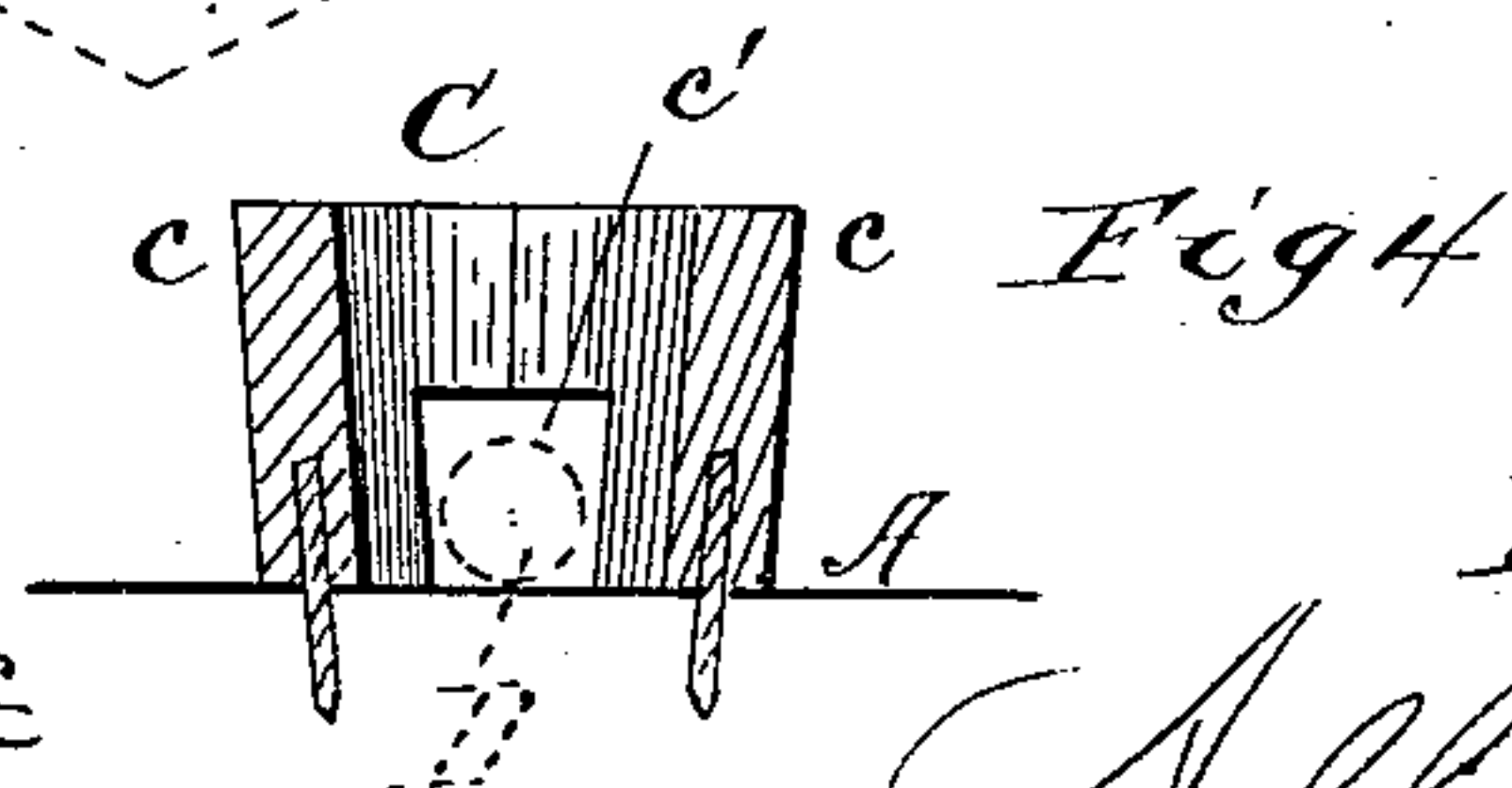
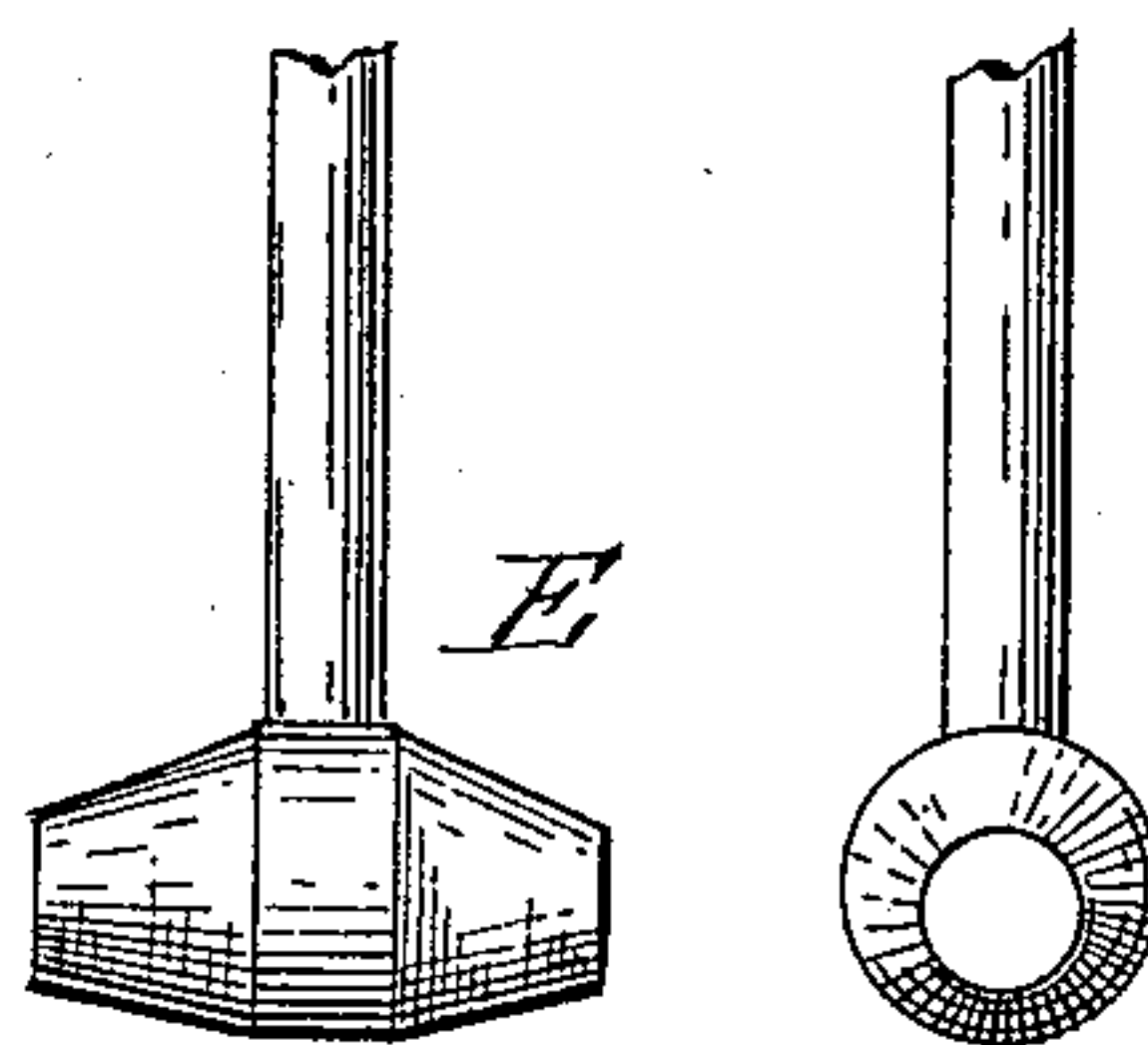
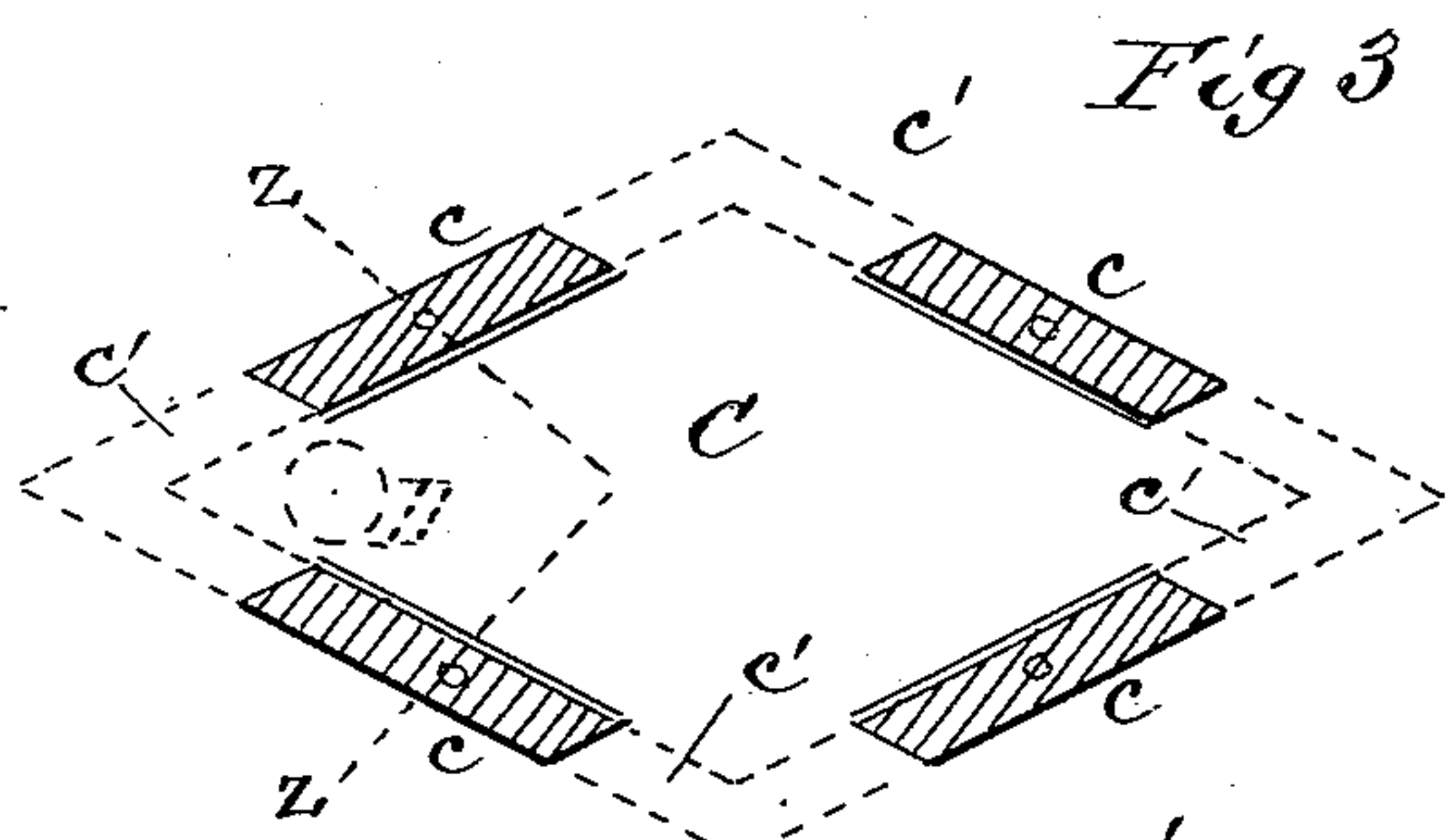
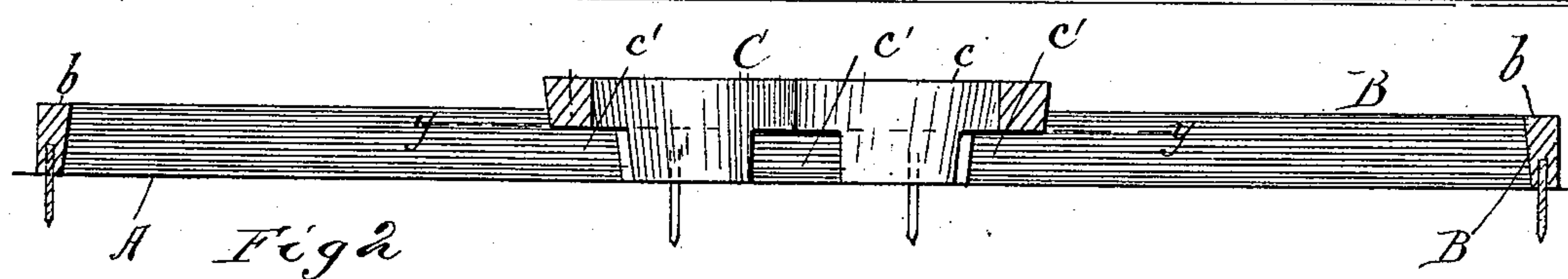
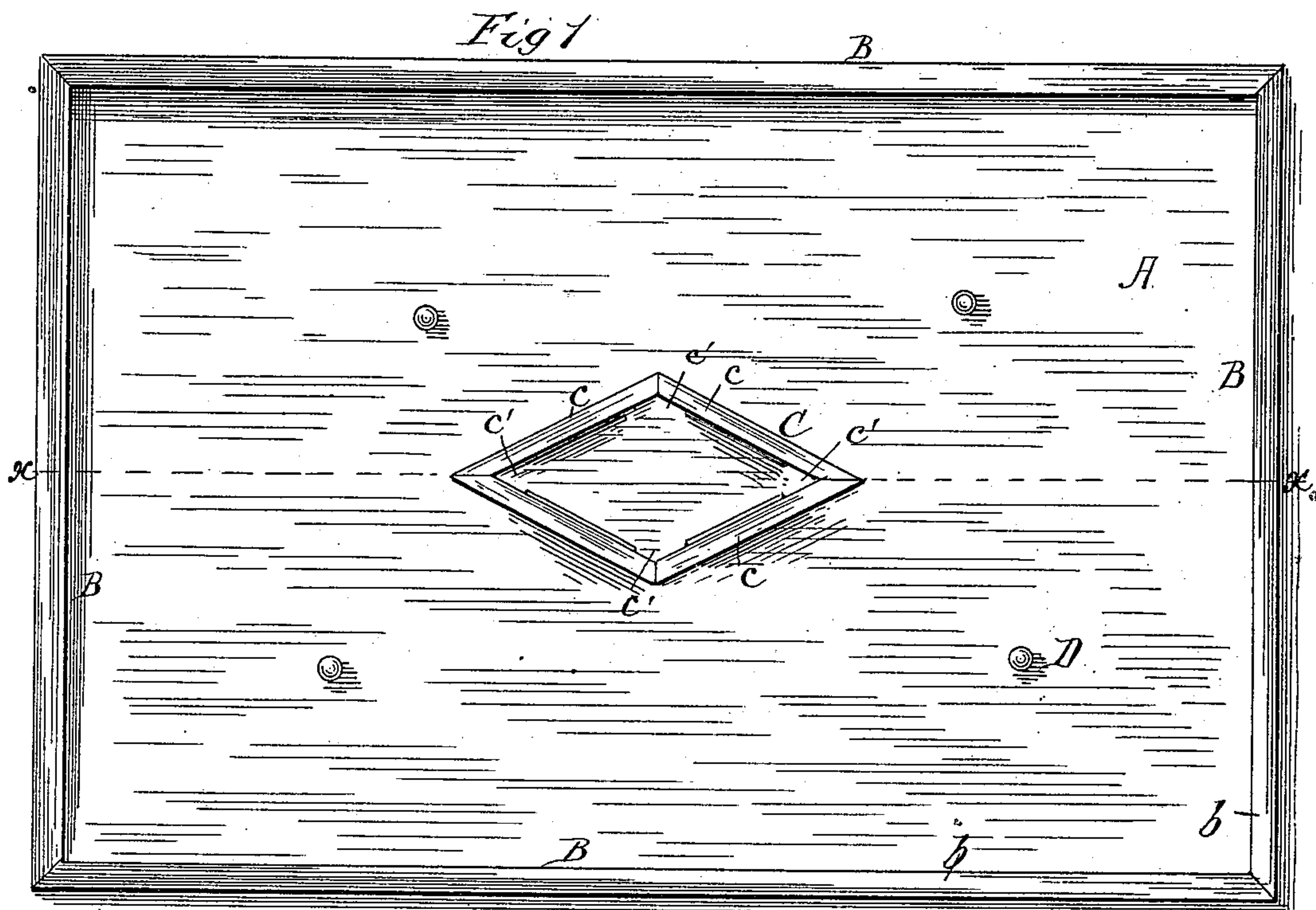


(No Model.)

A. DURHAM.
MECHANICAL GAME.

No. 352,971.

Patented Nov. 23, 1886.



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UNITED STATES PATENT OFFICE.

ALBERT DURHAM, OF SOUTH EVANSTON, ILLINOIS.

MECHANICAL GAME.

SPECIFICATION forming part of Letters Patent No. 352,971, dated November 23, 1886.

Application filed May 1, 1886. Serial No. 200,875. (No model.)

To all whom it may concern:

Be it known that I, ALBERT DURHAM, a citizen of the United States, residing in the village of South Evanston, in the county of Cook and State of Illinois, have invented a new and useful Mechanical Game which I have named "Burl," the object of which is to educate the eye to the use of angles, to develop strength in the arms and wrists, and to enable one to obtain complete control of the nerves, and all of these in such a manner as to afford recreation and amusement while educating and developing these powers of the body; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in mechanical games to make and use the same.

The invention is illustrated in the annexed drawings, in which Figure 1 is a plan view of a game board or field embodying my invention. Fig. 2 is a vertical longitudinal section of the same, taken on the line xx , Fig. 1. Fig. 3 is a detailed plan section of the burl-box, taken on the line yy , Fig. 2. Fig. 4 is a cross section of the same, taken on the line zz , Fig. 3. Fig. 5 is a front and side elevation of the mallet, on an enlarged scale.

A represents the rectangular board, field, or surface upon which the game is played.

B represents the side or end rails fastened to the surface A, on which they rest, by any well-known method, pins being shown; but other devices may be used. The rails B are composed of separate pieces secured together firmly, so as to form when completed a rectangular frame, and, as illustrated in the drawings, the top of the same, b , is slightly wider than the bottom of the same, thereby forming an angle from the ground upward and inwardly toward the center of the rectangular frame.

C is the burl-box, composed of separate pieces c , secured together, as illustrated in the drawings, and having apertures or openings c' at the corners, as clearly shown in Figs. 2 and 3. The side pieces of the burl-box C incline toward the center to such a degree that the top of the same is slightly wider or larger than the bottom, as shown in Fig. 4. The burl-box is to be firmly secured to the surface on which it rests in any convenient way, pins being shown.

D represents the balls, of suitable construction, for the game.

E is a mallet, which may be used for impelling the balls, though other means may be used for this purpose, if preferred.

This game is played with elastic balls within a rectangular space bounded by comparatively inflexible and inelastic rails, and resembling in some respects the arrangement of rails in a billiard-table, inasmuch as the side rails are set in the form of a parallelogram, but differing therefrom, as follows:

In a billiard table the balls are hard, comparatively inelastic, spheres, and the rails are furnished with very elastic cushions, more or less perfect, by means of which cushions the impact may be calculated and correct angles taken. In this game of burl the balls are made of some very elastic substance and the rails are relatively inflexible and inelastic; and whereas in billiards the game consists chiefly of the impact of nearly inelastic balls upon each other and incidentally upon the elastic rail, in this game it consists chiefly of the impact of elastic balls upon the very inelastic rails, using other balls incidentally and for a specific purpose.

In the use of comparatively inelastic balls upon each other, as in billiards, using the cushion as may be necessary, the cushion has been constructed with a certain elasticity, according to the law of the angle of incidence and reflection, so that the angles made by play upon the cushion may be calculated and may be depended on for an invariable result, and be made to promote the play of the balls upon each other. In this game, however, the balls are of greater elasticity than those used in billiards, so that their greater elasticity, when they are played upon an inelastic rail, or upon each other, causes them to follow in general the law of the angle of incidence and reflection, but with the important specific modification that their elasticity may cause a result at variance with that general law to a degree depending upon the size, the specific gravity, and the elasticity of the balls, and especially upon the momentum given as influenced by the stroke.

In billiards the count is made chiefly by the enumeration of the strokes of the balls upon each other. In this game the count is chiefly

made by the number of angles upon the side rails or the burl-box, resulting from a single stroke, it being also required that no stroke upon the rail shall count, unless, besides the angle or angles upon it, the playing-ball shall make an impact upon another ball. The construction of the apparatus for the game therefore affords to skill a proper advantage over chance or unskillfulness.

The stroke in the game of billiards is made by the impact of a cue against a ball. In this game, although a cue may be used, or various other methods of striking or impelling the ball may be adopted, I prefer the use of a mallet somewhat resembling a croquet-mallet. The game is therefore adapted to being played indoors, either upon a table or floor, or outdoors upon the grass or any level surface.

In the game of billiards the size and shape of the table is limited to the reach of a man's arms. In this game it may vary from a small parlor-table game to the size of a croquet-ground, the difference in size involving only a difference in the height of the rails, the dimensions of the burl-box, and the size and weight of the balls and mallets.

It is not intended that this game shall be a substitute for billiards, but that it shall be a game for general use, indoors and outdoors, by persons of all sizes, sexes, and ages; and while not practicably capable of the scientific exactness of billiards, this game, as intended to be played, is adapted to educate the eye to angles and the nerves to steadiness and accuracy. In this game the boundary-rails, as well as being comparatively inflexible and inelastic, are made with the top of the inner side projecting from the ground upward and inwardly toward the center of the rails at a small angle, to prevent the ball rising above the rail from the force of its impact upon it. The same end would be attained, but not so easily or satisfactorily, by making the inner surface (or face) of the rail concave, or by a cap projecting inward from the top of the rail. If for outdoor use, the rails may be each made in sections properly secured together, which would tend to obviate warping by the sun or elements.

In the center of the field is placed what I call a "burl-box," having the general shape of a diamond, as represented in the drawings herewith, and having its dimensions established by conformity to certain fixed proportions with regard to the size of the field and the diameter of the balls. The sides of the burl-box are inflexible and inelastic, and project outward from the center of the burl-box upwardly from the ground at the same angle from the perpendicular as the side rails. The burl-box is so placed that the points of the diamond are opposite the middle of the rails which they respectively face. The under side of each point of the burl-box is cut out, so as to allow the possible passage of a ball through

it to make its exit from the burl-box at any one of the other points. A ball entering the burl-box and becoming stationary therein may be treated as a ball would be in billiards that had jumped the rail or gone into a pocket, except that the construction of the burl-box, and its peculiar situation in the center of the field, may allow the ball to play and to be played upon under certain conditions impossible in billiards. The possibilities of play as related to the burl-box also afford advantages and disadvantages to the playing-ball and the placing an adversary at a disadvantage, which are described in the rules of playing the game, but are not necessary for these specifications.

In the construction of the ball special attention must be paid to its elasticity, as hereinbefore mentioned, and to securing a certain specific weight, which will prevent its jumping the rail or rising from the ground when struck, and will also give the proper momentum from the stroke as an aid to securing desired angles from the rails or from the impact of the balls upon each other. In the construction of the mallet, used as one means of impelling the ball, any ordinary form may be used; but certain advantages will accrue, especially to a skillful player, in the using a mallet, as illustrated in the drawings, in which the ordinary construction of a croquet-mallet is followed, except that the head of the mallet is tapered from the handle toward the face in such a manner that the center of the resulting face is below the axis of the head of the mallet.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A game apparatus comprising a rectangular field and a central or nearly central box having an opening, c' , in each corner, substantially as described.

2. A game apparatus comprising a rectangular field having overhanging side rails and a central or nearly central diamond-shaped box provided with an opening, c' , in each corner, substantially as described.

3. A game apparatus comprising a rectangular field having practically inelastic side rails, a central or nearly central diamond-shaped box having sides that project outward at the top and provided with an opening, c' , in each corner, elastic balls, and means for impelling said balls, substantially as described.

4. The herein-described game apparatus consisting of the rectangular field A, having practically inelastic overhanging side rails, B, the central or nearly central diamond-shaped box, C, provided with corner openings, c' , the elastic balls, and means for impelling the balls, substantially as described.

ALBERT DURHAM.

Witnesses:

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