Jan. 5, 1926. 1,568,514

T. A. LEWIS

PLAYING BALL

Filed Dec. 22, 1923

FIG 1

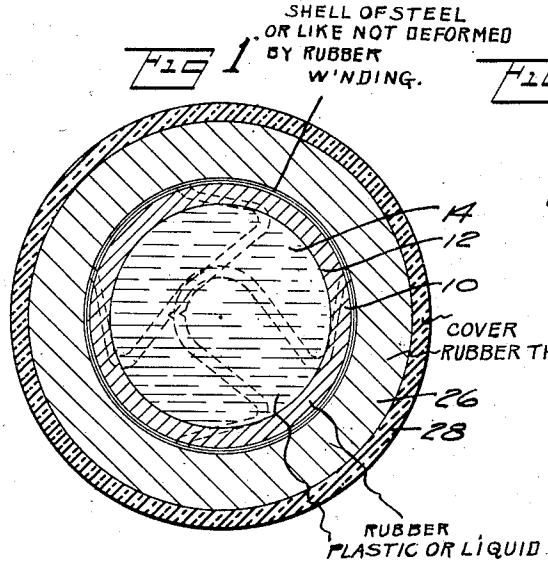


FIG 2

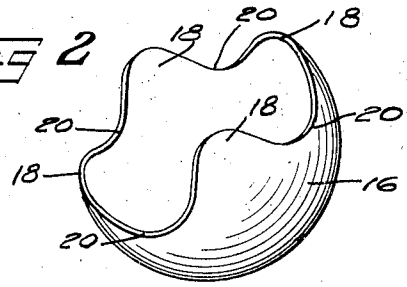


FIG 3

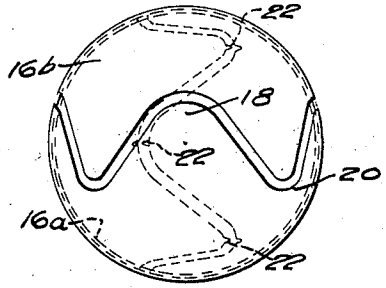


FIG 4

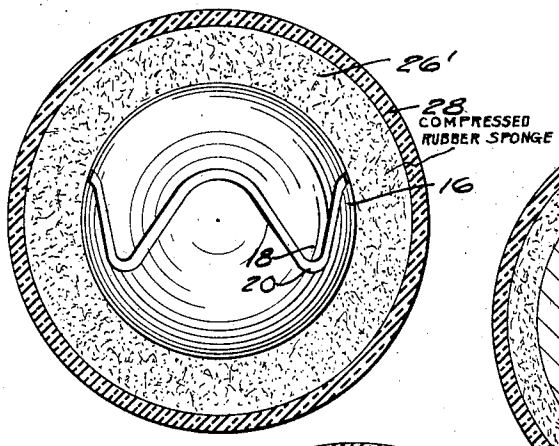


FIG 5

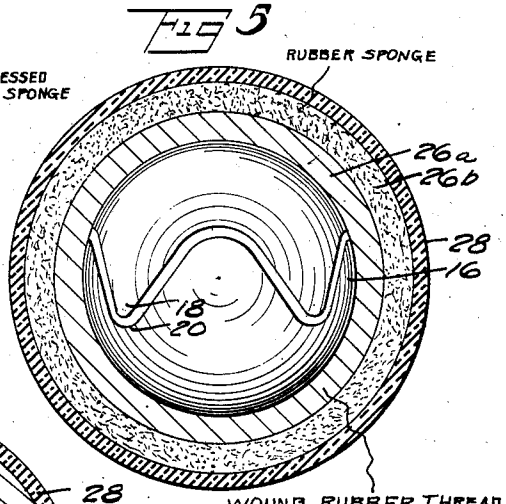
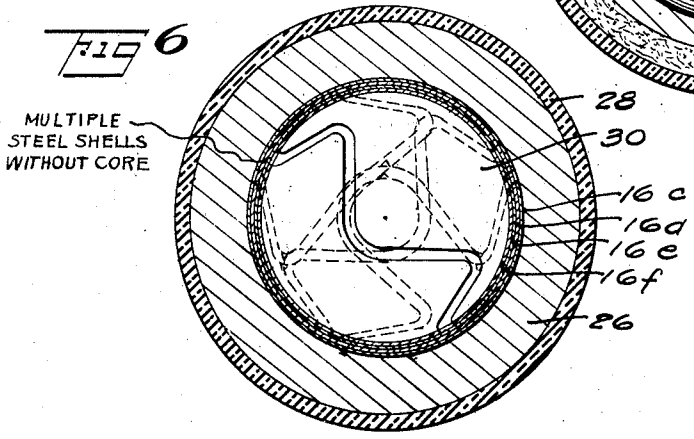


FIG 6



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UNITED STATES PATENT OFFICE.

THOMAS A. LEWIS, OF NEW YORK, N. Y.

PLAYING BALL.

Application filed December 22, 1923. Serial No. 682,197.

To all whom it may concern:

Be it known that I, THOMAS A. LEWIS, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented a certain new and useful Improvement in Playing Balls, of which the following is a specification.

My invention relates to playing balls, and while not so limited will be described as embodied in an improved golf ball.

The object of the invention is to produce a ball, which has its center of gravity at substantially its geometrical center, in which sphericity is maintained during manufacture and in the finished ball so as to drive and roll truly, and a ball which is of high resilience and can be manufactured cheaply with a minimum of expensive hand work.

The present invention is an improvement on the invention disclosed in my prior copending application Ser. No. 570,531, filed June 24, 1922, which has for its principal object the provision of an elastic core which is not subject to material distortion during application of surrounding matrix in making up the completed ball.

Embodiments of my invention are shown in the accompanying drawing, but it is to be understood that same are disclosed only for illustration and affording an understanding of the invention, and that the invention can be embodied in other forms within the scope of my claims.

In said drawings, Fig. 1 is a cross-sectional view of a golf ball embodying one form of the invention. Fig. 2 is a perspective view of a substantially hemispherical shell with locking extensions. Fig 3 is a side view showing the perferred assembly relation of a pair of shells. Fig 4 is a view similar to Fig. 1, but showing compressed rubber sponge, instead of wrapped rubber thread or tape. Fig. 5 is also a similar view showing partial replacement of rubber strands wrapped under tension by compressed rubber sponge. Fig. 6 is a view also similar to Fig. 1, but showing a plurality of nested shells with no interior core therein.

Reference character 10 designates a core consisting of a hollow spherical ball 12 of rubber or the like with a filling 14 of plastic or liquid material. Such cores are in common use with rubber thread windings applied directly thereto, but are deformed in winding even when the first rubber windings are applied by hand.

I avoid such deformation by applying to the exterior of the core, which may be of the construction shown or may be of other forms, one or more, preferably two, shells of material which are not subject to substantial deformation and will retain sphericity during application of surrounding material. The shells may be made of various alloys or materials, thin steel and celluloid being materials well adapted for the purpose. While the spherical shell is preferably complete without interruption, this is not essential in all cases as perforated metal or other reticulated metallic material may be utilized, if desired, and various other changes may be resorted to within the scope of my invention. Instead of making use of shell parts parted along an equatorial line as described in my said prior application, I construct the pairs of shell parts so that their edges are scalloped or serrated and two or more portions of each extend beyond the equatorial line, in order to obtain a clamping effect when the resilient half shells are applied to the core, enabling me to dispense with welding or otherwise securing the shell halves together and I also leave a clearance space or expansion joint between the half shells so as to make provision for yielding sufficiently when the ball is struck.

In Fig. 2 I have shown a half shell 16 which has a substantially toothed edge having four oppositely arranged portions 18, 18 extending beyond the equatorial line and relatively cut out or retracted portions 20, 20 between them for receiving similar projecting parts 18, 18 on the half shell mate of the pair, and in assembling same on the core a clearance space or expansion joint 22 is left between the edges of the half shells of each pair. Such clearance is preferably obtained by removal of shell material, so that the shell parts when assembled with the clearance space therebetween produce a complete substantially spherical shell. In other words, the clearance is obtained by making each of the scalloped halves slightly less than a hemisphere to produce an intermediate clearance space without resulting elonga-

tion of the shell on what may be referred to for convenience as its polar axis.

I preferably apply a plurality of such parted shells over the core 10 and arrange same so as to "break joints." In Fig. 3 I have shown two such shells 16^a, 16^b arranged with the joints at substantially 90 degrees apart. I preferably provide the half shells of each pair with distinctive markings of some kind in order that outer shell parts may not be mistaken for inner shell parts, for example, and in Fig. 3 I have shown the parts of inner shell 16^a provided with minute points 22 for distinguishing same from outer shell 16^b.

The core with two shells applied as described may be coated with adhesive and put directly into a winding machine, dispensing with all hand winding, and is not subject to any substantial deformation by application of rubber thread, tape or the like 26 wound thereon under tension, such as occurs when the core is not so armored to maintain its sphericity.

A ball so constructed when completed by application of the cover 28 is highly resilient, drives well and rolls truly as on the putting green or billiard table. When the core armoring shells are of material, such as thin steel say about .005" thick, it brings some additional weight near the surface, which appears to be of advantage in securing trueness of flight.

Instead of making use of rubber windings 26 I may replace same wholly or in part by compressed elastic material, such as compressed rubber sponge. In Fig. 4 I have shown compressed rubber sponge 26' replacing the wound and stretched strands of rubber 26, and in Fig. 5 I have shown the use of stretched and wound strands of rubber or the like 26^a applied about the armored core and compressed rubber sponge 26^b between same and the cover 28. The use of compressed elastic material, such as rubber sponge, in this relation is important because of the close and permanent union which can be obtained between same and the outer cover.

Instead of making use of an inner core as 10, a plurality of shells of the construction already described may be made use of. In Fig. 6 I have shown such a modification in which the interior core is dispensed with and four shells 16^c, 16^d, 16^e and 16^f are provided in the interior of the ball, leaving a hollow center 30. Any of the constructions already described may be resorted to about the outermost shell 16^c, and within the cover 28, but I have shown for illustration the customary wound body 26 of rubber strands put on under tension. The joints between the halves of the various shells 16^c—16^f are staggered, as already described, and the halves thereof are marked with distinguishing marks so as to avoid mismating and incorrect arrangement in assembly. The respective half shells are also preferably provided with projections, such as already described, so that they may be clamped together upon being assembled and handled after assembly without coming apart.

I claim:

1. A playing ball having an interior shell formed in halves with their edges scalloped or serrated.

2. A playing ball having an interior shell formed in halves with their edges scalloped or serrated, and having a clearance space between the halves.

3. A playing ball having a plurality of interior shells formed in halves with their edges scalloped or serrated, and with the parting lines between the parts of successive shells staggered with respect to one another.

4. A playing ball having a plurality of nested interior shells formed in halves with their edges scalloped or serrated, and having a clearance space between the halves, the clearance lines between the halves of successive shells being in staggered relation.

5. A playing ball having a core and a substantially non-deformable elastic shell thereabout formed in halves with their edges scalloped or serrated and registering with one another.

6. A playing ball having a core and a substantially non-deformable elastic shell thereabout formed in halves with their edges scalloped or serrated and registering with one another, and having a clearance space between the halves.

7. A playing ball having a core, a plurality of shells of substantially non-deformable elastic material applied successively thereabout, the shells being made in halves with scalloped or serrated edges.

8. A playing ball having a core, a plurality of shells of substantially non-deformable but elastic material applied successively thereabout, the shells being made in halves with scalloped or serrated edges, and having a clearance space between the edges of the shell halves.

9. A playing ball having a core, a plurality of shells of substantially non-deformable elastic material applied successively thereabout, the shells being made in sections or halves with scalloped or serrated edges, and with the joints between the successive shell halves in staggered relation.

10. A playing ball having a core, a plurality of shells of substantially non-deformable elastic material applied successively thereabout, the shells being made in halves with scalloped or serrated edges, and having a clearance space between the edges of the shell halves, and with the joints between successive shell halves in staggered relation.

11. A reenforcing elastic interior shell for

a playing ball formed in substantial halves with parts thereof projecting beyond the equatorial line, said projecting parts having the functions of spring clips.

12. A golf ball having a core and a reenforcing shell about said core, said shell being made in parts having portions thereof projecting beyond the equatorial line of the shell and acting as spring clips to hold the shell parts on the core.

13. A reenforcing interior shell for a playing ball formed of a plurality of parts, each part having scalloped or serrated edges and the scalloped or serrated edges of the respective parts in register with one another.

14. A reenforcing interior shell for a playing ball formed in a plurality of parts, each part having scalloped or serrated edges and the scalloped or serrated edges of the respective parts in register with one another, a clearance space being left between said parts.

15. A reenforcing interior shell for a playing ball formed in substantial halves with parts of each half projecting beyond and parts retracted behind the equatorial line, the projecting parts of one shell being adapted to substantially fit in the retracted parts of its mate.

16. In a playing ball, a core of hollow elastic material with a filling of fluid material, a shell of substantially non-deformable elastic material about the core, windings of rubber or elastic strands under tension about said shell, and a cover over the wound rubber.

17. In a playing ball, a core of hollow elastic material with a filling of fluid material, a shell of substantially non-deformable elastic material about the core, said shell being formed in halves with their edges scalloped or serrated and in register with one another, windings of rubber or elastic strands under tension about said shell, and a cover over the wound rubber.

18. In a playing ball, a core of hollow rubber with a filling of fluid material, a shell of substantially non-deformable elastic material about the core, said shell being formed in halves with their edges scalloped or serrated and in register with one another and having a clearance space therebetween, windings of rubber or elastic strands under tension about said shell, and a cover over the windings.

19. In a rubber ball, a hollow spherical core of rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, elastic filling material about the outermost shell, and a cover over the elastic material.

20. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, elastic filling material about the outermost shell, and a cover over the elastic material, said shells being formed in halves with their edges scalloped or serrated and registering with one another.

21. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, elastic filling material about the outermost shell, and a cover over the elastic material, said shells being formed in halves with their edges scalloped or serrated and registering with one another, and having a clearance space between the edges of the halves.

22. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, elastic filling material about the outermost shell, and a cover over the elastic material, said shells being formed in halves and the clearance lines between the halves of successive shells being in staggered relation.

23. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, elastic filling material about the outermost shell, and a cover over the elastic material, said shells being formed in halves with their edges scalloped or serrated and registering with one another and with the joints between successive shell halves in staggered relation.

24. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, windings of rubber or elastic material under tension about the outermost shell, and a cover over the rubber or elastic windings.

25. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, windings of rubber or elastic material under tension about the outermost shell, and a cover over the rubber or elastic windings, said shells being formed in halves with their edges scalloped or serrated and registering with one another.

26. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, windings of rubber or elastic material under tension about the outermost shell, and a cover over the rubber or elastic windings, said shells being formed in halves with their edges scalloped or serrated and regis-

tering with one another, and having a clearance space between the edges of the halves.

27. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, windings of rubber or elastic material under tension about the outermost shell, and a cover over the said windings, said shells being formed in sections or halves and the clearance lines between the halves of successive shells being in staggered relation.

28. In a playing ball, a spherical core of hollow rubber containing fluid material, a plurality of shells of substantially non-deformable elastic material successively about the core, windings of rubber or elastic material under tension about the outermost shell, and a cover over said windings, said shells being formed in halves with their edges scalloped or serrated and registering with one another and with the joints between successive shell halves in staggered relation, clearance spaces being left between the edges of shell halves.

29. In a playing ball, an elastic core, a plurality of shells of substantially non-deformable but elastic material about said core, rubber thread or elastic windings under tension about the outermost shell, and an elastic cover about the whole, said shells being formed of sections or halves, the edges being scalloped or serrated and registering with one another and a clearance space provided between the scalloped or serrated edges of the sections or halves, the concave and convex lines of the scallops or serrations being substantially bisected by the equatorial line so that the convex points form spring clips on the multiple shells and core.

In testimony whereof, I have signed my name hereto.

THOMAS A. LEWIS.