

No. 705,359.

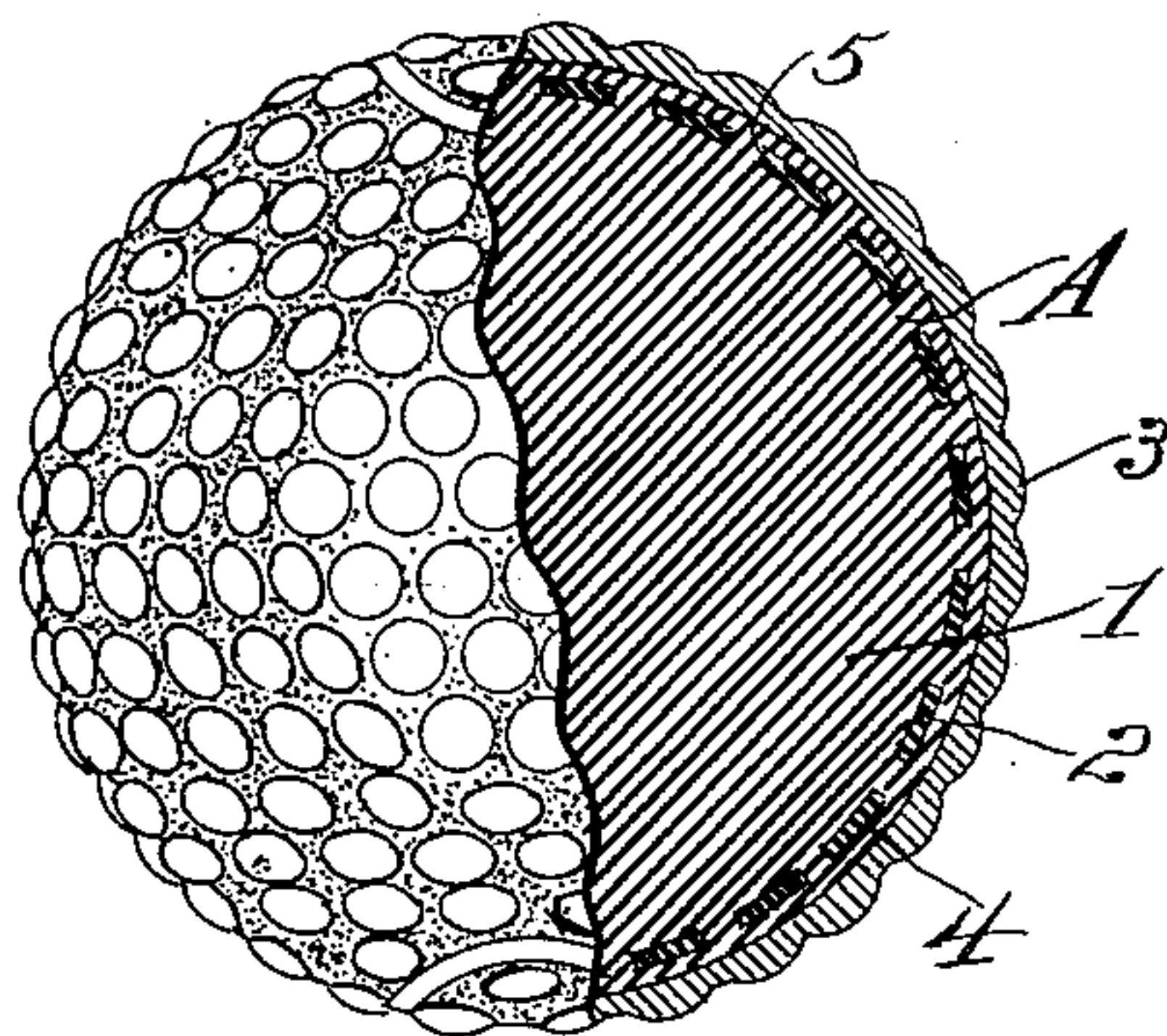
Patented July 22, 1902.

E. KEMPSHALL.

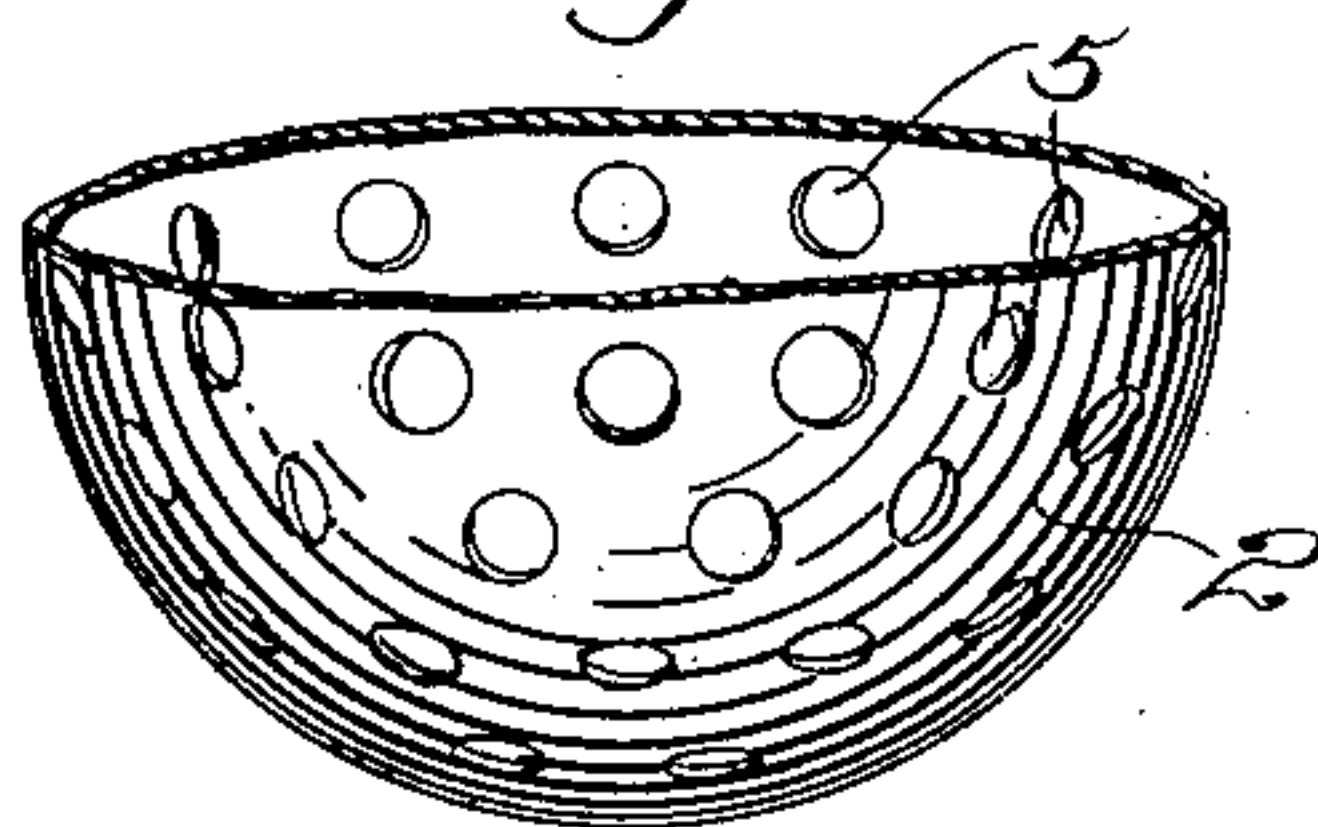
PLAYING BALL.

(Application filed May 9, 1902.)

(No Model.)



*Fig. 1.*



*Fig. 2.*

*Witnesses:*

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# UNITED STATES PATENT OFFICE.

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## PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 705,359, dated July 22, 1902.

Application filed May 9, 1902. Serial No. 106,540. (No model.)

*To all whom it may concern:*

Be it known that I, ELEAZER KEMPSHALL, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Playing-Balls, of which the following is a specification.

This invention relates generally to playing-balls, and specifically to balls used in the game of golf; and its object is to improve the flying power and other qualities of the ball.

In the drawings forming a part of this specification, Figure 1 is a part-sectional view of a golf-ball made in accordance with my present improvements, and Fig. 2 shows a fragment of a perforated metal shell contained in the ball.

My improved ball consists, preferably, of a springy spherical filling 1, inclosed by a thin hard elastic shell 2 and a casing 3, of springy plastic material, preferably gutta-percha, a thin soft-rubber layer 4 intervening between the casing 3 and the thin shell 2.

I prefer to make the shell 2 of metal, although other material may be employed, and I deem a very thin shell of tempered steel to be well suited for the purpose. The flexibility of this hard shell may be increased by providing the same throughout with perforations 5, thus vastly increasing the resiliency or flying power of the ball.

The thin layer 4 of soft rubber is intended chiefly to act as a cushion between the hard shell 2 and the hard casing 3, so as to diffuse the force of the blows upon the outer shell and save it from damage, while calling into action a larger area of the inner shell, with the effect of increasing the energy of the ball. It will be understood that when the outer shell or casing is depressed by a blow the soft rubber of the layer 4 is forced to flow sidewise away from the area of depression, thus not only cushioning the blow, but also calling into action a larger portion of the inner hard shell, and, further, by its own resiliency tending to restore the outer shell instantly to its normal spherical shape, thereby reacting upon the club and causing the ball to spring with great energy therefrom.

Preferably the plastic shell 3 holds the interior elements of the ball under compression, particularly the rubber facing or layer

4, and in this instance I illustrate the latter as integral with the core 1, said layer being connected to the core through the apertures 5 in the hard shell 2, as illustrated at A, or, in other words, the perforated shell 2 is embedded in a rubber sphere, the perforations being filled by the material of the sphere and said shell lying within the periphery of said sphere, so that a portion of the sphere forms a facing for the shell.

It will be understood that the outer layer 4 may be vulcanized to the core 1 through the apertures 5 before the covering 3 is applied to the ball, said core and layer being either uncured or partially cured when assembled with the steel shell. Said layer 4 is preferably a thin skin, so that the steel shell may lie close to the periphery of the finished golf-ball, and hence effectually support the gutta-percha cover.

It will be understood that the shock of the blow is taken chiefly by the hard thin shell 2, which effectually supports the gutta-percha or other plastic shell 3, so that the latter may not buckle, while the intervening layer 4 contributes both to the durability and resiliency of the ball, as already explained. In order to obtain these advantages, it is important that said inner shell 2 shall lie close to the outer shell 3, as illustrated, so as not to afford an opportunity for buckling of the latter. Moreover, by making the cushioning-layer thin it becomes impossible to effect displacement of said layer to such an extent as to burst the outer shell 3.

The principal function of the thin skin 4 is to prevent the gutta-percha shell 3 from being hammered out or "peened" by the blows of the club, the latter acting as a hammer and the hard shell 2 as an anvil. Such flattening of the shell 3 would eventually enlarge its diameter, so that it would become loose upon the ball; but the thin soft skin 4 prevents this injury, besides contributing to the flying power of the ball.

For certain games the shell 3 may be omitted, and for other games a shell of different material and otherwise constructed may be substituted.

So long as a thin rubber cushioning-layer is placed between the hard inner shell 2 and the hard outer shell 3 other cores or fillings



may be used, or, if desired, the core may be omitted, leaving only the thin inner shell, the outer shell, and the intervening thin cushioning-layer within the scope of my improvements, and still other changes in details may be resorted to.

Having described my invention, I claim—

1. A playing-ball comprising a hard thin shell provided throughout with perforations, a thin skin of soft rubber covering said shell, and a cover of wear-resisting material upon said rubber layer, said hard shell being close to the periphery of the ball.

2. A playing-ball comprising a hard thin shell provided throughout with perforations, a thin skin of soft rubber covering said shell, and a casing of gutta-percha holding said rubber layer under compression, said hard shell being close to the periphery of the ball.

3. A playing-ball comprising a thin tempered-steel shell, a thin skin of soft rubber covering said shell, the latter being provided throughout with perforations, and a shell of gutta-percha upon said rubber layer, said steel shell being close to the periphery of the ball.

4. A playing-ball comprising a hard thin shell provided throughout with perforations; soft rubber forming a thin covering upon said shell and extending into said perforations; and a shell of gutta-percha holding said rubber layer under compression.

5. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell.

6. A playing-ball comprising a soft-rubber sphere around which is embedded a thin perforated metal shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; all of said rubber being integral.

7. A playing-ball comprising a perforated tempered steel shell; a soft rubber filling therein; and a soft-rubber facing for said shell.

8. A playing-ball comprising a thin tempered-steel shell provided with perforations; a filling therein consisting of springy solid

material; and a facing or layer of soft rubber upon said shell; portions of at least one of said filling and facing elements entering said perforations.

9. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; and a casing of gutta-percha upon said soft-rubber facing.

10. A playing-ball comprising a soft-rubber sphere around which is embedded a metal perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; and a shell of hard material holding said rubber facing under compression.

11. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; and a shell of plastic material holding said layer under compression.

12. A playing-ball comprising a hard shell provided throughout with perforations; and springy material filling said shell and extending through said perforations and also forming a facing upon said shell; said facing being integral with the filling.

13. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations and also forming a facing for said shell; and a casing of gutta-percha holding said facing under compression.

14. A playing-ball comprising a sphere of soft rubber, and a perforated metal shell embedded around said sphere at the peripheral portion thereof.

15. A playing-ball comprising a solid sphere of soft rubber, and a perforated metal shell embedded within the surface of said sphere and close to said surface.

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Witnesses:

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