

No. 731,542.

PATENTED JUNE 23, 1903.

A. L. BURT.

METHOD OF MANUFACTURING GAME BALLS.

APPLICATION FILED DEC. 19, 1902.

NO MODEL.

FIG. 1.

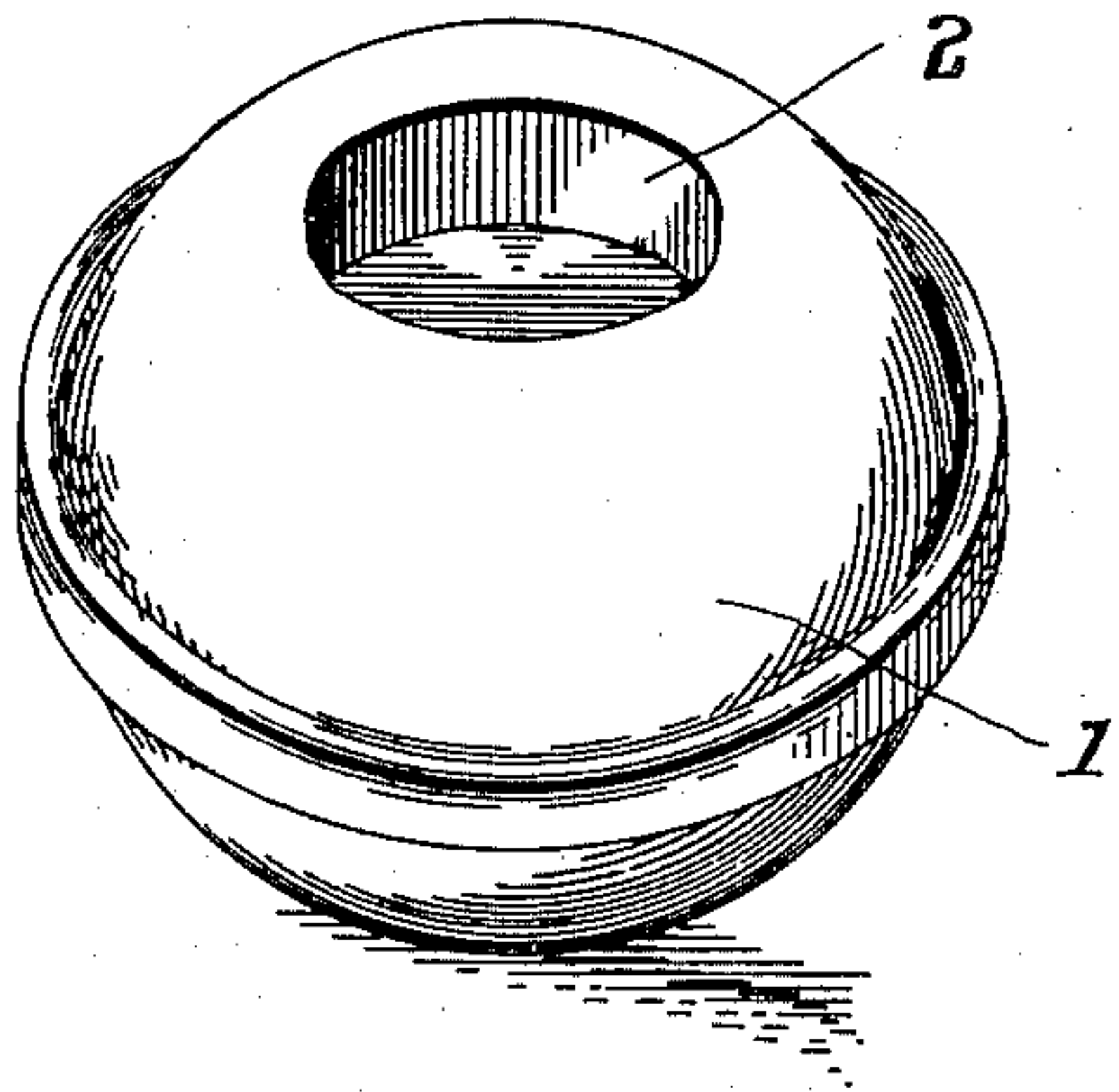


FIG. 2.

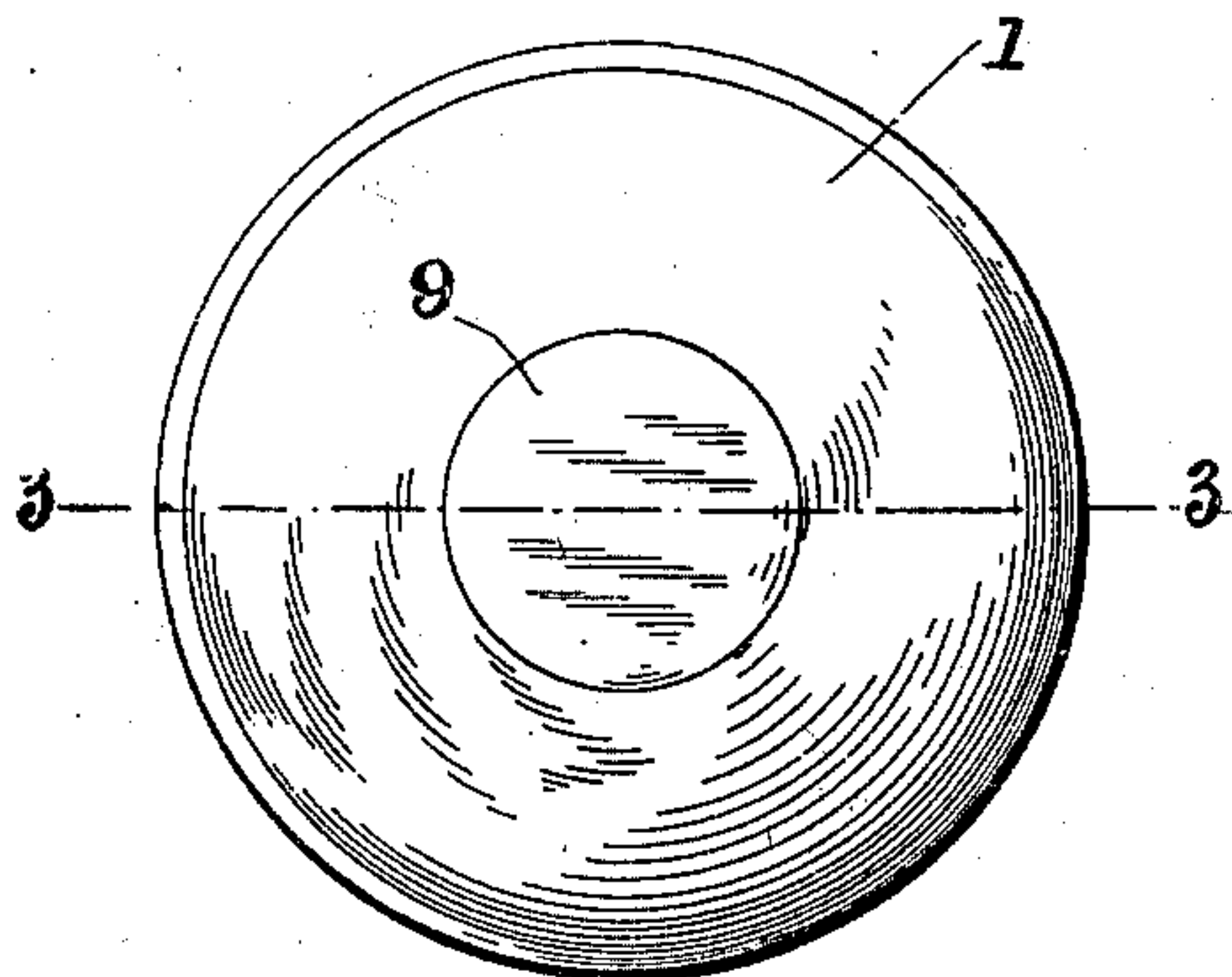


FIG. 3.

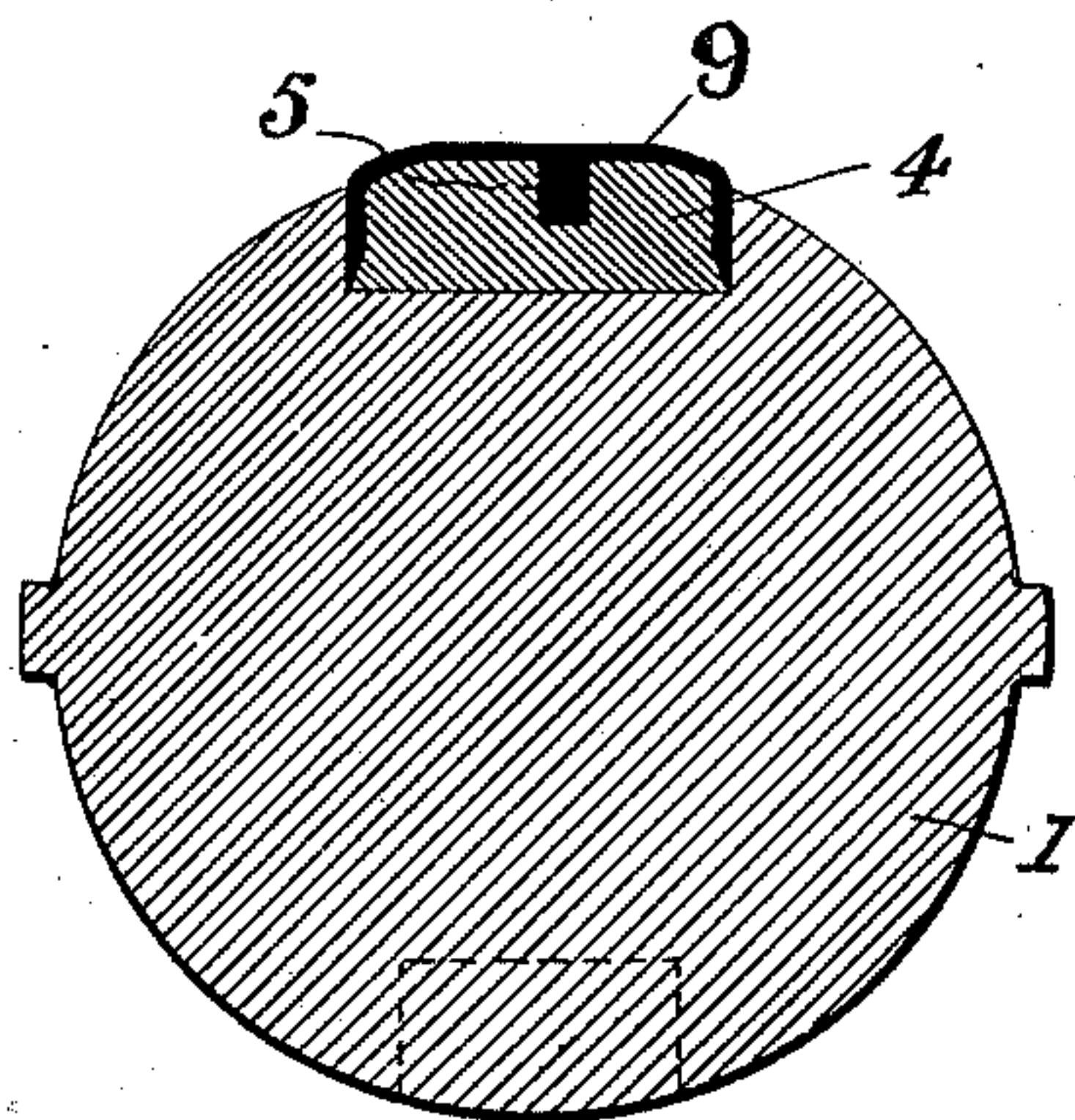


FIG. 4.

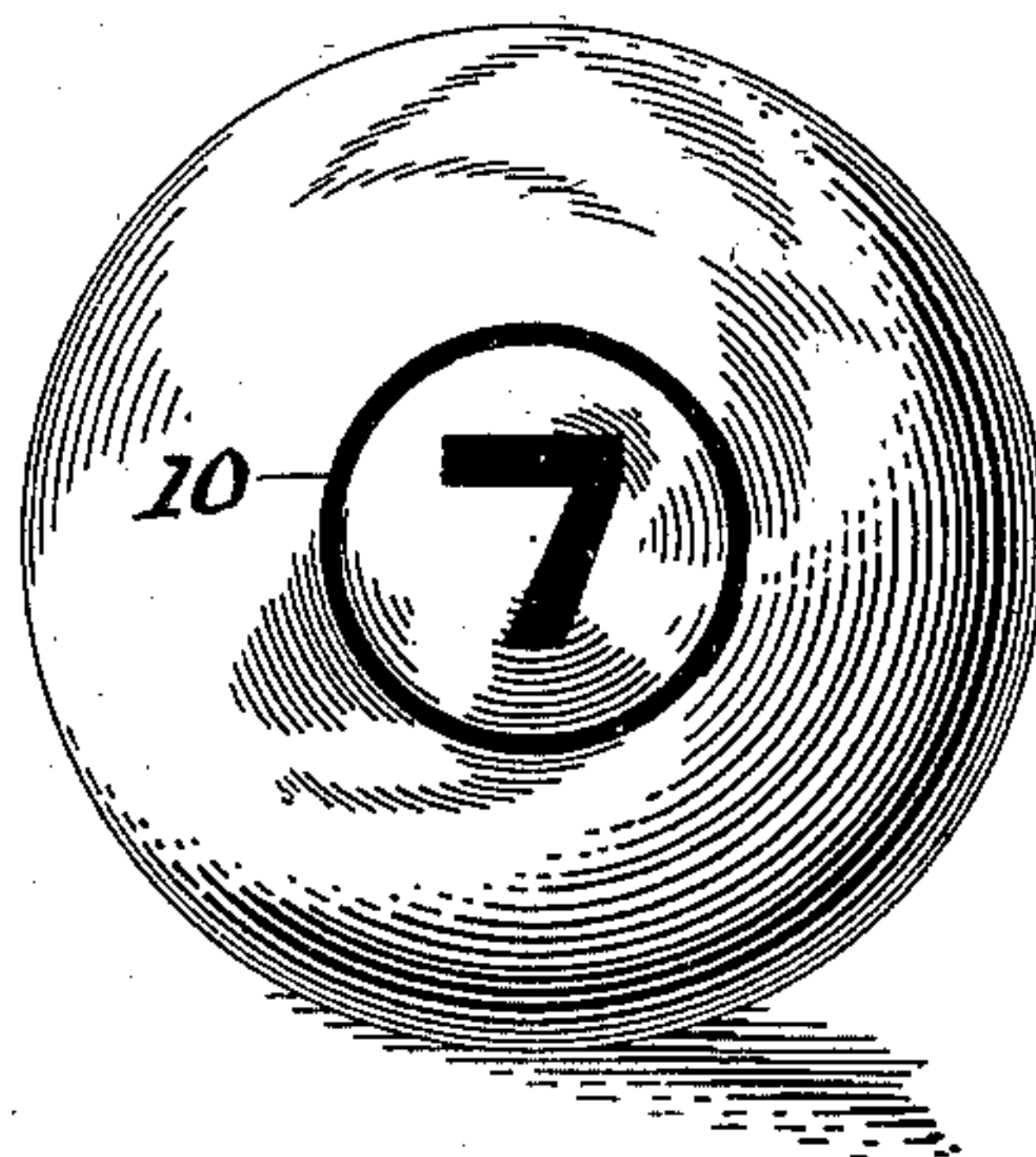


FIG. 5.

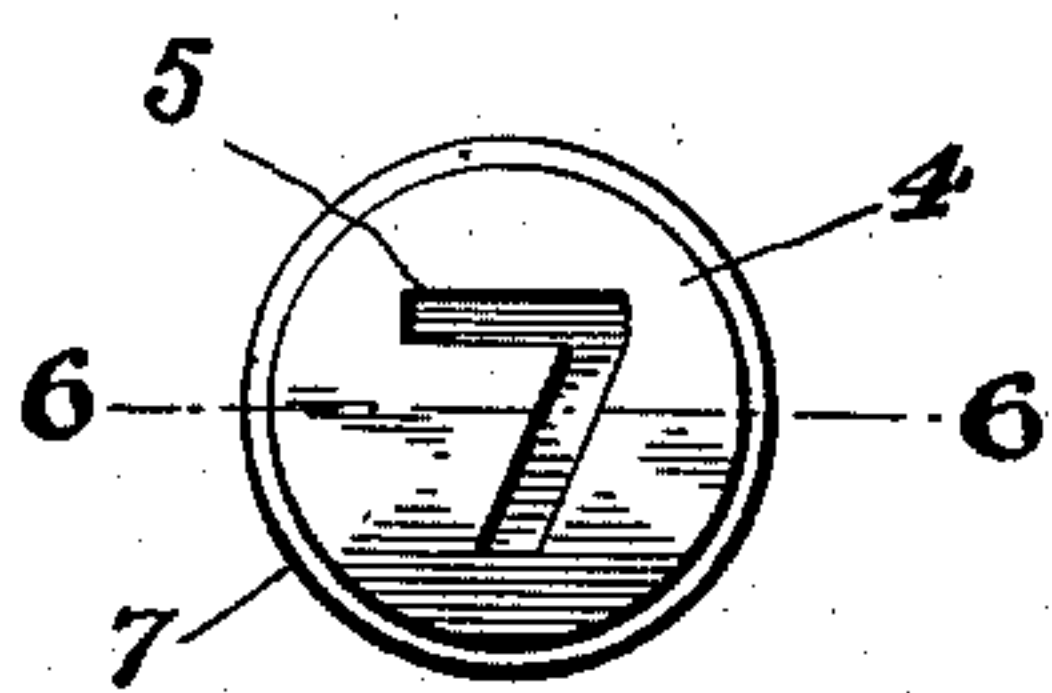


FIG. 7.

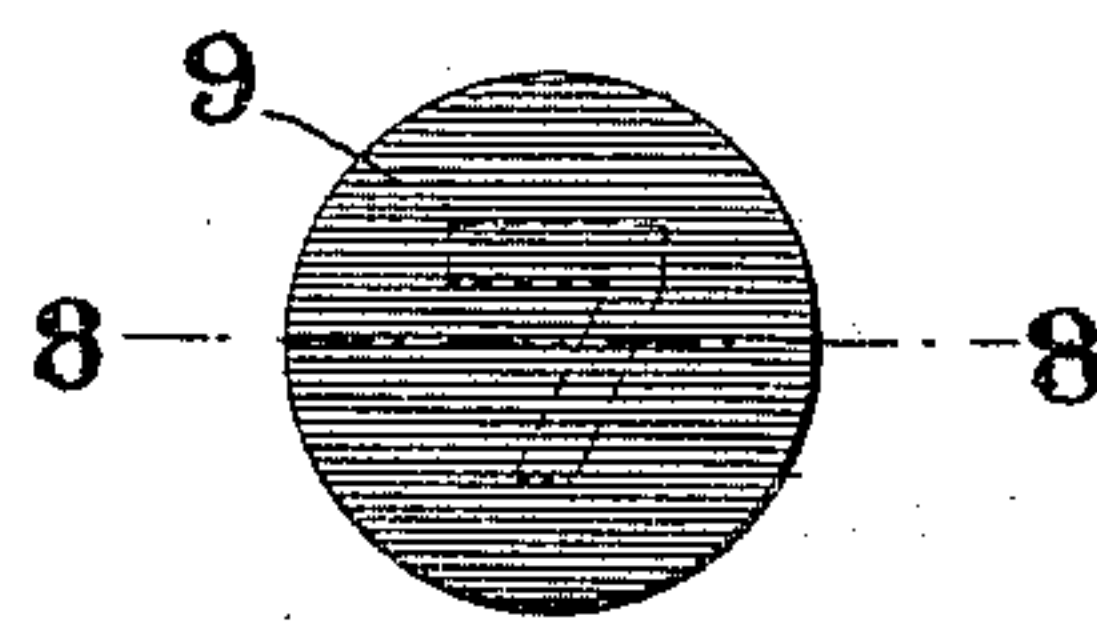


FIG. 6.

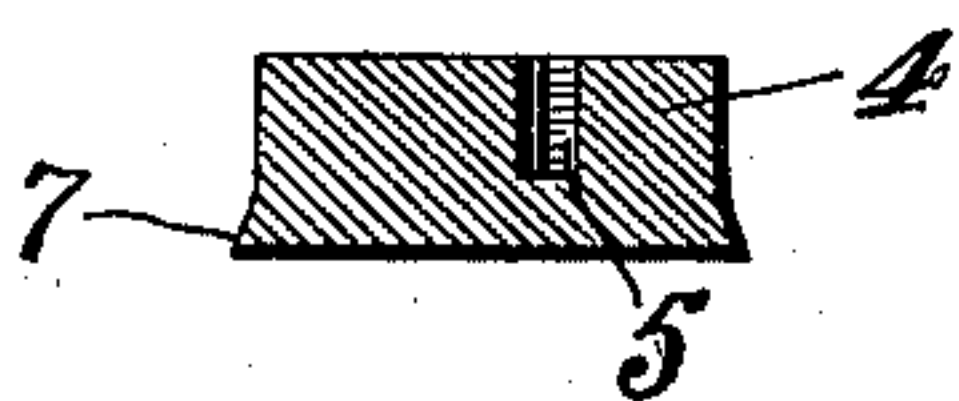


FIG. 8.



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Witnesses

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METHOD OF MANUFACTURING GAME-BALLS.

SPECIFICATION forming part of Letters Patent No. 731,542, dated June 23, 1903.

Application filed December 19, 1902. Serial No. 135,920. (No model.)

To all whom it may concern:

Be it known that I, ALONZO L. BURT, of Milburn, New Jersey, have invented a new and useful Improvement in Methods of Manufacturing Game-Balls, which invention is fully set forth in the following specification.

My invention relates to the art of manufacturing pool and other game balls, and particularly to that class of balls known as "composition" balls. Many balls of this class are provided with a black number on a white or other contrasting background and inclosed in a black circle.

The object of the present invention is to provide an efficient and expeditious method whereby said number and circle in black may be formed in composition game-balls. This class of balls is commonly formed of a plastic composition which is molded into suitable form and subjected to heat and pressure, after which it is turned to the desired size and polished.

With the aforementioned object in view the invention consists in the following method of forming the number and inclosing circle on the ball or of forming the number without such circle—that is to say, I form a flat circular disk of the white plastic composition commonly employed in making pool-balls, the base of which disk is preferably of the same diameter as the exterior diameter of the circle surrounding the number in the pool-ball, while the diameter of the top of the disk is equal to the interior diameter of said circle. This disk has the desired number formed therein in deep intaglio. I next take this disk and cover the top of it with black plastic composition, which fills the depressed number and also covers the periphery of the disk with the same black composition, so that the entire disk as thus covered is of an equal diameter at top and bottom and has a wall of the black material of even thickness entirely surrounding the same. This number-disk may be prepared with great rapidity by the use of a tool for stamping out the disk in white by one operation and then by a single additional operation applying the black material thereto. The number-disk thus formed is then placed in proper position in a pool or other game ball formed of plastic composition,

and the whole is then subjected to heat and pressure, whereby the ball, number, disk, and circle become united into a very hard homogeneous mass, after which the ball is turned down to the desired size. This turning operation removes the black material from the surface of the disk; but by reason of the depth of the circle and number only their outer surface is turned off and they appear in black. Various methods may be employed in placing the disk covered with black in proper position in the ball preparatory to subjecting the ball and disk to heat and pressure. For example, one disk may be placed face downward on the bottom die of the mold used in shaping or forming the plastic ball and the proper amount of plastic material to form a ball be then placed in the mold above the one disk, after which a second disk may be embedded face uppermost in the plastic material and the top die applied and subjected to pressure to compact the plastic material into a ball. This forms a ball of plastic material with the covered number-disks embedded therein.

According to another method I take a composition ball, preferably, though not necessarily, before it has been subjected to heat and accompanying pressure, and form a suitable hole or circular depression therein having a diameter equal to the diameter of the black covered number-disk. This depression may be formed in the ball as it is being molded or it may be drilled or otherwise cut out after the ball is formed. This having been done, I insert the black-coated number-disk within the opening or depression in the ball and then subject the ball to heat and pressure, these two steps being preferably simultaneously performed. After the number-disk has been placed in proper position in the ball by one of the above or any other method I usually place it in the well-known hydrostatic gun, the same being a device whereby the composition ball is simultaneously subjected to heat and hydraulic pressure. This last-mentioned step acts to solidify the plastic composition of which the ball and number-disk are formed, so that it becomes a thoroughly hard and homogeneous mass, and when it is removed from the hydrostatic gun and cooled the entire ball is then turned to

the desired diameter. In the act of turning the ball down the black material which was placed over the surface of the white number-disk is entirely removed, while that which
 5 filled the depressed number in the disk remains, as also that which was formed around the periphery of the disk, thus disclosing a number in black surrounded by the desired circle. By this means I am able to form the
 10 number-disk with its number in black and the black circle by the use of forming or stamping tools with great rapidity. Another advantage lies in the fact that the number may be accurately centered within the circle,
 15 while the circle itself is formed of a black line of even thickness throughout its extent.

One manner of carrying out the invention is illustrated in the accompanying drawings, in which—

20 Figure 1 shows a roughly-formed ball with a depression therein. Fig. 2 shows a ball with the number-disk embedded therein and after it has been subjected to heat and pressure, but before turning. Fig. 3 shows a
 25 cross-section of Fig. 2 on the line 3 3. Fig. 4 is a plan view of the completed ball after turning. Fig. 5 is a plan view of the disk of white material before the black coating has been applied thereto. Fig. 6 is a cross-section
 30 of Fig. 5 on the line 6 6. Fig. 7 is a plan view of the disk after the coating of black material has been applied thereto, and Fig. 8 is a cross-section of Fig. 7 on the line 8 8.

Referring to the drawings, 1 is a game-ball
 35 of suitable plastic material having a hole or depression 2 therein.

4 is a disk of white plastic material such as is ordinarily employed in the manufacture of composition pool and other balls, which
 40 disk has formed therein in intaglio a number, as indicated by the reference-numeral 5. This number is very deeply sunken into the disk, as shown in Fig. 6. It will be seen that the bottom 7 of the disk 4 is larger in
 45 diameter than the top of the disk, and preferably the diameter of the disk is quite rapidly contracted near the bottom and then remains constant to the top of the disk, as will be readily understood by inspecting Fig. 6.
 50 The diameter of the bottom of the disk should be such as to just permit the disk to concentrically enter the hole 2 in the ball 1. The object of having the diameter of the disk and of the hole thus so nearly the same is to perfectly center the number-spot in the hole or
 55 opening and to the end that the thickness of the black circle subsequently to be formed may be entirely uniform. The disk 4 having been formed, as shown in Figs. 5 and 6,
 60 is then coated with black plastic material 9, Figs. 7 and 8, the black material being spread over the entire top surface of the disk, forced down into the depressed number so as to entirely fill the same, and at the same time that
 65 the top is thus treated the periphery of the disk is also given a coating of this same black plastic composition under pressure, which

coating is of uniform thickness entirely around the disk, except at the immediate
 70 base. When the disk has thus been coated with the black material, its diameter is uniform from top to bottom and is such that it will just fit within the hole 2 of the ball. In other words, the diameter of the disk from
 75 top to bottom when coated with black, as shown in Fig. 8, is the same as the diameter of the bottom of the disk when formed in white, as shown in Fig. 6. The disk thus
 80 coated, as shown in Figs. 7 and 8, is then inserted in the depression 2 in the ball 1 or formed up with the ball, as before described, and the entire ball and disk are preferably
 85 inclosed in rubber cups and subjected to heat and pressure, preferably in the well-known hydrostatic gun employed in the manufacture of composition pool-balls. This having
 90 been done, the body of the ball, the white material of the disk, and the black material for the number and the circle all become thoroughly united and form a hard homogeneous
 95 mass which is readily turned in a lathe, and when so turned the black portion 9, as shown in Fig. 3, is removed from the outer surface of the disk and the white of the disk is exposed. The black constituting the numeral
 100 5, however, remains clearly exposed and surrounded by the white of the disk 4, while that portion of the black material which surrounds the periphery of the white disk is exposed at its outer surface and appears in the
 105 form of the ring 10, Fig. 4.

The white disks 4, with the numbers depressed therein, can be struck out with great
 110 rapidity by suitable dies or machines and may be then coated with the black composition by means of suitable dies or presses, this step being also performed very rapidly, after which it is the work of but a second to insert
 115 the coated number-disk into the depressions provided therefor in the ball, so that all of the operations in connection with the number and its inclosing circle are cheaply and rapidly performed.

While I have for the purpose of illustrating my invention shown a ball provided with
 120 a single number-disk, it will of course be understood that the same process is applied in making balls having two or the usual number of number-disks therein.

Having thus described my invention, what
 125 I claim is—

1. The process of manufacturing numbered game-balls, which consists in forming a number-disk of plastic material with a number
 130 depressed or formed therein in intaglio, coating said disk on its top and sides with composition plastic material contrasting in color with the material of the disk and of the ball, embedding said disk in a ball of plastic composition and subjecting the ball and disk to
 135 heat and pressure.

2. The process of manufacturing numbered game-balls, which consists in forming the balls of composition material with a number

hole or depression therein, forming a number-disk with a number depressed therein in intaglio, coating said disk with composition material on its top and sides, said coating contrasting in color with the material of the disk and of the ball, inserting said coated disk into the hole or depression in the ball, and subjecting the disk and ball to heat and pressure.

3. The process of manufacturing numbered game-balls, which consists in forming the ball of plastic composition, said ball having a number hole or depression therein, forming a number-disk with its bottom of the same diameter as the hole or depression in the ball, but with its top of slightly less diameter, said disk having a number formed or stamped therein in intaglio, coating the periphery of said disk with composition plastic material said material contrasting in color with the disk and ball, the thickness of said coating being such as to make the entire disk of the same diameter as the base of the disk before coating, impressing or otherwise filling the intaglio number in the disk with plastic composition material contrasting in color with that of the disk and ball, inserting the disk

thus coated in the hole or depression in the ball, subjecting the ball and disk to heat and pressure and then turning off the surface of the ball and disk whereby the number is disclosed on the surface of the ball surrounded by a circle of uniform thickness.

4. The process of making numbered game-balls which consists in coating a number-disk of plastic material with plastic material contrasting in color, embedding said coated disk in a ball of plastic material, subjecting the whole to heat and pressure and then turning the ball to the desired size.

5. The process of making numbered game-balls which consists in coating a number-disk of plastic material with plastic material contrasting in color, embedding said coated disk in a ball of plastic material, simultaneously subjecting the whole to heat and pressure and then turning the ball to the desired size.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALONZO L. BURT.

Witnesses:

H. J. PALMER,
M. B. FORD.