

[54] **BILLARD GAME APPARATUS**

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[58] Field of Search **273/2, 3 R, 5 R, 14, 127 R, 273/DIG. 24, 8, 9, 59 R, 12, 68, 59 A; 40/327, 134; 156/67; 240/2.25**

[56] **References Cited**

UNITED STATES PATENTS

716,645	12/1902	Ransom	40/327 X
3,649,029	3/1972	Worrell	273/DIG. 24 X
3,743,287	7/1973	Liermann	273/5 R X

FOREIGN PATENTS OR APPLICATIONS

1,042,398	6/1953	France	273/127 R
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Primary Examiner—Anton O. Oechsle

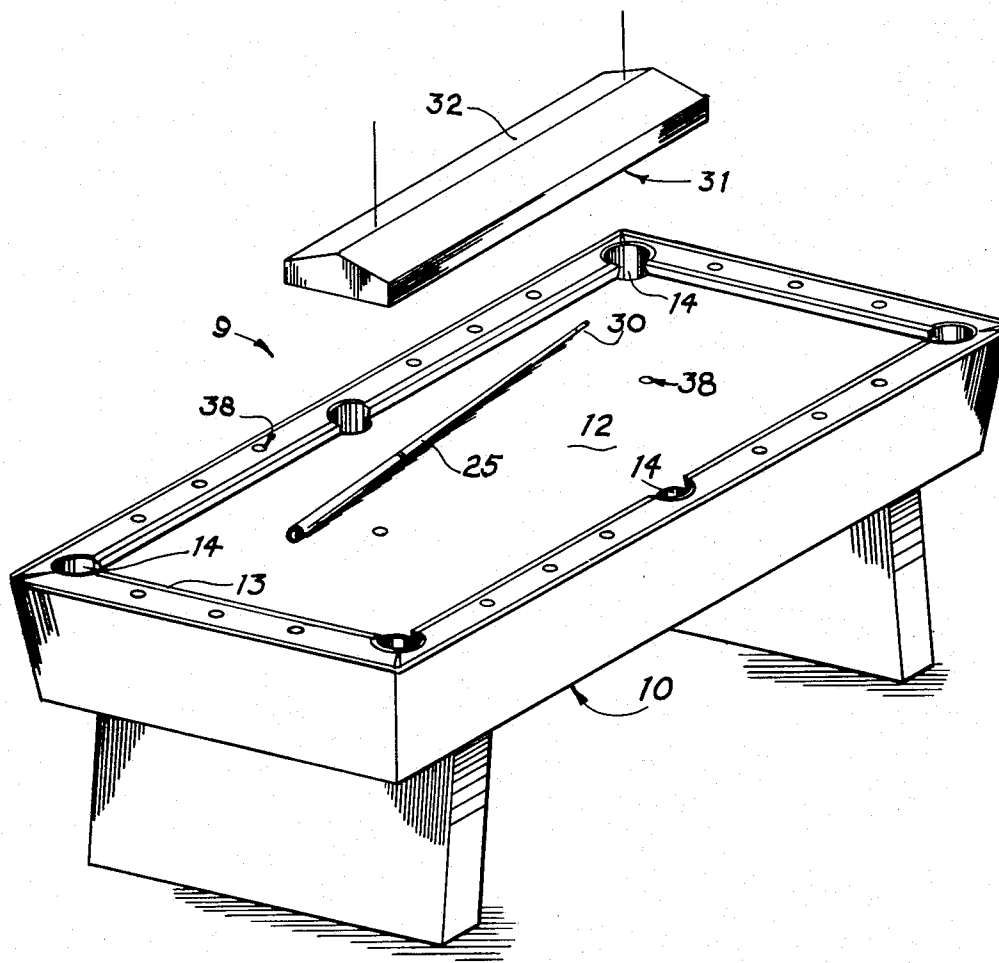
Assistant Examiner—R. T. Stouffer

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[57] **ABSTRACT**

A billiard game apparatus is provided for enabling a player to play a unique and unusual game of billiards on a billiard table. The apparatus includes a source of "black light" radiation directed onto the playing surface. The apparatus has a plurality of special billiard balls having a coating or layer (exterior, sublayer or inlay) of luminescent material that is responsive to black light to emit visible light. When the balls are placed on the table surface, they emit visible light and appear as if they are supported in an invisible plane with the balls being highly contrasted with respect to background objects. A special cue stick is provided having a luminescent coating adjacent its forward tip which is responsive to black light so that the player is able to more accurately stroke the billiard balls and visually observe their relative motions. It is preferable to pulse the black light source to obtain a stroboscopic effect in which the movement of the balls and cue stick produce a "trail" image that is visible to enable the player to concentrate more fully and to execute billiard shots more accurately.

3 Claims, 6 Drawing Figures



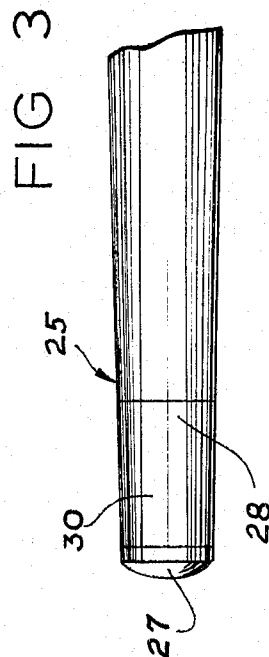
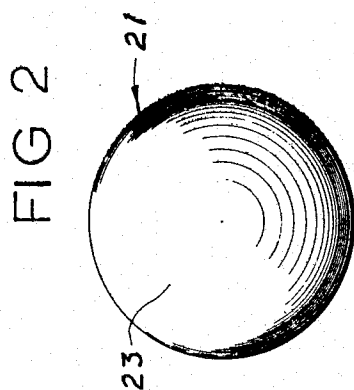
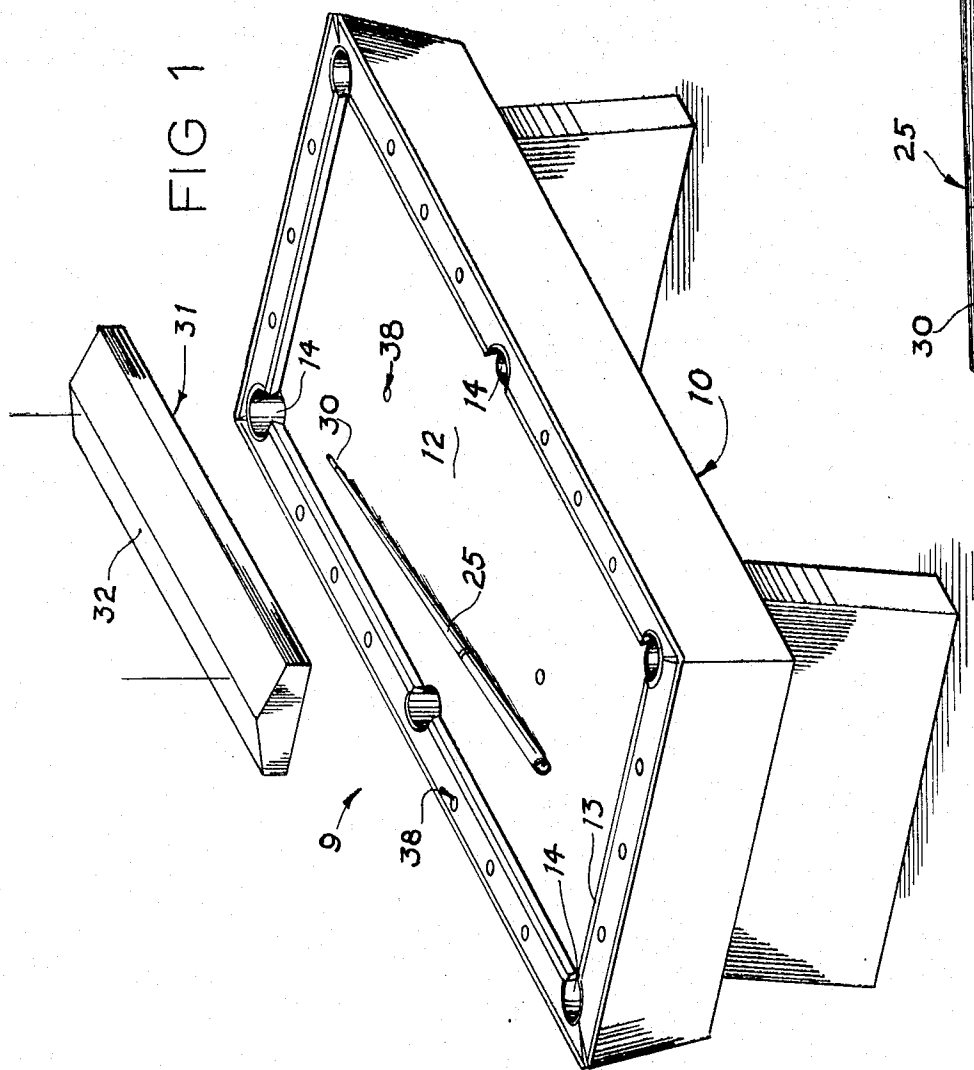


FIG 4

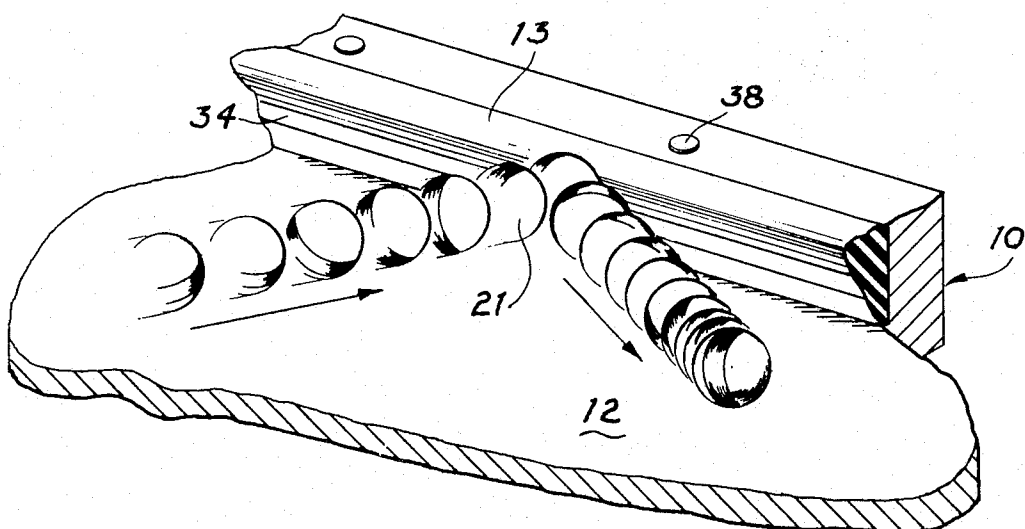
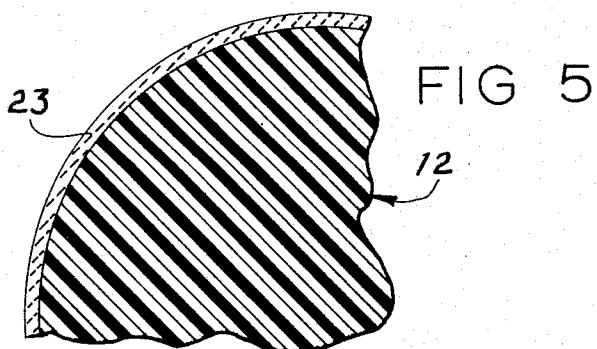
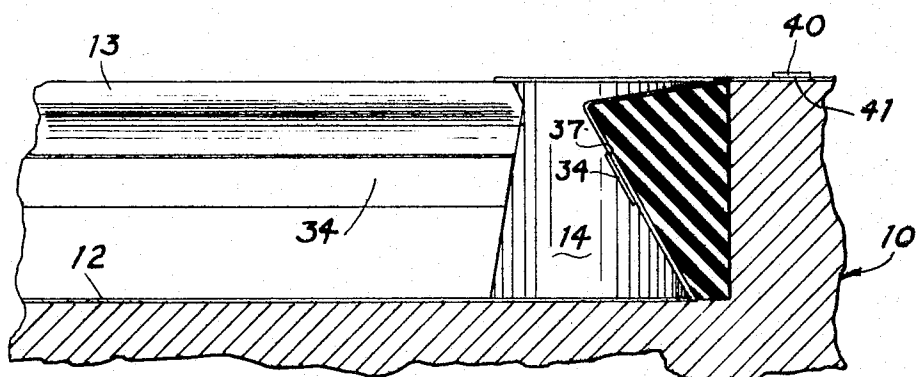


FIG 6

BILLARD GAME APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to billiard games.

Billiard games are played utilizing a billiard table having a horizontal playing surface and a plurality of spherical billiard balls supported for free rolling movement thereon. One of the balls, designated the "cue ball" is utilized as a projectile and is struck by one end of a "cue stick". The object is usually to direct the cue ball to strike one of the remaining balls in order to deflect it or another ball into a pocket. In other billiard games, the object is merely to strike one or more balls utilizing the resilient rail, commonly provided about the periphery of the playing surface.

It is often a difficult procedure to learn the proper angles for directing the cue ball toward the remaining balls or the rail so that it strikes the balls or rail at a proper angle to affect a desired resultant movement of the target ball. The angle of incidence and the angle of rebound are often difficult to distinguish by following one or more balls, as they move along the surface. Frequently it is difficult for the player, particularly a beginner to fully concentrate while the balls are moving on the angle of incidence and the angle of rebound to properly execute a billiard shot.

The present invention serves to eliminate the above-described problems by providing a billiard game apparatus wherein the billiard balls are coated with a luminescent material and exposed to ultraviolet rays in the "black light" band. The balls thereby emit a luminescent glow in a darkened room. The ultraviolet light source is comprised of an electric discharge lamp that operates on alternating current to generate pulses of ultraviolet light. The pulsing creates a stroboscopic effect on the moving balls and therefore creates the image of a trail or blurred streak extending behind the moving balls. The trail or streak extends along the path of movement for each moving ball. This trail or trails may be effectively utilized in directly determining the angles of incidence and angles of rebound of one or more balls moving on the table. Such a feature enables the beginner to more readily become proficient in the execution of the billiard shots. Further, the luminescent glow of the billiard balls produces an amusing effect since in a darkened room, the balls appear to be suspended on an invisible planar surface.

It is not claimed to be new to provide game balls with phosphorescent coatings to enable the balls to more readily be located in the dark. For example, U.S. Pat. No. 1,622,421 to C. W. Coffield discloses a golf ball that is coated with a phosphorescent material such as radium paint that will glow in the dark. The coating enables the golfer to find a lost ball in the darkness.

U.S. Pat. No. 716,645 to W. Ransom discloses a table-tennis ball having a luminous exterior. A similar arrangement is shown in U.S. Pat. No. 280,807 to A. D. F. Farley that shows phosphorescent strips provided on croquet balls and croquet mallets. The luminescent covering on the balls enables them to be easily seen when covered or hidden by grass or leaves, and particularly to enable the game to be played in darkness.

It is a primary object of the present invention to provide a billiard game apparatus for enabling a unique and unusual game of billiards to be played wherein movement of the billiard balls may be accurately de-

tected through the visual image of a trail behind the ball.

It is a further object to provide such an apparatus that may be used with conventional billiard tables and accessories, wherein the apparatus may be supplied as a kit that is adapted to be incorporated with an existing conventional table and cue stick, the balls being supplied with the kit.

It is a further object to provide such an apparatus wherein a source of ultraviolet light operates to emit ultraviolet waves of a frequency not damaging to the human eye or skin.

Other objects and advantages will become apparent upon reading the following description which, taken with the accompanying drawings, disclose a preferred form of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred form of the present invention is illustrated in the accompanying drawings in which:

FIG. 1 is a pictorial view of a billiard table for use with the apparatus of the present invention;

FIG. 2 is a view of a billiard ball included with the present invention;

FIG. 3 is a fragmentary view of one end of a cue stick utilized with the present invention;

FIG. 4 is an elevational fragmentary sectioned view of a billiard table utilizing luminescent strips and luminescent indicating dots of the present invention;

FIG. 5 is a fragmentary sectioned view of the billiard ball illustrated in FIG. 2; and

FIG. 6 is a fragmentary diagrammatic view illustrating the path illusion provided by a billiard ball as would be evident upon movement under an ultraviolet light source such as that described herein.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

The billiard game apparatus of the present invention is shown in the accompanying drawings and is generally designated therein by the reference numeral 9. Billiard game apparatus 9 is intended for use in playing a unique game of billiards on a billiard table such as the pocket billiard table 10 shown in FIG. 1.

Table 10 includes a horizontal rectangular playing surface 12. Peripheral resilient rails 13 surround surface 10 except as interrupted by a plurality of pockets 14. Tables without pockets 14 may also be used with the present apparatus 9.

Basically, apparatus 9 of the present invention is comprised of a plurality of special billiard balls 21, at least one special cue stick 25, and radiation means 31 for emitting ultraviolet radiation in the "black light" band.

More particularly, billiard balls 21 are provided with a luminescent coating 23 (FIG. 5) that is responsive to black light radiation. Balls 21 may include a conventional phenolic core with the luminescent coating applied as the spherical exterior surface. Coating 23 may be comprised of a phosphorescent or fluorescent material which, when exposed to black light, produces a luminescent glow (emits visible light). Normally, the playing surface 12 is covered by a woolen or felt cloth which will not produce luminescent light under black light rays. Balls 21 will therefore appear as distinct glowing spheres on the indistinct surface when exposed to black light in a darkened room to provide for a very sharp contrast between the balls and the table surface.

In a very dark room, the balls 21 will appear to be supported on an invisible plane, thereby creating an unusual and amusing effect for the players as though they were playing the billiard game in space.

Radiation means 31 is comprised of a mercury vapor electric discharge lamp commonly known as a black light as shown at 32. Black light 32 is designed to emit radiation within the black light bank of the ultraviolet spectrum, between 320 and 400 nanometers. Such black light is partially visible to the human eye as a faint dark colored glow. The wave length (320 to 400 nanometers) is such that no physical damage is done to human tissues exposed thereto. Ultraviolet rays of shorter than 320 nanometers can cause possible damage to the human skin and produce a sunburn effect to the exposed skin tissues. We have therefore found that the partially-visible radiation of the black light band are particularly suited for the intended use of the present apparatus.

We have also found that an electric discharge lamp operated by alternating current to produce black light ultraviolet rays is especially suitable to produce a distinct image effect as the balls 21 move on surface 12. Such lamps produce pulses or variation in light output. The pulse frequency of alternating current electric discharge lamp is twice that of the input frequency. Therefore such a lamp will pulse at 120 times with a typical 60 Hz. input frequency. This variation is manually too fast to be detected by the human eye. However, when an object is moved rapidly through the pulsating black light, a blurred "trail" illusion is produced behind the object along the path of travel. This effect, sometimes referred to as stroboscopic effect, is graphically illustrated in FIG. 6.

The stroboscopic effect is utilized to indicate the angle of incidence and angle rebound of a ball 21 as it strikes other balls 21 or rails 13. The ability to actually see these angles is of great benefit to the players. Since the angles are distinctly defined, the player may more readily learn the exact effect(s) produced by one ball 21 striking another at a desired angle, or a ball rebounding from the rail 13. Additionally, it is much easier for the player to more fully concentrate on the execution of a billiard shot because of the high contrast and trail effect. A beginner can become more proficient in a shorter period of time. The contrast and trail effect provide for a more exciting and stimulating billiard game.

Additionally, the apparatus may include reference lines produced along the rails 13 by mounting an elongated strip of luminescent tape 34 that is responsive to black light about the surface periphery along rails 13. The strips may be provided to extend between adjacent pockets 14 to thereby indicate the pocket location in a darkened room. The tape strips 34 include a luminescent side 35 and an adhesive side 37. Adhesive side 37 enables the luminescent tape strips to be adhered to the rails 13 as indicated in FIGS. 4 and 6.

A plurality of luminescent dots or diamonds 38 are also provided, including a luminescent side 40 and an adhesive side 41. Dots 38 may be selectively mounted to the table outside of the playing surface where, conventionally, such indicating markers are usually located.

The apparatus includes a cue stick 25 having a ball engaging tip 27 at a front cue stick end 28. A luminescent coating or sleeve 30 is provided adjacent tip 27 that is responsive to black light. This luminescent por-

tion enables the user to accurately determine the angular position of the cue stick in relation to the position of a ball desired to be struck with tip 27. The proper angle of alignment may be determined by moving the luminescent strip backward and forward along the intended path of travel of the ball to be struck, before actually striking the ball. This movement, like movement of the balls 21, will produce a trail image along the path of moving portion 30. This path indicates the direction of movement that will be produced as tip 27 strikes the ball 21. It is amazing how much more accurately one can execute a billiard shot by utilizing this apparatus.

In operation, the black light source or means 31 is located or mounted above the playing surface 12 so that the entire surface may be exposed to ultraviolet rays emitting therefrom. Tape strips 34 are placed along the rails 13 at elevational positions thereon so as not to interfere with the resilient action of the rails. Dots 38 may also be placed over existing reference markers on the pool table and, as shown in FIG. 1, on reference points of the playing surface 12. The luminescent billiard balls 21 are then placed on the playing surface 12. The billiard game may then be played according to the desires of the players.

The above description has been given by way of example and is not intended to restrict the scope of the present invention, such scope being defined in the following claims.

What we claim is:

1. A billiard game apparatus for use in playing a game of billiards on a billiard table, said billiard table having a playing surface, peripheral cushions defining the boundaries of said playing surface and ball pockets intermediate the cushions about said playing surface, said apparatus comprising:

a plurality of billiard balls supportable on a playing surface, said plurality of billiard balls including a cue ball and object balls, each ball including means which emits luminescent light in the visible spectrum of such intensity as to be clearly visible to the naked eye when subjected to sufficient ultraviolet rays in the black light band;

a boundary indentifying means adjacent substantially the entire length of said peripheral cushions intermediate said ball pockets to identify the boundary of the playing surface, to identify the location of said peripheral rebound cushions, and to indicate the location of said ball pockets between said boundary indentifying means;

said boundary indentifying means emitting luminescent light in the visible spectrum of such intensity as to be clearly visible to the naked eye when subjected to sufficient ultraviolet rays in the black light band;

radiation means adjacent the playing surface for directing ultraviolet rays of the black light band over the entire playing surface to luminesce the cue ball and object balls supported on said surface and to luminesce the boundary indentifying means without visually illuminating the surface to enable the player to visually observe the billiard balls and their movement with an unusual contrast and effect; and a cue stick having a forward end with a tip thereon for striking the cue ball to propel the cue ball against at least one of the object balls to direct at least one of said object balls into one of the pockets, said forward end having a portion thereof including means which emits luminescent light in the

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visible spectrum of such intensity as to be clearly visible to the naked eye when subjected to sufficient ultraviolet rays in the black light band to enable the player to visually observe the movement of the cue stick in relation to said cue ball as the cue ball is struck by the cue stick and thereby concentrate more fully on the execution of a billiard shot utilizing the peripheral cushions as located by the luminescent boundary identifying means and further utilizing the luminescent object balls.

2. The billiard game apparatus set out in claim 1 further comprising:

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a plurality of reference dots at desired locations along the periphery of the playing surface, each dot including means which emits luminescent light in the visible spectrum of such intensity as to be clearly visible to the naked eye when subjected to sufficient ultraviolet rays in the black light band to enable the player to more accurately execute banking shots against the cushions without being distracted by background objects.

3. The game apparatus set out in claim 1 wherein said radiation means is comprised of an electric discharge lamp powered by alternating current to emit pulsating black light of a desired frequency.

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