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A. J. TURNER

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INFLATABLE BALL

Filed Jan. 5, 1931

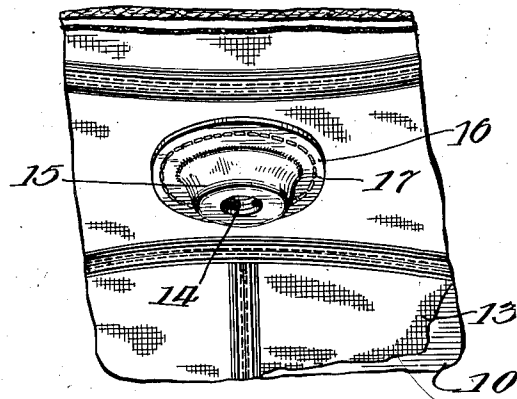
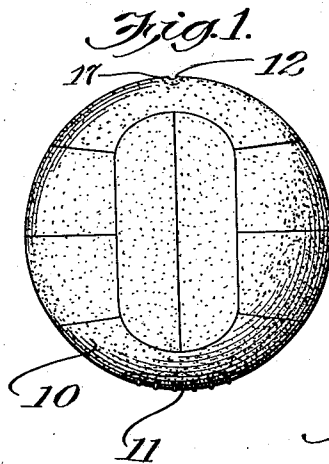
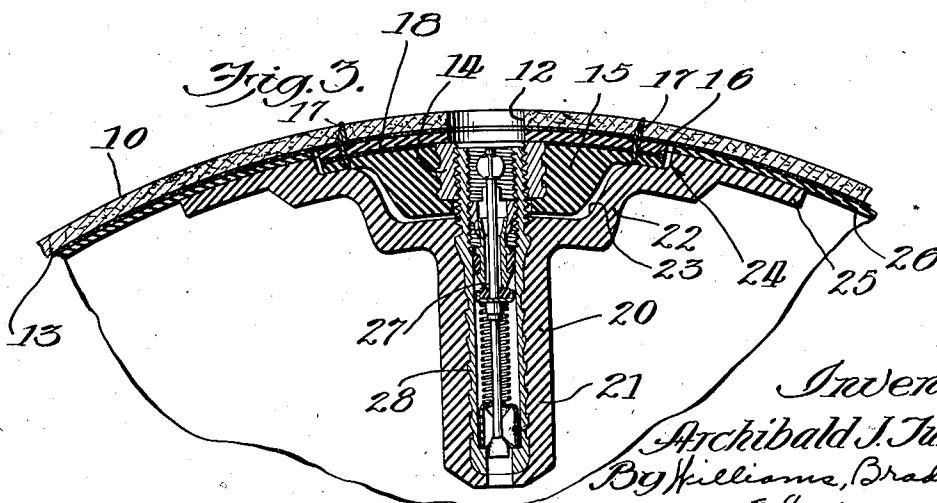
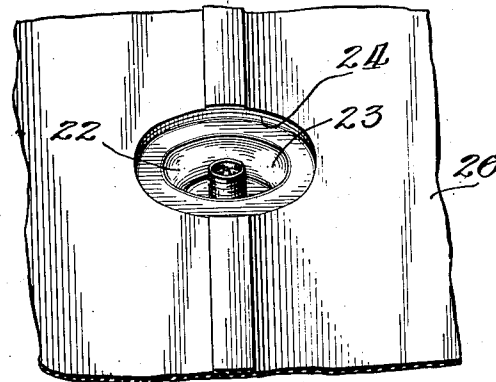


Fig. 2.



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UNITED STATES PATENT OFFICE

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INFLATABLE BALL

Application filed January 5, 1931. Serial No. 506,555.

My invention relates to inflatable balls such as basket balls, soccer balls, footballs, etc., having an outer covering or casing, usually of leather, and an inner inflatable bladder of rubber. My invention relates more particularly to the type of ball shown in United States Patent No. 1,730,309 to Ira Irl Tubbs, wherein the bladder is detachably anchored at the region of the valve to the inside of an integral portion of the cover and in association with a small inflation aperture through the cover, usually placed opposite the laced bladder insertion opening.

One important object of my invention is the elimination of the tendency of the anchoring members, due to their thickness, showing through on the outer surface of the ball after the leather covering becomes worn and more pliable. I effect this object preferably by initially so forming the covering carried anchoring member and its associated bladder-carried anchoring member that the two will normally internest, even in the absence of high internal pressure, whereby, when final inflation pressure is reached, the parts are not substantially distorted from their normal position.

Another object of the invention is to facilitate the finding of the cover-carried anchoring member at the inside of the inflation aperture, and the ready centering in it of the cooperating bladder-carried parts, when the bladder is to be anchored to the cover. This is of particular advantage because, the inflation aperture generally being located opposite the laced opening of the cover, the operator cannot readily see what he is doing.

The foregoing and other objects, features and advantages of my invention are set forth in the following description of a preferred embodiment thereof, and in the attached drawing, wherein:

Fig. 1 is a side elevation on a reduced scale of a basket ball embodying my invention;

Fig. 2 is a view on a larger scale of a fragment of the bladder with the valve and anchoring member which it carries and of a fragment of the associated part of the cover with the anchoring member which it carries, the two parts being separated to show their

position prior to bringing them together for assembly; and

Fig. 3 is a vertical cross-sectional view on a still larger scale showing the bladder anchored on the inside of the cover and in the position assumed by the parts when the bladder is partly inflated.

In the exemplary basket ball shown in the drawing, the leather cover 10, made up from the usual pattern pieces, has the usual laced bladder insertion opening 11 and, preferably diametrically opposite, a small inflation aperture 12. The cover may carry the usual fabric lining 13.

On the inside of the cover and in association with its inflation aperture 12, there is fixed the cover-carried bladder anchorage member, which consists of an internally screw-threaded metallic nut 14, embedded in the center of a molded rubber block 15. At its margins the block 15 is of reduced thickness, leaving a marginal flange 16, which is stitched to the inside of the cover by a ring of stitching 17 passing through the flange and the cover, with the lining 13, if there be any, between. A layer of fabric 18 is preferably embedded in the top side of the rubber block 15 to reenforce the flange 16 against tearing by the stitching 17. The securement by the stitching 17 may be augmented, if desired, by cementing the upper face of the block 15 directly to the inside of the cover, in which event, of course, it is advisable to cut away the lining about the margin of the inflation aperture 12.

The threaded bore of the nut 14 is, of course, allied with the inflation aperture 12. The inflation aperture 12 and the central opening in the rubber block 15 above and below the nut are preferably of only slightly larger diameter than the threaded bore of the nut. The over-lapping of the rubber block on the top and bottom ends of the nut serves to cushion the cover and bladder respectively against the metallic impact or wear of the metal nut.

The bladder-carried anchoring member includes a molded rubber member 20 comprising a tubular or stem portion 21 and a double cupped or depressed flange portion 22 con-

sisting of a primary depression 23 receiving the cylindrical nut embracing portion of the cover-carried rubber member 15 and a secondary depression 24 receiving the flange 16. Beyond the secondary depression 24 there is a marginal flange 25 which is vulcanized to the inside of the thin sheet rubber wall of the bladder 26. At the region of the anchorage the sheet rubber wall of the bladder 26 is cut away at a diameter preferably that of the secondary depression 24 of the member 20.

Where the valve as here shown is to be of the standard tire valve metallic type 27 and is to be carried by the bladder rather than by the cover, the valve stem 28 is embedded in the tubular portion 21 of the bladder-carried anchorage member 20 and extends outwardly beyond the bottom of the primary depression 23 where it is externally screw-threaded for engaging the cover-carried nut 14. As is usual, the protruding end of the valve stem is internally threaded for reception of the coupling end of the inflating pump. The rubber sleeve portion 21 envelops the metallic valve tube 28 to protect the bladder against internal injury by chafing against the metal, when, for example, the bladder is collapsed. The parts as shown in Fig. 3 are in the positions which they normally assume under only nominal pressure. The molded rubber members 15 and 20 in particular are in substantially the form in which they are molded. While inflating the ball to playing pressure, the parts are slightly altered in position and shape, but there is no substantial distortion. This I consider to be a decided improvement over the constructions heretofore in use where the cover-carried anchorage member was a relatively thick patch and where the bladder-carried valve stem was inserted in an integral in-turned neck of the bladder, so that the sheet rubber bladder wall normally approached the valve stem at the base of the protruding end. This meant that when the parts were assembled and the bladder inflated to playing pressure, the sheet rubber wall of the bladder, at the region of the valve, had to stretch itself into a considerably distorted shape in being pressed tightly against the cover-carried anchorage member. This not only subjected the rubber wall of the bladder to undue strain at this vital point, but, because of the stretching, which was most concentrated immediate the adjacent valve stem, subjected the cover and the cover-carried anchor member to greater pressure at the margin of the patch than adjacent the valve. This resulted in a ring appearing on the outside of the cover of about the diameter of the cover-carried anchor member. As the ball continued to be used and the leather cover became more pliable, this ring became more pronounced. This same trouble that

caused the appearance of the ring also detracted from the bouncing characteristic of the ball when it impacted at the region of the inflation aperture.

With my present improved construction with the molded depressed bladder-carried valve anchoring member, these tendencies are greatly lessened because the internal pressure in the region of the valve is more nearly like that in other regions of the ball.

By pre-forming a recess or depression of whatever size and shape is required to mate the cover-carried anchorage member, I am able successfully to use a nut or other coupling member of considerably greater depth. This permits a more rugged and durable anchorage and a mounting wherein the valve stem is less liable to tilt out of a radial position. Previously designers had to keep the coupling member as shallow as possible often reducing them to mere threaded plates.

The mating annularly stepped conformations of the cover-carried and the bladder-carried anchoring members greatly facilitate the operator locating the protruding stem of the valve in the nut when the bladder is being anchored on the inside of the cover, even though, as is usually the case, the operator is not able to see where he is working.

While I have illustrated and described in detail this specific embodiment of my invention, I contemplate that other adaptations and changes may be made without departing from the scope or spirit of my invention as defined in the following claims.

I claim:

1. In an inflatable ball a leather cover having a closable bladder insertion opening, an inflation aperture spaced therefrom, a molded rubber nut-attaching member on the inside of the cover, a nut embraced thereby and held in alignment with the inflation aperture, the attaching member being of reduced thickness at its margins forming a marginal flange, and a ring of stitching through the flange and cover to fix the member on the inside of the cover, and a separate removable bladder having a sheet rubber wall with a cut-away opening, a saucer-shaped molded rubber valve supporting and anchoring member having a marginal flange secured to said bladder wall at the margin of said opening and having primary and secondary pre-formed central depressions, the primary depression being deeper and of lesser diameter and adapted to receive the nut embracing portion of said attaching member, and the secondary depression being shallower and of greater diameter for receiving the flange of said attaching member, an inflation stem carried by the supporting and anchoring member and protruding outwardly through the bottom of the primary depression and threaded for engagement with said nut, a neck portion of said supporting and anchor-

ing member enveloping the inner end of said stem, to protect the inside of the bladder therefrom, and an inflation valve associated with the stem.

2. In an inflatable ball a cover having a bladder insertion opening, an inflation aperture spaced therefrom, a nut attaching member on the inside of the cover, a nut embraced thereby and held in association with the inflation aperture, the attaching member being of reduced thickness at its margins forming a marginal flange, means for permanently fixing the attaching member to the inside of the cover, and a separate removable bladder having an opening in its wall, a saucer-shaped flexible supporting and anchoring member having a marginal flange secured to said bladder wall and having primary and secondary pre-formed central depressions, the primary depression being deeper and of lesser diameter and adapted to receive the nut embracing portion of said attaching member, and the secondary depression being shallower and of greater diameter for receiving the flange of said attaching member, an inflation stem carried by the supporting and anchoring member and protruding outwardly through the bottom of the primary depression and threaded for engagement with said nut, and an inflation valve associated with the stem.

3. In an inflatable ball a cover having an inflation aperture, a cover-carried anchoring member fixed to the inside of the cover and embracing a coupling member in association with the aperture, a separate removable bladder having an opening in its wall, a flexible cupped supporting and anchoring member having a marginal flange secured to said bladder wall and having a preformed central depression for the reception of said coupling embracing attaching member, an inflation stem carried by the supporting and anchoring member and protruding outwardly through the bottom of said depression, and constituting a second coupling member for cooperation with said first mentioned coupling member for detachably anchoring the bladder to the inside of the cover.

4. In an inflatable ball, a cover having an inflation aperture, a nut member, means for holding the nut member in registry with the aperture comprising a patch member embracing the nut member and secured at the inside of the cover, a separate removable rubber bladder having an opening in its wall of greater diameter than the patch member, a molded rubber stem supporting and anchoring member having a marginal flange secured to said bladder wall adjacent the margin of the opening and having a pre-formed open saucer shaped central depression for the reception of said patch member and nut member, an inflation stem carried by the supporting and anchoring member and protruding

outwardly through the bottom of its depression and threaded for co-action with the nut member for detachably anchoring the bladder to the inside of the cover.

5. A bladder for an inflatable ball comprising a sheet rubber wall having a cut-away opening, a molded rubber valve supporting and anchoring member having a marginal flange vulcanized to the wall about the margin of said opening and having a pre-formed open saucer-shaped central depression, an inflation stem carried by the supporting member having a threaded end protruding outwardly through the bottom of the depression and terminating in substantially the plane of the wall, leaving an annular space between the protruding stem and the side wall of the depression adapted to receive an inwardly protruding cover-carried patch-like mounting for a stem-engaging member, and an inflation valve associated with the stem.

6. A bladder for an inflatable ball comprising a wall, a cupped resilient rubber anchoring member having a marginal flange secured to the wall and a pre-formed open saucer-shaped central depression immediately joining the marginal flange, an inflating stem carried by the anchoring member and having a coupling portion protruding outwardly from the bottom of the depression leaving an annular space between the coupling portion and the side wall of the depression.

In witness whereof, I hereunto subscribe my name this 30 day of December, 1930.

ARCHIBALD J. TURNER.