacle is filled to the desired extent the filler 11 is merely withdrawn and its normal cross sectional form shown in Fig. 5 is automatically resumed which prevents further discharge. The nozzle may then be transferred to the next receptacle without danger of loss of liquid, and insertion therein will again enlarge the opening through slit 13′ as previously described. In case the mouth of the receptacle is of such size that the walls of the nozzle do not contact therewith upon insertion of the same, the wall may be flexed to permit discharge by merely grasping the nozzle in the region of the diaphragm between the fingers and pressing the sides together until it assumes the form shown in Fig. 4. Upon release of the nozzle the parts resume their normal position to prevent further discharge.

During the flow of liquid from the reservoir 10 to the receptacle being filled, the same passes through the meshed fabrics 15 and 16, said fabrics acting as strainers in the usual manner, for the purpose of removing foreign substances therefrom.

Whenever it is desired to clean the several parts of the filler, sections 1 and 2 may be easily separated by pulling them apart, and then removing the strainer cloths together with the annulus 5 by grasping the projecting edges thereof.

The ribs 14 not only act as reinforcing portions to resist wear, but serve to maintain a slight space around the wall of the nozzle to permit the escape of air from the vessel being filled.

In actual use the several parts comprising the filler are made of rubber or similar elastic material of such character that they normally maintain a fixed shape, and maintain the slit 13′ closed, yet sufficiently elastic to permit the nozzle wall being flexed to the form shown in Fig. 4 by mere insertion thereof into the mouth of the receptacle being filled or by pressing between the fingers as previously described, and also permitting ready assembly and disassembly of the sections, together with the annulus and strainer cloths.

It is to be understood, however, that all portions, except the nozzle wall in the region of the diaphragm 13 and the diaphragm itself, need not be formed of elastic material, although preferably made thereof.

Fig. 6 illustrates a modified form of the invention in which the upper end of the nozzle is so shaped as to provide a shoulder 20 forming a valve seat which cooperates with a disk 21. The disk is attached at one side to the shoulder 20 as indicated at 22 and is provided with a rib 23 depending from its lower surface and centrally located at one side of the disk. The disk and rib 23 are preferably formed of rubber or similar material attached at 22 as by cementing.

The operation of this form is obvious. Normally disk 21 seats upon the shoulder 20 to prevent flow through the nozzle. Flexing of the wall in the region of the shoulder causes rib 23 to ride thereon in the manner of a cam which lifts the disk 21 and permits discharge of the liquid above it.

In the form shown in Figs. 7 and 8, the diaphragm 13 is provided with a circular opening 25, seated in which is a ball valve 26. Normally the parts assume the position shown in Fig. 8. Flexing of the nozzle wall causes the opening 25 to become elongated as illustrated in Fig. 7 whereupon liquid can escape therethrough.

The device described is simple in construction, cheap to manufacture, and efficient in operation for the purpose set forth.

I claim:

1. A filling attachment comprising a hollow body, a flexible depending nozzle which is non-circular in cross section, a transverse elastic diaphragm therein provided with an elongated slit, the sides of which are normally in contact, and which are adapted to be distended to move the same apart and permit discharge therethrough when the cross sectional shape of the nozzle is forced to assume a more truly circular form.

2. A filling attachment comprising a hollow body, a depending nozzle having a flexible wall which is elongated in cross section, an elastic diaphragm having a slit, the sides

of which normally contact to close the passage through the nozzle, whereby a flexing of the wall of the nozzle to a substantially circular form will distend the diaphragm and displace the sides of the slit to permit discharge therethrough.

3. A filling attachment comprising a hollow body, a depending nozzle having a flexible wall which is elongated in cross section and provided with integral ribs at its opposite sides, an elastic diaphragm having a slit, the sides of which normally contact to close the passage through the nozzle, whereby contact of the ribs with the interior of the mouth of a receptacle to be filled will flex the walls of the nozzle to distend the diaphragm and spread the sides of the slit to permit discharge therethrough.

4. A filling attachment comprising a hollow body, a discharge nozzle projecting therefrom and having spaced ribs upon its exterior, an elastic diaphragm in said nozzle provided with a normally closed elongated slit, said ribs and slit lying in substantially the same longitudinal plane of the body, the wall of the nozzle being flexible whereby contact of the ribs with the interior of the mouth of a receptacle to be filled will flex the wall of the nozzle to distend the diaphragm and spread the sides of the slit to permit discharge therethrough.

5. A filling attachment comprising a hollow body, a flexible depending nozzle whose normal cross sectional shape is that of an ellipse having a major and a minor axis unequal in length, a transverse elastic diaphragm within the nozzle provided with an elongated slit the sides of which are normally in contact and which are adapted to be distended to move the same apart and permit discharge therethrough when the cross sectional shape of the nozzle is changed from its normal form so as to cause the lengths of said axes to approach each other.

6. A filling attachment comprising a hollow body, a flexible depending nozzle whose normal cross sectional shape is that of an elipse having a major and a minor axis unequal in length, a transverse elastic diaphragm within the nozzle provided with a slit the sides of which normally contact to close the passage through the nozzle, whereby a flexing of the wall of the nozzle to reduce the length of said major axis and increase the length of said minor axis will distend the diaphragm and separate the sides of the slit to permit discharge therethrough.

7. A filling attachment comprising a hollow body, a flexible depending nozzle whose normal cross sectional shape is that of an elipse having major and minor axes of unequal length, said nozzle having spaced ribs upon the exterior surface of the nozzle wall, a transverse elastic diaphragm within the nozzle provided with an elongated slit the side of which normally contact to close the passage through the nozzle, whereby contact of the ribs with the interior of the mouth of the receptacle to be filled will flex the wall of the nozzle and cause the lengths of said axis to approach each other spreading the slit to permit discharge therethrough.

8. A filling attachement comprising a hollow body of flexible material having a discharge nozzle adapted to be inserted in the open mouth of a receptacle and provided with a passage therethrough, a normally closed valve in said passage, the external contour of the nozzle being non-circular in cross section, whereby contact of the nozzle with the said mouth will compress the sides of the nozzle inwardly in a direction corresponding to its greatest transverse dimension to open the valve and permit discharge through the nozzle.

In testimony whereof, I sign my name.

HARRISON D. STERRICK.

Witness:

EDWIN O. JOHNS.