

Sept. 6, 1938.

J. T. RIDDELL

2,129,237

BALL CONSTRUCTION

Filed Oct. 14, 1935

2 Sheets-Sheet 1

Fig. 1

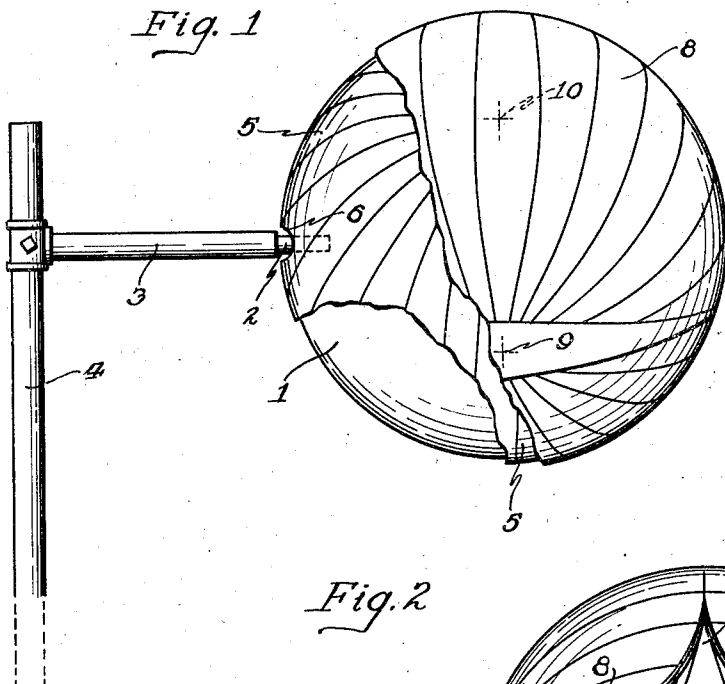


Fig. 2

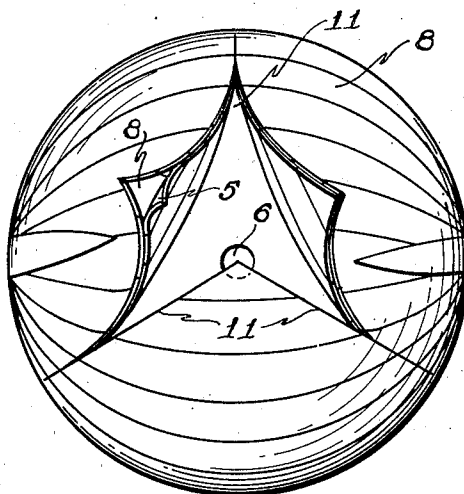
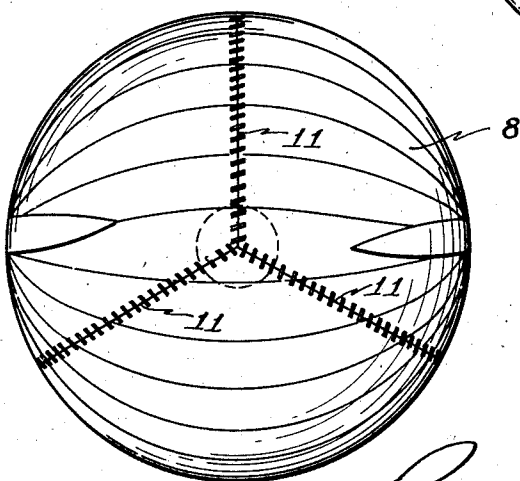


Fig. 3



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Fig. 4

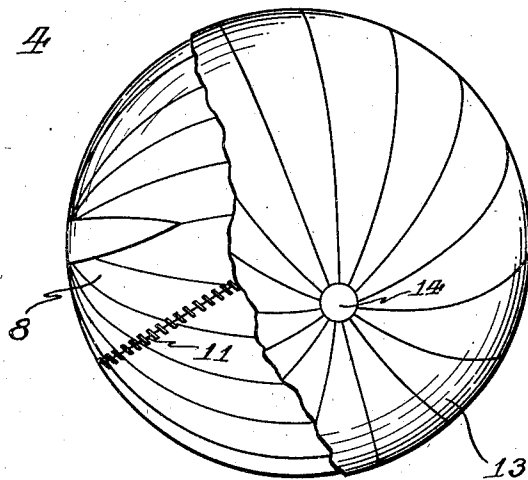
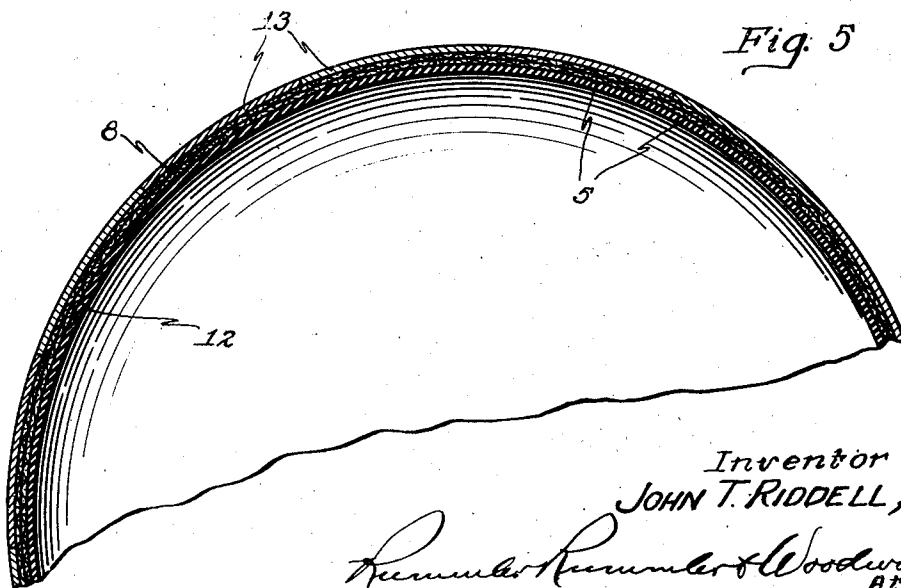


Fig. 5



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UNITED STATES PATENT OFFICE

2,129,237

BALL CONSTRUCTION

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Application October 14, 1935, Serial No. 44,925

4 Claims. (Cl. 154-16)

This invention relates to leather covered inflated balls of the type used in basket ball, volley ball, football, soccer, etc.

The main objects of this invention are to provide an improved construction for balls of this character and an improved method of making the same, whereby the ball is more perfectly shaped and of longer usable life; to provide an improved structure for the inner fabric casing; and to provide an improved structure for the outer leather casing.

Further objects are to simplify the operations of building the balls so as to secure greater accuracy of contour and more perfect balance in the distribution of weight.

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

Figure 1 shows a form block with the inner or foundation casing being formed thereon, the latter being partly broken away to show the relation of its layers of fabric.

Fig. 2 shows the manner in which the inner casing may be cut to remove it from the form.

Fig. 3 shows the inner casing with the cuts sewed up.

Fig. 4 shows the inner and outer casings with the latter partly broken away.

Fig. 5 is a sectional detail of the complete ball.

This invention is believed to represent a distinct advance in the manufacture of leather covered inflated balls of the type used in basket ball and certain other games as aforesaid, particularly as regards structure and method of manufacture. I am aware that in the manufacture of tennis balls, soft outer casings of material such as felt have been applied to inflated ball structures by cement alone, but no one has heretofore produced a structure such as the product of the hereindescribed invention that would be appropriate for and withstand the strains of use in such games as basket ball, volley ball, football and the like with a leather covered casing having flush seams devoid of stitching and devoid of either indentations, projections or deviations from a true spheroidal external surface.

Especially in the game of basket ball is accuracy of spherical contour a highly desired quality, long sought but never heretofore attained in a leather covered ball. Formerly, the leather casing itself was relied upon to determine the contour of the surface. Leather, however, carefully selected and treated, is nevertheless subject to varying stretchability in the different parts of so large an area as the surface of a basket ball and the more recent practice is to provide a lining

of inner casing of more uniformly constituted material as the main reliance for accuracy of form and to use the leather as an outer casing to take the wear and provide the desired surface texture. The best lining material thus far produced is a cotton fabric or canvas of uniform weave. This is usually cut into pieces corresponding in shape to the sections of which the leather casing is formed and the canvas and leather are cemented or sewn together to form individual composite pieces which are in turn sewn together at their edges. Howsoever such stitching may be done, it is necessarily characterized by ridges or depressions along the seams which distort the contour of the ball in some degree from the theoretically true geometric surface of the sphere or spheroid.

In the game of basket ball, the ball should approximate as closely as possible a true sphere, because a large part of the play and successful handling of the ball depends upon its liveliness and accuracy of rebound when it strikes the floor or basket backboards. Any departure from the true spherical surface, such as occurs at the seams of sewed balls, is therefore a condition that introduces factors of uncertainty in the rebound and that should be avoided if possible.

Sewed seams are also subject to variable stretching inherent in the nature of such seams and an important purpose of this invention is to reduce the sewing of seams to a minimum.

In the form shown, the ball is built up of a plurality of layers with non-coincident seams as follows: The form 1 is a spherical block of hard wood having a stem 2 rotatably fitting a tubular arm 3 carried on an upright 4. The innermost layer 5 of the casing is made up of a series of elements, preferably of canvas, accurately shaped to form surface segments or sectors bounded by great circles of the sphere and pasted side by side with abutting edges on the surface of the block with their extremities meeting in opposite poles on the form block 1. One of the segments has a central aperture 6 to accommodate the valve structure of the bladder by means of which the finished ball is inflated. This segment is usually the first to be applied to the form and is placed with the aperture 6 concentric with the stem 2. The form may be rotated on its support to facilitate the passing of the succeeding segments which complete the inner layer 5 of the casing. When this layer is completed and all wrinkles smoothed out, the entire surface is coated with latex or other suitable cement, completely filling

the seams and forming a smooth base for the next layer of the casing.

The second layer 8 of the casing is also formed of surface sector-shaped pieces of canvas similarly applied with abutting edges and with its polar axis 9 at an angle to that of the polar axis 10 of the first layer 5, so that the seams of one layer intersect those of the other.

After the cement has set the canvas casing is removed from the form by slitting it and peeling it off. Three slits 11 meeting at a point preferably diametrically opposite the aperture 6 as in Fig. 2 will allow the casing to be taken off from the form without undue strain. The bladder 12 (Fig. 5) is now inserted and the slits sewn up as in Fig. 3, and the bladder is then inflated to playing pressure.

An appropriate valve structure for this type of ball is shown in my Patent No. 1,672,905, issued June 12, 1928, which discloses a valve arrangement for use with an inflatable bladder and in which the valve stem, normally projecting outwardly from the bladder, has been substantially eliminated, the valve being constructed so that its outer end will lay flat with the surface of the inflated article. This valve is of the type which includes an enclosed capsule containing a puncture-healing fluid or semifluid material and a bladder equipped with such a valve may be inflated by a hollow needle which punctures through the capsule, the puncture-healing fluid closing the puncture when the inflating device is withdrawn, thereby preventing loss of air. Thus, after the bladder 12 has been inserted in the casing it may then be readily inflated to playing pressure, and when once inflated, since no leakage can occur through the valve, there is no need for any further provision for inflating or deflating the device.

The outer surface of the casing 8 is now filled and covered smoothly with a coating of latex or cement which is allowed to set or dry. Then the outer casing 13 is built up by applying segment strips of leather with abutting edges, as in the construction of the inner casings. These strips are cemented to the coated inner casing 8 and arranged with their seams intersecting the seams of both inner casings 5 and 8, as shown in Fig. 4. I prefer to arrange the three casing layers so that their polar axes intersect at right angles to each other for maximum strength. As a feature of appearance, I apply small circular discs 14 at the poles of the leather casing and terminate the strips in flush abutment with the peripheries of these discs.

The finished ball is now true to form without any projections or indentations and the seams are flush with the surface, as shown in Fig. 5. Since the cement used is unaffected by moisture,

there is no tendency of the leather to loosen up and the ball maintains its accuracy of form through an exceptionally long life of rough usage.

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

I claim:

1. The method of making leather covered balls, which consists in building up a hollow fabric casing by applying to a complete ball form strips of fabric with flush abutting edges in successive overlapping layers cemented together, removing the form through an aperture in said casing, inserting a bladder and inflating the casing, and then cementing upon the outer surface of the inflated casing a cover consisting of sections of leather with flush abutting edges.

2. The method of making leather covered balls, which consists in building up a hollow fabric casing by applying to a complete spheroidal ball form spheroidal sector-shaped strips of fabric with flush abutting edges in successive overlapping layers cemented together, removing the form through a slit in said casing, inserting a bladder and inflating the casing, and then cementing a covering of leather comprising narrow sector-shaped strips with flush abutting edges on the outer surface of said casing.

3. The method of making leather covered balls, which consists in building up a hollow fabric casing by applying to a complete spheroidal ball form spheroidal sector-shaped strips of fabric with flush abutting edges in successive overlapping layers cemented together, the strips of different layers being respectively arranged symmetrically with regard to different axes, removing the form through an aperture in said casing, inserting a bladder and inflating the casing, and then cementing a covering of leather comprising narrow sector-shaped strips with flush abutting edges on the outer surface of said casing, said covering strips being arranged symmetrically with regard to an axis different than the respective axes of said casing strips.

4. In the manufacture of inflated balls, the method step of building up a hollow casing by cementing narrow spherical polygon shaped strips of casing material in multiple transversely overlapping layers on the surface of a complete spheroidal form, the strips of each layer being laid with their edges flush and abutting, providing a slit in the casing, removing the form through said slit, inserting a bladder, closing the slit and inflating the bladder.

JOHN T. RIDDELL.

CERTIFICATE OF CORRECTION.

Patent No. 2,129,237.

September 6, 1938.

JOHN T. RIDDELL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 1, for "of", first occurrence, read or; and line 51, for "passing" read pasting; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of October, A. D. 1938.

Henry Van Arsdale

(Seal)

Acting Commissioner of Patents.