

No. 612,765.

Patented Oct. 18, 1898.

M. BENSINGER.
BILLIARD CUSHION.

(Application filed Jan. 20, 1898.)

(No Model.)

Fig. 1,

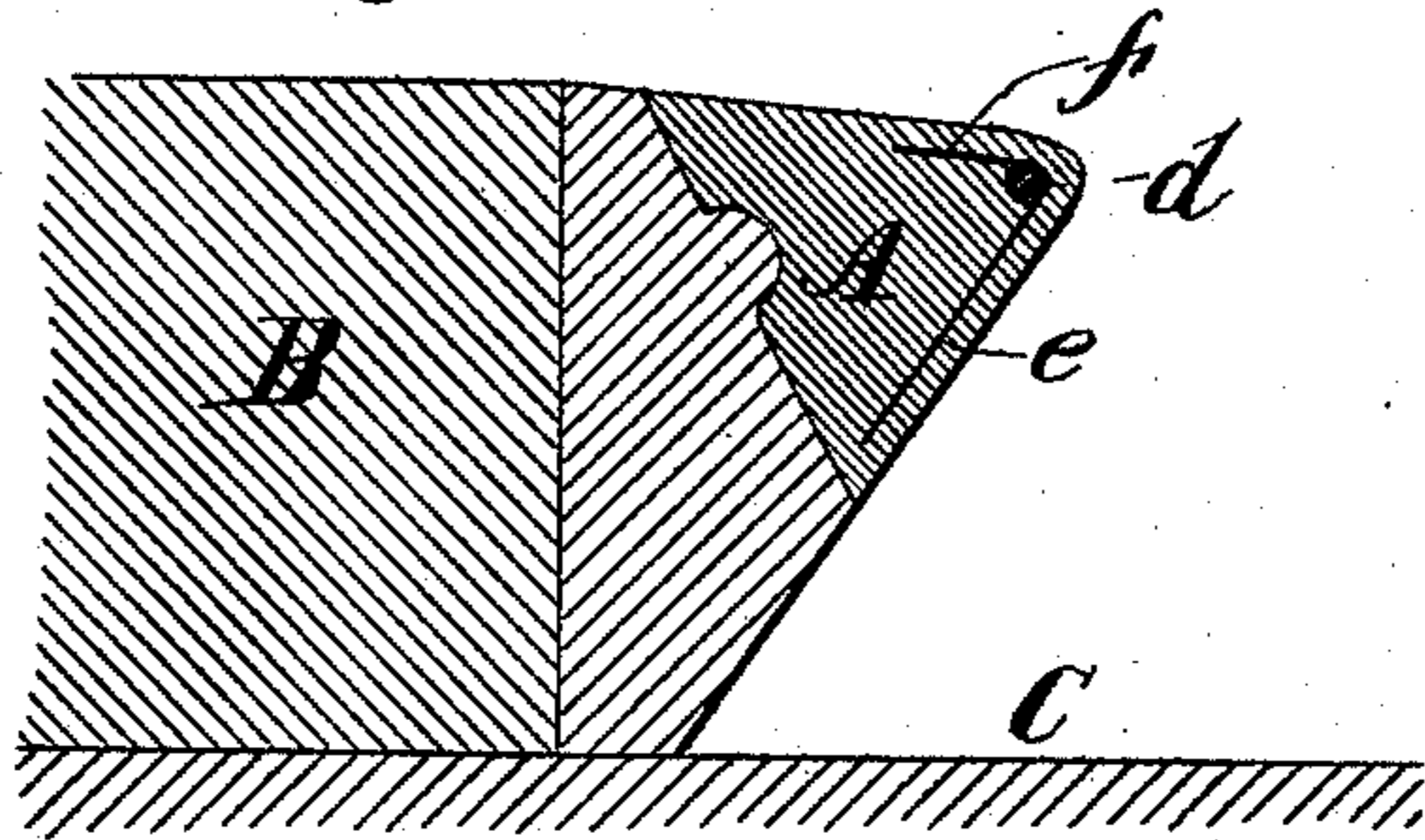


Fig. 2,

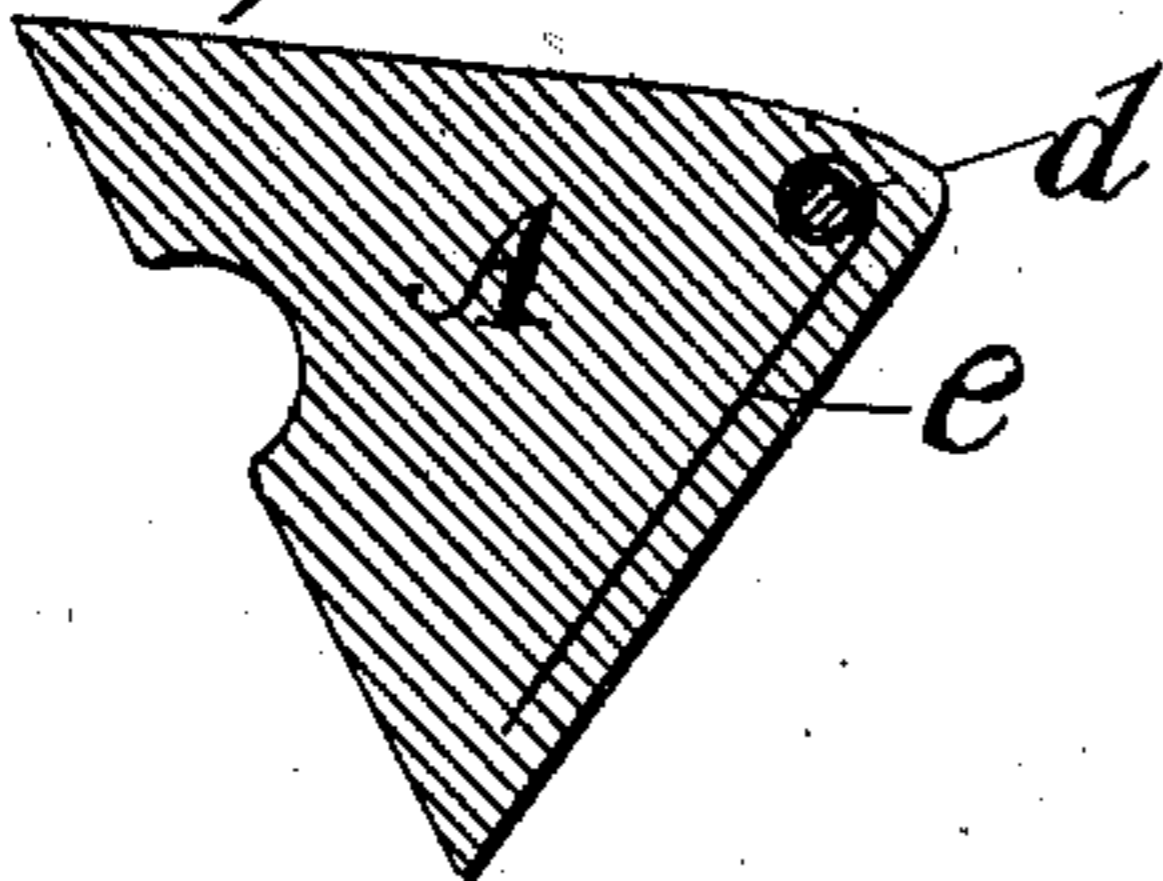


Fig. 3,

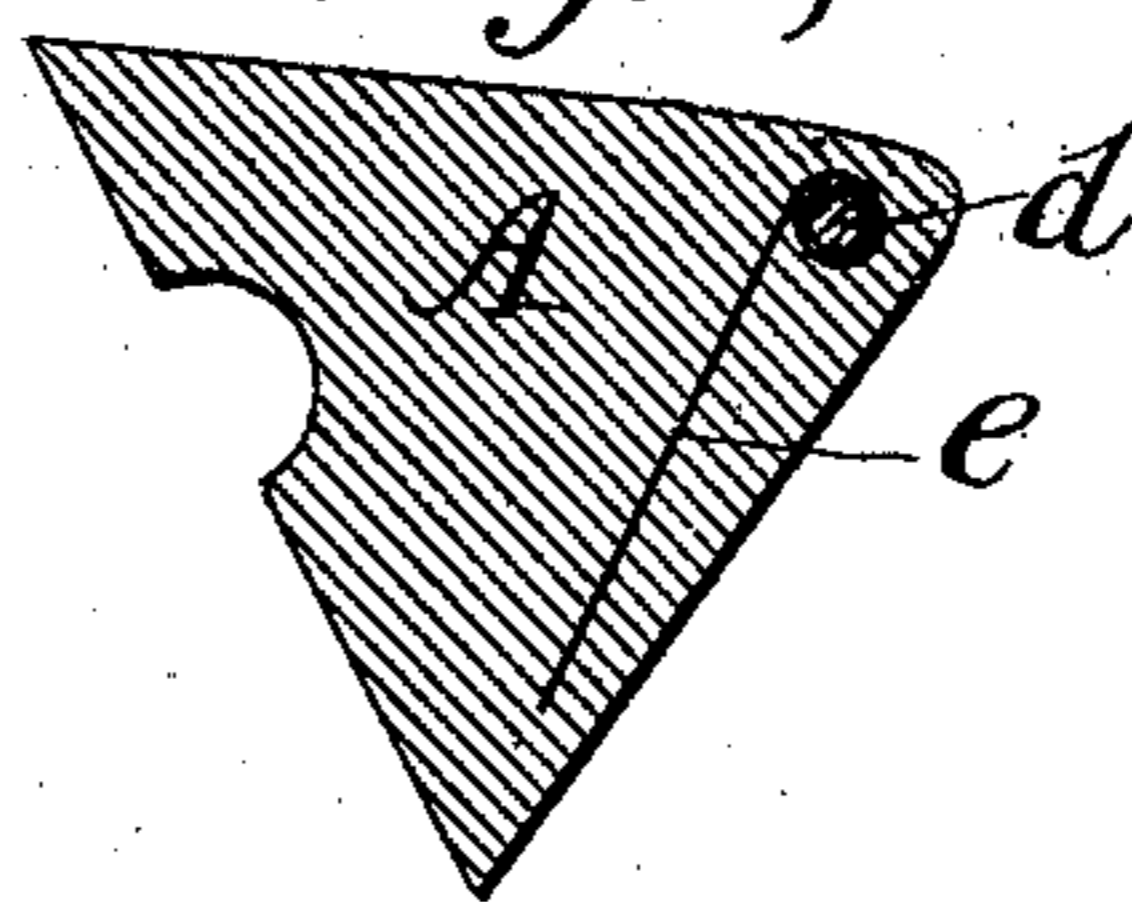


Fig. 4,

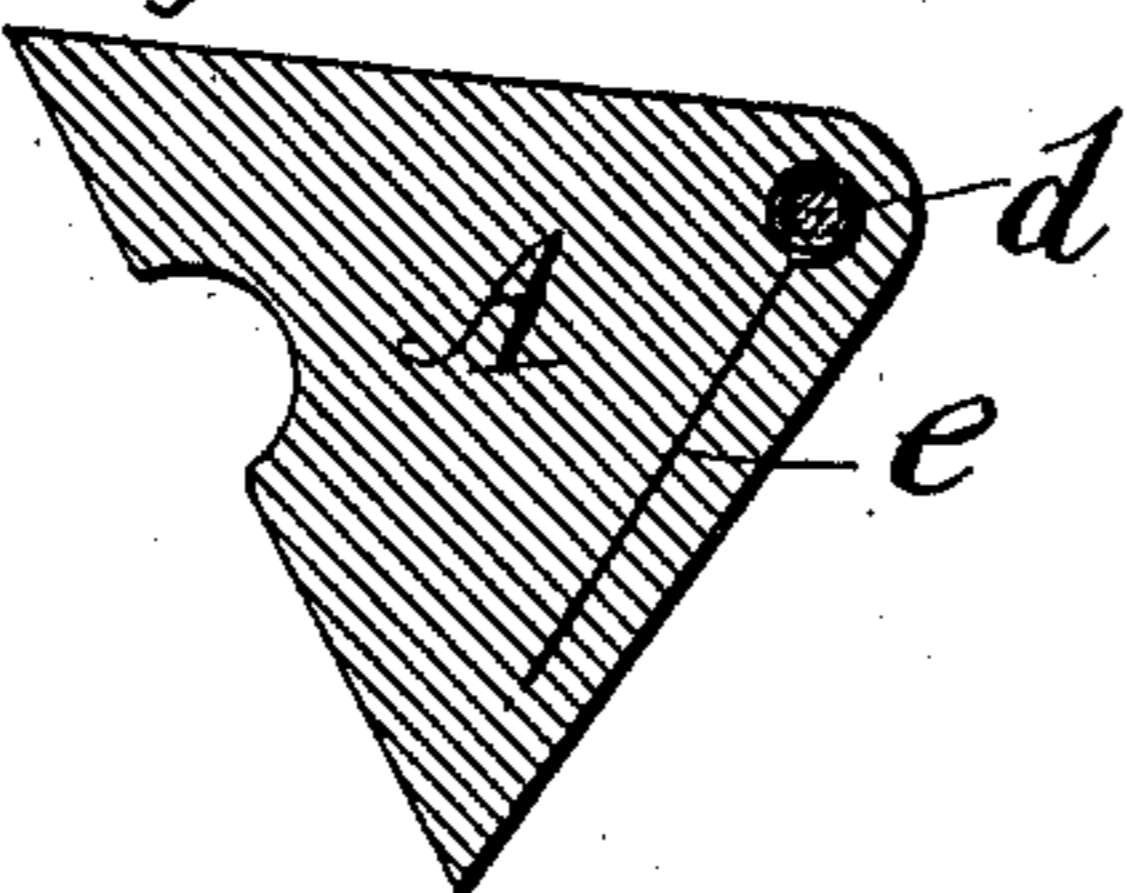


Fig. 5,

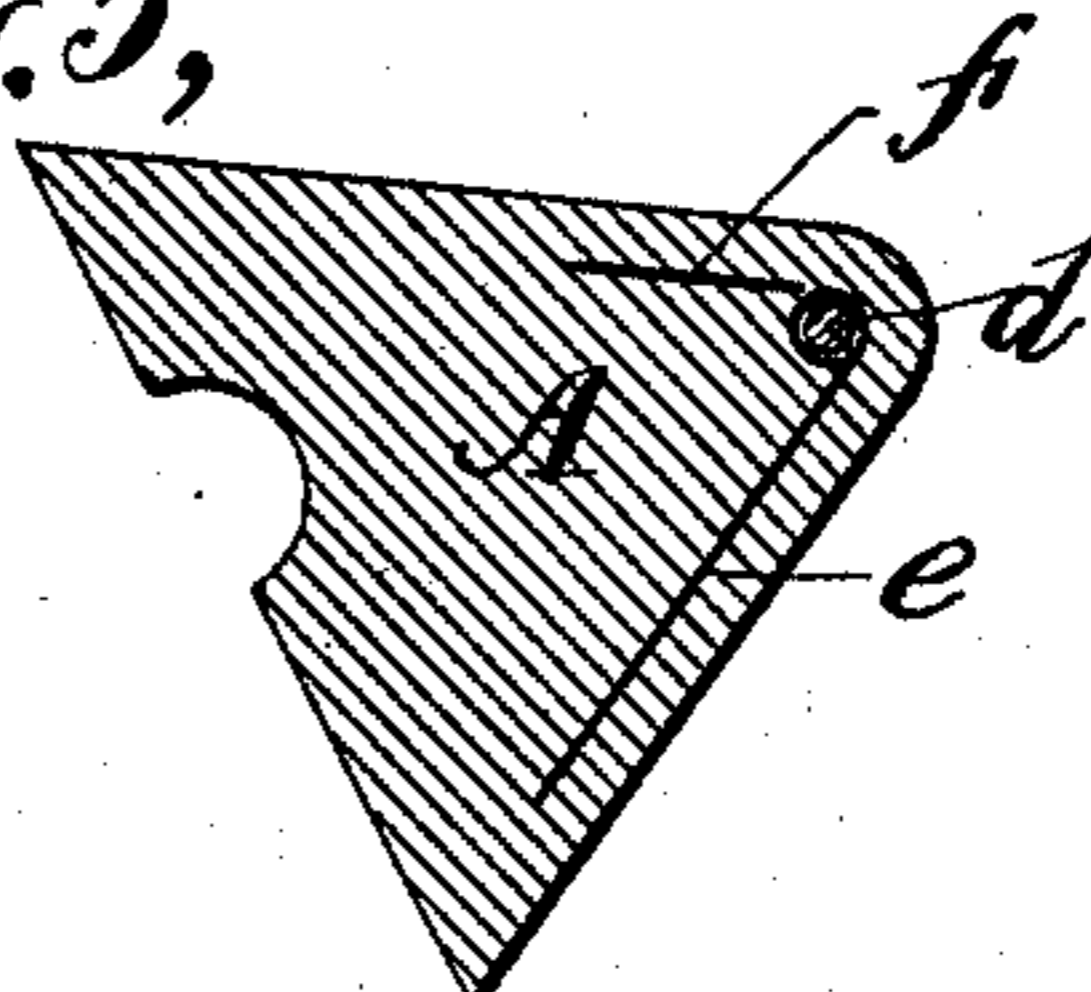


Fig. 6,

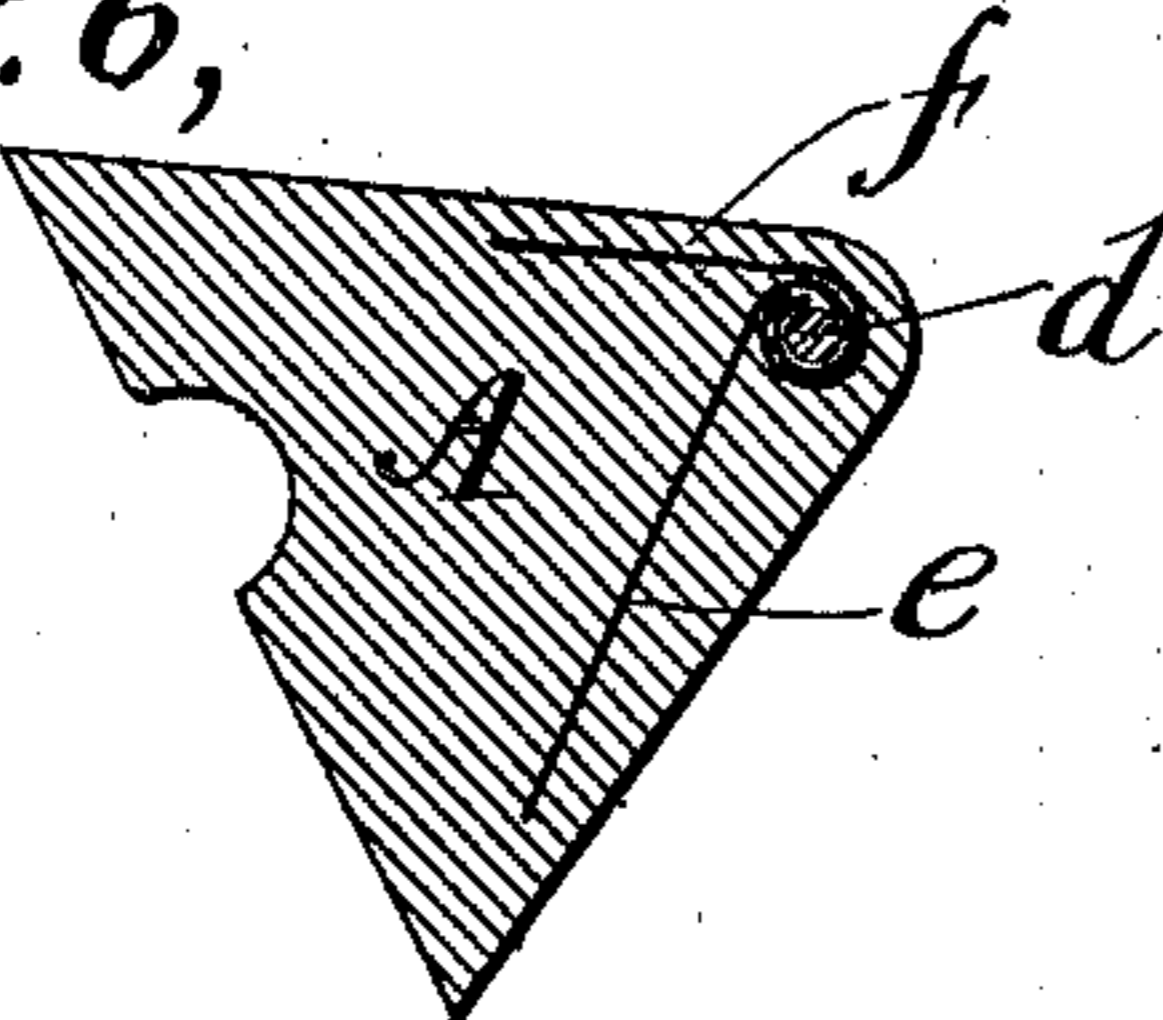


Fig. 7,

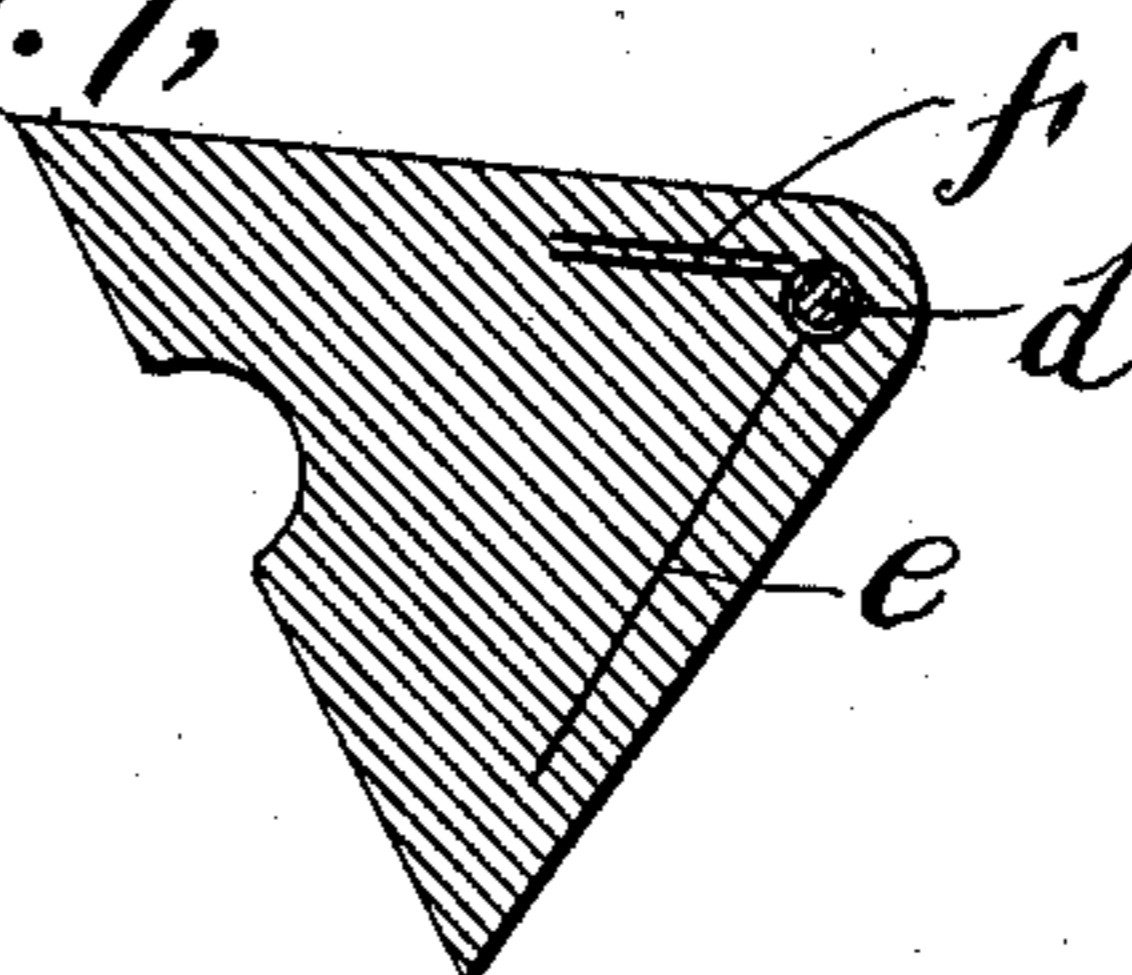
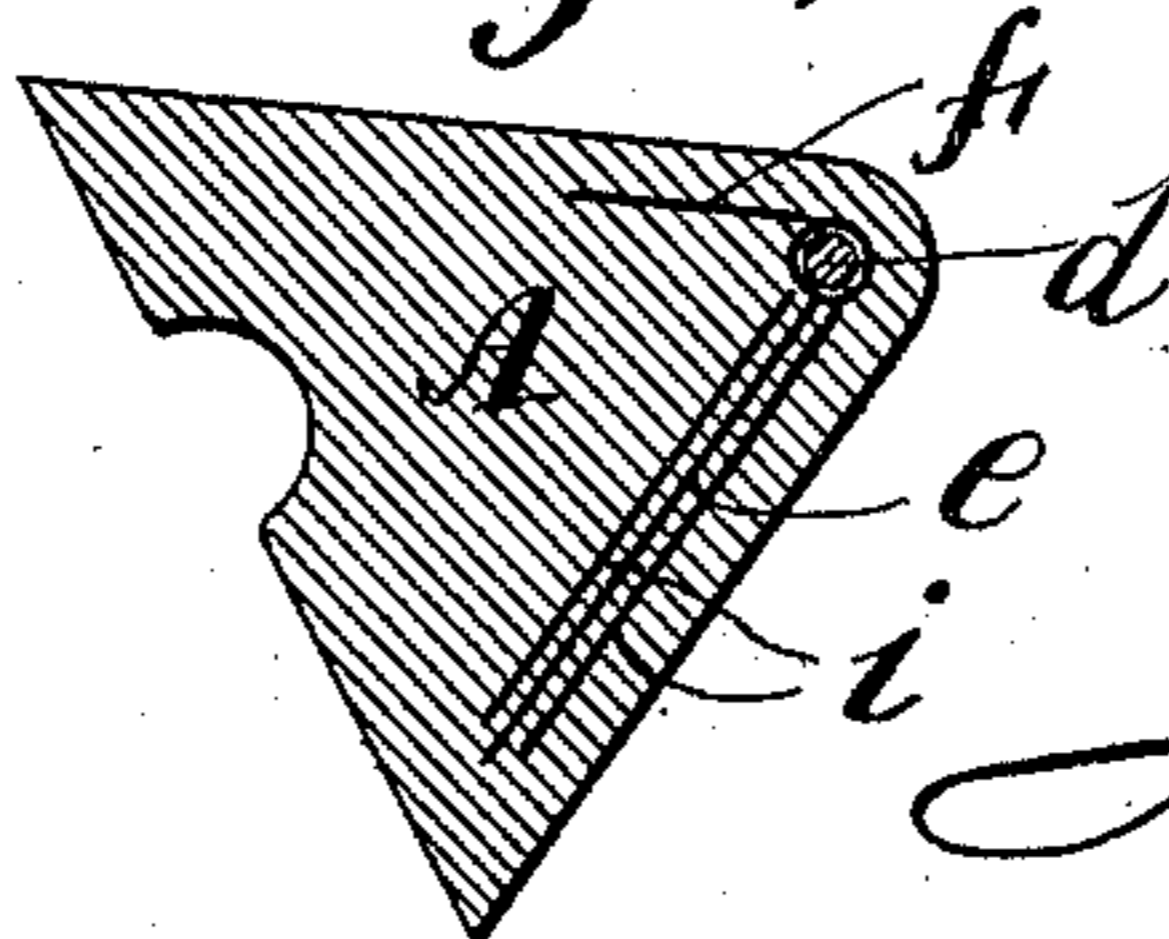


Fig. 8,



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UNITED STATES PATENT OFFICE.

MOSES BENSINGER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE BRUNSWICK-BALKE-COLLENDER COMPANY, OF SAME PLACE AND CINCINNATI, OHIO.

BILLIARD-CUSHION.

SPECIFICATION forming part of Letters Patent No. 612,765, dated October 18, 1898.

Application filed January 20, 1898. Serial No. 667,194. (No model.)

To all whom it may concern:

Be it known that I, MOSES BENSINGER, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Billiard-Cushions; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that type of billiard cushion or cushion-strip which is composed of a molded mass of some suitable rubber compound of such shape in cross-section as to present to the action of the ball striking the cushion a cut-under or obliquely-arranged working face and an upper edge or nose against which the ball impinges, at a point in the latter slightly above its center, and which cushion-strip is provided at the vicinity of the working face and nose with a molded-in device of some sort, usually designated by the generic term "face-hardening device;" and my invention consists, primarily, in the combination, with the usual (molded) rubber cushion-strip, of a novel kind of face-hardening device or means for increasing the resiliency of the cushion, or its ball-repelling power, without materially affecting the accuracy of the angle of reflection of the ball played against the cushion and without impairing the durability of the cushion; and my invention consists, secondarily, in the combination, with such cushion-strip, of a molded-in reinforce or stiffener arranged at the vicinity of the top surface of the cushion, all as will be hereinafter more fully described, and as will be most particularly pointed out in the claims of this specification.

To enable those skilled in the art to which my invention relates to make and use billiard cushion-strips comprising either partially or wholly my invention, I will now proceed to more fully describe the latter, referring by letters of reference to the accompanying drawings, which form part of this specification and in which I have shown my said invention carried into effect in that precise form in which I have so far successfully practiced it and under some slight modifications thereof, although the shown construction may of course be otherwise modified more or less

without departing from the spirit of my invention.

In the drawings, Figure 1 is a vertical sectional view showing so much of a billiard-table cushion and cushion-rail as is necessary for the purpose of illustrating my invention. Figs. 2, 3, 4, 5, 6, 7, and 8 are respectively diagrammatical views showing, on an enlarged scale, variations or mere modifications of my invention.

As is well known to those skilled in the art, a great variety of face-hardening devices have heretofore been combined with the rubber or other compound strip of molded material, the most of which devices have been (like the one herein shown and described) arranged within the mass of rubber during the operation of filling the compound into the mold in which the completed cushion-strip is subsequently vulcanized. In some of the cushions heretofore made and thus provided with face-hardening devices the incorporated device has consisted of a ribbon-like strip of some sort of comparatively hard material—such, for instance, as steel, hard-rubber compound, celluloid, &c.—of one or another precise shape and size, and having one or another precise relative arrangement to the working face and upper corner or ball-contacting edge of the rubber mass, and in some such cases such metallic or other hard face-hardening molded-in strip has been merely incased within or enveloped by a snugly-fitting jacket of fibrous material, while in others it has been covered or wrapped by the uppermost edge of a long band or ribbon-like strip of canvas or other woven fabric, the main or body portion of which strip of canvas has been extended downwardly toward the root of the cushion-strip in a plane parallel with the obliquely-arranged front surface or side of the said rubber strip. Again, it has been common in the art to use, in connection with the molded rubber strip, a face-hardening device composed simply of a round metallic rod or steel wire, sometimes molded fast in the rubber mass at the vicinity of the upper edge or nose of the cushion-strip and sometimes inserted within a cylindrical hole (cored out of the rubber strip in the operation of molding it) and kept in a strained-up or taut condition (after the

completion of the billiard cushion-strip and rail) by means of some suitable straining device; and, again, the rubber cushion-strip has had molded in it a face-hardening device composed wholly of a ribbon-like strip of woven fabric extending from the root of the cushion upwardly to the vicinity of the upper edge or nose, at which locality the said fabric has been formed or provided with a corded edge; but in the use of all the various prior constructions of cushion-strips comprising some one of these or other face-hardening devices incorporated within the molded strip of rubber it has been found that the cushion-strip has been more or less lacking in a capacity to throw off or repel the ball played against it with sufficient force to give the ball what the player calls sufficient "legs," while at the same time reflecting the ball with a perfect angle—that is, with the angle of reflection practically equal in all cases to the angle of incidence—and has lacked stability or endurance.

I have found by actual tests and practice that by the employment of a steel piano-wire of suitable size, wrapped or having tightly wound around it the upper edge portion of a ribbon-like strip of canvas or other suitable textile fabric, and by incorporating the wire thus wrapped and the canvas strip thus connected with it into the rubber strip in the operation of molding the strip, and with the main body portion or unwrapped part of the canvas strip extended downwardly toward the root of the cushion in a plane nearly or quite parallel to the oblique working face of the rubber strip, and that by having the thus composed and arranged face-hardening devices united securely with the rubber composing the cushion-strip in the process of vulcanization of the latter a billiard cushion-strip is produced which acts with greater efficiency than any heretofore known to me—that is to say, it will give more legs to the ball or will impel the ball farther with a given force of stroke than cushions heretofore made and used, while at the same time the ball will leave the cushion under any stroke at the proper or a perfect angle, and the cushion will longer retain its perfect action—that is, will longer remain in a perfect working condition than cushions heretofore made with face-hardening devices. I therefore propose by my invention to provide for use a billiard cushion-strip which, made in accordance with the above-explained construction, will be more efficient and durable and hence more desirable than cushions heretofore made and used.

In addition to the main feature of my improved cushion-strip, just above explained, I propose to provide the cushion, wherever found expedient, with a supplemental device operating to stiffen the topmost and nearly horizontal portion of the rubber strip from the vicinity of the nose rearwardly part way

of the said top surface of the cushion; and this supplemental device, which consists of a strip or strips of suitable woven fabric incorporated within the molded mass and extending from the wrapped wire rearwardly a short distance and in a plane substantially parallel with that in which lies the top surface of the rubber strip, constitutes a secondary feature of my invention.

At Fig. 1 in the drawings, A is the cushion-strip, of vulcanized-rubber compound, made in the usual manner and of substantially the usual and approved form in cross-section, and secured in the well-known manner to the cushion-rail B of a billiard-table in the usual relationship to the bed of the table, the playing-surface of which is represented or indicated by the line C, the parts A and B, as well as those to be presently described, being drawn to the scale of full size of the usual billiard-table. At about the point shown in said figure is located a piano-wire or comparatively hard steel wire *d*, which is incased in the upper portion of a canvas strip *e*, that is securely wound or helically wrapped (one or more turns) around said wire *d*, and the main body portion of which strip *e*, of woven fabric, extends downwardly toward and nearly or quite to the root or lowermost part of the rubber strip A, while, if deemed expedient, another and narrower strip of canvas (or other woven fabric) *f* is molded into the rubber strip near its top surface with its forward edge contacting with the canvas wrapping of wire *d* and with its rearmost edge at a point about one-third the way in rear of wire *d*, as shown. This supplemental incorporated woven fabric *f* may be composed of one or more plies or thicknesses, according to the character and quality of the woven fabric employed, and its function is to harden or somewhat stiffen the topmost part of the cushion-strip A at a locality embraced between the extreme upper edge or "nose" of the cushion-strip and a line located some distance rearwardly thereof, at which portion of the upper part of the rubber mass occurs in the greatest degree a displacement or upward bulging of the particles of the mass when the cushion-strip is struck by the billiard-ball. This device *f* for the purpose mentioned is, however, merely supplemental to or a secondary feature of the main part of my invention, which is based on the idea of the combination, with the usual rubber strip A in substantially the manner shown and so far described, of the fine steel rod or wire *d*, tightly incased within or wrapped by the upper portion of the strip of canvas or other non-stretchable textile fabric *e*, the body or main portion of which fabric extends downwardly toward the root of the cushion, as shown, the combined wire and canvas strip being incorporated within the rubber strip and securely united therewith during the usual process of vulcanization of the billiard-cushion.

Of course the precise manner of wrapping the wire *d* with the uppermost portion of the canvas strip *e* may be varied more or less, and in the use of the supplemental device *f* for stiffening the top part of the cushion-strip in rear of its working edge or nose the exact arrangement shown of said device may be varied more or less, and it may be made of either one or more plies of one or another kind of suitable fabricated material, and in lieu of having its forward edge merely extend up to the wrapped wire *d* said edge may be partially wound around said wire.

In the diagrammatical views Figs. 2, 3, and 4 I have shown the wire-wrapped and depending apron device for hardening the working edge and face of the cushion-strip on an exaggerated scale for the purpose simply of illustrating at least three exact forms or arrangements of the canvas strip relatively to the wire, the strip *e* in Fig. 2 being helically and tightly wrapped around the wire *d* and extended thence downwardly from the forward portion of the wrapping down toward the root of the cushion, while in Fig. 3 the said canvas strip is extended downwardly from a point at the rear of the wrapped wire toward the root of the cushion and not so nearly parallel with the working face of the cushion-strip, as seen at Fig. 2, and in Fig. 4 the canvas strip after having been helically wrapped around the wire *d* (as in each of the other figures just alluded to) is extended from the wrapping in a plane which passes through the center of the wire downwardly toward the root of the cushion-strip.

In the diagrammatical views Figs. 5, 6, and 7 (which are also drawn on an exaggerated scale) I have shown at Fig. 5 how the supplemental hardening device *f* may be arranged in a plane about parallel with the top surface of the cushion and with its forward edge simply contacting with the canvas-wrapped wire *d*, while at Fig. 6 I have shown this device *f* as composed of a piece of cloth or canvas having its forward edge partially wrapped or wound in with the wire wrapping of the canvas *e*, and extended thence rearwardly, and at Fig. 7 I have shown this device *f* composed of two plies of canvas or cotton cloth arranged relatively to the wire-wrapped device and the top surface of the cushion, as illustrated in said figure.

By actual experiment and practice it has been demonstrated that my improved construction of billiard cushion-strip will retain its efficiency longer than other constructions of strip heretofore made and used, and the main reasons for its greater durability are, as I understand the matter, attributable to the facts, first, that the round metallic device or wire can be more tightly and permanently incased with the wrapped upper portion of the canvas strip than can a metallic or other hard device angular or polygonal in cross-sectional shape; second, that the round me-

tallic device incased or wrapped with a woven fabric will not get loosened within the rubber mass by the constant pounding of the balls on the working edge of the cushion, as will a naked or unincased wire, while at the same time the wrapping material of the wire will have its several helically-arranged layers permanently united with each other and with the rubber compound in the molding and vulcanizing process, and, third, that the wrapped wire portion, as well as the depending apron-like part of the (compound) metallic and textile materials composing the face-hardening device in its entirety, will be so permanently and perfectly united with the surrounding particles of the rubber compound that the said face-hardening device as an entirety will always remain perfectly united at all localities with the rubber mass in which it is incorporated.

Of course in practicing the primary or main part of my invention, where it may be found desirable to employ a woven apron *e* of such thickness and stiffness as to render difficult a perfect wrapping of the wire *d* with several turns or plies of said apron, the latter may be composed of a non-stretchable fabric thin enough and flexible enough to be easily wrapped several times around wire *d* and tightly secured round about said wire, and the depending or downwardly-extended portion of the said apron *e* may then be reinforced or made stiffer and thicker by the addition thereto of one or more plies of the same or a different fabric *i*, as illustrated at the diagrammatical view Fig. 8 of the drawings.

Having now so fully explained my invention that those skilled in the art to which it relates can make and use billiard cushion-strips comprising either in whole or in part the hereinbefore-described novel structural features, either in the precise forms shown or under some modification thereof as to either the main or the secondary part or as to both parts of my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a billiard cushion-strip, the combination, with the usual molded mass of a suitable rubber compound, of a face-hardening device, or means, comprising a wire located within the molded mass and at the vicinity of the nose, or upper working edge of the cushion-strip; and a ribbon-like strip, of canvas, or other non-stretchable textile fabric, having its upper edge portion tightly wrapped round about said wire and its main portion extending thence downwardly toward the root of the cushion; all in substantially the manner and for the purposes hereinbefore set forth.

2. In a billiard cushion-strip composed of a suitable rubber compound and having incorporated within it a face-hardening device composed of a wrapped wire, the textile wrapping of which extends downwardly toward

the root of the cushion; a supplemental stiffener, or reinforcing device, *f*, composed of one, or more, plies of some suitable woven fabric, extending rearwardly from the wire-
5 wrapped face-hardening device for a short distance, and in a plane substantially parallel with the top surface of the cushion-strip, and slightly below the topmost part of the

rubber mass; all substantially as and for the purpose hereinbefore set forth. 10

In testimony whereof I have hereunto set my hand this 24th day of December, 1897.

MOSES BENSINGER.

In presence of—

BENJ. A. MACDONALD,
CHAS. P. MILLER.