

(No Model.)

F. C. ROCKWELL.
TENPIN BALL.

No. 575,128.

Patented Jan. 12, 1897.

Fig. 1

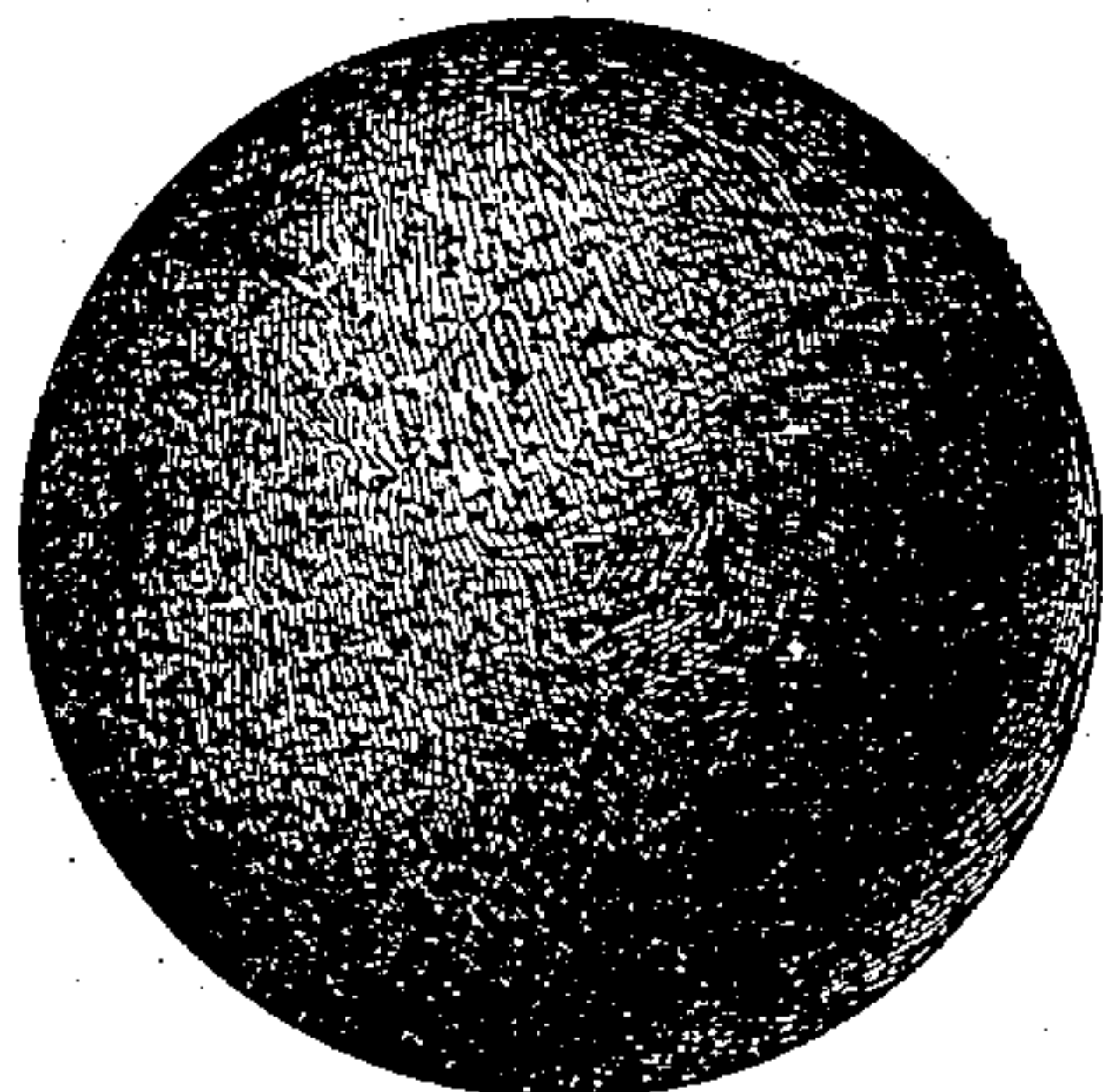


Fig. 2

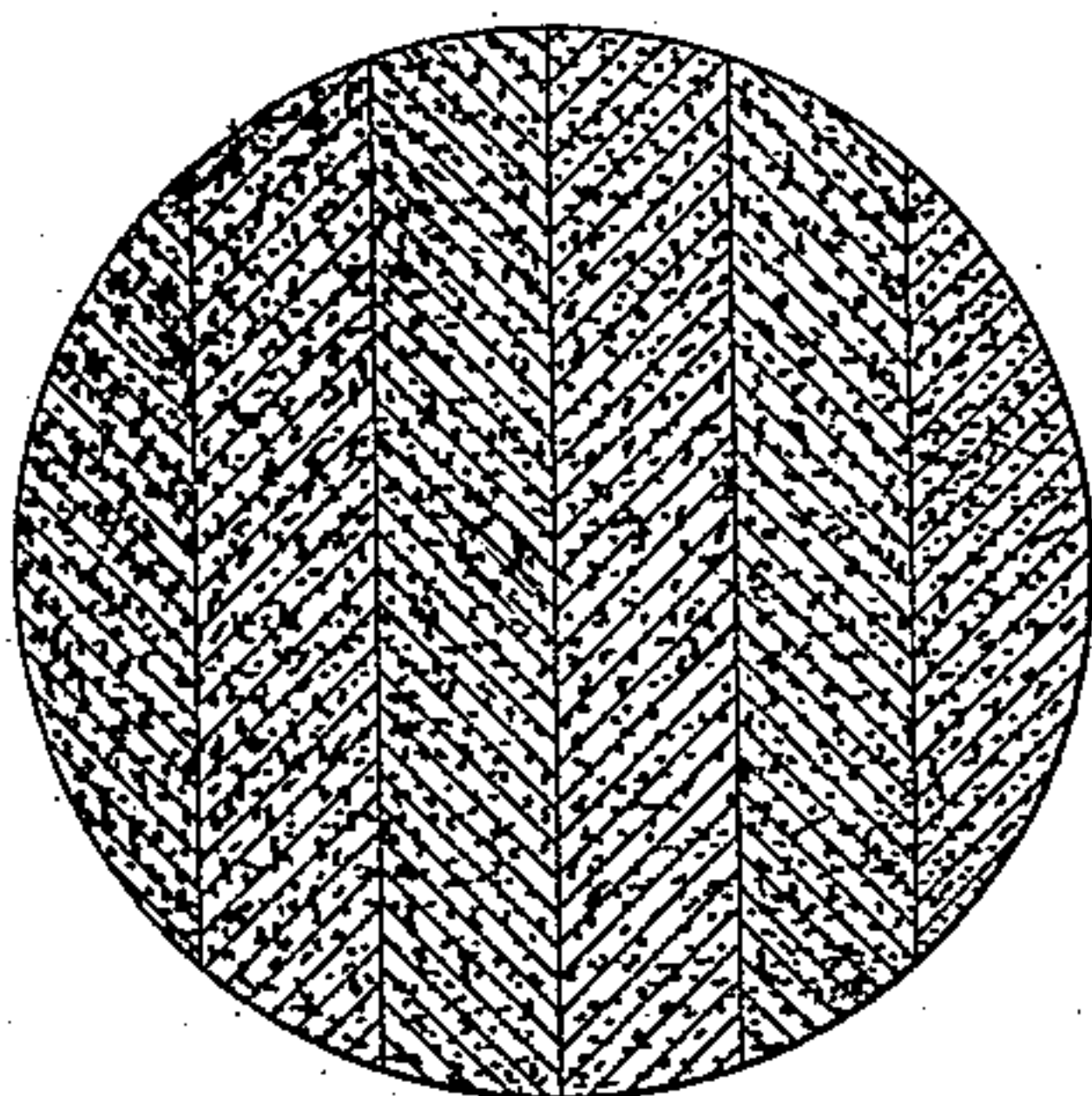


Fig. 3

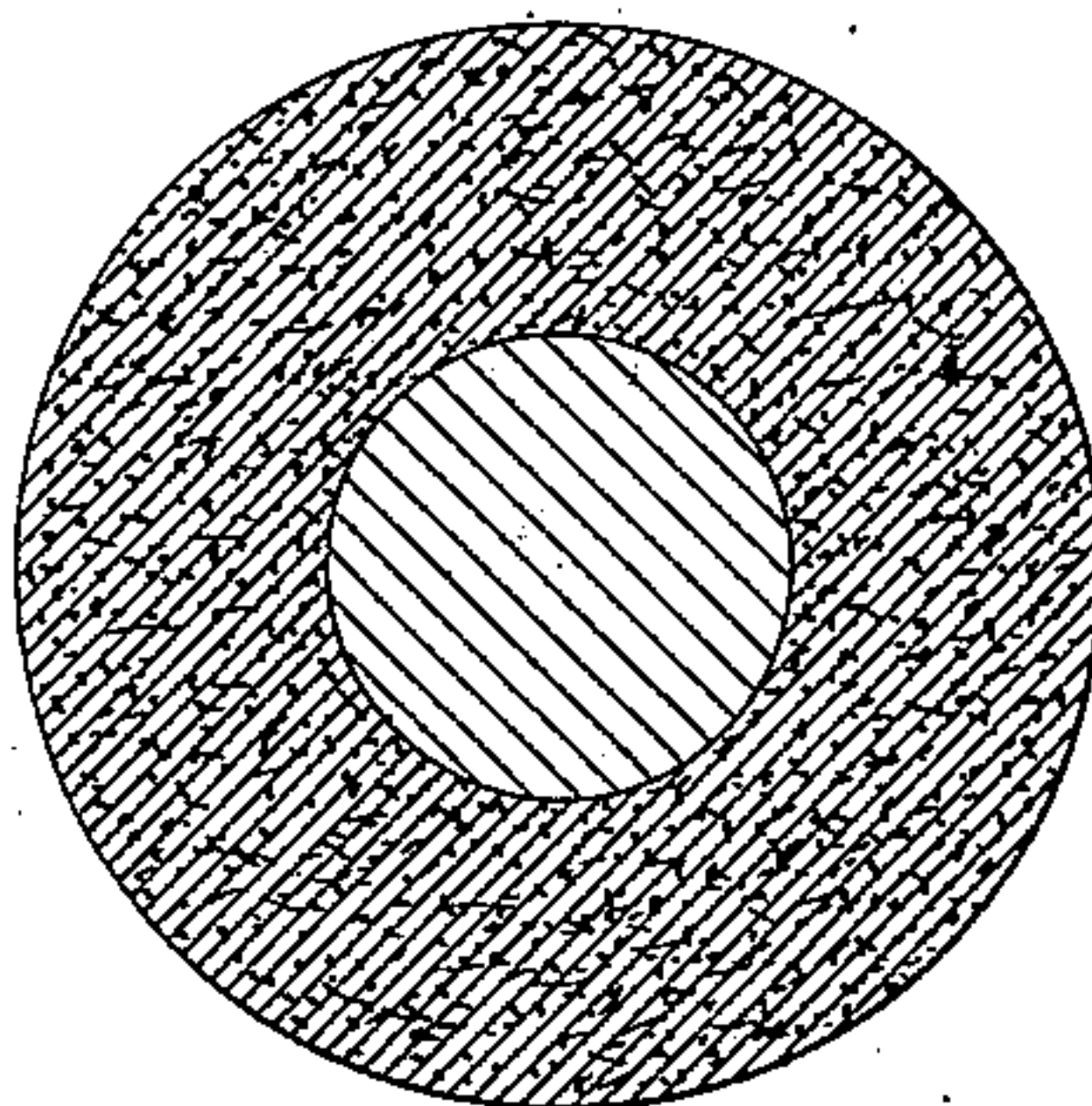
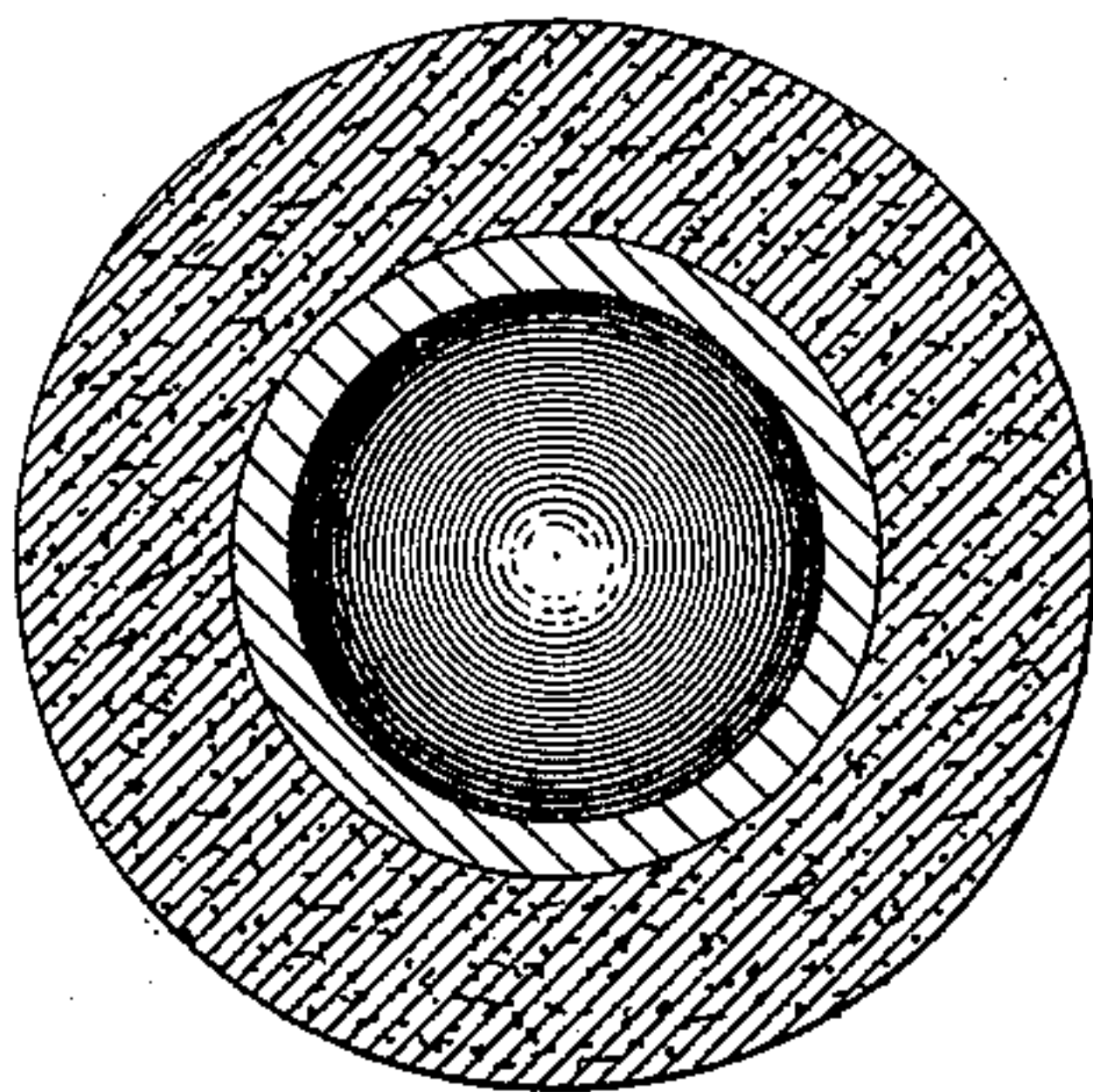


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERICK C. ROCKWELL, OF HARTFORD, CONNECTICUT.

TENPIN-BALL.

SPECIFICATION forming part of Letters Patent No. 575,128, dated January 12, 1897.

Application filed December 4, 1895. Serial No. 570,975. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. ROCKWELL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Tenpin-Balls, of which the following is a specification.

The invention relates to the class of balls that are made of various sizes and weights and used for bowling or playing at tenpins and similar games in which balls are rolled at standing objects. Balls for these games in present use are turned from hard wood, and balls of the same sizes are of necessity of the same specific weight, depending upon the density and weight of the wood from which they are turned. Consequently large balls must be always about the same weight. These balls, that have comparatively short life, crack and split, they wear and splinter the alley, they bruise and chip the pins, and they make much noise when running the alley and when knocking the pins.

The object of this invention is to provide a ball that can be made easily and cheaply of any regulation size and of any desired weight for the different sizes, which ball will be strong, durable, will not wear the alley nor bruise the pins, and which will run noiselessly along the alley and knock the pins with but little sound.

To this end the invention resides in a ball formed with an exterior of soft yielding factitious material that will cushion on the alley-floor and against the pins, thus enabling an alley to be successfully used in public places without disagreeable noise and pounding, and that can be so formed that the larger sizes may be made lighter in weight than the present balls, and consequently may be more easily handled and used without danger of wrenching or straining the body, thereby insuring the invigorating exercise and pleasant competition of the game without the dangerous effects of straining or over exercise from the use of too-heavy balls.

Referring to the accompanying drawings, Figure 1 is a side view of one of the balls. Fig. 2 is a diametrical section of one of the balls. Fig. 3 is a diametrical section of one

of the balls formed in a different manner, and Fig. 4 is a similar section showing another manner of forming the ball.

The exterior spherical body of the ball shown is formed of particles of broken cork that are very tightly bound together under heat and pressure by a binding-gum, as shellac or rubber, the pressure being such that the particles of cork are very much compressed, but not to such an extent as to destroy their texture, and the heat being such that the gum is reduced to a small amount and this small amount is hardened very solid.

In constructing a ball after the manner illustrated in Fig. 2 the particles of broken or ground cork of soft texture were given a coating of gum by spraying the particles with or mixing them into a thin solution of the gum. After becoming dry a quantity of the gum-coated cork particles was placed in a cylindrical mold and subjected to the desired pressure and necessary heat to form a circular disk of the diameter of the mold. This was repeated several times until a number of disks were produced, and these were afterward cemented together and subjected to further heat and pressure in order that they might be solidified and compressed into one mass. By first forming the separate disks or sections and then cementing or binding them together a large mass of uniform density and of suitable weight was produced, and then this mass was placed in a lathe and turned to spherical form and finally polished. To increase the weight, of course the material might be more solidly compressed, or foreign material, such as metallic or earthy matter, might be added before the particles were compressed.

The form shown in Fig. 3 illustrates the manner in which a solid wooden or metallic ball may be placed in the interior of the exterior body of soft factitious material for increasing the weight of the ball. In this form the factitious cushioning material may be formed in disks with openings through their centers, or rather in rings with central openings that will fit the solid ball, and these rings may be cemented and compressed together and then turned to shape, or they may be formed in segments of proper shape in

suitably-formed molds and these segments cemented together and compressed upon the solid central mass.

In the form shown in Fig. 4 the center of the ball is illustrated as made of a hollow metallic globe, and about this is placed the factitious cushioning material. The factitious cushioning material in this form is preferably made in segments and cemented by a suitable binding material and compressed to place under heat and pressure upon the exterior of the hollow center.

The balls which have been made according to this invention, of large size, (say, the largest regulation size, about twenty-seven inches in circumference,) are very durable. The pressure employed in forming these was about four thousand pounds per square inch, which so compacted them that they had a specific gravity about equal to that of water. The exterior factitious compressed material formed in the manner described cushions on the alley-flooring and against the pins, so that the alley has but little wear compared with the wear produced by the larger sizes of the common wooden balls.

The balls do not wear unevenly and crack, and the pins used with these balls are not bruised and splintered, as by the heavier wooden balls. The cushioning of the balls made in this manner causes them to run the alley noiselessly and to strike the pins without much sound, and it also obviates the lofting or bounding of the balls along the alley. The balls can be made after this invention of any desired weight for the same sizes, but the larger sizes of balls are made considerably lighter than the present wooden balls can be made, so that they may be used by persons of ordinary strength when bowling without danger of straining, wrenching, or unduly fatiguing the body.

The balls are not affected by the atmosphere or by moisture and retain their shape,

for they are of equal density and hardness on all sides and throughout the entire globe. They have no grain, as does the wood. They have a very soft and pleasant feel for the hand and can be used without finger-holes, if desired, for the cork surface is not slippery and can be firmly grasped by the hand of the bowler.

The chief feature of the invention, however, resides in the fact that quite large-sized balls can be made of comparatively light weight and the balls of all sizes can be bowled without the rumbling noises incident to the balls of the present game, thus enabling alleys to be operated in thickly-populated localities without maintaining a nuisance.

I claim as my invention—

1. As a new article of manufacture, a bowling-ball, consisting of a body of spherical shape formed of broken particles of cork and shellac united under heat and heavy pressure, having a texture without grain, a uniform density throughout its mass, and a specific gravity substantially the same as that of water, substantially as specified.

2. As a new article of manufacture, a bowling-ball, consisting of a spherical body having a specific gravity substantially the same as water, composed of sections of heated and heavily-compressed broken particles of cork and shellac cemented together under heavy pressure, substantially as specified.

3. As a new article of manufacture, a bowling-ball having an exterior surface composed of sections formed of heated and heavily-compressed particles of cork and shellac cemented together under heavy pressure and formed into a sphere which has a specific gravity substantially the same as water, substantially as specified.

FREDERICK C. ROCKWELL.

Witnesses:

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