Feb. 19, 1929. 1,702,981

M. B. REACH

INFLATABLE AIR CONTAINER FOR FOOTBALLS, ETC

Filed April 5, 1928 2 Sheets-Sheet 1

Fig. 1.

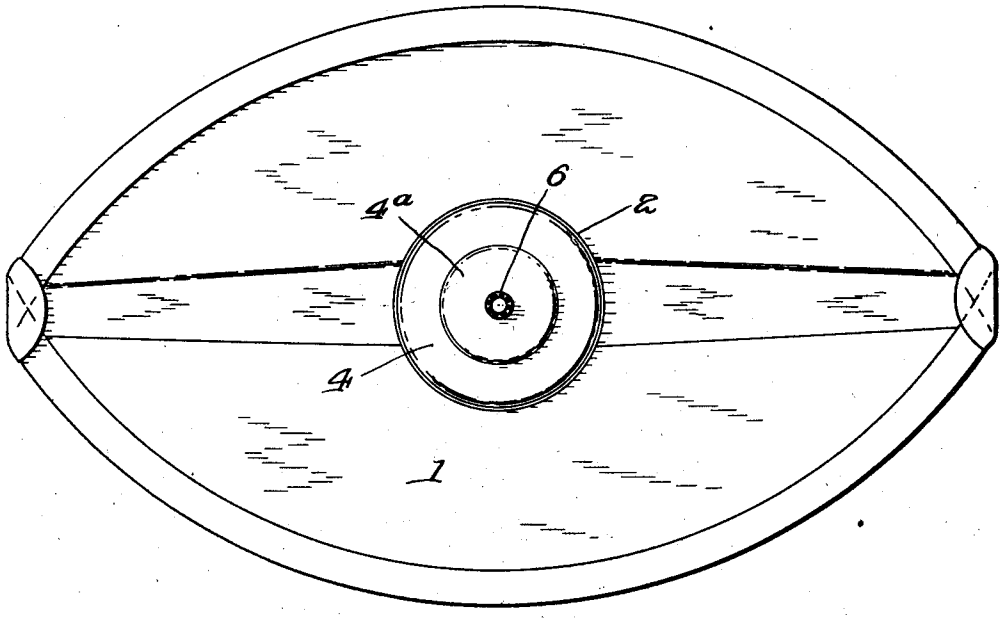



Fig. 2.

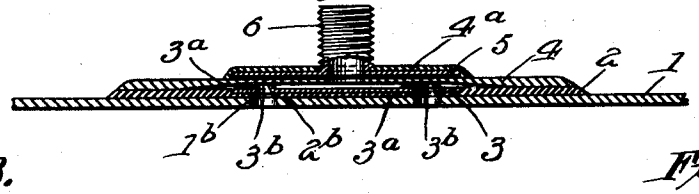



Fig. 3.

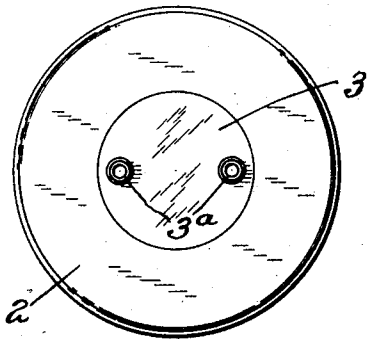



Fig. 5.

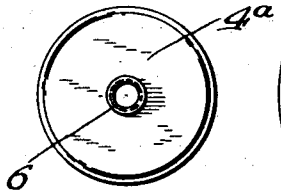



Fig. 4.

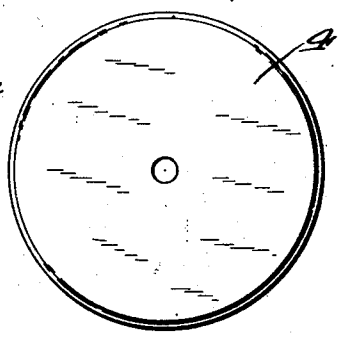
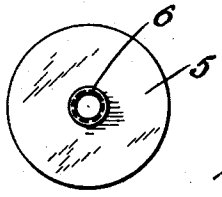



Fig. 6.




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INFLATABLE AIR CONTAINER FOR FOOTBALLS, ETC

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*Fig. 7.*

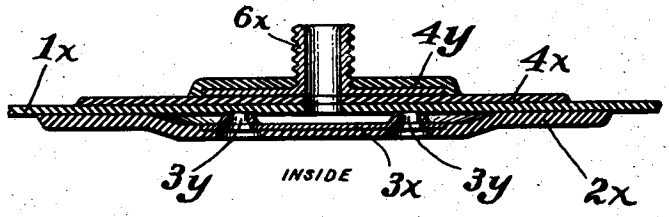
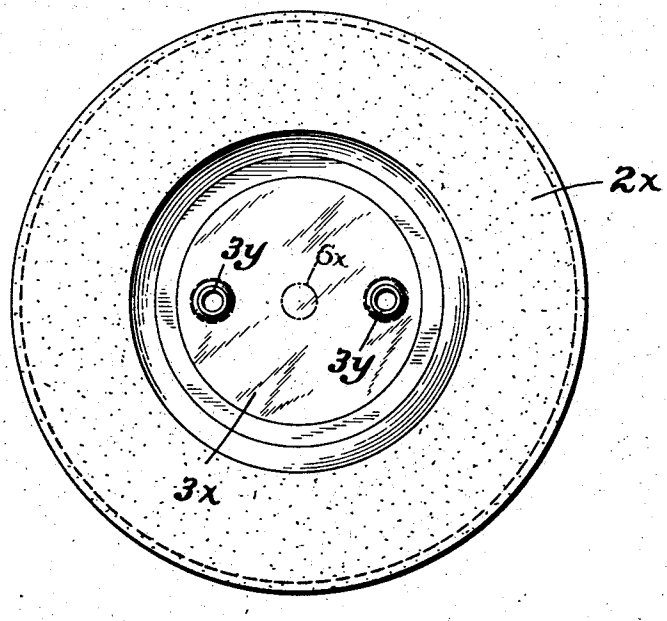



*Fig. 8.*




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# UNITED STATES PATENT OFFICE.

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## INFLATABLE AIR CONTAINER FOR FOOTBALLS, ETC.

Application filed April 5, 1928. Serial No. 267,654.

My said invention relates more particularly to improvements in the valve constructions of air inflatable bodies such as the bladders of foot balls, punching bags and other articles in which an inflatable rubber bladder or air container is confined and expanded within an outer casing.

The invention aims to provide a simple form of valve construction which will effect a permanent air tight seal or in other words be proof against leakage; which may be economically manufactured and incorporated in the bag or bladder; which will enable the ready connection of the inflating pump; and which will provide the minimum amount of projection from the surface of the bag.

With these and other objects in view the invention includes the novel features of construction and arrangement of parts hereinafter described, the invention being defined by the claims appended hereto.

What I at present consider the preferred embodiment of the invention is illustrated in the accompanying drawing in which:

Fig. 1 is a plan view of a foot ball bladder embodying my improved valve.

Fig. 2 is a fragmentary section on an enlarged scale.

Figs. 3 to 6 are detail views.

Fig. 7 is a view similar to Fig. 2 showing a modification.

Fig. 8 is a plan view of the inner disk member of Fig. 7.

Referring by reference characters to this drawing the numeral 1 designates the bladder which may be of the ordinary or any desired type composed of expansible or elastic rubber.

To the face of this at the desired point is secured a rubber disk member 2 constituting a reinforcement which has embedded in the upper face thereof a thin metal plate 3, provided with upstanding bosses or projections $3^a$. The metal plate is apertured in line with the bosses as indicated at $3^b$ and the rubber disk 2 and bladder 1 have holes alining with the apertures $3^b$ as indicated at $2^b$ and $1^b$ respectively whereby ports are provided passing through the metal plate 3, disk 2 and bladder wall 1. The plate 3 may be vulcanized in the upper surface of disk 2 with its upper surface (barring the projecting bosses) flush therewith, and the disk 2 may likewise be vulcanized to the bladder wall 1.

Another rubber disk $4^a$ has embedded therein a metal plate or disk 5 which has an upstanding tubular nipple 6 integrally connected therewith which is threaded for engagement with the inflating pump or pump tube by the customary coupling means, and which disk $4^a$ is superposed on and secured to a rubber disk 4. This nipple 6 has its bore communicating by a passage through the plate 5 and underlying the rubber disk 4 with the space between the disks 4 and 2, which space is closed by reason of the fact that the margin of disk 4 is vulcanized or similarly permanently secured to the marginal portion of disk 2.

It will be noticed that the ports or passages through the parts 1, 2 and 3 are out of line with the passage through the inflating nipple 6. When the pump has been connected to the nipple 6 and air forced into the same, the pressure causes the central unsecured portion of disk 4 to separate from the underlying portion of disk 2 and hence the portions which normally rest upon the upper ends of the nipples (which are preferably beveled as shown) are lifted away from the same and air is free to flow from the nipple into the interior of the bag. When the action of the pump is discontinued or it is disconnected from the nipple the internal pressure of the air bag immediately forces the nipples $3^a$ outward against the imperforate portions of disk or layer 4, which, being of soft rubber, effects an air-tight seal.

While I have shown a single air supply opening and a pair of non-alined inner openings I do not limit myself to this arrangement.

While I have referred to parts being vulcanized together it will be obvious that this may be accomplished, where found more convenient, by the use of a rubber cement.

In the modification shown in Fig. 7 the sealing or valve member is placed on the inside of the bag or bladder wall which in this instance is designated $1^x$.

The pump nipple $6^x$ is secured to the outside face of the bladder by the rubber disks $4^x$ and $4^y$, while the plate $3^x$ is carried by the rubber disk member $2^x$ which has its margin secured to the inside face of the bag or bladder.

In this form the portion or disk $2^x$ in effect constitutes a bladder wall portion while the nipple carrying part overlying the same is the full equivalent of the elements 4 and $4^a$. Where the parts are united by vulcanization

the respective rubber layers are of course homogeneously united.

Having thus described my invention what I claim is:

1. An expansible rubber air container for inflatable bodies of the character described having embedded in a wall portion thereof a disk of relatively hard material having an inlet opening surrounded by an upstanding flange, a flexible wall portion adjacent said opening and sealed to said wall portion around said opening, said adjacent wall portion having an air admission opening displaced with reference to said inlet opening.

2. An expansible rubber air container for inflatable bodies of the character described having embedded in a wall portion thereof a disk of relatively hard material having an inlet opening surrounded by an upstanding flange, a flexible rubber wall member adjacent said opening and sealed to said wall portion around said opening, said wall member having embedded therein a metal plate having a nipple for air pump attachment and providing an air admission passage displaced relative to said air inlet.

3. An expansible rubber air container for inflatable bodies of the character described having in the wall thereof an air inlet opening, a rubber member overlying the same and having a flexible margin sealed thereto, said overlying member having embedded therein a plate of rigid material having a nipple for air pump attachment, said nipple communicating with the space between said wall portion and the overlying member at a point remote from the air inlet opening.

4. An expansible rubber air container for playing balls and the like having at one part thereof a wall portion formed of two layers sealed together to provide an intermediate chamber, one of said layers having an aperture for pump connection and the other a stiffening plate with one or more non-alined apertures surrounded by raised annular flanges adapted under internal pressure to become embedded in the other wall portion.

5. An expansible rubber air container for playing balls and the like having at one part thereof a wall portion formed of two layers sealed together to provide an intermediate chamber, one of said layers having an aperture for pump connection and the other one or more non-alined apertures surrounded by annular flanges adapted under internal pressure to become embedded in the other wall portion, said raised flanges being of hard material provided with relatively sharp edges.

6. In combination with a rubber foot ball bladder having a plurality of openings therein, a rubber disk secured thereto, and having embedded in its upper face a metal disk, said plate and disk having apertures alining with the openings in the bladder, and said disk having upstanding nipples, a second rubber disk having embedded therein a metal plate provided with a nipple for pump attachment, said disk being of a size to overlie the nipples and being covered by rubber whereby the rubber covering is opposed to the nipple ends, said second rubber disk having its margin projected beyond the metal plate and secured to the first named disk.

In testimony whereof, I affix my signature.

MILTON B. REACH.