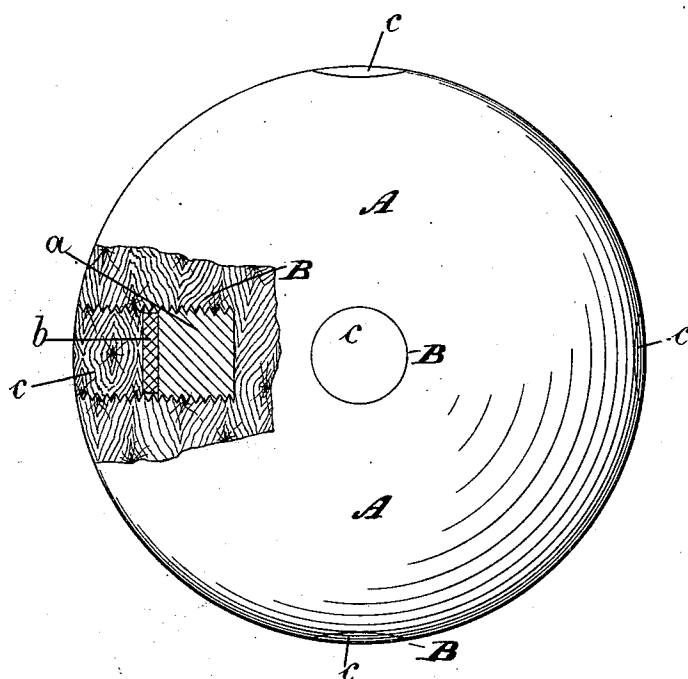


(No Model.)

T. NEUMANN.
BILLIARD BALL.

No. 512,391.

Patented Jan. 9, 1894.



Witnesses:
F. L. Ourand
R. G. Ray.

Inventor:
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UNITED STATES PATENT OFFICE.

THEODOR NEUMANN, OF BERLIN, GERMANY.

BILLIARD-BALL.

SPECIFICATION forming part of Letters Patent No. 512,391, dated January 9, 1894.

Application filed March 16, 1893. Serial No. 466,221. (No model.)

To all whom it may concern:

Be it known that I, THEODOR NEUMANN, a subject of the King of Prussia and Emperor of Germany, residing in the city of Berlin, in the Kingdom of Prussia and Empire of Germany, have invented a certain new and useful Improvement in Billiard-Balls; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification, and in which I have shown my improved billiard ball in elevation, with parts broken away on one side so as to show a portion of the interior in section.

This invention relates to the balls used in playing billiards and kindred games in which balls and cues are used, and has for its object to construct a ball at small cost which shall be of approximately the same weight and possess the same degree of elasticity, resiliency, and other attributes of the much more expensive ivory balls; and to this end my improvement consists in the novel and peculiar construction of a billiard ball made of wood, as will be hereinafter more fully described and claimed.

Referring to the drawing, the letter A denotes the spherical body of the ball, which is turned from a block of seasoned box-wood (*lignum-vitæ*) of the proper size. While I prefer to use box-wood for this particular purpose, on account of its inherent elasticity and close texture, due to its fine and homogeneous grain, other kinds of wood possessing the same characteristics may, of course, be substituted, if desired. Before cutting and turning the ball from the rough wood block or blank, this is subjected to a steaming or other suitable process by which the sap will be removed, and either before or after the ball has been cut and turned from the wood, this is (after the removal of the sap) submerged into a bath of benzine for a sufficient length of time to permit the benzine to permeate all of its pores, which has the effect of contracting and closing the pores and thus increase the density of the wood, enabling it to take as high a polish almost as ivory balls. The wood, after the ball has been formed and treated with benzine

may be left either in its natural color, which is a pleasing yellowish white, not unlike ivory which has darkened by age and smoke; or it may be colored (as in balls to be used in the game of "pool," for example) any desired color by the use of aniline or other mineral or vegetable dyes. After the ball has been shaped, but before it receives its final polishing and coloring (if it is to be colored), I bore out six equi-distant recesses, B, of cylindrical shape, one of which is shown in section on the left side of the ball represented on the drawing. Into each one of these six cylindrical bores or recesses I insert a screw-threaded plug, *a*, of lead; the recess having a female or interior thread which will engage the threads of the plug of lead, as shown clearly on the drawing. I then cut a disk or wad of rubber or leather (I prefer to use pure india rubber), which will fit the bore closely, and insert the same on top of the lead plug *a*, as shown at *b*. Finally, I close the recess B by screwing into it a threaded plug, *c*, of the same material as the body of the ball, and carefully smooth off and finish the outside of the plug, so that it will be absolutely even with the spherical surface of the ball, without either the least protuberance or indentation. The ball is then ready for the coloring (if it is to be colored) and final polishing process.

The lead plug *a*, as well as the elastic disk *b* and stopper plug *c*, should, before their insertion into the recess, be covered with a thin liquid coating of glue dissolved in *spiritus vini*, which dries rapidly and cements the several parts together as well as to the threaded walls of the recess, so that they cannot become loose and work out by the constant shocks and concussions to which a ball of this character is subjected. If properly made, a ball of this kind will last as long, and "play" as well, as the finest and most expensive ivory balls. Care should be taken in shaping the lead plugs *a* to make them of the proper size, so that the finished ball will weigh about the same as a ball of the same size made of solid ivory. It is also important to make the recesses B of the proper depth to give the finished ball its proper "balance" and equipoise.

While this ball can be manufactured at very much less cost than ivory balls, or even the much inferior celluloid or composition balls,

it will be found (if properly and scientifically made) to possess all the attributes of the finest ivory balls as regards specific gravity, resiliency, non-liability to warp or split, and appearance; the wavy grain of the box-wood being not unlike the grain of ivory. Of course, only the best and properly seasoned wood should be selected for this purpose, free from knots, fissures, cracks or blemishes of any
10 kind.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

As an improved article of manufacture, the
15 billiard ball hereinbefore described, consist-

ing of a spherical solid body of seasoned wood of the proper density, having circumferential cylindrical screw-threaded recesses, *B*, into which are inserted the gravity plugs *a*, elastic wads *b*, and stoppers, *c*, of the same material 20 as the body of the ball and finished off even and smoothly with its spherical surface; substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand in presence of two witnesses.

THEODOR NEUMANN.

Witnesses:

PAUL HALLE,
WILHELM RUTTE.