Jan. 3, 1933. B. DE JESUS-ANGELES 1,893,401

TUBE CLOSING DEVICE

Filed Feb. 29, 1932

Fig. 1.

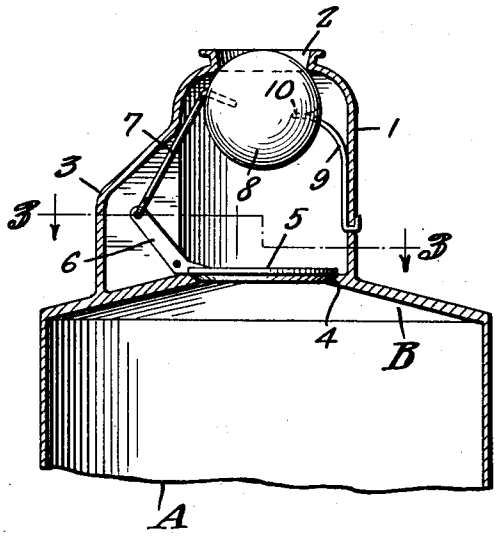


Fig. 2.

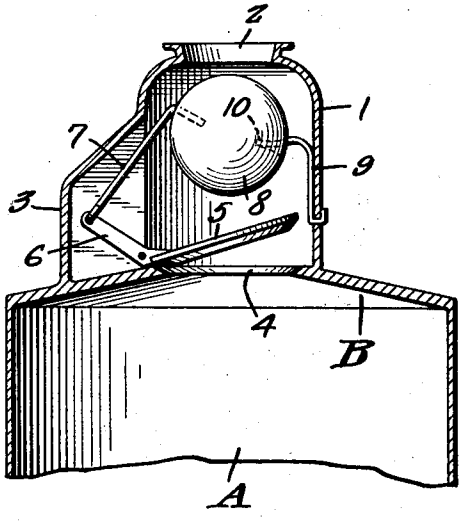
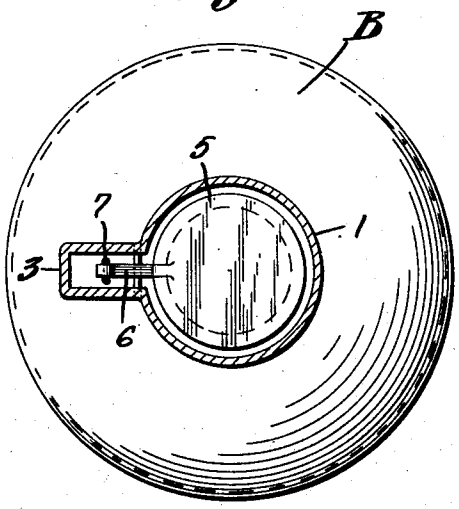


Fig. 3.



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WITNESS:

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UNITED STATES PATENT OFFICE

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TUBE CLOSING DEVICE

Application filed February 29, 1932. Serial No. 595,917.

This invention relates to collapsible tubes and its general object is to provide a closing device in the form of a valve for a collapsible tube that is permanently secured to the tube and is automatic in its action, as it is disposed to open position when pressure is applied to the tube and to closed position when the pressure is relieved.

A further object of the invention is to provide a closing device of the character set forth, that is simple in construction, inexpensive to manufacture and extremely efficient in operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a fragmentary perspective view illustrating the closing device which forms the subject matter of the present invention with the parts in closed position.

Figure 2 is a similar view with the parts in open position.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1, looking in the direction of the arrows.

Referring to the drawing in detail, the letter A indicates a collapsible tube which includes an annular shoulder B arranged at the top thereof, and formed with the shoulder and rising therefrom is a housing 1 which is of substantially cylindrical formation but has its upper end restricted in curved formation and terminates in a flanged outlet 2. The latter may be of elongated formation or circular, and if elongated, it will be obvious that when the contents of the tube are passed therethrough, the same will be dispensed in the form of a ribbon, but if circular the contents will be dispensed accordingly.

Formed with the housing is a chamber 3, and the annular shoulder has formed therewith a valve seat 4 to accommodate a disk valve 5 which has formed therewith and rising therefrom at an inclination, an arm 6 the latter being pivoted in the chamber 3 and has pivotally secured to its outer end one of the ends of a link 7, while the opposite end of the link 7 is bent at right angles upon itself, with the right angle bent portion fixed within a ball valve 8 which may be formed from any material such as lead, other metal or rubber, and the ball valve is adapted to close the outlet 2 as clearly shown in Figure 1.

In order to urge the ball valve on its seat for closing the outlet 2, and to normally retain the same accordingly, I provide a leaf spring 9 that has one of its ends mounted within a substantially V-shape opening 10 arranged in the ball valve, while its opposite end is passed through the housing 1 and bent in clamping engagement therewith as clearly shown in Figures 1 and 2.

From the above description and disclosure of the drawing, it will be obvious that I have provided a closing device for a collapsible tube that is automatic in its action and when pressure is applied to the body of the tube, the force of the contents will open the disk valve 4 as shown in Figure 2, which in turn will open the ball valve 8 through the instrumentality of the arm 6 and link 7. When the pressure is relieved, the leaf spring 9 will act upon the ball valve to close the same and of course the disk valve will likewise be closed due to the connection between the ball valve and disk valve, with the result the tube is normally closed, and the contents thereof can be kept in a clean and sanitary condition at all times.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. A closing device for a collapsible tube comprising a housing of substantially cylindrical formation and being provided with a restricted outlet, said tube having an open-

ing formed therein and being in the form of a valve seat, a disk valve arranged in said housing for closing the opening, a ball valve for closing the outlet and being arranged in said housing, an arm formed with said disk valve, a link pivotally secured to the arm and fixed to the ball valve, spring means for the ball valve to normally hold the valves in closed position, and said valves being operated to open position when pressure is applied to the contents of the tube and to closed position when the pressure is relieved.

2. A closing device for a collapsible tube, comprising a housing formed with said tube and rising from an annular shoulder thereof, said shoulder being provided with a centrally disposed opening in the form of a valve seat, a disk valve arranged in said housing and cooperating with the seat to close the opening, said housing being provided with a restricted outlet, a ball valve arranged in said housing for closing the outlet, an arm pivoted intermediate its ends and secured to the disk valve, a link having one end pivotally secured to the arm and being fixed to the ball valve, a leaf spring having connection with the ball valve and housing for urging the valves to closed position, and said valves being operated to open position when pressure is applied to the contents of said tube and to closed position when the pressure is relieved.

In testimony whereof I affix my signature.

BENJAMIN DE JESÚS-ANGELES.