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BALL SEPARATING AND ALIGNING DEVICE

Filed Jan. 3, 1967

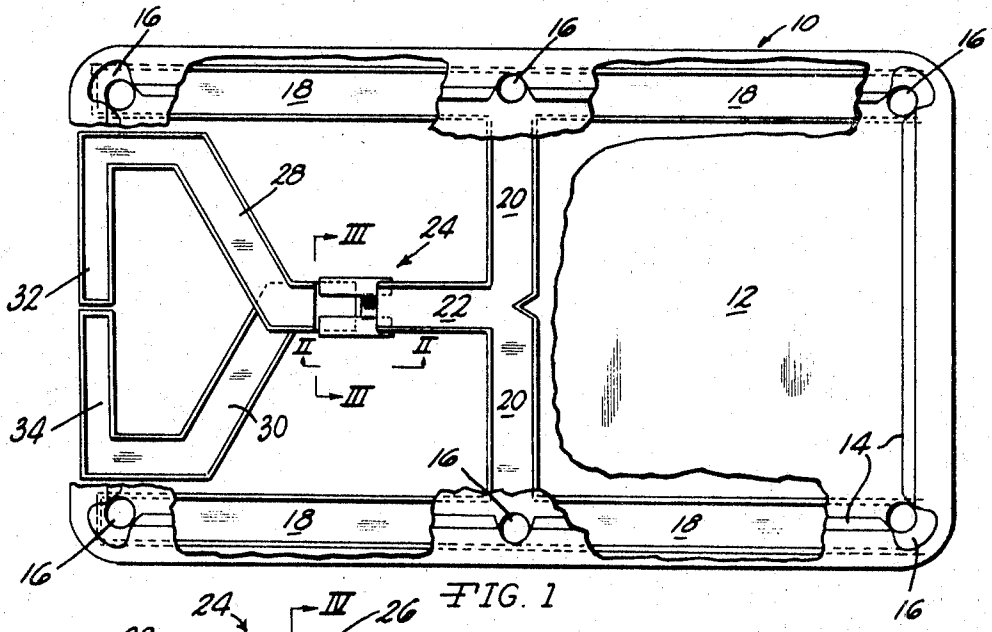


FIG. 1

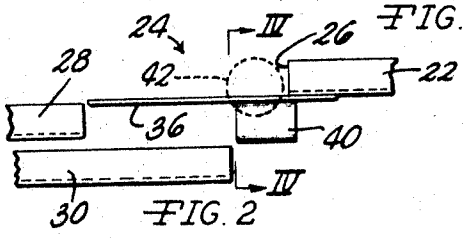


FIG. 2

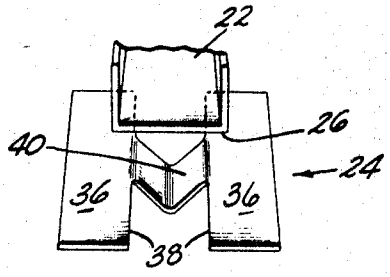


FIG. 3

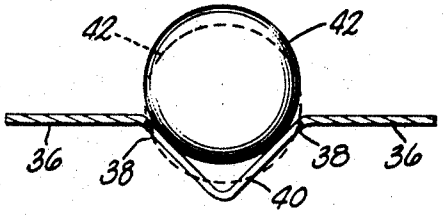


FIG. 4

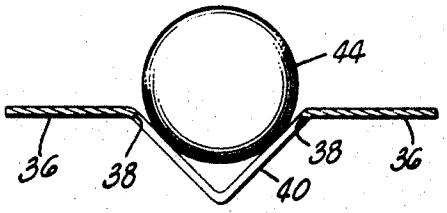


FIG. 5

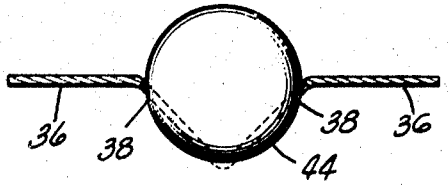


FIG. 6

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BALL SEPARATING AND ALIGNING DEVICE

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ABSTRACT OF THE DISCLOSURE

Separation apparatus separating a smaller diameter cue ball from larger diameter playing balls for use with coin-operated pocket billiard tables, the separation apparatus including preliminary ball-receiving means for vertically aligning the balls with the gauging apparatus prior to gauging.

Pocket billiard tables of the coin-operated type employ ball return means associated with the six pockets of the table whereby as the playing balls are "pocketed," the balls are returned to a rack or compartment. At the end of a game all of the playing balls will be located within the playing ball rack and, upon the insertion of a coin, the playing balls are made accessible to the players whereby the balls may again be placed upon the playing surface of the table for the next game. As the playing ball rack renders the balls inaccessible, except when a coin is inserted in the actuating apparatus, accidental "scratching" or pocketing of the cue ball during playing of the game would cause a problem if means were not provided for separating the cue ball from the playing balls.

With coin-operated pocket billiard apparatus, it has been the practice to make the cue ball slightly larger in diameter than the playing balls. Separation means are located within the ball return guideway, or rack, which separates the smaller playing balls from the larger cue ball. Thus, when the cue ball is "scratched," the size of the cue ball permits it to successfully pass through the playing ball and cue ball separator and be conveyed to a receptacle which is always accessible to the players. One difficulty with this type of cue ball separator lies in the enlarged dimension required of the cue ball. For optimum rebound characteristics of the playing balls from the rails of the pocket billiard table, the rails are located a vertical distance above the playing surface of the table which permits the balls to strike the rails at a vertical height substantially corresponding to the vertical distance of the playing ball's center of gravity above the supporting table surface. As the cue ball is of a larger diameter than the playing balls, the rails will strike the cue ball at a point vertically below the center of gravity of the cue ball and, thus, often cause the cue ball to "hop" as it rebounds from the billiard rail. Such "hopping" of the cue ball is especially noticeable and objectionable when the cue ball rebounds from the rails at high velocities.

In order to prevent the aforementioned problems arising from the enlarged cue ball, it is the object of the invention to provide a cue ball separator for coin-operated pocket billiard tables wherein the cue ball is of a smaller diameter than the diameter of the playing balls. By making the cue ball a smaller diameter than the playing balls, the cue ball will engage the table rails at a point slightly above the center of gravity of the cue ball and, thus, the rebound effect of the cue ball tends to maintain the cue ball on the table surface, rather than lifting the cue ball, as in the case of the oversized cue ball.

In the practice of the invention, the cue ball separator takes the form of a pair of spaced gauge elements located within the ball return guideway of the table apparatus. The spaced gauge elements are separated by a distance greater than the diameter of the cue ball and less than the diameter of the playing balls. Thus, a cue ball being received upon the cue ball separator gauge elements will fall between the gauge elements into a passageway, or receptacle, which is always available to the players. The playing balls will be supported upon the gauge elements and will not fall therethrough, as is the case with the cue ball. Thus, the playing balls will roll along the gauge elements and be transported to a ball guideway, or rack, which is accessible to the players only upon the insertion of a coin.

A further object of the invention is to provide a cue ball separator for pocket billiard apparatus consisting of a pair of parallel, spaced elements having opposed edges spaced apart a distance slightly greater than the diameter of the cue ball and less than the diameter of the playing balls, whereby the playing balls may be supported by the gauge element edges and roll therealong. Preliminary ball-supporting means are associated with the separator whereby the preliminary ball-supporting portion vertically relates the playing balls to the element edges to provide a smooth, nonabrupt transition from the preliminary supporting portion to the gauge edges and prevent wedging, or sticking, of the playing balls between the gauge elements.

A further object of the invention is to provide a cue ball separator for pocket billiard apparatus wherein the separator consists of an economical gauge member which may be readily interposed within the ball return passage or guideway.

These and other objects of the invention arising from the details and relationships of components of an embodiment thereof will be apparent from the following description and accompanying drawings wherein:

FIG. 1 is a plan, partially sectioned view of pocket billiard apparatus incorporating the concept of the invention,

FIG. 2 is an enlarged, elevational view of the cue ball separator in accord with the invention as taken along section II—II of FIG. 1,

FIG. 3 is a front, elevational, perspective view of the gauge element and ball separator as taken along section III—III of FIG. 1,

FIG. 4 is an elevational, sectional view as taken along section IV—IV of FIG. 2 illustrating the position of a playing ball in full lines as received upon the preliminary supporting surface and showing the position of the playing ball in the dotted lines when supported by the gauge element edges,

FIG. 5 is an elevational, sectional view similar to FIG. 4, illustrating a cue ball as received upon the preliminary gauge supporting surface, and

FIG. 6 is a view similar to FIG. 5, illustrating the position of a cue ball in the process of passing between the gauge elements.

In FIG. 1 a pocket billiard table is shown in plan view, partly broken away, to appreciate the environment in which the invention is employed. A pocket billiard table **10** includes a playing surface **12**, and rails **14** are located above the playing surface in the normal manner to permit the balls to rebound therefrom. Six ball-receiving pockets **16** are located in the normal pattern on the table and are provided with an H-shaped ball return guideway system including guideways **18**. The guideways **18** are inclined in such a manner that balls received therein will roll under gravitational forces to the guideways **20** communicating with the central guideway **22**. The guideways may be formed of a plastic or similar material, if desired.

The cue ball separator takes the form of a gauge mem-

ber generally indicated at **24** which is disposed parallel to the ball guideway **22** and receives balls therefrom. As will be apparent from FIGS. 2 and 3, the cue ball separator gauge member **24** is located below the end **26** of the ball guideway **22**. A pair of ball guideways **28** and **30** are associated with the cue ball separator gauge member **24**. The guideway **28** is disposed on a substantially equal, horizontal relationship with the gauge member **24** for receiving the playing balls transported across the gauge member. The guideway **28** communicates with a playing ball receiving rack **32** which is provided with suitable means, not shown, as to be accessible to the players only upon the insertion of a coin of the proper denomination in a coin box.

The ball guideway **30** is disposed below the cue ball separator gauge member **24** to receive cue balls passing through the gauge member. The guideway **30** communicates with the rack **34** which is always accessible to the players.

The cue ball separator gauge member **24** may be formed of sheet material, such as sheet metal, and is of an H configuration, as will be appreciated from FIG. 3. The gauge member includes parallel, spaced elements **36**, each including an opposed edge **38**. The elements **36** are interconnected by a preliminary guideway or trough **40** which is of a V-shaped configuration. Preferably, the elements **36** and the trough **40** are formed from an integral sheet material member. The depth of the V shape of the trough **40** is of such dimension as to support a playing ball **42** in the relationship shown in full lines in FIG. 4, and a cue ball **44** in the relationship as shown in FIG. 5. Also, the trough portion **40** maintains a separation between the element side edges **38** slightly less than the pocket billiard playing balls and slightly greater than the diameter of the cue ball **44**. In one embodiment of the invention, it has been found that by making the cue ball .030 inch less in diameter than the playing balls, the playing characteristics of the cue ball are not adversely affected as the cue ball strikes the rails or the larger playing balls, yet the cue ball separator will function consistently and efficiently.

In operation, the cue ball gauge member **24** is located below the end **26** of the ball guideway **22**, as shown in FIGS. 2 and 3, wherein the trough portion **40** is disposed immediately below the guideway end **26**. Thus, as the balls leave the guideway **22**, they drop onto the trough **40** and are supported in the manner shown in FIGS. 4 and 5, depending upon whether a playing ball or cue ball is received within the trough portion. As will be appreciated from FIG. 4, reception of the balls **42** on the trough portion **40** positions the playing balls **42** so that only a slight "drop" of the playing balls occurs as the playing balls leave the trough portion **40** and are supported by the element edges **38**. Of course, the linear movement of the balls **42** from the dotted line position shown in FIG. 2 to the element edges **38** is due to the slight inclination of the gauge member **24**, as will be appreciated from FIG. 2. As the spacing between the element side edges **38** is slightly less than the diameter of the playing balls, the playing balls will roll along the side edges and be received by the guideway **28** and therein roll to the rack **32**. Preferably, the edges **38** are bent slightly downward to form a convex radius which engages the balls **42** to facilitate rolling thereon and prevents marking the ball.

As the trough **40** substantially aligns the playing balls with the vertical position they will occupy when supported by the edges **38**, there is no tendency for the playing balls to "wedge" between the element edges **38** as the playing balls **42** are being "gauged" by the element edges.

When the cue ball **44** is "scratched," i.e., falls into one of the pockets **16**, the cue ball will roll down the ball return guideways and be received upon the guide member trough **40**, as shown in FIG. 5. The cue ball will roll along the trough **40** and into the space between the element side edges **38**. Since the diameter of the cue ball **44** is less than the spacing between the opposed side edges **38**, the cue ball will fall through the gauge member, as indicated in FIG. 6. The cue ball is received by the guideway **30** and rolls to the rack **34**, where it may be removed by a player and again put into play.

From the previous description, it will be appreciated that the invention is directed to an inexpensive, yet efficient, cue ball separator which is capable of separating cue balls from playing balls, wherein the cue ball is of a smaller diameter than the playing ball. The smaller diameter of the cue ball permits a true rebound from the pocket billiard table rails to occur without causing the cue ball to "hop" or leave the table surface.

It is understood that various modifications to the invention may be apparent to those skilled in the art without departing from the spirit and scope thereof and it is intended that the invention be defined only by the scope of the following claims.

I claim:

1. A separator for pocket billiard balls capable of separating a cue ball from playing balls wherein the cue ball is of a smaller diameter than the playing balls comprising, in combination, a ball guideway defining a path of movement for pocket billiard balls, a gauge member defined in said guideway, said gauge member including a pair of spaced elements having a relative spacing greater than the diameter of a cue ball and less than the diameter of the playing balls wherein said cue ball will pass downwardly through said gauge member and said playing balls will be supported by said gauge member elements, a ball supporting portion defined on said gauge member and located below and adjacent said spaced elements and prior to said elements with respect to the movement of balls in said guideway, said supporting portion receiving balls from said guideway and guiding said balls intermediate said elements, said ball supporting portion supporting said playing balls on said gauge member in substantially the same vertical position relative to said spacer elements as when said playing balls are supported by said elements preventing wedging of said playing balls between said elements, and a second ball guideway vertically aligned with and below the opening between said spaced elements receiving said cue ball.

2. In a separator for pocket billiard balls, as in claim **1**, wherein said ball-supporting portion comprises a trough of a V configuration having an elongated axis centrally located between said spaced elements.

References Cited

UNITED STATES PATENTS

1,938,265	12/1933	Thomas	273—11
3,075,770	1/1963	Young	46—43 X

FOREIGN PATENTS

20,638	10/1915	Denmark.
446,859	5/1936	Great Britain.

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