No. 701,492. Patented June 3, 1902.

J. H. MATTHES.

METHOD OF MAKING POOL BALLS.

(Application filed Mar. 24, 1902.)

(No Model.)

Fig. 3.

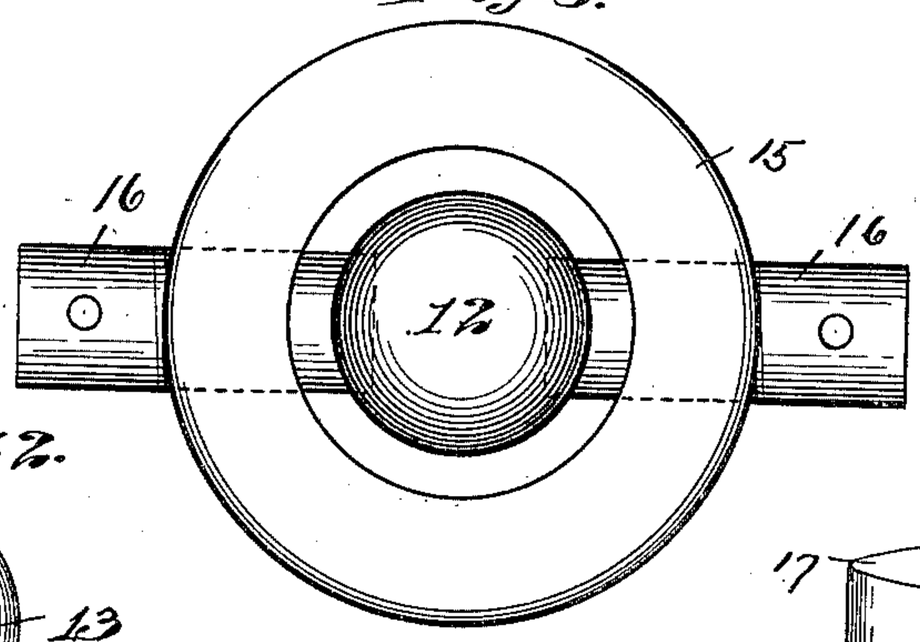


Fig. 2.

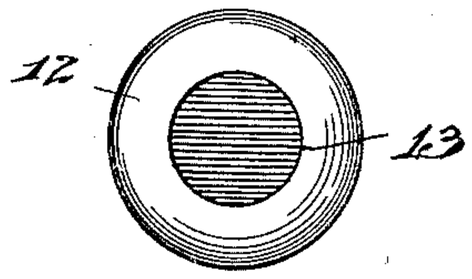


Fig. 5.

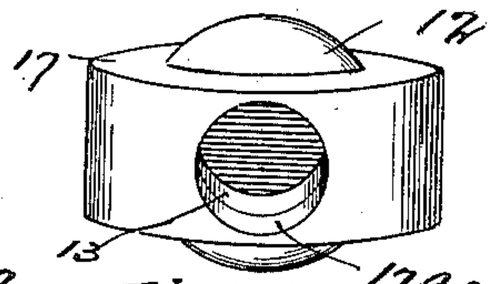


Fig. 1.

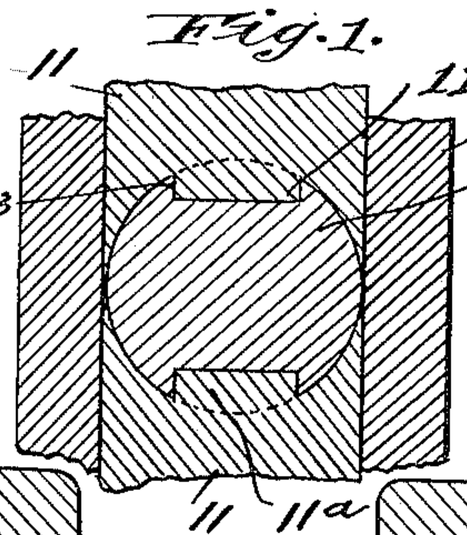


Fig. 4.

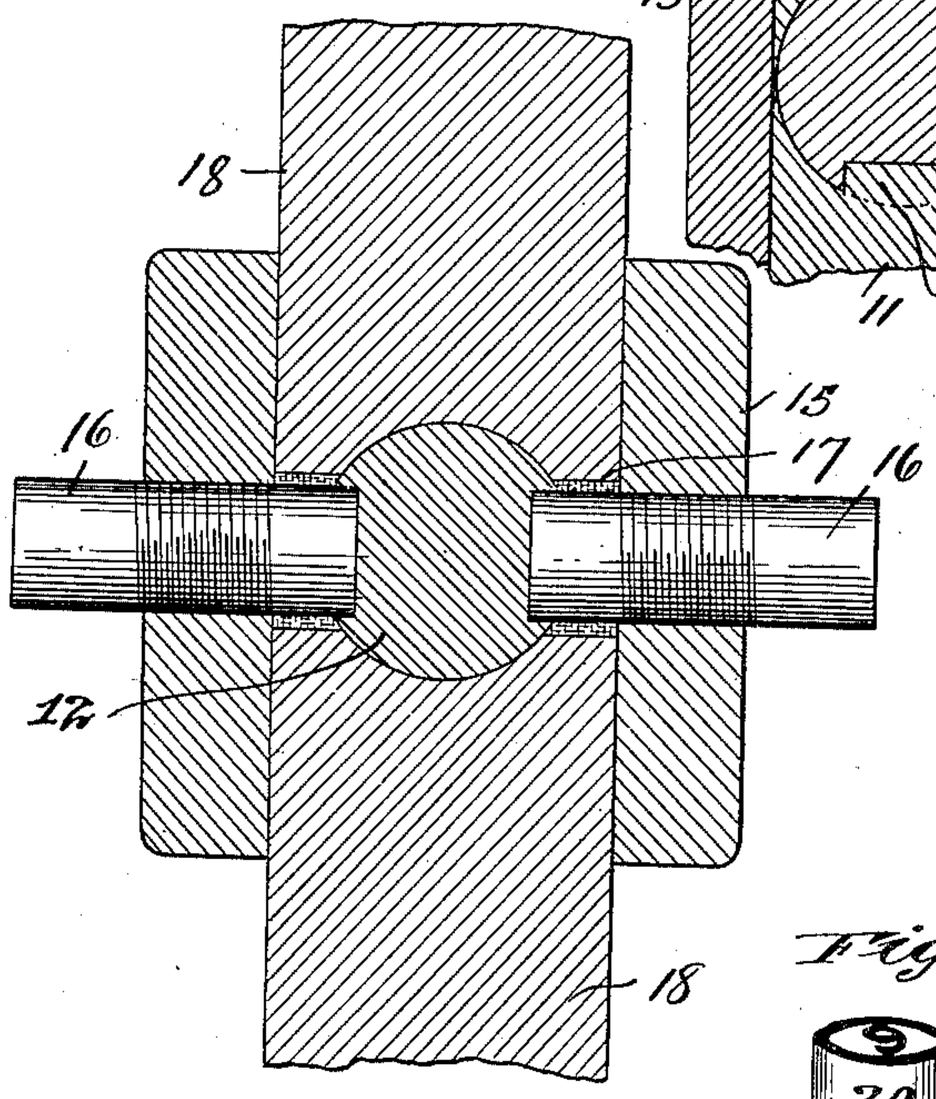


Fig. 7.

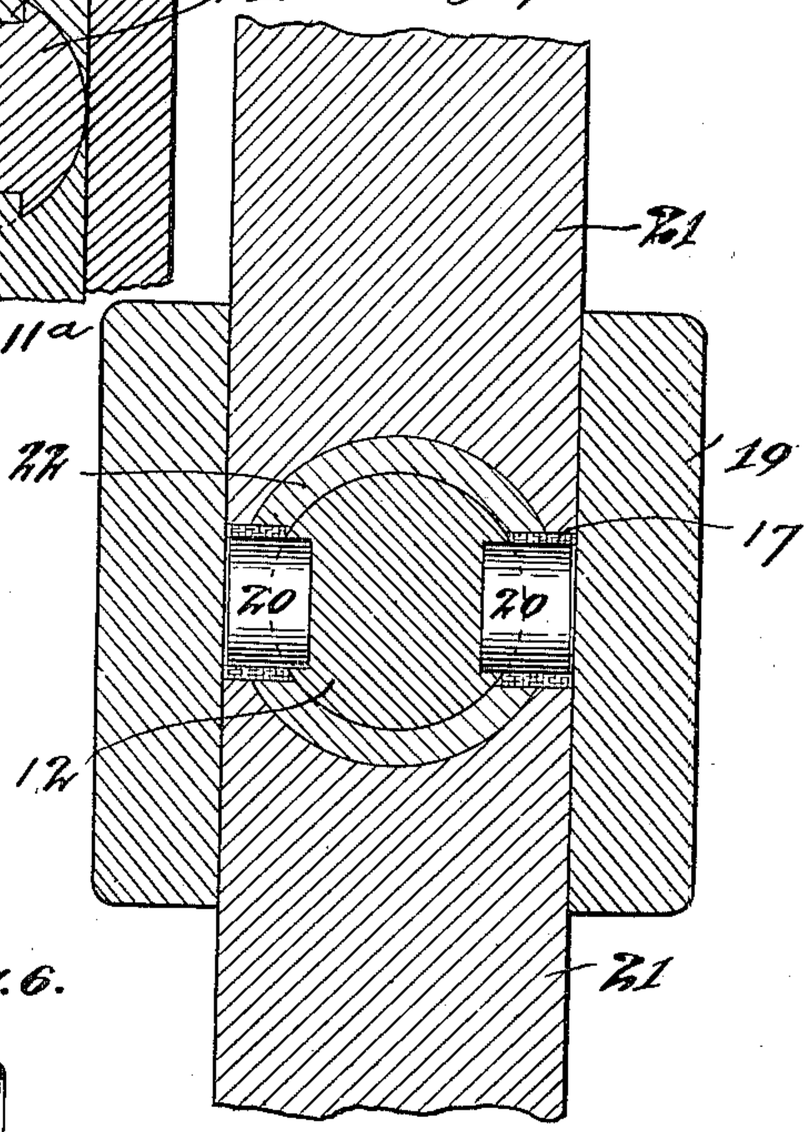
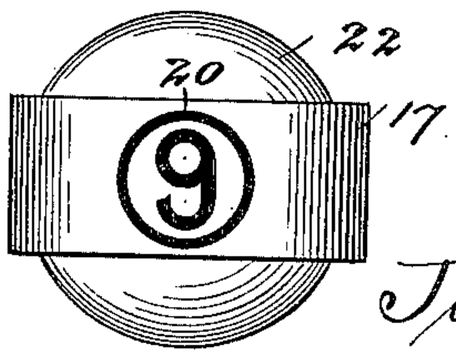


Fig. 6.

Fig. 8.



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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING POOL-BALLS.

SPECIFICATION forming part of Letters Patent No. 701,492, dated June 3, 1902.

Application filed March 24, 1902. Serial No. 99,762. (No specimens.)

To all whom it may concern:

Be it known that I, JULIUS H. MATTHES, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of Making Pool-Balls, of which the following is a specification.

My invention relates to a novel method of manufacturing composition pool-balls. Such balls are usually composed of a compressible material compacted from a dry powder into approximately the ultimate shape of the ball and the molded ball is subjected to heat or heat and pressure for the purpose of fusing the parts and consolidating it into permanent form. In order to produce the desired striped or striated appearance, the central circumferential portion of the body of the ball is usually composed of a composition of a distinguishing color, producing the appearance in the completed ball of a circumferential or annular band, and in this annular portion of the ball are usually secured the inserts or number-spots.

The processes of manufacture to produce a ball having the desired characteristics and qualities are somewhat complicated; and it is the purpose and object of my present invention to somewhat simplify these processes and at the same time to produce a ball which is highly compacted, and therefore durable.

In the practice of my invention I use suitable molding apparatus, the form of which may be somewhat varied, and I arrive at the ultimate result by performing certain steps in prescribed order, although some of the steps of the preferred method of manufacture may be omitted and the order of the steps may be somewhat varied.

To the ends above mentioned my invention consists in the method hereinafter described, and which will be understood with reference to the accompanying drawings, in which—

Figure 1 is a broken sectional elevation showing a mold and a pair of dies constituting a molding apparatus and showing a spherical compacted body of the composition therein. Fig. 2 is a plan view of the spherical body which is to constitute the core of the completed ball. Fig. 3 is a plan view of a part of a molding apparatus consisting of a mold and two plugs, with the core portion of the ball secured in position within the mold by means of the plugs. Fig. 4 is a sectional elevation of a mold, showing the plug sustaining the core in place and with a pair of dies arranged in suitable relation to the plugs and core and with the material which constitutes the annular band compressed around the core and over the ends of the plugs. Fig. 5 is a perspective view of the core with the annular band compressed thereon and showing one of the apertures to receive a number-spot or insert shown in Fig. 6. Fig. 7 is a sectional elevation of a mold and a pair of dies with a banded core, as shown in Fig. 5, and having the inserts shown in Fig. 6 embraced between the dies and the body portion of the ball compressed by said dies around the core, band, and inserts; and Fig. 8 shows the ball at the completion of the molding operation ready to be finishsd by fusing and turning.

In carrying out the invention I first take a suitable open-ended cylindric mold, such as shown at 10 in Fig. 1, and place therein a die 11 and then charge into the mold a mass of material capable of being compacted into the form of a spherical core 12. A second die 11 is then inserted in the opposite end of the mold, these dies having cylindric extensions 11^a, which are forced into the material constituting the core to produce in opposite sides thereof a cylindric socket or cavity, such as shown at 13. This core is then placed within an open-ended cylindric mold 15, Figs. 3 and 4, having apertures at opposite points in its side wall, through which apertures are turned the threaded plugs 16. The core 12 will be placed within the cylindric mold 15 and the plugs turned in until their end portions enter the cavities 13, thus sustaining the core in a central position within the mold 15, as clearly shown in Fig. 3. Thereupon a suitable quantity of material to constitute the annular band 17 is to be charged into the mold 15, and this may be done by first inserting into one of the open ends of the mold 15 a die 18 and allowing it to rest upon the plugs 16. A quantity

of material of a color to compose the annular band 17 may then be poured into the opposite end of the mold, whereupon the parts may be reversed as to position, the die first inserted withdrawn, and an additional quantity of composition charged in from the open end, after which the said die will be again inserted and pressure exerted on the dies to compact the band material upon the core and around the ends of the plugs 16, so as to produce the annular band 17. In this operation the annular band will fill the mold and apertures 17ª will be produced in this band, which will register with the apertures 13 in the core, the relative depths of the portions of the apertures within the core and band being shown in Fig. 4 and indicated in Fig. 5. The central core, with the band compacted thereon, may then be placed within a suitable cylindrical mold, as 19, Fig. 7, the inserts 20 (shown in Fig. 6) being placed within the sockets 13. These inserts are preferably separately molded and fused, so that when they are placed within the socket they will support the thin walls of the band around the sockets. A pair of dies 21 are employed, having such configuration on their acting faces as to abut upon the shoulder of the band, and one of these dies will be inserted, and the material to form the body portion 22 of the ball will be poured in at a single operation or at two operations, as preferred, and finally pressure will be exerted upon the dies 21 to compact the body portion 22 upon the core and band and to consolidate the several component parts of the ball together. The ball in the condition shown in Fig. 8 may be fused by placing it in what is called a "gun" and subjecting it to heat or to heat and pressure, or the fusing may be carried out in the mold 19.

Obviously the compression of the body portion, as well as the fusing might be carried on in the mold 15 by turning out the plugs 16 and pushing the inserts into place within the sockets through the apertures, and the plugs might then be turned back, so as to abut against the ends of the inserts. This variation is of such an obvious character that it requires no illustration or further description. Other variations may be made than those above indicated, and the modifications suggested are intended to be illustrative only.

What I deem essentially novel, and desire to secure by Letters Patent, is—

The herein-described method of manufacturing a composition ball, which consists in first compressing a mass of material into substantially spherical form and simultaneously forming therein cylindrical sockets or cavities in opposite portions thereof, then compressing upon said spherical body or core material of a distinguishing color to produce an annular band and simultaneously forming therein cylindrical apertures, registering with the sockets of the core, next forming or placing within said sockets inserts to afford number-spots and finally compressing a composition upon said core on opposite sides of said band, substantially as described.

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