No. 676,012. Patented June 11, 1901.

B. E. D. STAFFORD.

FLEXIBLE CONTAINER.

(No Model.)

Fig. 3.

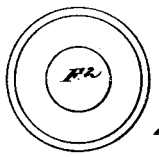


Fig. 1.

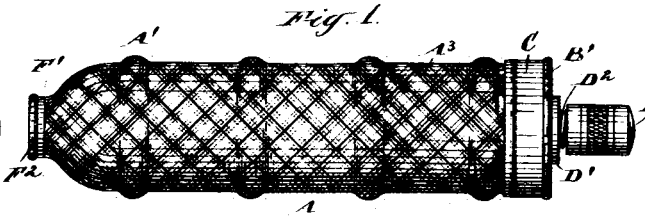


Fig. 2.

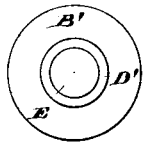


Fig. 4.

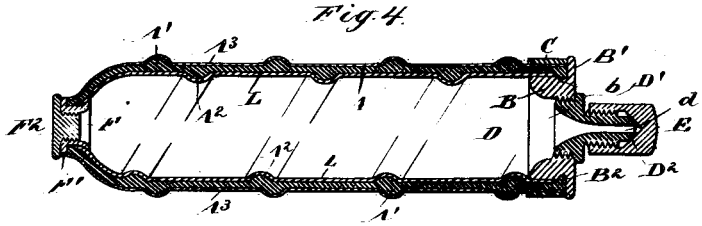


Fig. 5.

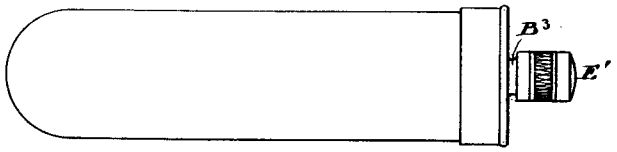
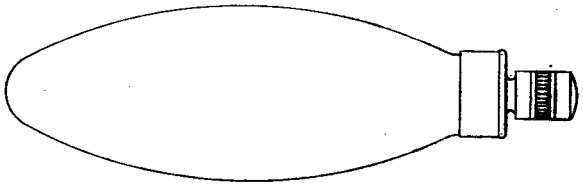


Fig. 6.

Fig. 7.



Witnesses:
Thos Garry
Robt Cowan

Inventor:
Benjamin C. D. Stafford
by his Attorney
Charles K Search

UNITED STATES PATENT OFFICE.

BENJAMIN E. D. STAFFORD, OF ST. LOUIS, MISSOURI.

FLEXIBLE CONTAINER.

SPECIFICATION forming part of Letters Patent No. 676,012, dated June 11, 1901.

Application filed August 9, 1900. Serial No. 26,343. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN E. D. STAFFORD, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Flexible Containers, of which the following is a specification.

The invention relates to receptacles for liquid or semiliquid materials adapted to deliver the contents in small quantities as required by pressure applied to the exterior of the receptacle. Collapsible tubes of metal have been long known and used for this purpose, but are objectionable by reason of the difficulty experienced in expelling the remaining portion of the contents when the tube is nearly exhausted and also on account of the unsightliness of the partly-emptied tube.

The object of my invention is to provide a container which shall yield to slight pressure, allow the entire contents to be forced out, and also present a neat and attractive appearance during all stages of use.

The invention consists of a tubular pouch or bag of soft vulcanized rubber or analogous material, with a plug having a delivery-nozzle controlled by a screw-cap or other closure and means for making a tight joint between the plug and mouth of the pouch.

In the most complete form of the invention a flexible lining-tube is introduced and provisions are made for easily refilling the container and for strengthening and ornamenting it.

The accompanying drawings form a part of this specification and show the manner in which I have carried out the invention.

Figure 1 is a side elevation of the container in its complete form. Fig. 2 is an elevation of the delivery end, and Fig. 3 is an elevation of the filling end. Fig. 4 is a corresponding longitudinal section. Fig. 5 is a side elevation showing a simpler construction, and Fig. 6 is a corresponding longitudinal section. Fig. 7 is a side view showing another modification.

Similar letters of reference indicate like parts in all the figures.

Referring to Figs. 1 to 4, inclusive, A is a pouch of rubber composition molded to the form shown and vulcanized to produce the degree of flexibility required. It receives a similarly-formed thin lining-tube L, preferably of a purer quality, serving to protect the contents of the container from contact with the pouch A and secured within the latter by cementing or otherwise. The delivery end of the double tube thus formed receives a cylindrical plug B, of gutta-percha or hard rubber, having a flange B′, against which the edges of the tube abut, and is secured within the mouth of the tube by rubber cement applied along the joint. An annular groove *b* receives an annular lip B^2 on the tube, held in engagement by a ring C, of hard rubber, or preferably metal, forced upon the plug, encircling the mouth of the tube, and compressing its margins between the ring and plug, as shown.

The outer portion of the cylindrical plug is screw-threaded interiorly and receives a similarly screw-threaded metal top D, having a flange D′, matching tightly against the face of the plug and knurled to allow its removal. A nozzle D^2 projects from the center of the top and is screw-threaded to receive an ornamental cap E, matching thereto and serving to close the axial orifice *d* in the nozzle.

The container is intended more particularly to serve as a convenient receptacle for salve, cold-cream, tooth-paste, &c., and allow the contents to be forced through the nozzle D^2 in the desired quantities by pressure upon the tube, the flexibility of the latter allowing the last remaining portion to be expelled.

In the form shown in the above figures the container may be refilled by unscrewing the metal top D and introducing the new supply through the large orifice in the plug; but I prefer to provide an independent filling-orifice at the opposite end. F is a ring having a flange F′, matching against the rear end of the tube and screw-threaded interiorly to receive a screw-plug F^2, by which the orifice is closed. The lining-tube L shown in these figures is intended to be of pure gum, which will not affect the contents, thus allowing the pouch A to be of a cheaper grade of material better adapted to withstand the usage to which the container is subjected. The exterior of the pouch is preferably strengthened by annular beads or corrugations A′ and on

the interior by a similar bead A^2, arranged spirally, as shown, the lining-tube being flexible enough to follow the contour of the inner surface. The outer surface may be ornamented by a fabric covering A^3, cemented or vulcanized thereon.

Figs. 5 and 6 show a form in which the filling-orifice at the rear is omitted and a simpler construction of delivery-nozzle and closure is employed. A screw-threaded nozzle B^3 is formed in one with the plug and closed by a cap E', as before. This form should be filled with the material and closed by forcing the plug into the open mouth of the tube and then applying the inclosing ring. The contents may be expelled by forcing the closed end of the pouch axially inward, thus folding it within itself and retaining the cylindrical shape until the material is nearly or quite exhausted.

Further modifications may be made in the forms and proportions and in the materials employed for the several parts.

Fig. 7 shows an oval form adapted to contain a comparatively greater quantity of material.

The metal portions may be ornamented and finished as expense will warrant and taste may dictate.

I claim—

1. The collapsible container described comprising a flexible pouch of soft vulcanized rubber having an internal lip at its mouth, a rigid plug received in said mouth and having an annular groove receiving said lip, and a close-fitting ring encircling said mouth and plug and holding said lip in engagement with said groove, and means for permitting the contents of the pouch to be discharged through said plug, all combined and arranged to serve substantially as herein specified.

2. The collapsible container described comprising a flexible pouch, an internal lip at the mouth thereof, a flexible lining-tube within said pouch, a rigid plug received in the open end of said tube and mouth of said pouch and having an annular groove receiving said lip, a close-fitting ring encircling said pouch, tube and plug and holding said lip in engagement with said groove, and means for permitting the contents of the tube to be discharged through said plug, all combined and arranged to serve substantially as herein specified.

3. The flexible pouch A and lip B^2 thereon at its mouth, in combination with the cylindrical plug B received in such mouth and having the annular groove *b* receiving said lip, the ring C inclosing said pouch at said mouth and compressing said pouch upon said plug and thereby securing the engagement of said lip and groove, and a delivery-nozzle and cap for said plug, all substantially as herein specified.

4. The flexible pouch A and lip B^2 thereon, lining-tube L therein, cylindrical plug B received in the open end of said pouch and lining-tube, the annular groove *b* on said plug receiving said lip, the top D removably secured to said plug, nozzle D^2 on said top, cap E closing said nozzle, and the ring C surrounding said mouth and compressing said pouch and lining-tube upon said plug and thus securing the engagement of said lip and groove, thereby holding the pouch and tube to said plug, all combined and arranged to serve substantially as herein specified.

5. The flexible pouch A having the beads A', A^2 and covering A^3, the lip B^2 on said pouch at its mouth, the cylindrical plug B received in the latter and having the annular groove *b* receiving said lip, the ring C inclosing said mouth and compressing said pouch upon said plug, and a delivery-nozzle and cap for said plug, all combined substantially as herein specified.

6. The flexible pouch A having the beads A', A^2 and covering A^3, the lip B^2 on said pouch at its mouth, the cylindrical plug B received in the latter and having the annular groove *b* receiving said lip, the ring C inclosing said mouth and compressing said pouch upon said plug, the filling-ring F and screw-plug F^2 therefor, and the top D, nozzle D^2 and cap E, all combined substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

BENJAMIN E. D. STAFFORD.

Witnesses:

FRED. B. PHILLIPS,

WILLIAM M. SIMPSON.