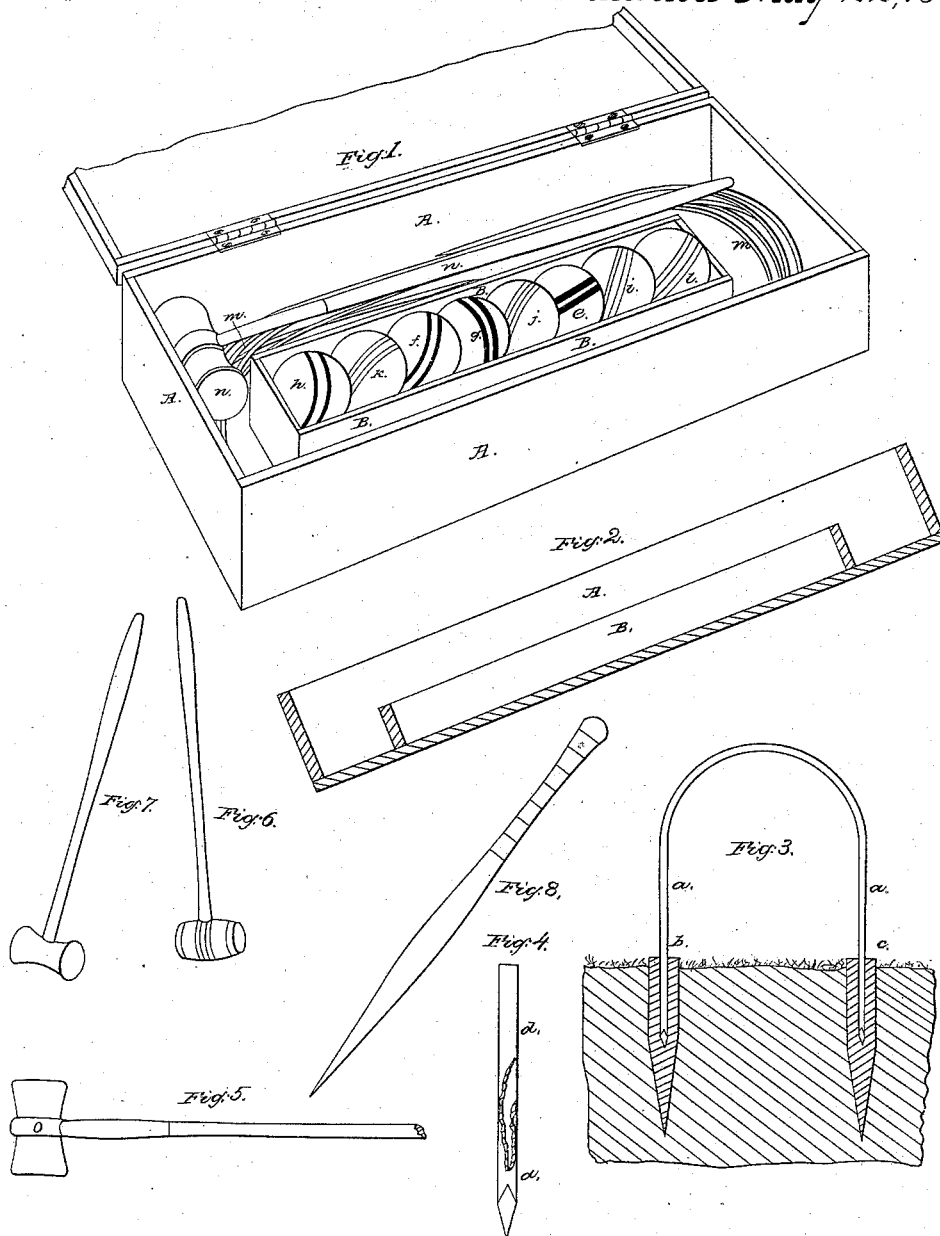


*L. & M. Bradley,*

*Croquet Bridge,*

*N<sup>o</sup> 51,848.*

*Patented May 22, 1866.*



*Witnesses.*  
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# UNITED STATES PATENT OFFICE.

LEWIS BRADLEY AND MILTON BRADLEY, OF SPRINGFIELD, MASS.

## IMPROVEMENT IN CROQUETERIE.

Specification forming part of Letters Patent No. **54,848**, dated May 22, 1866; antedated April 17, 1866.

Be it known that we, LEWIS BRADLEY and MILTON BRADLEY, both of Springfield, in the county of Hampden and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Croqueteries; and we do hereby declare that the following is a full, clear, and exact description thereof.

The game of croquet is so well understood that any extended description of the process of the game is probably unnecessary in this connection. We will merely state that the game is played out of doors on a level plot of turf, and consists in driving wooden balls through small arches erected in the ground, the balls being driven by blows from a mallet in the hands of the player. The materials of the game consist of a set of eight wooden balls about ten inches in circumference, eight mallets with handles about three feet long, ten arches, usually formed of iron rod, a quarter of an inch in diameter, bent in the form of an ox-bow, about sixteen inches high and ten inches wide, and two wooden stakes about two feet high. These materials are packed in a box suitably arranged for their accommodation, and are, as a whole, termed a "croqueterie."

As the game, although already immensely popular, is still in its infancy, the materials as heretofore used have been very imperfect in many respects, and we claim that our improved croqueterie is more perfect as a whole than any other ever manufactured.

Our improvements relate to several parts—viz., the arches, (often termed bridges or hoops,) the mallets, the balls, and the box.

In the drawings, making a part of these specifications, Figure 1 is a perspective view of the box with the eight balls in their place, also the bridges and one mallet, showing the construction of the box, the painting of the balls, and the method of packing the several parts. Fig. 2 is a longitudinal section of the box. Fig. 3 represents our improved bridge when set up in the ground ready for use. Fig. 4 is intended to represent more clearly the metallic coating of the bridge. Fig. 5 represents our improved mallets with the handle broken off for convenience. Figs. 6 and 7 are the mallets that have heretofore been in use. Fig. 8 is one of the two wooden stakes, called "starting" and "turning" stakes, when set in position for the game.

In laying out a croquet-ground with the ordinary bridges, the ten bridges are set in the ground according to certain established rules, by driving the points of the rods into the earth about six inches, or far enough to hold them securely in an upright position. Now, as the bridges are set in regular order with mathematical precision on a space about thirty by sixty feet, it is not a small job to lay out the ground and properly set the bridges. Consequently it is the custom to allow the bridges when once set to remain in position through the season; otherwise the labor of setting the bridges would more than balance the pleasure derived from the play. Iron has been selected as the best material for the bridges, because it combines cheapness with the necessary rigidity without clumsiness.

Rigidity and stability in a bridge are necessary in order to secure good playing, because an expert often depends upon a rebound from one of the piers of a bridge in order to secure the passage of a ball through that bridge when the relative position is such that the ball cannot pass in a right line between the two piers of the bridge. The piers of a croquet-bridge are the two straight sides of the bent rod from the top of the ground to the springing-points of the arch. Now iron bridges in themselves have the necessary quality of rigidity, but the diameter of the rod is so small that the necessary bearing-surface in the ground is not secured, so that by repeated blows of the balls and accidental kicks they soon become loose and incline from their proper perpendicular position, and in order to keep them even decently firm it is necessary to repeatedly tamp the earth around them, which not only wears off the turf, but soon makes hollows around each bridge, which are continual interruptions to the passage of the balls.

In our improved bridge, Fig. 3, we provide the iron bridge *a*, as ordinarily made, with two sockets, *b c*, which are made to fit the iron rod, and are of such exterior diameter as to give them a firm bearing in the ground. In laying out a croquet-ground for the season, we drive these sockets into the ground so that their tops are nearly or quite level with the top of the ground. Having the sockets once set the whole matter is accomplished for the season.

As before remarked, it has heretofore been the necessary custom to leave the bridges out in all kinds of weather through the season, which is very inconvenient for several reasons. If a person has a croquet-ground so situated that it is not required to be used for other purposes, there is probably little objection to leaving the bridges out, except the inevitable corroding caused by the rains and dews, which is no small objection, as the ladies will testify who have experienced the evil effects of iron-rust on their clothing, which necessarily comes in continual contact with the bridges whenever playing. But croquet is rapidly becoming so popular that it is no longer confined to lawns and parks. Many a family desires to enjoy this truly healthful and fascinating game, but are prevented because they have only a yard or plot which at certain times is necessarily used for other purposes, or over which persons require to pass, and a set of croquet-bridges, when set up in a passage-way, form a labyrinth of man-traps not very safe or agreeable by day or night.

Now all the foregoing difficulties are entirely obviated by our improved bridge. The increased diameter of the sockets gives the necessary stability to the bridge in the ground, and the sockets, when once set in their proper places, are not the least obstruction to the use of the ground for other purposes, while the iron bridges may be inserted in the sockets nearly as fast as a person can pass from one position to another on the ground. Consequently the iron bridges may be removed with the rest of the materials at the end of each playing, and thus kept perfectly free from rust. The inventors had a set in constant use during last season, and although the ground was very unfavorably located, being frequently crossed, even with a horse and wagon, yet not one of the sockets ever became loosened, and every expert that played on the ground was highly pleased with the unusual stability of the bridges.

As the iron bridges would very soon corrode, even with the best of care, if not protected by some covering, it has been the custom to paint them. At first manufacturers of croqueteries painted their bridges black or some dark color, because the iron could be more easily covered with a dark paint and did not show defects in the painting so badly; but all dark colors were soon abandoned for white, because it renders the bridges so much more conspicuous in contrast to the green turf. But there is so little adhesion between the iron and paint that it is very difficult to perfectly cover the bridges with white, as if a thick coating is applied it peels off badly; also the dirt very soon soils the white paint, so that before one season has passed the bridges look no better than if painted black.

We overcome all these difficulties by discarding paint entirely and coating the iron bridges with a light-colored metal, such as zinc or tin, by the process commonly known as

"galvanizing"—*i. e.*, by dipping them, properly prepared, into molten metal. At Fig. 4 one end of a bridge is represented with a portion of the coating *d* removed.

By this process the iron is much more perfectly and permanently protected from corrosion than is possible with paint, and a nearly white metallic surface is secured that is very durable and pleasing, and instead of soiling by contact with the dirt, grows brighter and cleaner by use.

These two improvements in the bridge apparently render it as nearly perfect as is necessary for ordinary croqueteries.

*The mallet.*—There has been much difference of opinion respecting the best form of mallet-head. At first many manufacturers and amateurs adopted the form seen in Fig. 6, in which the head has very nearly the form of a barrel—*i. e.*, larger in the middle than at each end. This proved to be clumsy, and the increased diameter at the center often caused the mallet-head to come in contact with the ground when attempting to strike a ball. Afterward the form seen in Fig. 7 was adopted, and is recommended by all writers on the subject, being described as the form of a dice-box. This obviates the difficulty above mentioned, and makes a much more elegant head than the barrel shape. But in a croqueterie the several parts are so connected that a certain relation of size and weight must be maintained between the mallet-head and the ball with which it is used.

The ball requires size without great weight, while the mallet-head should have a good degree of weight without being so large as to be clumsy. Now, in adopting the dice-box shape instead of the barrel shape, a large amount of the material is turned off, and consequently the mallet made much lighter. This fact, by itself, is an objection; but it forms a head so much neater in appearance that it has been almost universally adopted. But the lightness of the dice-box shape is not its only objection. A croquet-mallet is subject to hard usage, and, if not properly secured, the handles are continually becoming loosened, and, with the greatest care in the selection of the wood, the heads are very liable to split. Now, the handle must be inserted at the middle of the head, which, in this form, is the smallest part, consequently the hole for the handle materially weakens the head. Furthermore, it is very desirable for the appearance of the mallet that the hole shall not be made entirely through the head, but when the head is so small in the middle, if the handle does not go through, it has so little bearing that it is liable to very soon become loosened.

In croqueteries each mallet is designated by a distinct color, and there has been a great variety in the styles of painting. Thus, some manufacturers have painted a small portion of the handle, others have painted the two faces of the head. A portion of the handle is hardly distinct enough, while the face of the head is the part most exposed to wear, and

consequently the least desirable place to apply the paint.

In order to retain as far as possible the desired weight, diameter at the center, and elegance of form, we make the mallet-head as shown at Fig. 5—*i. e.*, we imitate the dice-box form with a band or hoop, O, around the center. This forms a very conspicuous place for the paint, and when painted it has the appearance of a metal band strengthening the mallet, while it gives the head a diameter at the center such that the handle does not require to go through, and also gives considerable additional weight to the mallet just in the place where it is most desirable.

This form of the mallet-head, with the paint applied as described—*i. e.*, to the band merely, or to the band and a small portion of the handle—forms a mallet that is entirely different in appearance from any others that have been made, and one that combines, to a greater degree than any other, the useful with the ornamental.

*The balls.*—The eight balls are designated each one by a distinct color of its own, for the purpose of distinguishing between the balls of the several players.

As it is the usual custom in the game to play by sides—*i. e.*, for four players to play against four other players—it has become a custom to divide the colors into two parts, the light and dark colors, one side using the four light balls and the other side the four dark balls. The most common colors are black, white, blue, yellow, brown, red, green, and pink. The black, blue, brown, and green are called the dark colors and the alternate ones the light. Now, according to the laws of the game, a player has frequent opportunity to aid a friend or injure an enemy, and it is necessary that he should constantly bear in mind which colors belong to his side.

Different manufacturers have adopted different styles of painting the balls. Thus some have painted the entire surface of the ball with the designating-color, while others have merely painted stripes of the color around the ball, leaving the rest of the surface the natural color of the wood.

The stripes are the most ornamental, while the painting of the whole surface has been considered the most useful, because the balls are more easily distinguished on the grass, in whatever position they may lie, and the ball is better protected from the weather. But with any style of painting that has been adopted by others than ourselves the player has been obliged to depend upon his memory to decide which balls were on his side, for in selecting eight very different colors it is not always easily determined which are light and which are dark—as, for instance, the red and blue. It is necessary to make the blue rather light, or it will by wear soon become confounded with the black, and in this shade of color it may well be disputed which is the

darker color, the blue or the red; and, further, in the excitement of the game a player will not stop to reason, and if the memory fails for a moment a false play may be made that is exceedingly vexatious. To avoid this difficulty, and at the same time have our balls well protected as well as somewhat ornamental, we have adopted a method of painting that is entirely different from all others. We first cover the whole surface of the balls with their respective designating-colors, laid on in several coats to form a perfect protection, and then to ornament them somewhat, and also to form a perfect key for the players, we give the four dark balls one or more stripes of white and the four light balls similar stripes of black. Now a player will know at once that if his ball has black stripes all the other balls with black stripes belong to friends and all with white stripes to enemies.

The above arrangement will be readily seen in Fig. 1, in which *efgh* are the light balls, and *ijkl* are the four dark balls. The stripes may be made and arranged entirely according to the taste of the painter, but should not be broad enough to cover up the principal color of the ball to any great extent, as the contrast is so great that there is no necessity that they should be very broad in order to show very conspicuously.

*The box.*—As the materials of croquet are not in a form very convenient for transportation from place to place, especially from the house to the ground, a box suitably arranged to contain them has come to be considered an essential part of a croqueterie. At first this was simply a box large enough to hold the materials, and into which they were piled promiscuously; but in this way the several parts were very much mixed up, and it was found desirable to provide some means of keeping the balls in place, and therefore some manufacturers have made a small compartment at each end of the box for the balls, each compartment holding four balls. This arrangement holds the balls very well, but adds twice the diameter of the ball to the length of the box, and several inches to the width, which is a great objection, as the box is large enough in its best form.

In Fig. 1 is shown our box in perspective, with a portion of the cover broken off, and in Fig. 2 a longitudinal section of the same.

A is the box, and B a small interior box securely attached to the center of the inside of the bottom. The box B we do not make as deep as the main box, but only in depth a little more than one-half the diameter of the ball. This allows the mallets, bridges, and stakes to pack better than they otherwise would.

In Fig. 1 *mm* are the iron bridges, and *n* one mallet, which show how perfectly all the parts pack with the central box for the balls. Another feature of this style of box is the appearance that the goods make when exposed

for sale, which is much better than in any other box that has been devised.

Fig. 8 represents one of the two wooden stakes heretofore mentioned. These stakes are driven at either end of the croquet-ground, and besides forming boundary-points, they form a guide to the players by means of the several colors, which are painted in their regular order near the top of each stake.

Now, having fully explained the nature of our improvements in croqueteries, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of arch *a* and sockets *b* *c*, to form a croquet bridge or arch, substan-

tially in the manner and for the purpose herein set forth.

2. An iron croquet bridge or arch coated with zinc, tin, or other similar metal, substantially in the manner and for the purposes herein fully set forth.

3. The method, herein fully described, of painting croquet-balls, in which the light balls are designated by black or dark stripes and the dark balls by white or light stripes.

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