

No. 700,658.

Patented May 20, 1902.

E. KEMPSHALL.

PLAYING BALL.

(Application filed Mar. 25, 1902.)

(No Model.)

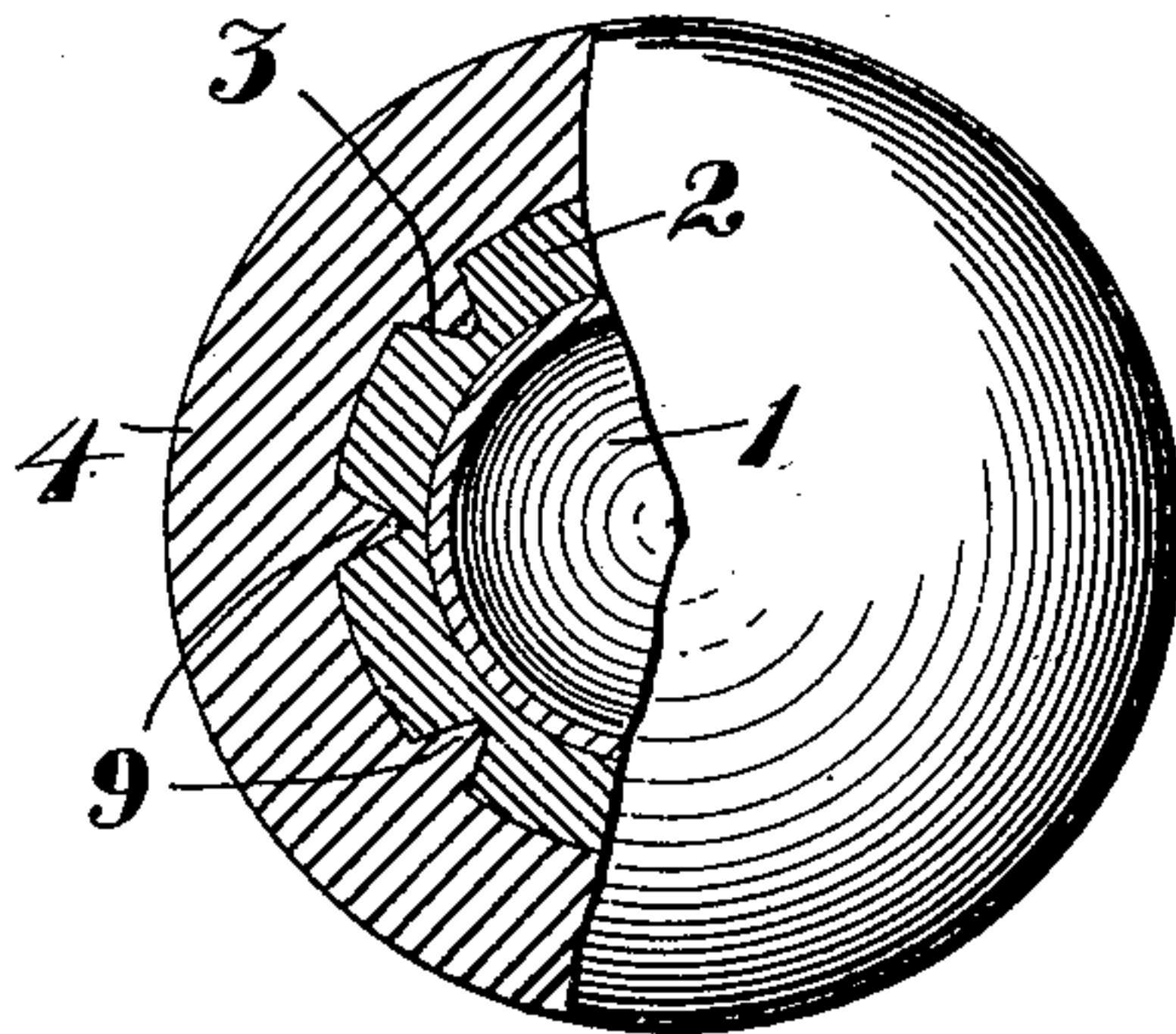


Fig. 1.

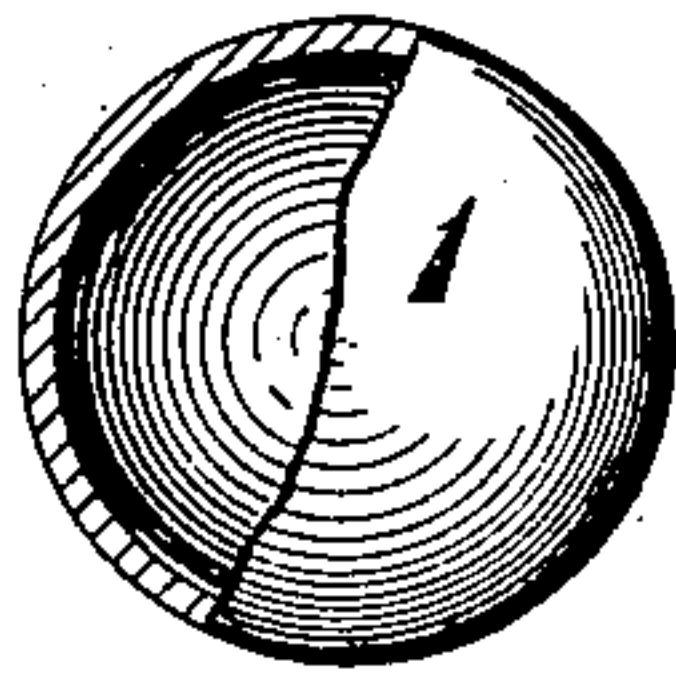


Fig. 2.

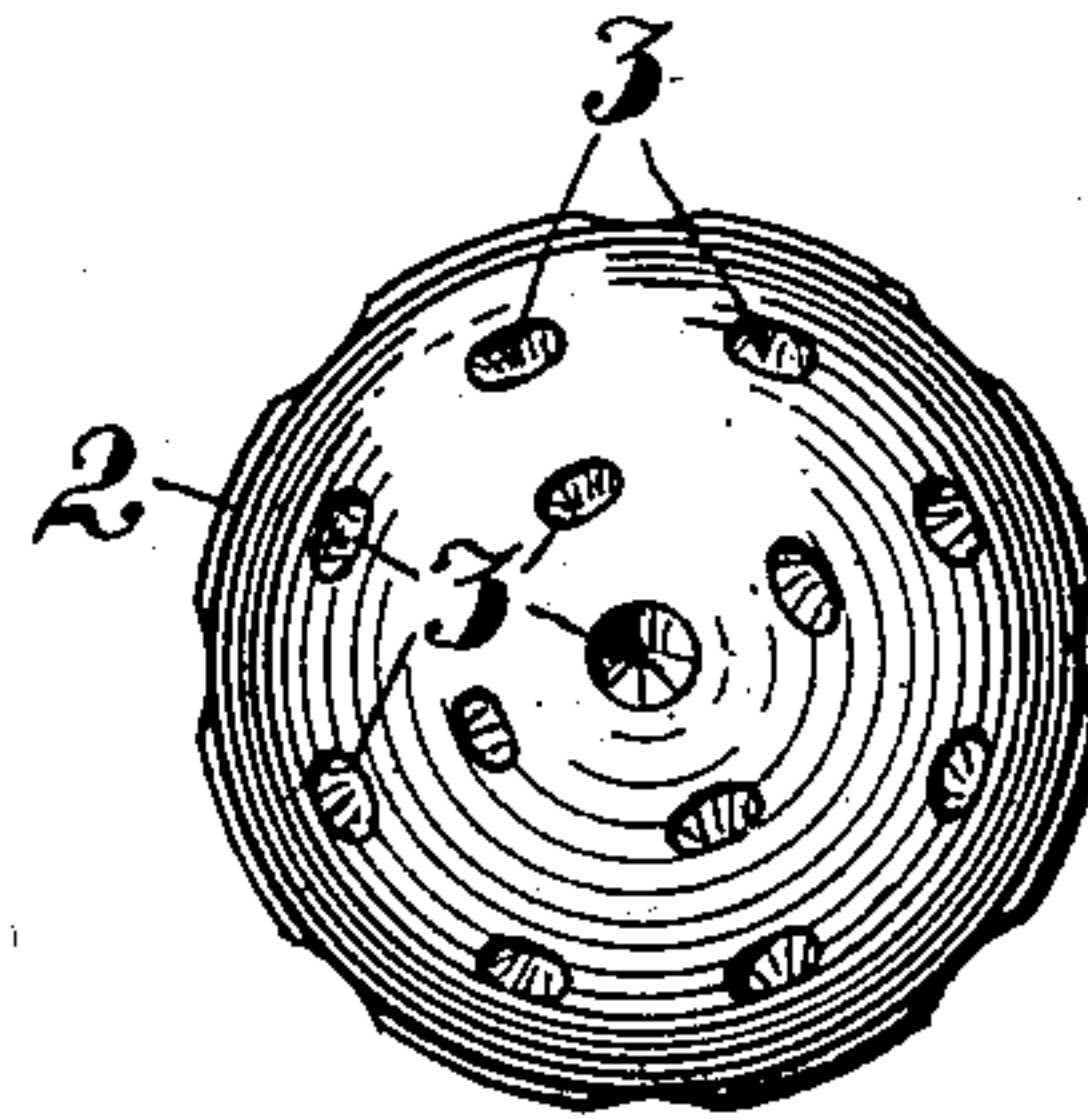


Fig. 3.

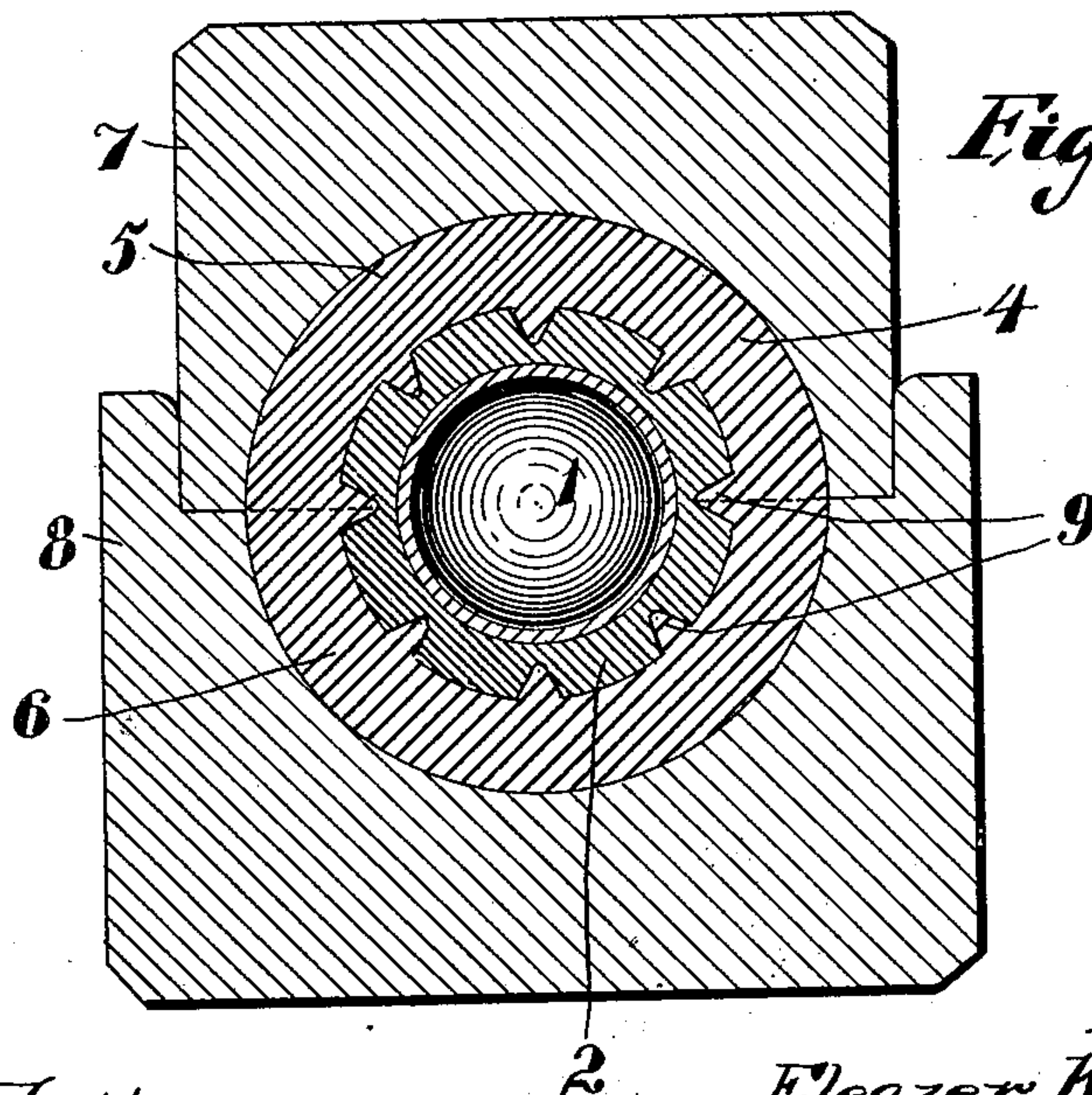


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PLAYING-BALL.

SPECIFICATION forming part of Letters Patent No. 700,658, dated May 20, 1902.

Application filed March 25, 1902. Serial No. 99,929. (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 to playing-balls; and it consists, substantially, in the improvements hereinafter more particularly described.

The invention has reference more especially to billiard-balls and the like, although certain features thereof may be advantageously adapted or employed in the construction or formation of balls such as are used in the game of golf.

The principal object of the invention is to provide a playing-ball of the character named of increased durability and efficiency and one also possessing the necessary inherent qualities of elasticity and strength, besides being symmetrical and equally balanced at all points from the center to the circumference thereof.

Other objects of the invention will also more fully hereinafter appear when taken in connection with the accompanying drawings, in which—

Figure 1 is a view of my improved ball, partly in section; and Fig. 2 is also a part sectional view of the spherical metal core of the ball. Fig. 3 is a view showing the metallic envelop or covering for inclosing the spherical metal core of the ball, and Fig. 4 illustrates a sectional view of one means which may be employed in the process of finishing or manufacturing the ball.

To be thoroughly effective for its purpose, a billiard or similar playing ball should possess a certain amount of elasticity, but should not be too "lively," on account of the comparatively short distances traveled by the same between the cushions of the playing-table. Moreover, as is well understood in the game of billiards, it is desirable that the ball come to a state of rest as quickly as possible after each shot or play made, the cushions of the tables being themselves usually elastic to cause the ball to move over the table and take direction in accordance with the particu-

lar nature of the caroms made. Besides, a billiard-ball is usually required to be of substantially a given weight for a predetermined size thereof, and better results are also derived in the use of the ball the nearer the heavier parts or components thereof are to the circumference. A billiard-ball constructed in accordance with my present improvements substantially answers the above and other requirements, as will hereinafter more fully appear.

I employ a spherical core for the ball, and preferably said core is hollow and of metal, although in some instances the same may be of other suitable material and substantially solid. The core may be of any desired diameter proportionate to the diameter of the completed ball, and upon said core I apply an envelop or tight-fitting casing of suitable material, said envelop or casing being also preferably of metal. Upon the said inner casing or envelop I apply a comparatively thick outer casing or shell of celluloid or other suitable material, and the whole structure is then placed between heating and compressing dies to shape and otherwise complete the ball. The inner casing or envelop which incloses the core may be applied to said core in any suitable way—as, for instance, by casting the same thereon—and the outer casing is preferably constructed of two hemispherical segments, which may be applied in any suitable way, but preferably as will hereinafter appear. In order that there may be perfect union or coöperation between the outer casing and inner envelop, a special construction is resorted to whereby no displacement of the one relatively to the other can take place no matter how hard the ball may be struck.

Specific reference being had to the accompanying drawings by the designating characters thereon, 1 represents the interior element or core of the ball, which core is a sphere of steel or other metal and also preferably hollow. In some instances, however, said core may be solid, and it may also be constructed of other material than metal. The hollow metal sphere shown herein gives stability to the completed ball and possesses the requisite degree of elasticity and strength for the purpose for which

used, besides being light in weight and not liable to lose its shape when the ball structure is placed in the finishing compression-dies. Upon this core 1 I apply in any suitable way
 5 an envelop or tight-fitting casing 2, which is also preferably of metal or analogous material and is of proper thickness or diameter proportionate to the diameter of the ball when completed. The said envelop is also practically
 10 spherical in form, and the same is preferably cast in place upon said core by the use of a suitable mold for the purpose, although it may be applied in other ways. Either while the said envelop is hot or at any other time
 15 I form the same with a lot of pits or recesses 3, which are distributed or scattered about the outer surface thereof, as shown in Fig. 3. These pits or recesses may be of any suitable form, and they may also be of any desired
 20 depth, the purpose thereof being to receive portions of the outer casing or shell, as presently explained, by which an interlocking engagement takes place between the latter and the said inner casing or envelop. Preferably the said pits or recesses are formed in
 25 the mold at the time the envelop is cast upon the core. The sphere 2 is preferably heavier than the core 1.

I apply to the outer surface of the inner
 30 casing or envelop in any suitable way an outer casing or shell 4, of celluloid or other desired material, said outer casing or shell preferably comprising hemispherical segments 5 and 6, the whole ball structure being
 35 then placed within compressing-dies 7 and 8, which dies are heated to render the celluloid plastic, and they are brought together with great pressure, so as to force parts 9 of the plastic celluloid into the pits or recesses 3 of
 40 the inner casing or envelop 2, as shown in Fig. 4. I preferably maintain the pressure on the structure until the outer casing or shell cools and hardens, so that when the ball is re-

moved from the dies the outer shell or casing is effectually interlocked with or gripped in
 45 place upon the said inner casing or envelop.

I thus produce a ball the predominance of the weight of which is nearest the circumference thereof and one also in which there is an equal distribution of weight in all direc-
 50 tions from the center outward. My improved ball also has a high degree of stability and embodies all the other desirable characteristics of a billiard or similar playing ball. The material of the outer casing or shell
 55 should be of high quality of celluloid or other pyroxylin compound and fine and dense in character, so as to present a true and even surface throughout the ball, by which an equal responsive action is derived from a
 60 blow of the same force at whatever part of the ball applied.

Having described my invention, I claim—

1. A playing-ball comprising an inner sphere of metal and an outer sphere of cellu-
 65 loid, one of said spheres having integral hobs and the other of said spheres having pits engaged by said hobs.

2. A playing-ball comprising an inner metallic sphere having pits, and an outer cellu-
 70 loid sphere having integral hobs which project into said pits.

3. A playing-ball comprising a hollow metal sphere provided with pits, and a celluloid shell upon said sphere, said shell having
 75 integral hobs which enter said pits.

4. A playing-ball, comprising a hard hollow core, a metal sphere thereon, and a hard shell interlocking with said sphere.

5. A playing-ball, comprising a core, a
 80 metal sphere thereon, and a celluloid shell interlocking with said sphere.

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Witnesses:

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