

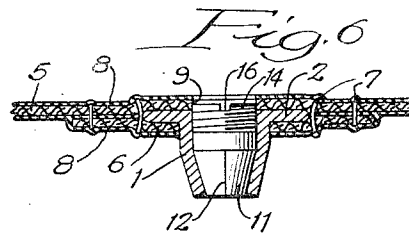
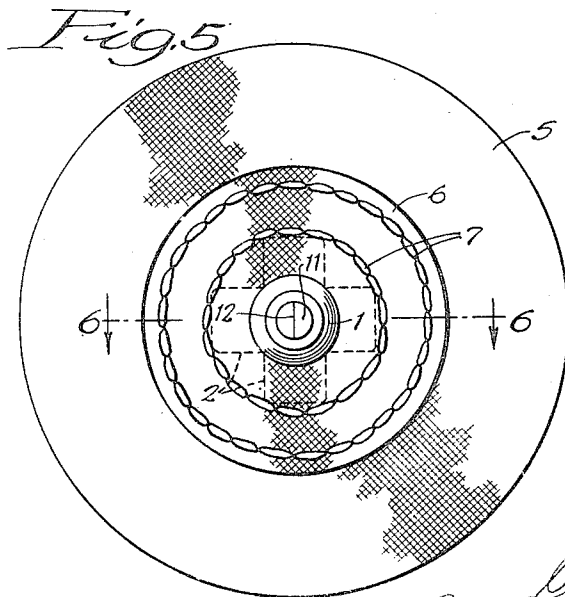
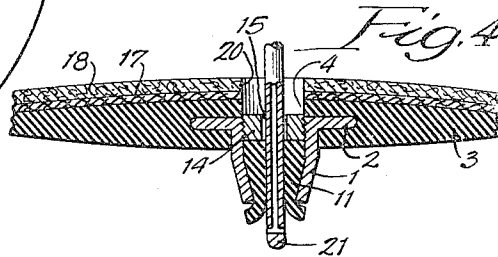
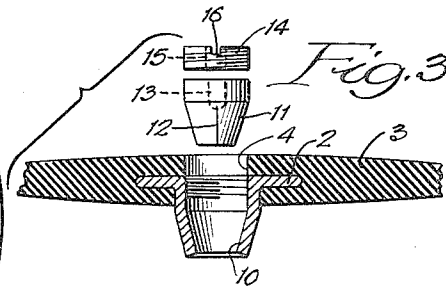
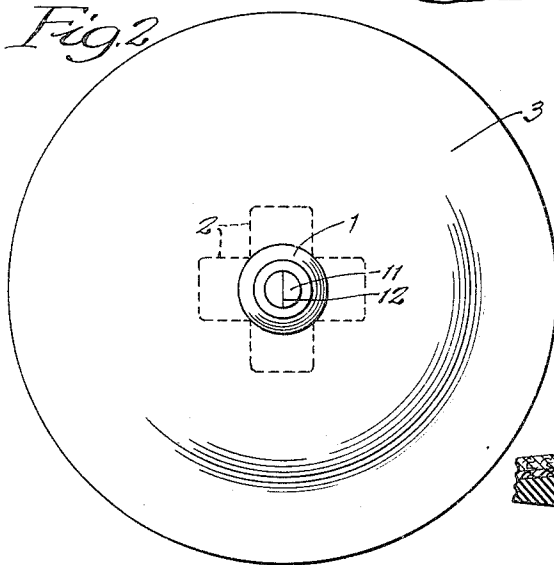
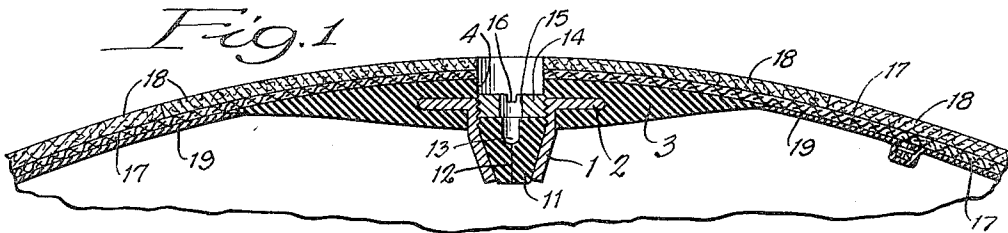
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J. T. RIDDELL

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AIR VALVE

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Inventor:
John T. Riddell,
By *Rumrider, Rumrider & Ransom*
his Attorneys.

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AIR VALVE

John T. Riddell, Chicago, Ill.

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2 Claims. (Cl. 273-65)

This invention relates to air valves, and particularly to air valves for inflated articles wherein from time to time the internal air pressure must be renewed.

The main objects of this invention are to provide an improved air valve wherein the valving element may be readily renewed; to provide an improved air valve having a renewable valving element which may be removed and replaced by the user and without the need of special tools; to provide an improved air valve having a self-closing valving element which may be adjusted to regulate the closing pressure; and to provide an improved air valve for inflated articles, which valve is of simplified construction and low manufacturing cost.

A specific embodiment of this invention is shown in the accompanying drawing in which:

Figure 1 is a fragmentary sectional view of an inflated ball casing showing the improved air valve construction and arrangement.

Fig. 2 is a plan view of the improved air valve and its carrier as viewed from its bottom or inner side.

Fig. 3 is a sectional view showing the improved air valve in disassembled position with the valving member and the adjusting member removed from the valve body.

Fig. 4 is a sectional view of the valve member as shown in Figure 1 and illustrating the manner in which an inflating needle is passed through the valving element.

Fig. 5 is an inner side plan view of the improved air valve as arranged in a modified form of mounting means, and

Fig. 6 is a sectional view of the air valve as taken on line 6-6 of Fig. 5.

In the form shown in the drawing, the improved air valve comprises a tubular body 1 having a plurality of radially extending tongues or fingers 2, which body is mounted in a patch or carrier member 3 and secured by means of tongues or fingers 2 which are embedded within the mass of the patch or carrier 3.

As shown in Figures 1 to 4 inclusive, the patch or carrier 3 is of suitable flexible or molded material, such as rubber and the valve body 1 is molded into the mass of the patch or carrier 3, an opening 4 being provided on one side of the patch 3 and the tubular portion of the body 1 projecting outwardly from the opposite side of the patch 3.

As shown in Figures 5 and 6 the valve body 1 is mounted in a patch or carrier made of fabric material and comprising a top member 5 and a

concentric bottom member 6 between which the tongues or fingers 2 of the body 1 are retained. The inner and outer fabric members are secured together by any suitable means, such as stitching 7 and the fabric is sealed against air leakage by means of a coating of latex or any other suitable sealing material, indicated by the numeral 8 in Figure 6.

As shown in Fig. 6, the outer fabric member 5 is provided with a center opening 9 leading to the interior of the tubular body 1 and the tubular portion of the body 1 passes through an opening in the inner fabric member and projects outwardly beyond the same.

As shown in the drawing the tubular body 1 is provided with an inwardly tapered side wall 10 at the end opposite the tongues or fingers 2 and a tapered plug 11 of rubber or other suitable elastic material is fitted into the body 1 and seated against the tapered inner wall thereof. This plug or valving member 11 has its tapered end axially split as at 12 and is provided with a central axially extending passage 13 leading from the end opposite the tapered portion to the split portion of the plug or valving member 11. This construction is illustrated in detail in Figure 1 of the drawing.

Also as shown the outer end of the body 1, which carries the fingers or tongues 2, is internally threaded to receive a pressure cap 14 in threaded relation and the threads of the body 1 extend inwardly a sufficient distance to permit the pressure cap 14 to be screwed down into tight engagement with the outer end of the plug or valving member 11.

The pressure cap 14 is provided with a center opening 15 therethrough and is also slotted across its outer end as at 16 to receive the end of a screw driver.

From the foregoing description and from the drawing, it will be apparent that the body 1 may have any desired external shape and that if the body 1 is made of metal the tongues or fingers 2 may, if desired, be formed by splitting the end of the body axially, opposite the tapered internal portion, for a portion of its length, so that the tongues or fingers 2 may be provided by bending the split portions outwardly.

It will also be apparent that if desired the body portion 1 may be molded of a suitable plastic or other molding material and that the pressure cap 14 may also be a molded article.

It will now appear that the improved valve, together with its carrier member, comprises four elements or parts, namely, the carrier member,

or patch, by means of which the valve is secured to the body of the inflated article on which it is to be used; the valve body; the plug or valving member, which is a core for the valve body; and the pressure cap by means of which the closing tension of the valving member or plug can be adjusted.

These four elements are normally assembled into a unit which unit is then applied to the body of the inflated article, either internally or externally as may be desired, but preferably on the inner side. The preferred manner of use is as shown in Figure 1, wherein the improved valve is illustrated in connection with the carcass or casing of an inflated article, such as a basketball, wherein the casing is constructed of stitched-together panels 17 of fabric onto which panels 18 of leather are cemented, the inner side of the casing being sealed against air leakage by means of a coating of latex or any other suitable sealing material, as indicated by the numeral 19.

The valve carrying member 3, or 5 as the case may be, is cemented onto the inner side of the fabric casing in alignment with a suitable opening 20 through the casing which provides access to the internal valving member and pressure cap elements.

It will be understood that if the fabric carrier member 5, as illustrated in Figures 5 and 6 of the drawing, is employed, this element may be stitched onto the fabric casing of the inflated article or the fabric casing 17 itself of the inflated article may constitute the outer portion of the carrier for the valve body 1.

In operation air, or other inflating gas, is introduced into an article to which the improved valve is applied by means of a hollow needle 21 which is inserted through the valve by way of the opening 15 of the pressure cap, the passageway 13 of the plug or valving member and the split tapered end of the valving member, the tapered end of the valving member stretching and spreading, as shown in Figure 4 of the drawing to permit passage of the needle 21.

After the article has become inflated to the desired pressure, the inflating needle 21 is withdrawn, whereupon the split tapered end of the valving member closes immediately behind the needle and shuts off communication between the interior of the inflated article and the passageway 13 of the valving member which leads to the opening 15 of the pressure cap; thus sealing the inflated article against leakage of the internal pressure.

The elastic nature of the material of which the valving member or plug 11 is made permits stretching to pass the needle and provides for immediate constricting and closure as the needle is withdrawn. The elastic tension, however, which causes tight closure of the split portion of the valving member or plug 11, may be adjusted by means of the pressure cap 14 which, upon being screwed downwardly into the valve body 1, causes an increase of the compression on the tapered portion of the plug or valving member, resulting from the wedging action of the tapered inner wall of the body 1. Thus as the plug or valving member loses its elasticity, due to age or other deteriorating influences; its usefulness can be prolonged by merely increasing the pressure on the tapered plug through the medium of the pressure cap 14.

When the plug or valving member 11 becomes deteriorated or damaged to such an extent that its valving efficiency is lost, that element may be

renewed or replaced by a new plug or valving element merely by unscrewing the pressure cap so as to remove it from the valve body, and by lifting out the plug or valving element, the new plug or valving element being then inserted into the body 1 and secured in place by replacing the pressure cap 14. Thus to renew the usefulness of the valve, it is only necessary to replace a simple core or plug element and that operation can be readily accomplished by the coach or user of the inflated article or by any one of ordinary skill.

The main advantages of the hereindescribed improved valve reside primarily in the easy renewability of the valving element and in the arrangement whereby the compressing pressure, causing air-tight closure of the split portions of the valving element, can be readily adjusted merely by means of a screw driver.

Other advantages of the improved valve reside in the simplicity of its construction and the simplicity and low manufacturing cost of the plug or valving element which is the heart of this or any other air valve construction.

Still other advantages reside in the fact that with the improved valve it becomes no longer necessary to return the inflated article to its manufacturer for renewal or replacement of the air valve, thus increasing the usefulness of the inflated article and obviating the wasteful expense, loss of time and labor which would otherwise be the burden of a manufacturer of the inflated article.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. An air valve comprising a rigid body having a passage therethrough and a portion of said passage being inwardly tapered to form a valve seat, a valving member of elastic material disposed within said body and having its inner end tapered for conforming engagement with said valve seat, said valving member having its tapered end axially split for a substantial distance within said seat and having a passage in its opposite end leading to the split portion, and a pressure member mounted in said body and axially adjustable therein, said pressure member bearing upon said valving member to force the same along said seat to closely compress the split portion thereof, and said bearing member having an opening aligned with the passage therein.

2. An air valve comprising a rigid body having a passage therethrough, a portion of said passage being tapered to form a conical valve seat, a valve plug of elastic material disposed within said body and having its inner end conically tapered for conforming engagement with said valve seat, said plug having its tapered end split axially for a substantial distance within said seat and having a central opening in its opposite end leading to the split portion, and a pressure cap disposed within said body and engaging the said opposite end of said plug to force same along said seat to closely compress the split portion of said plug, said pressure cap having threaded engagement with the wall of said body passage and having a central opening in alignment with the opening in said plug.