

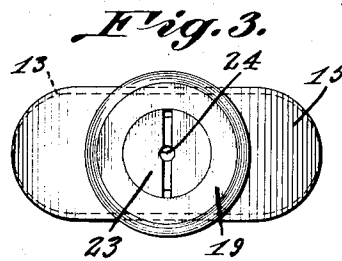
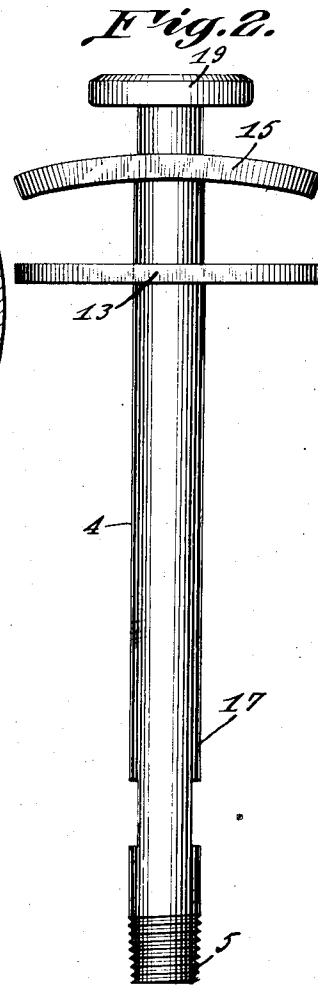
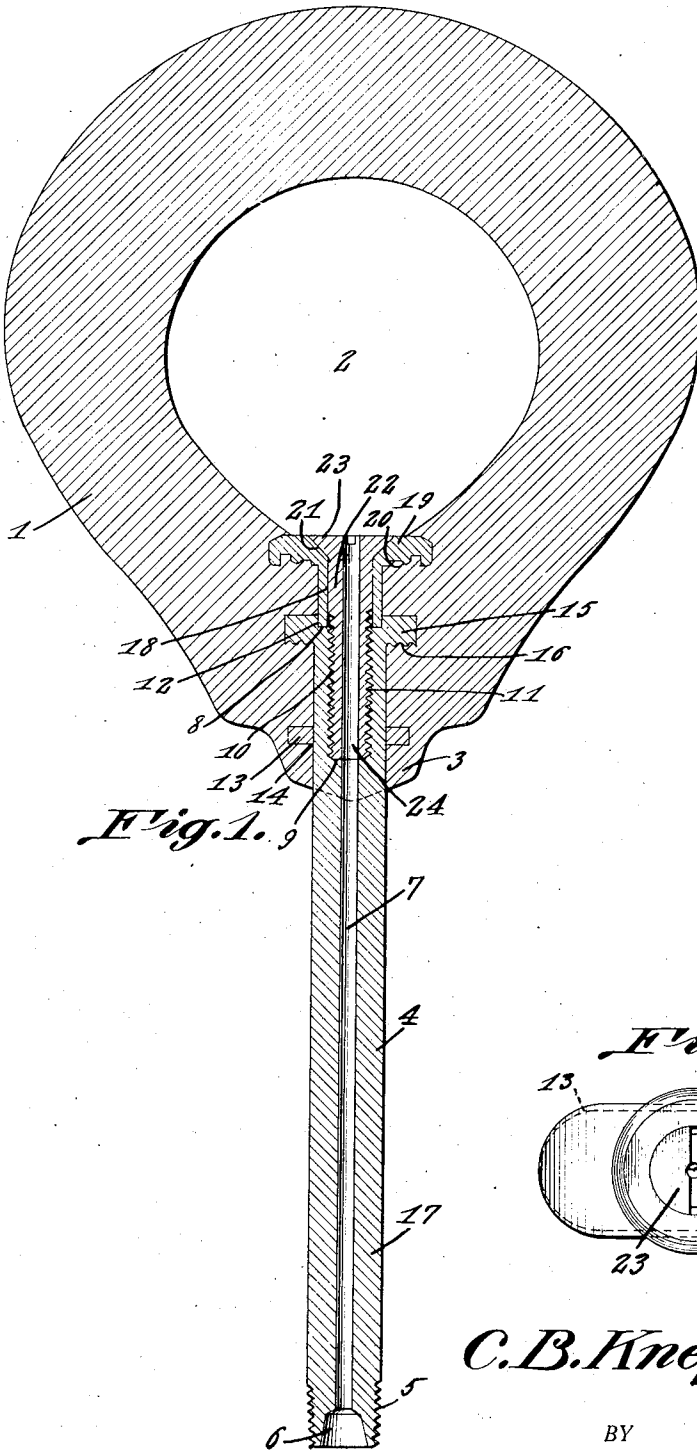
Jan. 19, 1926.

C. B. KNEPPER

VALVED AIR BAG

Filed March 18, 1925

1,570,157



C.B. Knepper, INVENTOR.

BY

Geo. P. Kimmel, ATTORNEY.

Patented Jan. 19, 1926.

1,570,157

UNITED STATES PATENT OFFICE.

CHRISTOPHER B. KNEPPER, OF AKRON, OHIO.

VALVED AIR BAG.

Application filed March 18, 1925. Serial No. 16,500.

To all whom it may concern:

Be it known that I, CHRISTOPHER B. KNEPPER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Valved Air Bags, of which the following is a specification.

This invention relates to a valved air bag for use in connection with the building of cord and fabric tires, and the invention has for its object to provide, in a manner as hereinafter set forth, a bag of such class, including an air valve stem having means co-acting with the material from which the body of the bag is formed to securely anchor one end of the stem with the body portion of the bag to reduce to a minimum the separation of the stem from anchored position.

Further objects of the invention are to provide a valved air bag for the purpose set forth, which is simple in its construction and arrangement, strong, durable, thoroughly efficient in its use, readily assembled, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a vertical sectional view of a valved air bag, in accordance with this invention.

Figure 2 is a side elevation of the air valve stem.

Figure 3 is a top plan view of the stem.

Referring to the drawings in detail, 1 denotes the body portion of the bag constructed from rubber and of the desired contour and said body portion 1 is employed in lieu of the cast iron core formerly used for building cord and fabric tires. The body portion 1 is hollow to form an air chamber 2, to which air is supplied to maintain the body portion extended to the position shown in Figure 1 when building up the tire.

The body portion 1 is annular in contour, and the outer periphery thereof conforms

in contour to the inner shape of the tire which is to be built, and the inner side of the body portion 1 is reduced, as at 3.

Air is supplied to the chamber 2 by an elongated valve stem 4, which is anchored in the material from which the body portion 1 is formed. The stem 4 is cylindrical in cross section and has its outer terminal portion reduced and peripherally threaded, as at 5, for connection with an air line. The stem 4, at its outer end, is provided with a conoidal-shaped cavity 6, and extending therefrom to a point between the transverse and inner end of the stem 4, is an axial bore or passage 7, having its inner end positioned at a point in alignment with the material from which the body portion 1 is constructed. The stem 4, between the inner end of the bore 7 and the inner end of said stem, is provided with an opening having the wall thereof stepped to provide the shoulders 8 and 9. The shoulder 8 is positioned at a point in proximity to the inner end of the stem 4 and the shoulder 9 aligns with the inner end of the wall of the bore 7. The stepped opening is indicated at 10 and that portion of the wall thereof between the shoulders 8 and 9 is threaded throughout as at 11. That portion of the wall of the opening 10, which extends from the shoulder 8 to the inner end of the stem 4, as indicated at 12, is plane.

Embedded or cured in the reduced inner side 3 of the body portion 1, is a metallic washer 13, which is employed for reinforcing the inner side 3 of the body portion 1. The washer 13 is disposed in a straight plane and rectangular contour and formed with rounded corners 14. The washer 13 is of materially greater length than the outer diameter of the stem 4 and projects laterally in opposite directions from said stem. The opening formed by the washer 13 is indicated at 14, and through said opening extends the stem 4, and the diameter of the opening is such as to snugly engage the periphery of said stem 4.

The inner end of the stem 4 is provided with an arcuate flange 15 extending laterally in opposite directions and embedded or cured in the material from which the body portion 1 is constructed, and the outer side of the flange 15 is serrated or knurled, as at 16, to more securely bind the same with the body portion 1 when the stem 4 is embedded or cured in said body portion. The

flange 15 has the length thereof substantially equal to the length of the washer 13 but is of greater thickness than the thickness of said washer. The width of the flange throughout is greater than the outer diameter of the stem 4 and further the width of said flange is slightly greater than the width of the washer 13. The flange 15 in plan is substantially rectangular and provided with rounded corners. The outer periphery of the stem 4 from the threaded outer terminal portion 5 to the flange 15 is plane throughout, as indicated at 17. The flanged inner end 15 of the stem 4 is embedded or cured in the body portion 1 closer to its inner than to its outer periphery.

Embedded or cured in the body portion 1 is the cap of the valve and which consists of a tubular member 18 which extends into the chamber 2 and also into the opening 10 and is seated on the shoulder 8. The tubular member 18 snugly engages, when in seated position, the inner face of the stem 4. Formed integral with the inner end of the member 18 is a laterally extending annular flange 19 of greater diameter than the width of the flange 15, and which has a portion of its inner face arranged within the chamber 2 and the remaining portion of such face embedded in the body portion 1. The outer face of the flange 19 is ribbed or serrated, as at 20, to increase the anchorage of the member 18 in the body portion 1 when said member is embedded or anchored thereon. The inner face of the member 18, at the inner end thereof, is bevelled, as at 21 to provide a seat for the head of a tightening element for the cap.

Extending through the cap is the tightening element therefor, and which also extends into and threadedly engages with the stem 4 and further abuts against the shoulder 9. The said element consists of a tubular body portion 22 having a bevelled head 23, which, when the element is in operative position, bears against the seat 21 and is flush with the inner face of the flange 19. The tubular body portion 22 has a portion of its length threaded and which engages with the threads 11 of the stem 4. The opening formed by the tubular body portion is indicated at 24 and which registers with and is of the same diameter as the bore 7. The opening 24 extends entirely through the body portion 22.

The flanging of the cap, as well as the flanging of the valve stem, and the connecting of the cap with the stem, through the medium of the tightening element, provides means when the cap and inner end of the stem are embedded or cured in the material from which the body portion is constructed, for securely anchoring the stem and cap in position. Then furthermore, as the side 3 of the body portion is reinforced by the

washer 13, which constitutes a guide for the stem 4, additional means is set up to assist in the anchoring of the stem and cap to the body portion 1, and the anchoring of the stem and cap, in the body portion, in the manner as shown, reduces the separation of the stem from the body portion to a minimum, under such conditions materially increasing the life of the bag.

It is thought that the many advantages of a valved air bag, for the purpose set forth and in accordance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:—

1. A valved air bag comprising a hollow flexible body portion, a tubular valve stem having a laterally extending flange at its inner end, said stem having its flanged inner terminal portion embedded in said body portion at a point removed from the inner periphery of the latter, a flanged cap seated in and projecting from the inner end of said stem, said cap embedded in said body portion and having a portion of one face of its flange extended from said inner periphery, a headed tubular element seating in said cap and threadedly engaging with said stem for tightening and coupling said cap relative to the stem, the opening formed by said element providing a continuation of the opening formed by the stem for supplying air to said body portion.

2. A valved air bag comprising a hollow flexible body portion, a tubular valve stem having a laterally extending flange at its inner end, said stem having its flanged inner terminal portion embedded in said body portion at a point removed from the inner periphery of the latter, a flanged cap seated in and projecting from the inner end of said stem, said cap embedded in said body portion and having a portion of one face of its flange extended from said inner periphery, a headed tubular element seating in said cap and threadedly engaging with said stem for tightening and coupling said cap relative to the stem, the opening formed by said element providing a continuation of the opening formed by the stem for supplying air to said body portion, and a substantially rectangular washer embedded in the body portion and having said stem extending therethrough.

3. A valved air bag comprising a hollow flexible body portion, a tubular valve stem having a laterally extending flange at its inner end, said stem having its flanged inner terminal portion embedded in said body portion at a point removed from the inner periphery of the latter, a flanged cap seated

in and projecting from the inner end of said stem, said cap embedded in said body portion and having a portion of one face of its flange extended from said inner periphery, a headed tubular element seating in said cap and threadedly engaging with said stem for tightening and coupling said cap relative to the stem, the opening formed by said element providing a continuation of the opening formed by the stem for supplying air to said body portion, the flange of said cap being annular and the flange of the stem being arcuate.

4. A valved air bag comprising a hollow flexible body portion, a tubular valve stem having a laterally extending flange at its inner end, said stem having its flanged inner terminal portion embedded in said body portion at a point removed from the inner periphery of the latter, a flanged cap seated in and projecting from the inner end of said stem, said cap embedded in said body portion and having a portion of one face of its flange extended from said inner periphery, a headed tubular element seating in said cap and threadedly engaging with said stem for tightening and coupling said cap relative to the stem, the opening formed by said element providing a continuation of the opening formed by the stem for supplying air to said body portion, the flange of said cap being annular and the flange of the stem being arcuate, said washer projecting laterally in opposite directions with respect to said stem and each of its lateral projecting portions being materially greater than the diameter of the stem, and the flange of said washer being of a length substantially equal to that of the length of the washer.

5. A valved air bag comprising a hollow flexible body portion, a tubular valve stem having a laterally extending flange at its inner end, said stem having its flanged inner terminal portion embedded in said body portion at a point removed from the inner periphery of the latter, a flanged cap seated in and projecting from the inner end of said stem, said cap embedded in said body portion and having a portion of one face of its flange extended from said inner periphery, a headed tubular element seating in said cap and threadedly engaging with said stem for tightening and coupling said cap relative to the stem, the opening formed by said element providing a continuation of the opening formed by the stem for supplying air to said body portion, and a substantially rectangular washer embedded in the body portion and having said stem extending there-through, the outer side of the flange of the cap and the flange of the stem being serrated.

6. In combination, a valve stem provided with a lengthwise bore opening at the outer end of the stem and terminating at a point

removed from the inner end thereof, said stem further provided with a stepped opening extending from the inner end of said bore to the inner end of the stem, an arcuate flange formed integral with the inner end of the stem and projecting laterally in opposite directions with respect to the stem, the length of said flange being materially greater than the width thereof, the wall of said stepped opening forming a pair of spaced shoulders, one positioned in proximity to the inner end of the stem, a tubular cap mounted in and seating against said last mentioned shoulder and provided at its inner end with an annular flange, and a tubular headed element extending through and seating in said cap and threadedly engaging with the wall of said stepped opening and further abutting against the other of said shoulders, said element providing means for tightening and coupling said cap with respect to said stem, the opening formed by said element providing a continuation of the bore of said stem.

7. An air bag for building cord and fabric tires comprising a hollow body portion constructed of rubber and forming an air chamber, an apertured metallic reinforcing element embedded in the inner side of said body portion, a tubular stem provided at its inner end with an arcuate flange projecting laterally in opposite directions therefrom, the flanged inner terminal portion of said stem embedded in said body portion, a tubular cap provided with an annular flange at its inner end, said cap extending in the inner end of said stem and embedded in said body portion, the flange of said cap having a portion of its inner face arranged in said chamber, and a headed tubular element extending through and seated in said cap and further extending in and threadedly engaging with the inner terminal portion of said stem, the opening formed by said element forming a continuation of the opening formed by the stem for supplying air to said chamber, said stem extending through said reinforcement and having its flange spaced from the latter.

8. An air bag for building cord and fabric tires comprising a hollow body portion constructed of rubber and forming an air chamber, an apertured metallic reinforcing element embedded in the inner side of said body portion, a tubular stem provided at its inner end with an arcuate flange projecting laterally in opposite directions therefrom, the flanged inner terminal portion of said stem embedded in said body portion, a tubular cap provided with an annular flange at its inner end, said cap extending in the inner end of said stem and embedded in said body portion, the flange of said cap having a portion of its inner face arranged in said chamber, and a headed tubular element ex-

tending through and seated in said cap and further extending in and threadedly engaging with the inner terminal portion of said stem, the opening formed by said element forming a continuation of the opening 5 formed by the stem for supplying air to said chamber, said stem extending through said reinforcement and having its flange spaced from the latter, said reinforcement of rectangular contour and of a length substantially equal to the length of the flange of the 10 stem.

In testimony whereof, I affix my signature.
CHRISTOPHER B. KNEPPER.