

Jan. 13, 1953

E. A. ROBINSON ET AL

2,625,398

INFLATABLE ARTICLE HAVING RETAINING COLLAR

Filed Dec. 9, 1948

FIG. 1

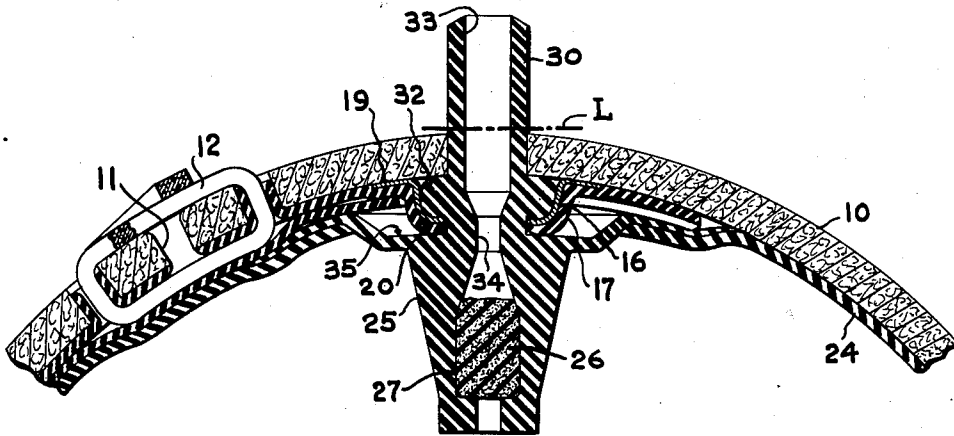


FIG. 2

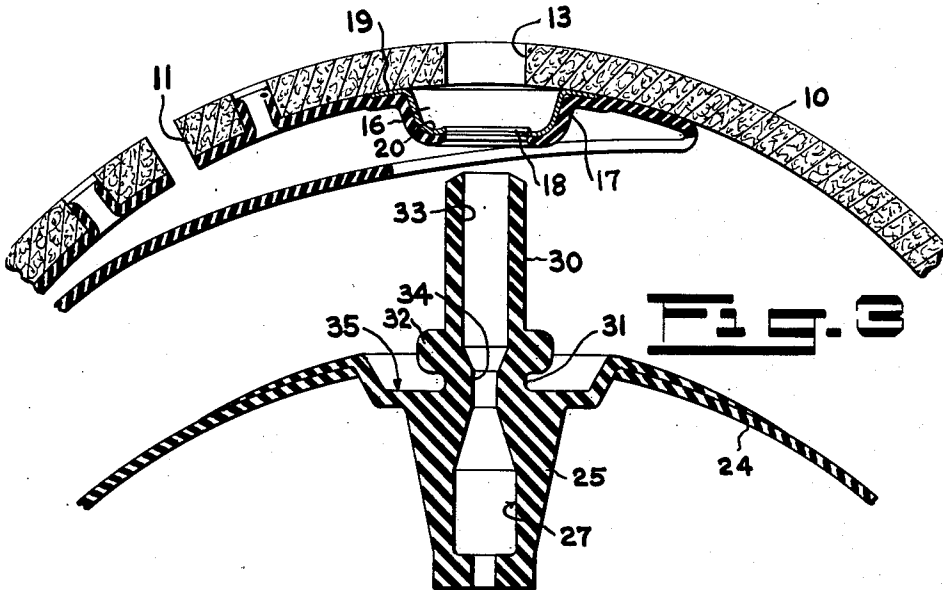


FIG. 3

INVENTORS
ELI A. ROBINSON
ALBERT F. HECK

BY
Bohleber, Jasaff & Montstream
ATTORNEYS

UNITED STATES PATENT OFFICE

2,625,398

INFLATABLE ARTICLE HAVING
RETAINING COLLAR

Eli A. Robinson and Albert F. Heck, Amsterdam,
N. Y., assignors to The Collette Manufacturing
Company, Amsterdam, N. Y., a corporation of
New York

Application December 9, 1948, Serial No. 64,264

14 Claims. (Cl. 273-65)

1

The invention relates to an inflatable article such as a foot ball, playball, inflatable toys and the like, which includes a casing and an inflatable bladder within the casing. Heretofore it has been the practice to cement the bladder to the casing in an area around the bladder valve. Valves today are of the type using an inflating needle or stem which is pressed into the valve so that the latter must be anchored in some fashion in order to prevent the valve from being pushed within the casing thereby many times resulting in the valve opening being displaced from the casing opening.

Anchoring the bladder to the casing by cementing has three disadvantages, the first and primary one of which is that if the workman did not get the bladder in good alignment with the casing in an irregularly shaped inflatable article, such as a foot ball, creases would form in the bladder which would cause chafing and constriction thereof and rapid destruction of the bladder. A second disadvantage is that it takes considerable time in buffing the parts, to be cemented, in applying two coats of cement to adequately anchor the bladder to the casing, and in requiring care in positioning of cementing the bladder to the casing. A third disadvantage lies in the fact that many times adhesion does not take place with the result that the bladder valve may be pushed away or shift away from the hole of the casing when a needle or stem is inserted through the valve when attempting to inflate the bladder.

It is an object of the invention to construct a new and novel valve and casing combination which effectively anchors the bladder to the casing and yet permits relative adjustment of the bladder with respect to the casing.

Another object of the invention is to construct a bladder and casing combination in which the valve is effectively anchored to the casing by means which is inexpensive to manufacture and assemble.

Another object of the invention is to construct a new and novel method of anchoring a bladder to the casing so that a bladder may be quickly anchored to the casing and yet permit relative adjustment thereof in the casing.

Another object is to construct a new and novel casing having a collar for anchoring a bladder to the casing.

Another object is to construct a bladder with a valve which provides an enlarged flexible portion on a valve stem which contracts on being stretched so that the stem may be anchored to a casing.

2

Other objects of the invention will be more apparent from the following description when taken in connection with the accompanying drawing illustrating a preferred embodiment thereof in which:

Figure 1 is a section through a portion of the casing of an inflatable article and of a bladder therein at the valve showing the two anchored together yet permitting relative adjustment of the bladder within the casing;

Figure 2 is a section through a casing at the valve opening, and in spaced relation preparatory to anchoring the bladder to the casing; and

Figure 3 is a section through a valve and portion of the bladder in spaced relation with Figure 2 preparatory to anchoring the bladder to the casing.

The inflatable article includes a casing 10 which may be of any suitable material such as leather, artificial leather, plastic, rubber or the like. The casing carries a slot or opening 11 through which a bladder is inserted within the casing and later the slot is closed and held together in any known fashion such as by lacing 12. Adjacent the slot 11 is a hole 13 at which point the valve on the bladder to be described is located when assembled within the casing.

In alignment with the casing hole and preferably on the inner face of the casing is secured a collar 16. This collar is secured to the casing in any suitable way and in the construction shown it is held in place by vulcanizing a pad 17 of rubber or rubber-like material thereover in the manner described in the Robinson application, Serial No. 19,495. The collar has a hole 18 there-through to receive the stem of the valve for a bladder, the hole 18 being in or approximately in alignment with the hole 13 in the casing. It is desirable that the hole of the collar be spaced from the wall of the casing, and in order to effect this, the collar is cup shaped with a base 19 which engages the inner face of the casing so that the flange 20 thereof is spaced from the wall of the casing. With the collar mounted upon the inside of the casing the flange is spaced from the inner wall. The flange preferably is depressed around the hole 18 to more securely anchor a valve stem thereto.

The bladder 24 is of any suitable material such as plastic or rubber-like material and is usually of rubber either natural or synthetic. A valve 25 is carried by the bladder and it is immaterial whether it is molded thereto or molded separately and secured in any desirable fashion to the bladder. Any type of valve may be used through which the article is inflated. The con-

struction, however, is particularly suited for that type of valve which requires a needle or stem to be inserted into the valve for inflating the bladder. The particular valve illustrated is the plastic type of valve having a mass of plastic material 26 carried in a cavity 27 therein and which is inflated or deflated by projecting a hollow needle through the plastic mass.

The valve carries a stem 30 which initially is of substantial length. This stem carries an enlarged portion forming a groove 31, the groove being preferably formed by a circumferential bead 32 carried by the stem adjacent to the valve face. A passage 33 extends through the valve, which passage preferably is larger than the inflating needle or stem and has a restricted portion 34 which is approximately the diameter of the inflating needle and located radially of the groove or generally in the same plane. The valve preferably has a recess 35 therein to receive the casing collar 16.

It is important that the diameter of the groove 31 be such with respect to the diameter of the hole 18 so that the valve stem or particularly the groove may be easily turned therein or adjusted itself with respect to the hole 18 of the collar. If the groove has a diameter less than that of the hole in the collar, the valve will adjust itself freely. It is important that the stem be not clamped so that adjustment or alignment of the bladder with the casing will be achieved.

In assembling the bladder within the casing the bladder is inserted through the slot 11 and the long stem 30 is projected through the hole 18 in the collar 16 and the hole 13 through the casing. The stem is then pulled which stretches the same and in stretching, the bead 32 reduces its diameter so that it will be pulled through the hole 18 of the collar until the flange 20 engages in the groove 31 as shown in Fig. 1. Thereafter the slot is laced up and a needle may be inserted through the passage 33 and the plastic 26 to inflate the bladder. The workman need not carefully align the bladder with the casing in the event it is an oblate article, such as a foot ball. As previously mentioned there is freedom for movement circularly between the groove 31 and the flange or hole 18 of the collar 16. When the bladder is inflated, therefore, it adjusts itself or the valve adjusts itself with respect to the casing because there is no binding or clamping between the collar and the groove or not sufficient to prevent adjustment. The bead 32 retains the valve in position in that it is received between the flange 20 and the inner face of the valve or recess 35.

The needle upon being inserted through the passage 33 engages the restricted portion 34 and in so doing supports this portion of the stem so that it will not contract and tend to force the bead through the hole 18 in the collar. The bead, therefore, is practically locked in position between the collar and the inner face of the casing when the needle is inserted. The portion of the stem 30 extending beyond the outer wall of the casing 10 may be cut off such as on line L immediately after the bladder is assembled upon the casing. It may, however, be that it is desirable to give the ball an inflation test first before it is cut off. In any event the excess or projecting stem is cut off when the ball is sold.

This invention is presented to fill a need for improvements in an inflatable article having retaining collar. It is understood that the various modifications in structure, as well as changes in

mode of operation, assembly, and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the teachings of the invention. Hence, it will be understood that this disclosure is illustrative of preferred means of embodying the invention in useful form by explaining the construction, operation and advantages thereof.

What is claimed is:

1. An inflatable article to be inflated comprising in combination a casing having an opening therethrough, a stiff collar secured to the casing and having a circular hole therethrough in alignment with the casing opening, a bladder, a valve secured to the bladder having a hole therein to pass the inflating air, an air seal within the hole, a flexible stem carried by the valve, a groove carried by the stem in the exterior surface thereof and spaced axially from the air seal of the valve, the end of said flexible stem being insertable through the hole in the collar and the stem then being contractile upon pulling the same to pass the stem through the hole to the groove, and the groove and stem fitting loosely in the hole in the collar for unrestrained circular adjustment therewithin.

2. An inflatable article as in claim 1 adapted to be inflated by projecting a needle into the hole in the valve to open the air seal, the stem having a passage therein to the air seal, said passage being of a relatively large diameter throughout most of its length to freely pass the needle, and the passage having a portion of smaller diameter at a point radially of the groove for engagement by the needle to restrict contraction of the stem and groove.

3. An inflatable article as in claim 1 in which the stem carries a circumferential bead spaced from the valve and larger in diameter than the hole in the collar and contractile upon stretching the stem to a diameter to pass through the hole in the collar which bead forms the groove.

4. An inflatable article as in claim 1 in which the collar has a base and a flange in spaced planes, the base contacting the casing and the flange having the hole therethrough, and a circumferential bead carried by the stem spaced from the valve and larger in diameter than the hole in the flange of the collar and contractile upon stretching of the stem to a diameter to pass through the hole in the collar which bead forms the groove.

5. An inflatable article as in claim 1 adapted to be inflated by projecting a needle into the hole to open the air seal including the stem having a hole therethrough of a relatively large diameter throughout most of its length to easily pass the needle therethrough, the hole in the stem at a point radially of the groove being a smaller diameter and engageable by the needle to restrict contraction of the stem and groove, the collar having a base and a flange in spaced planes, the base contacting the casing and the flange having the hole therethrough, the stem having a circumferential bead spaced from the valve and larger in diameter than the hole in the flange of the collar and contractile upon stretching the stem to a diameter to pass through the hole in the collar which bead forms the groove, the bead being received between the flange and the casing.

6. An inflatable article as in claim 1 in which the stem is long enough to project beyond the casing wall sufficiently to be gripped and pulled to stretch the stem and contract the same to pull

5

the stem through the hole in the collar until the groove rests in the collar.

7. An inflatable article as in claim 1 in which the stem carries a circumferential bead, said stem being long enough to project beyond the casing wall sufficiently to be gripped and pulled to stretch the stem and bead and contract the same to pull the stem through the hole in the collar until the groove rests in the collar.

8. An inflatable article to be inflated comprising in combination a casing having a hole therethrough, a stiff collar having a base secured to the casing in alignment with the casing hole, a flange carried by the collar spaced from the base and having a circular hole therethrough in alignment with the hole in the casing, a bladder, a valve secured to the bladder having a hole therein to pass the inflating air and an air seal within the hole, a recess in the valve to receive the collar, a tubular flexible stem carried by and connected with the valve and projecting from the recess, a groove carried by the stem spaced axially from the air seal of the valve, the end of said flexible stem being insertable through the hole in the collar and the stem then being contractile upon pulling the same to pass the stem through the hole to the groove, and the groove and stem fitting loosely in the hole in the collar for unrestrained circular adjustment therewithin.

9. An inflatable article as in claim 8 including a circumferential bead carried by the stem spaced from the bottom of the recess to form a groove therebetween.

10. An inflatable article as in claim 9 including the stem being long and extending outside of the casing sufficiently to be gripped and pulled to contract the bead to pass the same through the hole in the collar.

11. A valved bladder to be inflated by means of an insertable inflating needle comprising an inflatable bladder envelope, a valve carried by the

6

bladder envelope through which the bladder is inflated, an air seal carried by the valve, a flexible stem carried by and extending from the valve and having a groove axially spaced from the air seal, the stem being contractile upon stretching the same to a substantially smaller diameter, and a passage extending into the valve and stem to the air seal to pass the inflating needle.

12. A valved bladder as in claim 11 including the valve having a shoulder, and the stem carrying a bead spaced from the valve shoulder to form the groove, the bead being integral with the stem and contractile therewith upon stretching.

13. A valved bladder as in claim 12 including a recess in the end of the valve, and the stem projecting from the recess.

14. A valved bladder as in claim 11 in which the passage into the stem is relatively large throughout most of its length to freely pass the inflating needle and a portion of the passage radially of the groove being of a lesser diameter to be engaged by the inflating needle to restrict contraction of the stem and groove.

ELI A. ROBINSON.
ALBERT F. HECK.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,641,382	Goldsmith	Sept. 6, 1927
1,702,974	MacDonald	Feb. 19, 1929
2,136,520	Perry	Nov. 15, 1938
2,142,414	Riddell	Jan. 3, 1939

FOREIGN PATENTS

Number	Country	Date
215,485	Great Britain	May 15, 1924