Aug. 16, 1955 E. G. HENRY 2,715,531

DIRIGIBLE BALL PROJECTOR

Filed Feb. 10, 1949

FIG. 1.

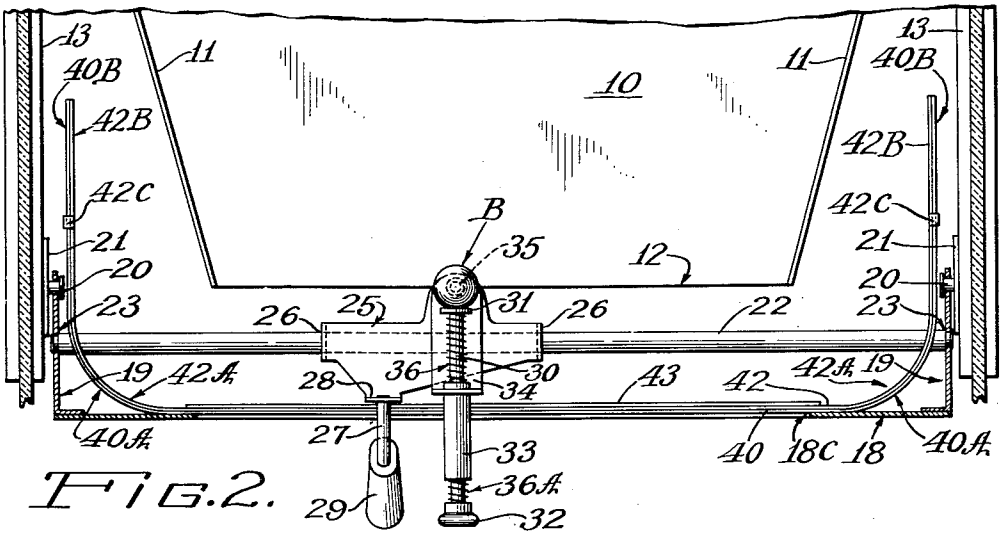


FIG. 2.

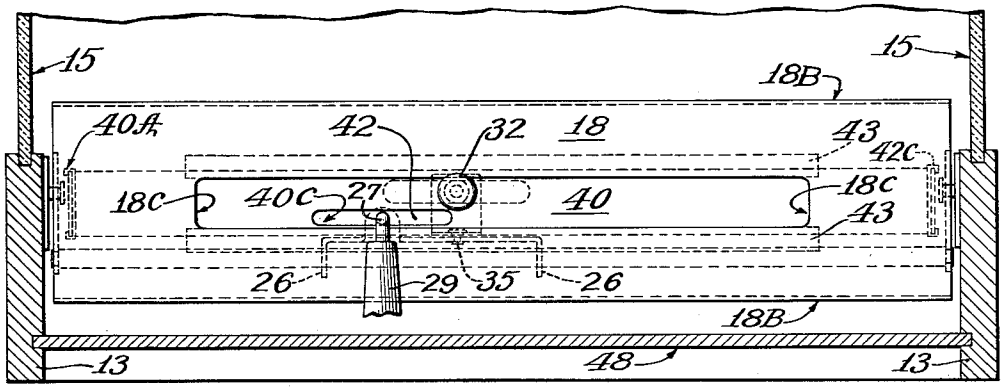


FIG. 3.

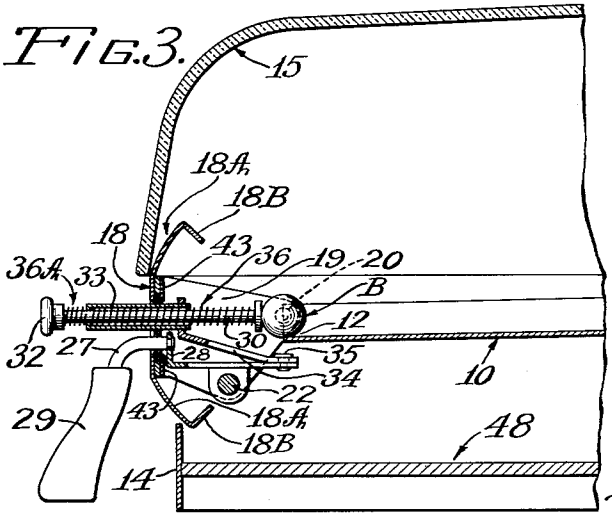
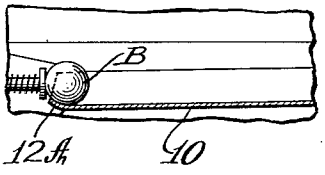


FIG. 4.



Inventor:
Earle G. Henry
By
Attorney

United States Patent Office 2,715,531
Patented Aug. 16, 1955

2,715,531

DIRIGIBLE BALL PROJECTOR

Earle G. Henry, Wilmette, Ill., assignor to Raymond T. Moloney, Chicago, Ill.

Application February 10, 1949, Serial No. 75,537

6 Claims. (Cl. 273—129)

This invention has as its principal object a provision of improvements in ball projectors or shooters for pinball and similar ball-rolling and amusement games.

A more particular object is the provision of a dirigible ball projector which is adjustable at the will of the player relative to a plurality of axes for locating the projector variously with respect to a ball-rolling field, particularly one which is inclined toward the projector, so that the player may position the projector at a point at which he expects a ball to arrive, for the purpose of projecting or reprojecting said ball over the playing field with respect to some form of target or scoring objective thereon.

A further object is the provision in a ball-rolling game of an inclined ball-rolling surface or apron adapted to have one or more balls released onto the upper reaches thereof, and a dirigible ball projector situated at a lower edge of said apron, together with means mounting said projector for travel transversely across the downward path of balls on the apron, and to rock about an axis parallel with the axis of transverse movement aforesaid, and further, to pivot about an axis transverse of the first-mentioned two axes, such that the projector may be quickly adjusted by the player to follow the movement of a ball toward any particular spot on the lower edge of the apron so that said ball may be projected or reprojected up onto the playing field or apron if the player has been skillful enough to locate the projector properly.

Additional objects relate to provision of transparent and other shield means for the projector, such that the manipulations thereof may be observed by the player while obviating access to the interior of the game as a precaution of fraudulent manipulation or vandalism.

Additional objects and aspects of novelty and utility in the invention pertain to details of the construction and operation of the illustrative embodiment described hereinafter in view of the annexed drawing in which:

Fig. 1 is a fragmentary horizontal section through a game apparatus utilizing the novel projector;

Fig. 2 is a fragmentary transverse vertical section through said game apparatus with the projector unit shown in elevation;

Fig. 3 is a fragmentary vertical section taken longitudinally of the game apparatus through the projector and shield means therefor;

Fig. 4 is a fragmentary vertical sectional detail through the lower end of the ball-rolling apron showing a modification of the latter.

In Fig. 1 there is shown the lower or discharge end of a ball-rolling apron **10** having opposite flanges or side walls **11** directing the downward travel of a ball B toward the lower edge **12** of the apron from which, in this embodiment, the ball or balls may escape into a return means (not shown) of conventional form for return to play to the upper end of apron **10** by means well known in the art, and hence not shown herein.

Said apron or inclined ball field **10** is housed in a conventional cabinet having opposite side walls **13**, and, as in Fig. 3, a front wall plate **14** serving to close off the front end of the machine in the region of the projector cooperably with a transparent dome **15** of plastic or other transparent material.

The dirigible projector unit consists preferably of a rockable bracket comprising a front plate **18** (Fig. 1) welded to a pair of side plates **19**, each said plate being pivotally supported as at **20** on pin means fixed to plates **21** on the inner walls of the cabinet.

As in Fig. 3 the main face plate **18** has a relatively median portion flanked by upper and lower curved edge portions **18A**, each said edge portion having an inturned guard lip **18B**, so that said main shield structure substantially blocks access to the interior of the machine at all positions of rocking movement of the main shield structure about its axis through the pivots **20**.

Extending in parallelism with the rocking axis of the unit through pivots **20** is a slide rod **22** (Fig. 1) staked into the plates **19** as at **23**.

A traveling carrier or bracket in the form of a stamped plate **25** is provided with opposite perforate ears **26** slideably engaging rod **22**; a handle rod **27** is staked into upset lug **28** on the plate and projects outwardly of the main guard or face plate **18** through a large horizontal slot **18C** Fig. 2) therein, and terminates in a pistol grip or like handle **29**.

The ball projector or shooter consists of a plunger **30** (Fig. 1) having a headed end **31** for impact with the ball B and a handle knob **32** grasped by the player in manipulation thereof; this plunger is slideably seated in a sleeve **33** fixed in a bracket **34**, which is pivotally mounted as at **35** (Figs. 1 and 3) on the carrier plate **25**. A coil spring **36** is tensioned by withdrawal of the plunger by the player who releases the plunger to be driven by the spring against ball B, there being additional spring means **36A** exteriorly of the sleeve to cushion the driving return of the plunger.

It will now be apparent that the projector carriage **25** may be slid along rod **22** transversely of the apron **10** and the general downward travel of ball thereover by appropriate manipulation of a hand grip **29**; moreover the projector proper may be pivoted about the point **35** by manipulation of the knob **32**, which the player also grasps in actuating the projecting plunger; and, in addition to the foregoing two possible movements, the entire projector unit or assembly may be rocked on pivot pins **20**.

Accordingly, the player may move the projector transversely of the playing field or apron to follow the downward meander of a ball with the object of skillfully locating the projecting plunger head **31** at the place where it is expected that the ball will arrive, and, in addition, the entire unit may be rocked about the main axis through pins **20** to elevate or depress the projecting plunger in a vertical component of adjustment which is capable of lofting the ball or driving it hard-on, and at the same time the angular set of the projector and bracket **34** about pivot pin **35** affords a third directive projecting component, all of which permits directing the ball in a great variety of plays.

Additional shield means is provided for the angular adjustment of the projector in a horizontal plane; this means includes, Fig. 1, a first thin flexible guard strip **40** provided with opposite curves **40A** terminating in the limbs **40B**. Said guard strip is provided with a horizontal slot **40C** which accommodates the pistol grip rod **27**.

Behind the first guard strip **40** is a second guard strip **42** (Fig. 1) which is curved as at **42A** to terminate in substantially rigid limbs **42B** provided with turned-over ears **42C** slideably guiding the limb **40B** of the flexible sliding strip **40** as the latter shifts back and forth responsive to pivotal movement of the projector and particularly the sleeve portion **33** thereof (about point **35**).

Retaining strips **43** (Figs. 2 and 3) are fixed in spaced

relation to the main plate **18** to provide a seating channel for the outer and inner guard strips **40** and **42** and maintain the assembly in condition so that the strip **40** may slide back and forth as aforesaid.

Operation

The embodiment just described is intended for operation with conventional ball-feeding apparatus well-known in the art for releasing balls, preferably one at a time, at the upper end of the apron **10** to gravitate theredown toward the lower edge **12** in order that the player may slide the projecting unit along rod **22** to locate the plunger head **31** at a point to strike the ball B before it has a chance to escape over edge **12** and drop onto a returning floor **48** (Fig. 2 or 3).

If the player is successful in locating the projector to strike the ball he may additionally regulate the force and direction of projection by exercise of skill in determining the angular displacement of the projector proper about pivot **35**, and also in the vertical angular adjustment of the entire unit about pivots **20**, and also by selective tensioning of the spring **36**.

In a modified form of game, as shown in Fig. 4, the lower end of the apron **10** is provided with ball-retaining lip **12A** which prevents the ball B from escaping over the edge of the apron in order that said ball may be repeatedly projected and reprojected relative to some target objective (not shown) in the upper reaches of the apron. In the latter type of game the curvature of lip **12A** may be calculated to permit some but not all balls to escape from the apron, depending upon their velocity of downward travel, so that a player has extended opportunity to manipulate the projector relative to balls which cannot at once escape.

I claim:

1. A dirigible, shielded, ball projecting mechanism comprising a face-plate and shield bracket including opposite offset arms projecting from opposite ends of said plate, means pivotally supporting said arms for rocking movement of said shield bracket about a horizontal axis, a slide rod supported between said arms parallel with said axis and spaced therefrom toward said plate, a ball projector slidable on said rod and including a manipulating portion projecting through a horizontally-extensive slot in said plate, and horizontally shiftable shield means for said projector slidably supported on said bracket to close said slot in all positions of adjustment of said projector and all positions of said bracket.

2. For use with a cabinet-enclosed ball game apparatus, a dirigible ball projecting mechanism comprising a shield bracket including a face plate, a pair of lateral arms fixed at opposite ends of said plate means supporting said arms in a wall of the game cabinet for rocking movement of said bracket up and down about a horizontal axis, a slide member mounted between said arms and spaced in parallelism with said axis, a carriage slidable horizontally on said slide member, said plate having a horizontally extensive slot opposite said carriage, a ball projector in said game cabinet and pivoted on said carriage and having a manipulating portion projecting outwardly of the cabinet through said plate slot, and a second shield means including a plate portion slidably mounted on said bracket for movement with said projector in movements of the same with said carriage, said second shield-plate portion including a horizontal slot narrower and shorter than the slot in said first shield-plate to accommodate pivotal movement of the projector relative to said carriage.

3. Ball projecting apparatus including a carriage, a hand grip on said carriage, a spring projecting plunger mounted on said carriage, a rod mount on which said carriage slides lengthwise along the rod mount; bracket means supporting said rod mount in a horizontal plane and means mounting said bracket means to rock about an axis spaced in parallelism to the lengthwise axis of said rod mount; a ball-supporting panel and means fixedly mounting the same in position before said rod mount and plunger and in a plane inclined toward the latter with a lower marginal edge portion extending along a substantial portion of the lengthwise extent of said rod mount to support a ball in different positions along said extent whereby to require sliding adjustment of said carriage relative thereto for projection of the ball by operation of said plunger.

4. Apparatus as set forth in claim 3 and further characterized in that said plunger is mounted on said carriage to pivot about a vertical axis.

5. Apparatus according to claim 4 in which there is additionally provided a shield structure for said carriage and ball supporting panel, said shield structure including stationary shield-strip means mounted to move with said bracket and slidable shield-strip means mounted to move slidably in approximate parallelism with said stationary strip means responsive to sliding movement of said carriage, said stationary and slidable strip means having aligned slot formations through which portions of said plunger and hand grip project for manual engagement and manipulation, said projecting hand grip portion engaging a portion of the said slot formation in the slidable strip to impart sliding movement thereto responsive to similar movements of the carriage.

6. A dirigible ball projecting device comprising a U-shaped bracket and means mounting the same to pivot about a horizontal axis passing through both of the arms thereof near their respective ends; a slide rod extending between said arms in parallelism with said axis at a position between the latter and the bight of the bracket, a carriage slidable on said rod substantially along the length thereof, and a ball projector mounted on said carriage.

References Cited in the file of this patent

UNITED STATES PATENTS

604,650	Aske	May 24, 1898
1,941,630	Smith	Jan. 2, 1934
2,130,050	Walters	Sept. 13, 1938
2,167,847	Olken	Aug. 1, 1939
2,248,596	Wilsey	July 8, 1941
2,364,141	Harris	Dec. 5, 1944

FOREIGN PATENTS

202,679	Germany	Oct. 5, 1908