Aug. 26, 1969 A. TRETOW 3,463,489

POCKETED ELLIPTICAL PLAYING AREAS WITH COMMON FOCAL POINT

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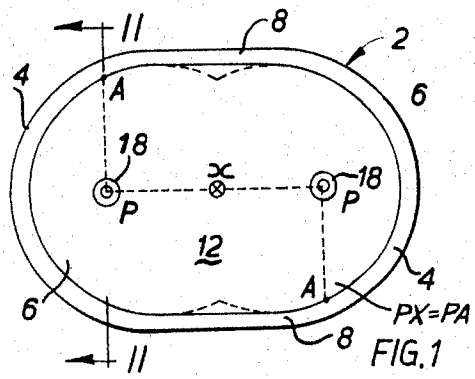


FIG. 1

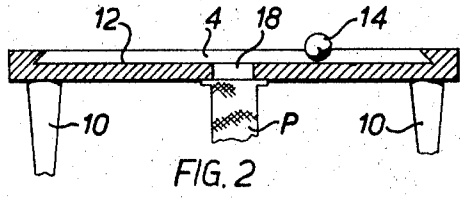


FIG. 2

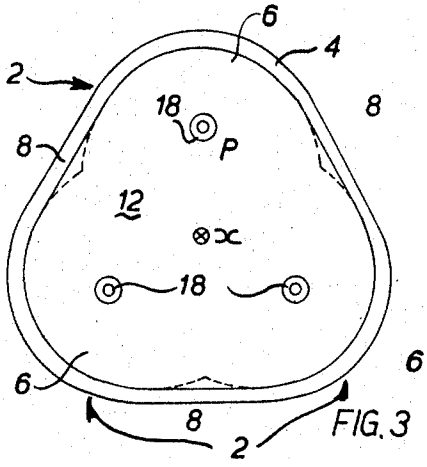


FIG. 3

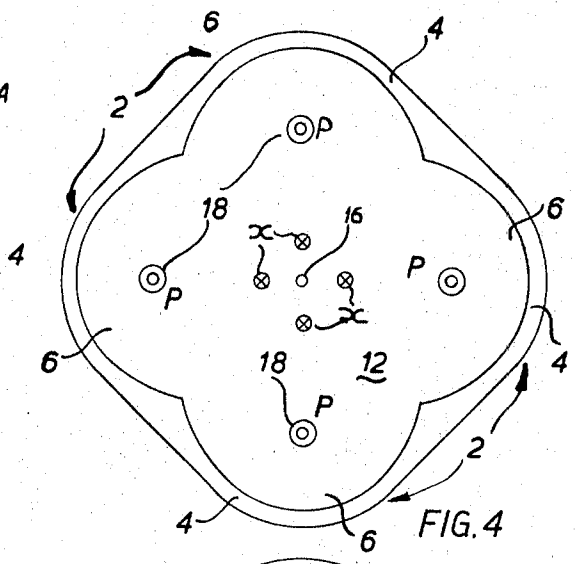


FIG. 4

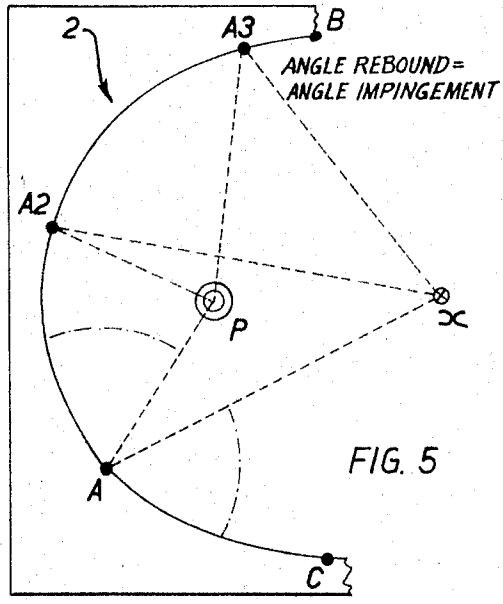


FIG. 5

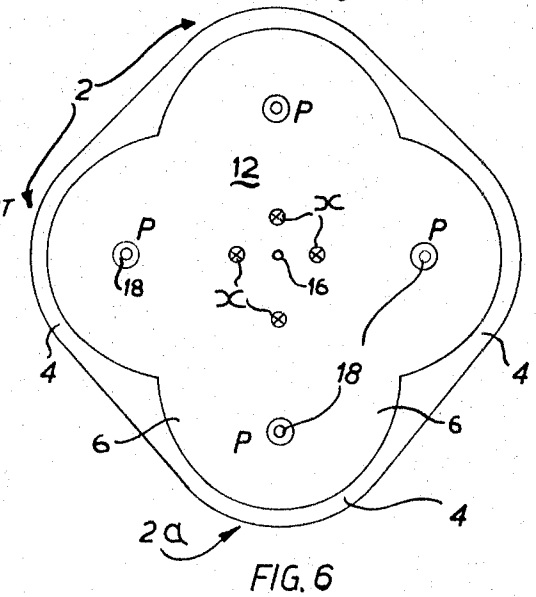


FIG. 6

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POCKETED ELLIPTICAL PLAYING AREAS WITH COMMON FOCAL POINT

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ABSTRACT OF THE DISCLOSURE

A billiard table having a continuous playing surface comprised of a plurality of part-elliptical playing areas all bounded by a common continuous cushion and a ball pocket being provided at one of the foci of each of the elliptical areas. The other of said focal points for each elliptical area may be coincident with a similar non-pocket focal point of an adjacent elliptical playing area.

The present invention relates generally to the game of billiards and particularly to a table on which the game is played; the word "table" within the meaning hereof being actually the top of the table which has a flat, level, smooth and preferably hard surface over which the billiard balls are rolled in play.

One broad object of the invention is to provide a table of this character on which a variety of billiard games are playable; it being understood that the game herein referred to as billiards is that wherein the object is to propel said balls—by means of a cue or by impact of other balls—to roll into pockets which are disposed about the table with their openings flush with the table top.

Another broad object of the invention is to provide a billiard table construction which is adaptable to tables which may be easy or difficult to play.

Like its conventional counterpart, the table of the present invention is also fenced by a rail having a cushion which overhangs the table in a position to be impinged by balls rolling thereon. Said cushion is highly resilient and has the capacity of rebounding balls which impinge thereon in accordance with the general formula, namely: The Angle of Rebound=The Angle of Impingement. It should be emphasized, however, that the applicability of this formula is subject to any bias which may reside in a ball at the time of its impingement on the cushion. For example, a player may cause the ball to spin with the deliberate intention of imparting such bias thereto. It should therefore be kept in mind that all subsequent discussion of rebound in this submission is predicated on conditions in which the ball or balls are not biassed as aforesaid.

Notwithstanding the foregoing similarities, the table of the invention may yet differ significantly from its conventional counterpart in other respects.

For example, a conventional table is rectangular in shape and usually has six pockets disposed and spaced about its perimeter; one pocket being located at each corner of the table and one located intermediate each long side thereof. Moreover, in the conventional table there is no particular relationship or affinity between any of the pockets and the cushion or any portion or segment thereof; said portion or segment being also loosely referred to in popular usage as a cushion notwithstanding that it is really part of a unitary whole. In other words, a ball may be theoretically rebounded from any cushion to any pocket of the table pursuant only to the formula aforesaid, namely: The Angle of Rebound=The Angle of Impingement.

Conversely, the inventive idea visualizes what might be termed "playing units" each comprising the combination of, a particular area of the table, a cushion at the periphery of the playing area, a pocket in the intermediate regions of the said playing area, and a spot which may be referred to as a "focal" spot for better identification and which may be marked or unmarked; said focal spot being also an integral element of the combination aforesaid. Ideally, the various elements of a said playing unit are constituted, designed, and inter-related with each other so that the angle formed by the cushion and a straight line joining any point on the cushion to the said focal spot is congruent to the angle formed by the cushion and a straight line joining the same point on the cushion to the pocket; the provision of a table embodying at least one playing unit as aforesaid and the specific playing unit above described being more particular objects of the invention.

It is also a specific object of the invention to provide a table incorporating at least one playing unit comprising a table area, a peripheral cushion, a pocket and a focal spot which are respectively so designed, constituted and inter-related that a ball propelled into impingement with the said cushion along a straight line connecting the cushion to said focal spot will be rebounded by said cushion towards the associated pocket.

A table according to the invention may be equipped with a number of playing units which is a still further object of the invention. It is of course theoretically possible that, given a table of appropriate size, any number of said playing units may be incorporated therein. For practical purposes, however, it is most unlikely that more than four such playing units will be incorporated in any table.

Additional objects of the invention are to provide a table equipped with multiple playing units as aforesaid whose focal spots are coincident.

The foregoing and other more or less broad objects of the invention herein both stated and implied are achieved by providing a playing unit for incorporation into a table as aforesaid comprising the combination of the several stated elements, namely: a playing area on the table, a pocket in the intermediate regions of said playing area, and a cushion at the periphery of said playing area uniformly arched about two centres respectively constituted by said pocket and by a focal spot which is also an integral element of the playing unit and which is spaced from the pocket pursuant to considerations to be described.

Tables may be provided according to the invention by incorporating therein one or more such playing units; the cushions of the respective playing units being serially interconnected in and forming parts of the entire cushion surrounding the table.

A preferred embodiment of the inventive idea will now be described by way of example only with reference to the accompanying drawings wherein:

FIG. 1 is a schematic view in plan of a table embodying two playing units according to the invention;

FIG. 2 a section along the line **11—11** of FIG. 1;

FIGS. 3 and 4 schematic views in plan of tables respectively embodying three and four playing units according to the invention;

FIG. 5 an enlarged schematic view of a playing unit, and

FIG. 6 as schematic view in plan of a table embodying four said playing units.

As has already been explained, the inventive idea is capable of application, selectively, to small tables, large tables, "difficult" tables and "easy" tables; four of such tables being illustrated in the drawing.

A playing unit **2** as herein contemplated is best shown in FIG. 5 wherein it will be seen to consist of the cushion **4** which is arched about two centres respectively constituted by pocket P and focal spot X; said cushion **4** embracing a playing area **6** which also forms an integral element of the playing unit **2**.

Ideally, the curvature of said cushion **4** is such that straight lines PA and XA respectively joining pocket P and focal spot X to any point A on the cushion **4** between its limits B and C, form congruent angles PAB and XAC therewith. The curvature of said cushion **4** may thus be expressed by the formula: The Angle PAB=The Angle XAC. It will be understood that said limits B and C of the cushion **4** are its peripheral extremities between which the cushion is of substantially elliptical shape as required by the invention and as is more fully explained herein. Thus, since the cushion **4** is comprised of an elliptical arc, the positions of the aforesaid limits B and C thereof are only determined by the length of the arc constituting the cushion **4**.

In said FIG. 5, a number of straight lines are shown connecting said pocket P and focal spot X to arbitrarily selected points A, A2 and A3 on cushion **4**; the angles respectively formed by said cushion **4** with each of the two lines converging on a said point A being respectively congruent.

Empirically, it has been found that a suitable curvature of said cushion **4** may be achieved by making it substantially elliptical about the two centres P and X provided that the said centres are generally spaced apart according to the formula $PX=PA$ wherein PA is a perpendicular of PX intersecting the arc of the cushion **4** at A as shown in FIG. 2. It is, incidentally, noteworthy that the curvature of the cushion **4** as it appears in the drawing is not necessarily accurate; the drawing being mainly schematic as distinguished from pictorial.

FIG. 1 illustrates a table T embodying two playing units **2—2** disposed opposite and in confronting relation to each other. In this case, the focal spots X—X of the two playing units **2—2** are disposed to coincide with each other so that, in effect, the single point X seen in this view is common to both playing units and forms one of the centres about which each cushion **4** is described. In this instance, the cushions **4—4** merge with and are linked by straight cushion sections **8—8**.

As shown in FIG. 2, said table T is supported on legs **10—10** appearing fragmentarily in this view in which also appear the table surface **12**, a ball **14** and a cushion **4**. It need hardly be stated that the cushions **4** incorporated in any table T must always be interconnected to form a closed circuit as it were, about the table surface **12** which, of course, covers the entire table T and includes the area **6** of each playing unit **2** embodied in the table T.

The table T of FIG. 3 embodies three playing units **2**; the focal spots X—X—X of the respective playing units being coincident with each other and the respective cushions **4** merging with and being linked by rectilinear cushion sections **8** as in the case of the table of FIG. 1.

FIGS. 4 and 6 each illustrate a table T which embodies four playing units **2**. In each instance, the focal spot X of each playing unit **2** is separate from and does not coincide with the focal spot of any other playing unit **2**. As in FIG. 4, all said focal spots X may be uniformly spaced around a central point **16**. Alternately, at least one of said focal spots X may be eccentric with respect to the others as in FIG. 5.

The several playing units **2** embodied in a table T may all be congruent with each other as in FIGS. 2, 3 and 4 with uniform spacing between the centres P and X of each playing unit. However, as shown in FIG. 6, at least one of the playing units—identified in this instance by reference device **2***a*—is not congruent with any of the other playing units **2**.

It will be further observed that the cushions **4** of the respective playing units **2** may be consecutive with each other as will be apparent from FIGS. 4 and 6; each being produced to intersect with the cushions **4—4** of the neighbouring playing units **2—2** in contra-distinction to the table T of FIGS. 1 or 3, for example, where the cushions **4—4** do not intersect each other but are joined by the merging and linking sections **8**.

Each cushion **4** according to the present invention is endowed with the capacity to rebound balls impinging thereon pursuant to the formula: The Angle of Rebound=The Angle of Impingement subject, as has been stated, to any bias which may reside in the ball **14** at the time it impinges on the cushion **4**.

Adverting now to FIG. 5 of the drawing, it will be seeen that a ball travelling along any line XA into impingement with a cushion **4** will be rebounded thereby along the companion line AP towards pocket P; having regard to the formula previously enunciated namely: The Angle PAB=The Angle XAC.

It is deemed appropriate to point out at this juncture that precise adherence to the formulae herein enunciated, while desirable, is not an indispensable essential to the production of a satisfactory table T according to the invention. For example, the mere enlargement of opening **18** leading to pocket P (FIG. 2), or other corresponding expedient, may be adopted to compensate for and permit minor deviations from the said formulae. In the circumstances, it will be understood that general—rather than precise—adherence to the herein prescribed formulae will thus be adequate to produce a suitable table T according to the invention.

It should also be clearly understood that this submission is not directed to a billiard game and does not purport to prescribe or even suggest rules or methods for the playing of billiards on a table T constructed according to the present invention. Instead, the invention is directed to the provision of a unique principle of construction capable of being embodied in a large range of tables on which various versions of billiards can be played even employing the old and standard techniques.

That is to say, for example, while present cushions **4** are vested with certain rebound characteristics which may well be utilized to add variety and interest to the game, it is of course still possible to propel a billiard ball **14** directly towards pocket P without rebounding it from cushion **4** wherein only the conventional skills are required.

It is also deemed worthy of emphasis that the one constant of the inventive idea as above described is the playing unit **2** comprising the combination of the cushion **4**, playing area **6**, pocket P and focal point X; such playing unit **2** being capable of embodiment in a table T in the divers forms set forth in the foregoing specification. The invention is not, therefore, to be construed as being limited to tables precisely as hereinbefore described; the true scope of the invention being contained and defined in the claims now following.

What I claim is:

1. A billiard table having a playing surface including a plurality of interconnected playing areas thereon;

a ball pocket located in the intermediate regions of each said area;

a focal point common to all of said area, and

a cushion at the periphery of each said areas disposed to be impinged by and cause rebounding of balls in play on said area generally pursuant to the formula, namely: The Angle of Rebound=The Angle of Impingement;

said cushion of each said area being substantially in the shape of an elliptical arc defined about two centers respectively constituted by said ball pocket and said common focal point, whereby a ball projected along any line through said focal point to impinge said cushion will rebound therefrom along a line through said respective ball pocket;

the cushions of the several playing areas being interconnected forming a closed non-elliptical circuit around the table.

2. A table as claimed in claim 1 wherein said two centres are spaced apart according to the formula: $PA=PX$ wherein P is the said pocket, X the said point, and PA a perpendicular of PX intersecting the said cushion at A.

3. A table as claimed in claim 1 wherein the several playing areas embodied in said table are congruent with each other.

4. A billiard table as claimed in claim 1 wherein some of the playing areas embodied in the table are congruent with each other.

5. A billiard table as claimed in claim 1 wherein at least one of the playing areas embodied in said table is incongruent with any of the others.

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U.S. Cl. X.R.

273—3, 12, 123