No. 717,229. Patented Dec. 30, 1902.

W. F. LOTT.

CLOSURE FOR INFLATABLE DEVICES.

(Application filed Sept. 24, 1902.)

(No Model.)

Fig.1

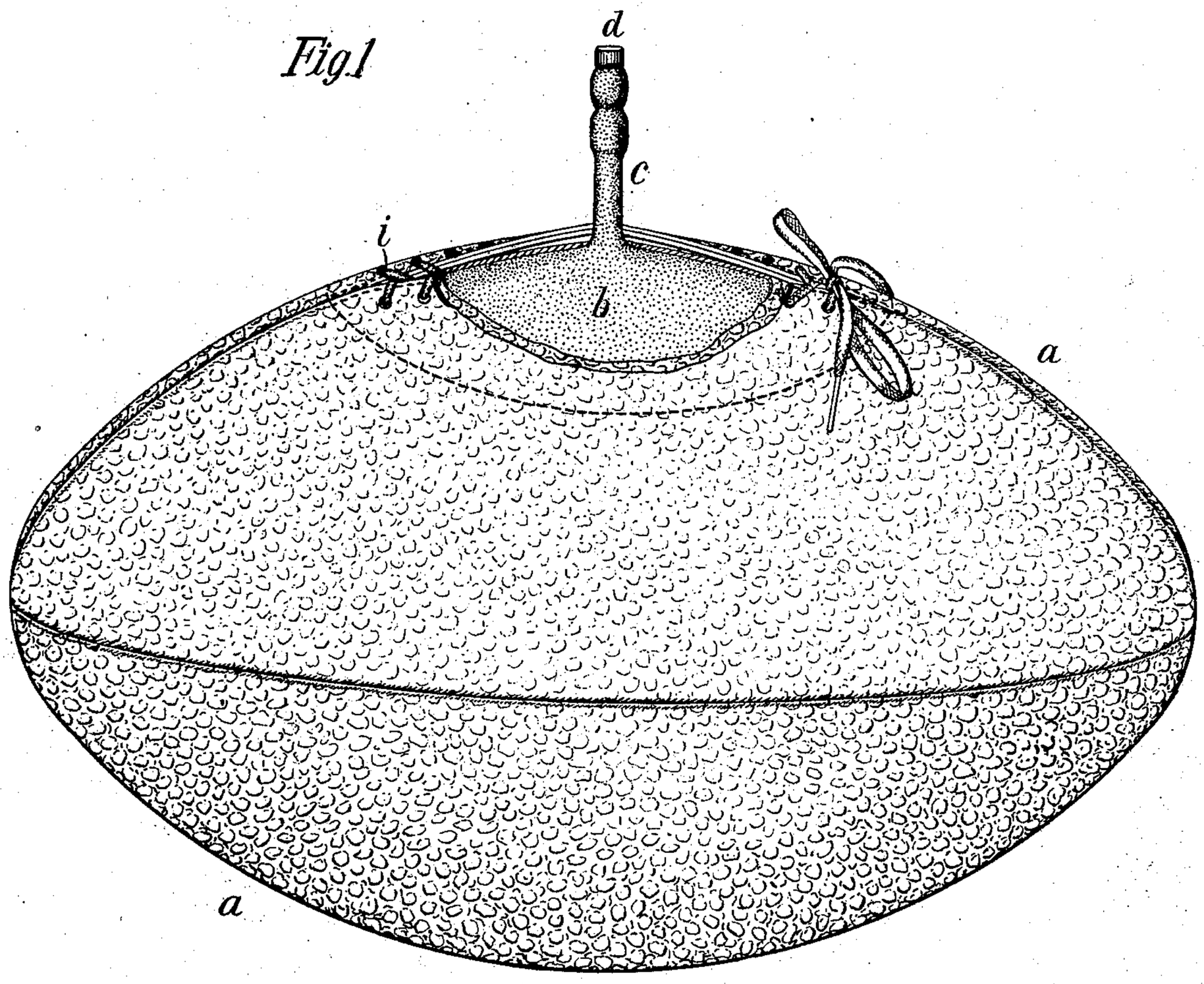
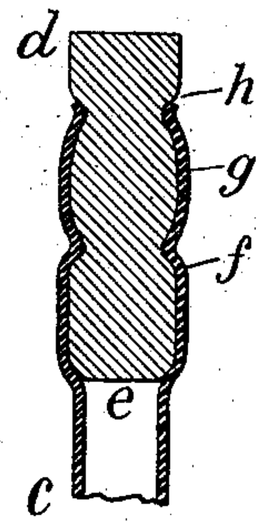


Fig.2



Witnesses:
C. D. Morrill
Raphael Netter

William F. Lott
Inventor
by Henry B. Williams
Atty

UNITED STATES PATENT OFFICE.

WILLIAM F. LOTT, OF NEWARK, NEW JERSEY.

CLOSURE FOR INFLATABLE DEVICES.

SPECIFICATION forming part of Letters Patent No. 717,229, dated December 30, 1902.

Application filed September 24, 1902. Serial No. 124,611. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. LOTT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Closures for Inflatable Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to closures for inflatable bladders and similar devices, and especially for foot-ball and striking-bag bladders, and has for its object to provide improved means for effectually closing the inflating-tubes of such devices. The inflating-tubes of such devices are of flexible and elastic material, so that after inflation of the bladder they may be pushed under the outer cover and will not cut the bladder under kicks and blows and rough usage, to which these devices are necessarily subjected, and will not cause a protuberance or projection or present hard surfaces at any part of the foot-ball or striking-bag. The closure of such devices has heretofore been effected by bending and tying the flexible and elastic tube; but such method of closure has been troublesome and has not afforded a satisfactory sealing of the compressed air within the foot-ball or striking-bag. According to my invention I provide a plug adapted to be inserted within the plug-receiving mouth at the outer free end of the flexible and elastic inflating-tube, and such plug is of somewhat larger diameter than the inflating-tube, so as to stretch the same, and is provided with portions of varying diameter, so that the tube will be drawn tightly over the edges of such portions and will be tightly held in the tube and cannot be forced out by any of the kicks and blows and rough usage and will effectually seal the tube against the escape of air under all the rough conditions of use. I have also found that with a soft-rubber inflating-tube the use of a hard-rubber closure-plug, such as above described, insures a very tight holding of the plug by reason of the cohesiveness of the two rubber surfaces.

I will now describe the closure device embodying my invention illustrated in the accompanying drawings, forming part hereof, and will thereafter point out my invention in claims.

Figure 1 is a perspective view of a foot-ball, showing the inflating-tube in protruding position with the closure-plug therein. Fig. 2 is an enlarged longitudinal section of the inflating-tube and closure-plug.

The foot-ball shown in the drawings is of ordinary construction, having a leather outer cover *a* and an inner inflatable bladder *b*. The inflating-tube *c* is of sufficient length for convenient manipulation and is flexible and elastic, being usually made of soft rubber. The closure-plug *d* is shown as of circular cross-section and is of larger diameter than the internal diameter of the inflating-tube, so that when inserted within the tube it will stretch the same tightly, thereby developing considerable pressure from the resiliency of the elastic tube. The inner end *e* of the closure-plug is rounded to facilitate the insertion of the plug within the inflating-tube, such insertion necessarily stretching the tube. Intermediate of the ends of the plug and near the inner end thereof a shoulder *f* is formed, this shoulder being slightly rounded, so as not to cut the rubber tube, and beyond this shoulder the closure-plug is of reduced diameter and is provided with a swelling or bulb-shaped portion *g*. Beyond this portion of reduced diameter another rounded shoulder *h* is formed.

To insert the plug, it is advisable to roll back the end portion of the inflatable tube *c*, in the meantime holding the tube compressed and twisted to prevent escape of compressed air in substantial quantities, and after the plug has been inserted as far as convenient the rolled-over end of the tube may then be rolled out over the plug, and thereafter the inflating-tube may be worked upwardly or outwardly over the plug until the plug is very nearly covered by the inflating-tube. The inflating-tube will be very tightly drawn at the shoulder *f* and will also be tightly stretched at the larger part of the bulb-shaped portion *g*, and the tendency of compressed air to push the plug out of the tube will be strongly resisted by the resilient action of the

tube, and the plug will not be forced out nor will it work out of place and will constitute an effective seal for the compressed air within the bladder *b*. The plug is preferably shorter than the inflating-tube, and its length is such that when it is in closing position a sufficient length of unplugged flexible tube is left between the inner end of the flexible tube and the bladder to permit the tube to be freely bent over against the bladder. If the end of the plug terminated at the bladder, the bending over of the tube would stretch the tube and the repeated bending of the tube would cause a break at the juncture between the tube and the bladder. After the closure-plug has been inserted within the inflating-tube and the inflating-tube worked over it the entire tube, with the closure-plug therein, may be pushed under the outer cover and the outer cover may be tightly laced by the usual lacing *i*. When the inflating-tube, with the closure-plug therein, is thus housed beneath the cover, it will not cut the material of the bladder, nor will it cause a protuberance or projection or a hard surface therein, as the closure-plug is substantially covered by a soft-rubber envelop, and this, in connection with the leather cover at the outer side thereof and the soft bladder on the inside thereof, will cause it to be effectually cushioned.

It is obvious that various modifications may be made in the shape of the closure-plug within the spirit and scope of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with an inflatable device and a soft-rubber inflating-tube projecting exteriorly therefrom, of a removable hard-rubber imperforate closure-plug of larger diameter than the internal diameter of the inflating-tube and having portions of varying diameter.

2. The combination with an inflatable device and a soft-rubber inflating-tube projecting exteriorly therefrom, of a removable hard-rubber imperforate closure-plug of larger diameter than the internal diameter of the inflating-tube and having an inner end of reduced diameter and a portion of reduced diameter intermediate of its ends forming a shoulder and bulb-shaped part, substantially as set forth.

3. The combination with an inflatable device and an elastic inflating-tube projecting exteriorly therefrom, of a removable closure-plug inserted in the tube and of such length that there is a freely-flexible unplugged length of tube between the plug and the inflatable device, the plug being of larger diameter than the internal diameter of the tube.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM F. LOTT.

Witnesses:
HENRY D. WILLIAMS,
HERBERT H. GIBBS.