

(No Model.)

J. N. McINTIRE.
BILLIARD TABLE CUSHION.

No. 560,170.

Patented May 12, 1896.

Fig. 1,

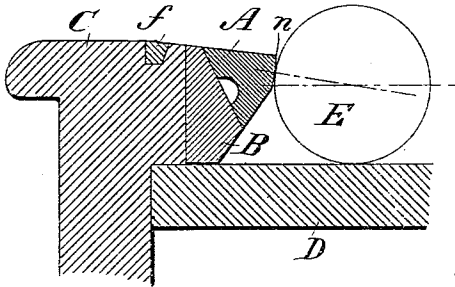


Fig. 2,

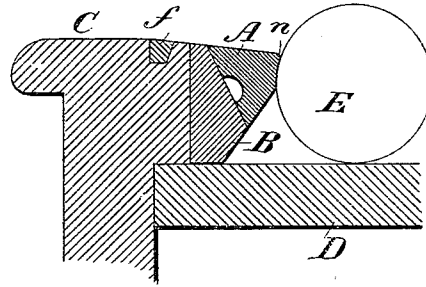


Fig. 3,

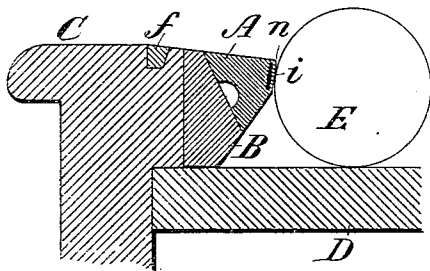


Fig. 4,

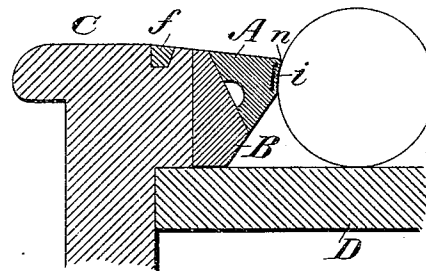


Fig. 5,

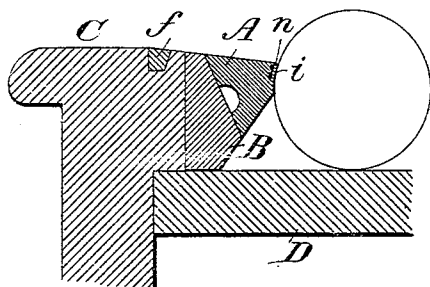
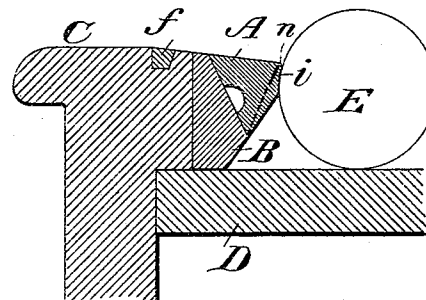


Fig. 6,



WITNESSES:

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JACOB N. MCINTIRE, OF NEW YORK, N. Y., ASSIGNOR TO THE BRUNSWICK-BALKE-COLLENDER COMPANY, OF CHICAGO, ILLINOIS.

BILLIARD-TABLE CUSHION.

SPECIFICATION forming part of Letters Patent No. 560,170, dated May 12, 1896.

Application filed October 21, 1895. Serial No. 566,428. (No model.)

To all whom it may concern:

Be it known that I, JACOB N. MCINTIRE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Billiard-Table Cushions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to cushions for billiard-tables, and has for its main objects to provide for use a billiard-table cushion which will be faster than those now in general use, on which the "English" (in making twisting shots) will be very effectual, which will not cause the balls to wear or "gutter" the bed-cloth so badly, and which shall be exceedingly efficient, durable, and desirable in action, while costing little, if any, more than the kind of cushion now manufactured.

To these main ends and objects my invention may be said to consist, primarily, in a rubber cushion-strip having a soft working face (or ball-contacting surface) that is located in a plane slightly oblique to the perpendicular and so that the ball will first contact therewith at a point approximately halfway between the uppermost point of said plane and a point therein about on a level with the center of the ball, whereby when the ball is played against said working face the initial point of contact, while above the level in which lies the center of the sphere, is considerably below the top edge of the said face, and whereby after the surface of the ball shall have come into forcible contact with the whole extent of said face (in a vertical direction) the cushion-face will also react on the ball at a point considerably below the level in which lies the center of the latter, thus tending to repel the ball in substantially a horizontal direction, all as will be more fully explained hereinafter, and as will be finally pointed out particularly in the claims of this specification; and my invention may be said to consist, secondarily, in certain other structural features which will be found hereinafter fully described, and which will be particularly pointed out in the claims.

To enable those skilled in the art to make

and use cushions comprising, either in whole or in part, my said improvements, I will now proceed to more fully describe the latter, referring by letters to the accompanying drawings, which form part of this specification, and in which I have shown my said invention carried out in those forms in which I have so far practiced it.

In the drawings, Figure 1 is a vertical section of so much of a billiard-table, with a ball resting on the bed thereof and barely in contact with the cushion, as is necessary to be shown to illustrate my invention. Fig. 2 is a similar view, but showing the ball in such forcible contact with the cushion that it contacts with the entire working face thereof in a vertical direction. Fig. 3 is a view similar to Fig. 1, but showing the cushion-strip provided with an interiorly-arranged "face-hardening" device. Fig. 4 is a view like Fig. 3, but showing a ball forced into contact with the working face of the cushion to illustrate the distortion thereof and the slight change of position of the face-hardening device. Fig. 5 is a view similar to Fig. 4, except that a narrower face-hardening strip is shown. Fig. 6 is a like view, but showing a wholly different arrangement of face-hardening device.

In the several figures the same part will be found always designated by the same reference-letter.

A is the cushion-strip constructed according to my invention, composed of any compound or material suitable for the purposes of a billiard-cushion, and securely fastened, in about the usual manner, to the wooden "lining" B of the cushion-rail C, though it is not essential, of course, to my invention that the said cushion-strip be secured to the cushion-rail in this usual manner so long as it be properly held in place with its working face in substantially the relationship to the bed D of the table that I have shown it in.

As usual, the cushion-rail is securely but removably attached to the bed of the table, and the finished cushion is covered with green cloth tacked at its lowermost portion to the bottom of the wooden lining B, stretched thence upward over the cushion-strip, and having its upper rear edge wrapped around the inserted retaining-strip F, after the fash-

ion familiar to the billiard-table manufacturer. I have, however, omitted this cloth covering of the cushion, as well as the bed-cloth, in order that the drawings may be made to more distinctly show (without a confusion of lines) the more important parts of the cushion proper.

E is a billiard-ball, not shown placed the same, however, in all the figures, and in like manner I have shown in some of the figures only face-hardening devices *i* of different forms and differently arranged, as will be presently described.

In the case shown my improved cushion-strip is molded with a semicylindrical longitudinal recess *a*, running along the middle of its back side, and in practice, so far, I have made the strip with a canvas backing, in a known manner; but these particulars of the shown cushion-strip are not at all material to my invention; nor is it essential that the shape and size of the rubber below the working face thereof be just as I have shown them to be. Indeed, I have contemplated variations in these particulars, which, however, would not change the principle of construction and mode of operation peculiar to my invention.

I have shown all the parts drawn exactly half of a full-sized table, supplied with balls about two and three-eighths of an inch in diameter, or with what are known (in this country) as balls of the "standard" size, so that those skilled in the art seeking to practice my invention can successfully carry out the same by following the said drawings.

Preferably the extreme upper front edge of the rubber strip *A* is made slightly rounded, as seen at *n*, instead of perfectly angular, (or sharp,) simply to render this upper corner less destructive of the green-cloth covering by frictional wear of the latter, this special form of this part having been shown by practice, with cushion-strips heretofore in use, to be desirable for the reason just above stated. This rounded upper edge of the strip, however, comes into active operation only when the ball *E* is played very hard against the cushion, though even with a comparatively light stroke the uppermost part of the stock of strip *A* necessary to the formation of the rounded corner *n* operates as a reinforce to the main portion of said stock, and thus influences the action of the working face of the cushion.

By reference now particularly to Fig. 1 it will be seen that the line representing the working face of the strip *A* is only inclined backward very slightly from the vertical, as it extends downwardly from the rounded upper edge *n*, and that therefore said line is tangential to the circle indicating the ball *E* at a point about three-sixteenths of an inch only above the level of the center of said ball. I have drawn two dotted radial lines at Fig. 1 to illustrate the above explanation, and it will be understood that while the ball is prevented from "jumping" by thus having its

initial point of contact above its center and on an oblique (or cut-under) working face the degree of obliquity is so slight that the repellent action of the ball in a slightly-downward direction does not cause any appreciable portion of said force to be expended in driving the ball downward (against the bed of the table) at the expense of the "legs" of the ball when making a stroke. As, however, it is in making comparatively hard strokes that in the "diamond-shaped" cushion now almost universally employed the wedging-down action of the ball is most objectionable, both on account of detracting from the legs of the ball (or lessening the rebound thereof) and on account of the "guttering" of the bed-cloth by the pounding thereon of the balls, a most important novel feature of my improved cushion lies in this, viz: that as soon as the ball *E* shall have been forced into contact with the entire extent of the working face, (vertically,) so that the latter is made to conform to the curved surface of the ball, as shown, for instance, at Fig. 2, then the repellent force of the strip *A* acts also on the ball not only at a point coincident with the level of its center, but furthermore acts on the ball below a horizontal line passing through its center, and hence the cushion will in its effort to resume its normal condition throw the ball off with little or no appreciable downward force on the ball. Furthermore, inasmuch as that portion of the working face lying above the initial point of contact yields a little more readily, under the impact of the ball, (as the latter forces the face into the shape shown at Fig. 2,) than does that portion below said point, it follows that that portion of the cushion-face acting at and below the level of the ball's center will exert a greater repellent force proportionately to extent than the part acting on the ball above its center, thus rendering the cushion competent to exercise a great repellent power on the ball and mainly in a horizontal action: I need hardly add that the reason why the upper part of the working face acts less powerfully on the ball than the lower is because the rubber which backs up the former can yield to the impress of the ball more easily on account of the freedom of the top surface of the strip *A* to bulge upward, while the lower part of the working face is backed up by stock so disposed as to present more impediment to the forcing backwardly of this part of the said face.

I have shown the working face extended below the dotted line (at Fig. 1) indicating the level of the ball's center only about a sixteenth of an inch; but it may be carried lower if deemed or found in practice to be desirable, though about the form shown for the lower part of the cushion-strip has been found to work perfectly, and it will be observed that this form of strip combines economy of stock with ample strength or force of action. It is also to be observed that a cushion having its working face and entire front side shaped

as shown presents to the eye of the player an appearance so similar to that of the cushion now and for many years past in universal use that his eye will not be distracted in using the new cushion. While this matter of appearance may seem to be one of little moment to the casual observer, it is of some importance to many players.

A change in the appearance of the cushion-face—such, for instance, as is observable between a curved or rounded working face and a face lying in a plane forming an angle with the plane of the top of the cushion—easily distracts the eye of the player in gaging cushion-shots, so that in starting to play on a rounded face after being used to looking at the angular strip now in general use he would have to “get used to” the rounded cushion.

To increase the resiliency of the cushion A, I place within it, slightly in rear of the outer surface of its working face, a thin strip *i* of some suitable hard and durable material, which operates to bring into play or action more evenly and to a greater extent the mass of rubber disposed in rear of the working face and thus renders the cushion-strip capable of more forcibly repelling a ball played against it, while at the same time preventing any undue embedment of the ball in the face of the cushion and a consequent material discrepancy between the angles of incidence and reflection. In practice so far I have used for this face-hardening device a piece of hard rubber compound enveloped or jacketed by a covering of canvas or analogous fabric; but some other material or materials may be used, it being desirable, however, that this device be of such a nature and so combined with the stock of the strip A that the two things will be perfectly and durably united.

I have found it best to mold-in the face-hardening strip, and that in the process of vulcanization, to which cushion-strips are usually subjected, the parts will be very durably and perfectly united.

At Figs. 3 and 4 the strip *i* is very nearly as wide as is the working face of the strip A, and it is located so that there is nearly a sixteenth of an inch of the soft-rubber stock of A outside of the device *i*; but these exact proportions may, of course, be varied more or less without materially changing the action of the cushion.

The strip *i* at Fig. 5, it will be observed, is much narrower than that of Figs. 3 and 4, and this narrower strip gives to the cushion a slightly-different mode of action, since by reason of the lower half of the working face being left unbacked the upper part thereof will be stiffer proportionately to the lower half than in a cushion made like Fig. 4. Hence with the cushion seen at Fig. 5 there will be less liability of any jumping of the ball than with one like Fig. 4.

With an arrangement of the device *i* as shown at Fig. 6, where it is not only arranged

at a considerable angle to the face of the strip, (instead of parallel therewith, as seen at Fig. 3,) but is also tied down to the root of the cushion by a web of canvas, (indicated by the dotted line in the figure,) the action on the ball is further modified because of the stock of A lying intermediately of the outer surface and the hard strip *i* being backed up at points farther and farther in rear of it, from the uppermost point of *i* downward to the lower edge of the latter, and because that portion of the stock of A included between its two outer planes and to the plane formed by the device *i* and the canvas strip (indicated by the dotted line) will have a slightly-different action. In the form shown at this figure the cushion will have still less tendency to permit any jump of the ball, and will be slightly faster.

Although the slightly-rounded edge *n* is desirable for the purpose hereinbefore mentioned, even without this the strip would not wear the cloth covering nearly so much by abrasion as does the correspondingly-rounded edge of the present (diamond-shaped) cushion, because in the latter the balls practically strike directly against this upper corner (or edge) of the strip, while in my construction of cushion the ball contacts almost wholly with the plane or flat working face of the strip, and always with so much of the surface as not to pound the cloth covering in a manner tending to eventually cut or wear it through at a line of contact.

In practice the ivory balls (which are very expensive and soon get “out of true”) have to be “trued up” after short use, and hence they are often furnished new to the purchaser slightly over the standard size of two and three-eighths inches in diameter, and during their continued use generally become appreciably less than this size from successive re-dressing to keep them perfectly spherical. Therefore, as matter of fact, the cushion must be adapted to operate with the best possible average action on balls of somewhat different sizes. Now with the form of cushion in general use prior to my invention these necessary changes in the size of the balls have had the effect to produce these different results, viz: with the ball slightly over the full or standard size, the ball-contacting upper edge of the cushion being at a different relative elevation, the effect on the ball would be different, and with the ball of a less diameter than the standard size the wedging-down action of the cushion-face on the ball would be greater, thus aggravating the objections of detracting from the “legs” of the repelled ball and the wearing of the bed-cloth.

In my improved cushion, it will be seen, with the ball either a little larger or a little smaller than the standard size, the point of initial contact is always on a plane that bears practically the same relationship to the circle (or circumference) of the ball E, because of the

working face having so slight a degree of obliquity and extending in all cases above the point of initial contact.

Having now so fully explained my invention
5 that those skilled in the art can make and use
cushions embodying it, either in whole or in
part, and in either the precise forms in which
I have so far practiced it or under some mere
change therein, and wishing it to be under-
10 stood that less than all the separable features
hereinafter claimed may be used with more
or less advantage, what I claim as new, and
desire to secure by Letters Patent, is—

1. A cushion-strip having a soft, or impressi-
15 ble, plane, or flat, working face, which is
slightly inclined from its upper edge under-
ward; and which is located, relatively to the
table-bed, so that the ball thereon will con-
tact initially therewith at a point intermediate
20 of the top edge of the face and a point therein
on a level with the center of the ball; all sub-
stantially in the manner and for the purposes
hereinbefore set forth.

2. The combination, with a cushion-strip
25 of rubber compound, having a soft, flat, work-

ing face that is slightly oblique to a vertical
plane, and that is located, relatively to the
table-bed, so that the ball first contacts, at a
point below the top edge thereof and above
the level of ball's center, of a strip of some 30
suitably hard and resilient material molded
in the strip slightly in rear of its working
face; parallel therewith; and of a width nearly
equal to that of said face; in the manner and
for the purpose specified. 35

3. The combination with a rubber cushion-
strip having a working face such as specified,
of a face-hardening strip molded therein in
rear of said face; of a width about half that
of the face; and arranged parallel therewith, 40
and with its upper edge about on a level with
the top edge of said working face; all substan-
tially as hereinbefore set forth and for the
purpose described.

In witness whereof I have hereunto set my 45
hand this 23d day of April, 1895.

J. N. MCINTIRE.

In presence of—

B. R. RYAN,

HELENA A. QUEENAN.