

No. 622,834.

Patented Apr. 11, 1899.

B. G. WORK & C. HASKELL.

BALL.

(Application filed Aug. 9, 1898.)

(No Model.)

Fig. 1.

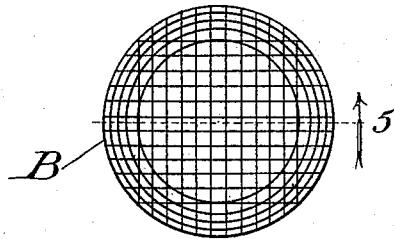


Fig. 2.

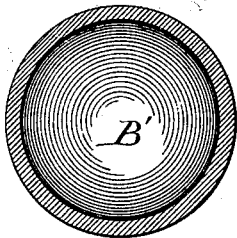


Fig. 3.

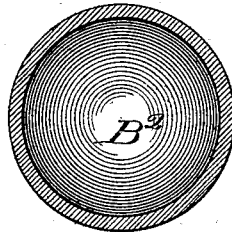


Fig. 6.

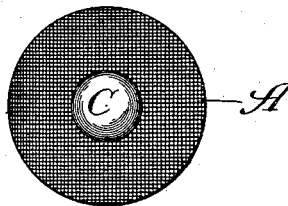


Fig. 4.

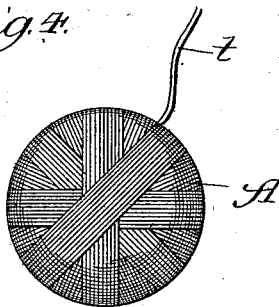
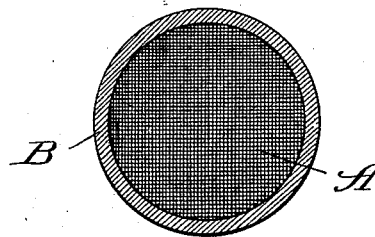


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

BERTRAM G. WORK, OF AKRON, AND COBURN HASKELL, OF CLEVELAND,
OHIO.

BALL.

SPECIFICATION forming part of Letters Patent No. 622,834, dated April 11, 1899.

Application filed August 9, 1898. Serial No. 688,152. (No model.)

To all whom it may concern:

Be it known that we, BERTRAM G. WORK, residing at Akron, in the county of Summit, and COBURN HASKELL, residing at Cleveland, in the county of Cuyahoga, State of Ohio, citizens of the United States, have invented a new and useful Improvement in Balls, of which the following is a specification.

Our invention is in the nature of an improved ball for use more especially in the game of golf, though it may be used in other games where a ball of similar properties is desired.

Our object is to provide a ball for the above purposes which shall possess the essential qualities of lightness and durability and which shall also have the property of being comparatively non-resilient under the moderate impacts incident to its use, but highly resilient under the stronger impacts.

We accomplish the objects sought by making the main body of the core of rubber thread wound under tension into spherical form and providing the same with an adequately-thick covering of gutta-percha or one of its substitutes, such as balata gum, the covering possessing the attributes, comparatively speaking, of inelasticity, toughness, hardness, and lightness.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a view of the interior of the ball; Figs. 2 and 3, interior views of the two halves of the outer shell or covering laid open; Fig. 4, an outer view of the elastic core employed; Fig. 5, a section taken on line 5 of Fig. 1; and Fig. 6, a view, partly in section, of a modified form of the elastic core, showing the rubber thread, from which it is made, as wound upon a central core-section of gutta-percha or the like.

The preferred manner of making the ball is by winding a rubber thread *t* upon itself, under a tension approximating the elastic limit, to produce a spherical core A and covering this core with a gutta-percha shell of adequate thickness. The preferred method of applying the inclosing shell is by wrapping or inclosing the core in one or more sheets of gutta-percha suitably cut and previously heated sufficiently to give it a certain de-

gree of plasticity, as by dipping it in boiling water, and then placing the core thus wrapped in a mold and subjecting the whole to sufficient pressure to form it to the exact shape desired, which shape is retained on cooling; but the shell may be produced by any other method which may be found practicable. The shell thus formed to be effective must be of such thickness as to remain comparatively rigid under the moderate impacts to which the ball is subjected, as in the case of light blows with the golf-club or on striking the earth, but to yield under the more violent impacts, as in "driving," whereby the force is brought to bear upon the elastic core.

B is the complete ball, and B' B² the halves of the comparatively unyielding shell which receives the elastic core A. The exterior surface of the ball may be roughened, as shown in Fig. 1, by using a mold having intersecting ridges on its inner surface.

Fig. 5 shows a complete half-section of the ball, the core being shown as made simply by winding a rubber thread upon itself to form a sphere.

Fig. 6 shows the rubber winding inclosing a small central core-section C, which may be of any suitable material serving to facilitate the winding and, if desired, to regulate to some extent the weight of the ball.

It is an essential feature of the construction that the core shall closely fill the interior of the shell and desirable that the core be confined therein under some compression.

A core produced by winding a rubber thread under high tension into spherical form possesses a remarkably high degree of elasticity coupled with high rigidity in the sense of resistance to deformation, which imparts to the ball the property of very great resilience. As the result of the described construction, therefore, our golf-ball has exceptionally high driving qualities owing to the fact that the impact of a golf-club is capable of distorting it through the shell by reason of the adequate flexibility of the latter and little tendency to bound by reason of the fact that little, if any, distortion takes place upon contact with the ground. The highest resistance to change in form, therefore, is attained when

the thread is at all parts of the ball under a tension close to the elastic limit, tending to maintain a perfect sphere, whereby the slightest distortion is resisted by approximately
5 the full strength of the material, and the effect is enhanced by the close environment of the elastic body within the comparatively unyielding shell.

In the appended claims the term "elastic
10 core" is meant to cover that portion of the ball included within the outer shell and composed wholly or mainly of rubber thread, while the term "gutta-percha shell" is intended as limiting the claims wherein it is
15 employed to gutta-percha or one of its substitutes, such as the one mentioned above.

What we claim as new, and desire to secure by Letters Patent, is—

1. A golf-ball, comprising a core composed wholly or in part of rubber thread wound under high tension, and a gutta-percha inclosing shell for the core, of such thickness as to give it the required rigidity, substantially as described.

2. A golf-ball, comprising a central core-
25 section of relatively non-elastic material, rubber thread wound thereon under tension, and an inclosing shell of gutta-percha, of such thickness as to give it the required rigidity, substantially as described.

BERTRAM G. WORK.
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In presence of—

R. T. SPENCER,
D. W. LEE.