

April 7, 1953

R. J. LOHR ET AL
BALL CONTROL GAME APPARATUS

2,634,129

Filed July 21, 1952

2 SHEETS—SHEET 1

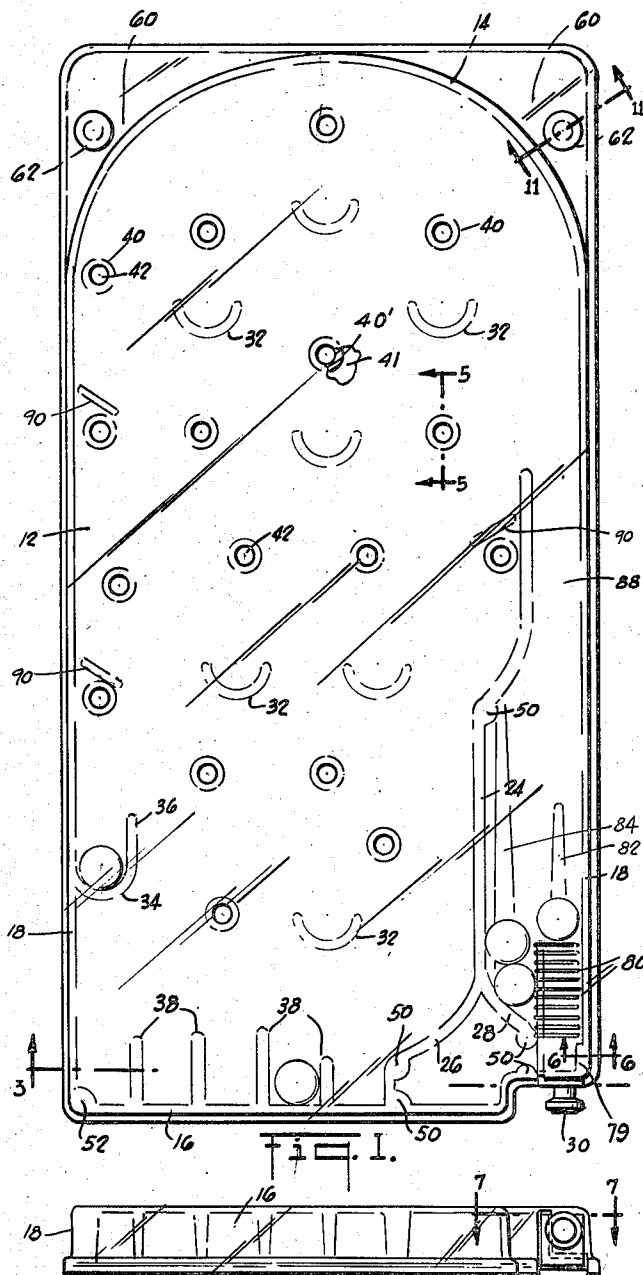


FIG. 1.

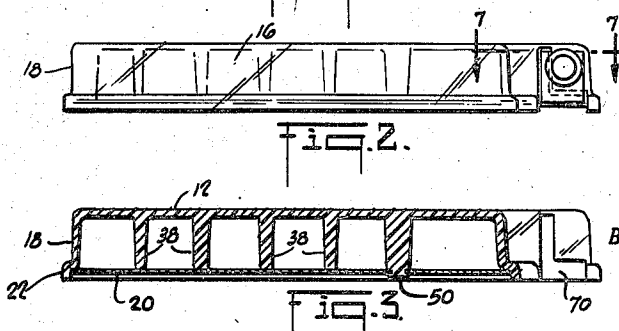


FIG. 2.

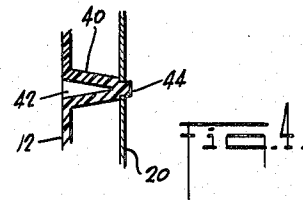


FIG. 4.

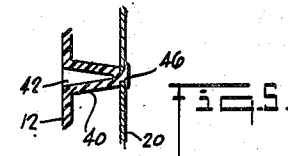


FIG. 5.

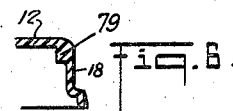


FIG. 6.

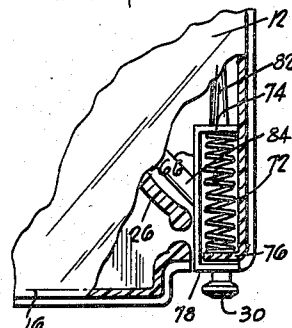


FIG. 7.

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2 SHEETS—SHEET 2

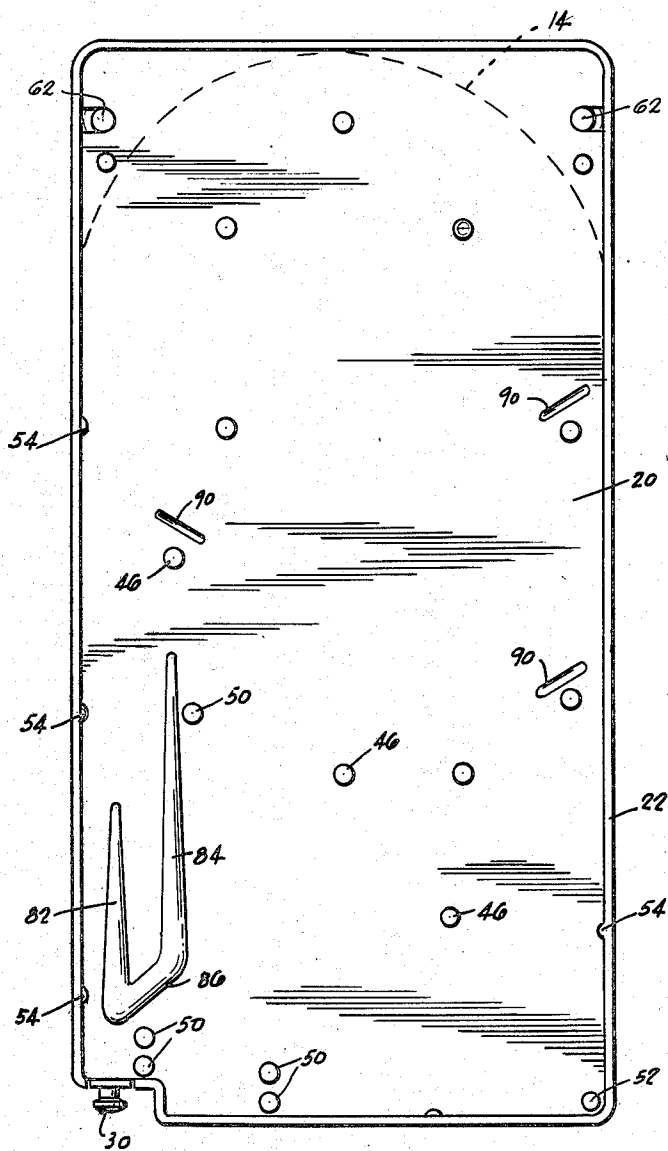


Fig. 8.

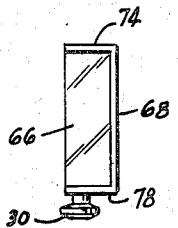


Fig. 10.

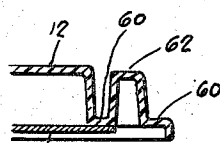


Fig. 11.

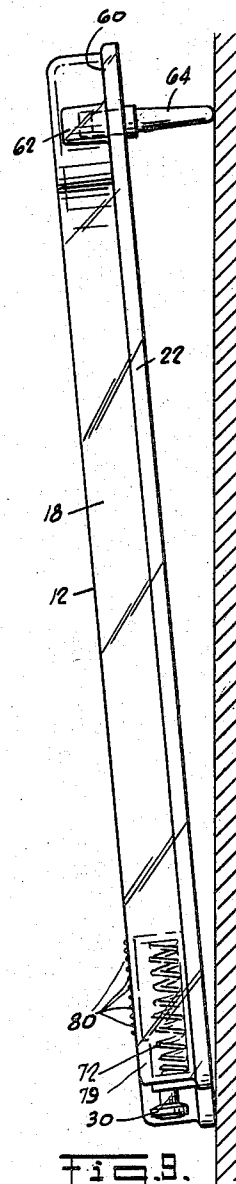


Fig. 9.

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BALL CONTROL GAME APPARATUS

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7 Claims. (Cl. 273-121)

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This invention relates to games, and more particularly to ball control games.

The primary object of the present invention is to generally improve such games. A more particular object is to so simplify the construction of the game that it may be made under quantity production conditions at low cost, while at the same time strengthening the game structure and giving it a smooth, finished, lustrous appearance superior to prior games made at far greater cost.

With these objects in view we have originated a game structure in which we use a clear transparent plastic as the transparent top wall of the game, and we further mold the top wall integrally with side and end walls, and ball intercepting elements. The latter here shown include partition walls, scoring pockets and stalls, and obstacle pins, all molded integrally with the top wall in a single molding operation. To complete the toy it is merely necessary to add a bottom wall, and this may be inexpensively made of thin sheet metal appropriately lithographed to add color to the toy, and to provide scoring targets and numbers. Moreover, the bottom may be attached to the main body of the toy inexpensively by using projections on the molded body of the toy as rivets, and the edges of the sheet metal bottom may be housed within a peripheral plastic ledge, thus protecting the user against contact with the sharp edge of the sheet metal, and also avoiding any cheapening of the appearance of the toy which might result from exposure of the sheet metal.

To accomplish the foregoing general objects, and other more specific objects which will hereinafter appear, our invention resides in the ball control game elements and their relation one to another, as are hereinafter more particularly described in the following specification. The specification is accompanied by drawings, in which:

Fig. 1 is a plan view of a toy embodying features of our invention;

Fig. 2 is an end view looking at the near end of the toy;

Fig. 3 is a vertical section taken approximately in the plane of the line 3-3 of Fig. 1, with the projector omitted;

Figs. 4 and 5 are sections taken approximately in the plane of the line 5-5 of Fig. 1, but one before and the other after a riveting operation;

Fig. 6 is a section showing a detail and is taken approximately in the plane of the line 6-6 of Fig. 1, with the bottom wall omitted;

Fig. 7 is a fragmentary horizontal section

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taken approximately in the plane of the line 7-7 of Fig. 2;

Fig. 8 is a bottom plan view of the toy;

Fig. 9 is a side elevation showing the toy in inclined playing position;

Fig. 10 is a side elevation of a preferred form of firing projector used in the toy, in the direction viewed in Fig. 9, or looking from right to left in Fig. 7; and

Fig. 11 is a fragmentary section taken approximately in the plane of the line 11-11 of Fig. 1.

Referring to the drawing, and more particularly to Figs. 1 and 2 thereof, the game comprises a transparent top wall 12 with which there is integrally molded a remote end wall 14, a near end wall 16, and side walls 18. The terms "remote" and "near" are relative to the player, who is located at the lower end to operate the projector knob 30. The one-piece molded structure is closed at the bottom by means of a bottom plate 20 best shown in Figs. 3 and 8. In the present case the bottom is made of a single piece of sheet metal stamped to desired configuration. The top face of the sheet metal may be lithographed to provide score indications, not shown in Fig. 1 of the drawing, although in practice they are clearly visible through the glass-like transparent molded body 12. It will be noted that the peripheral edge of the molded body is appropriately offset, as shown at 22 (Fig. 3), and recessed to receive the metal bottom 20, the edges of the latter being housed within and concealed by the plastic.

Reverting to Fig. 1, the top wall 12 has molded integrally therewith a partition wall 24 (Fig. 1). This separates the left side of the game which acts as a scoring compartment, and the right side of the game which acts as a ball storage and ball projecting compartment. At its near end the partition 24 curves leftward, as shown at 26 (Fig. 1), and has a branch extending rightward, as shown at 28, the latter acting to guide successive balls in front of the ball projector shown here as projector 30.

The top wall 12 also has molded integrally therewith a series of scoring pockets 32. In the present case there are eight such pockets, seven of which are semi-cylindrical in shape, while the eighth, indicated at 34, has an additional wall or extension 36 extending upwardly therefrom.

There are additional partition walls formed integrally with both the top wall 12 and the near end wall 16, these being shown at 38. They act to divide the near end of the game into a series of scoring stalls, in which the balls may be re-

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ceived with appropriate scoring values. All partitions taper downward, as shown in Figs. 2 and 3, to facilitate the molding operation.

In addition the top wall 12 is formed integrally with a series of obstacles which deflect the ball to one side or the other as it rolls from the remote toward the near end of the game. In the present case these obstacles are essentially round pins indicated at 40, and in the layout shown there are sixteen such pins. For ease in molding, the pins are tapered so that each pin is essentially frustoconical in shape, as is best shown in Figs. 4 and 5. If desired the pin may be hollowed and molded with a conically shaped opening 42 which passes right through the top wall 12 of the toy. This helps insure complete accurate filling of the molding cavity which forms the pin, and incidentally helps save material, although that is not the main reason for using the same. A small fragment of the top wall is shown broken away at 41 in Fig. 1, thereby exposing a part of one of the hollow pins 40 in section at 40'.

The pins, and also the partitions and pockets 24, 32, and 38, extend downwardly from the top wall 12 toward the bottom 20, and preferably all the way down to the bottom, for in that case they help support and stiffen the bottom against upward movement. Moreover, rivets for holding the bottom may be formed at the lower ends of selected ones of the pins, and also at selected points on the partitions. Thus referring to Fig. 4, it will be seen that the pin 40, as molded, includes a cylindrical stud 44. This passes through a mating hole in the bottom 20 and by application of a heated tool the projecting end may be spread or riveted, as shown at 46 in Fig. 5, thereby anchoring the bottom 20 as well as spacing it properly from the top wall 12. These rivets are most readily formed at the lower ends of the pins, and referring to Fig. 8, which shows the bottom of the toy, such rivets are shown at 46. Four additional rivets 50 are formed on the partitions, and the corresponding locations will be seen at 50 in Fig. 1. Another rivet 52 is formed in one corner, the corresponding location being shown in Fig. 8 and in Fig. 1. The unnumbered rivets in Fig. 8 are on pins 40 (Fig. 1) like rivets 46 (Fig. 8). In Fig. 8 it will be seen that in addition to the rivets, some marginal tabs may be riveted over the edge of the sheet metal bottom, as indicated at 54.

The remote end wall 14 is curved, and in simplest form is semi-circular, in order to guide a projected ball smoothly around after it has been fired by the ball projector 30. Despite the curved configuration of the wall 14, the one-piece molded body is extended outward beyond the curved wall 14, as is indicated by the areas 60, which are at a lower level immediately adjacent the bottom wall 20, as is best shown in Fig. 11. These extensions provide room in which to form inverted sockets 62 which detachably receive legs 64, as is best shown in Fig. 9. The metal bottom 20 is cut away at the socket holes, as shown at 62 in Fig. 8. When the legs are inserted in the sockets the game is supported at an angle to the horizontal, as shown in Fig. 9. However, in shipping the toy or when storing it away the legs 64 are readily removed.

The ball projector 30 may take any desired form, but that shown here is thought convenient and preferable. It is a plunger which might be considered approximately square in cross-section and hollow, but with two adjacent longitudinal

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walls removed, leaving only the remaining two walls, a vertical wall 66, and a horizontal wall 68, so that for all of its length except at the ends 74 and 78 (Fig. 10) it is L-shaped in section. Thus the projector is adapted to be received in an L-shaped slot shown at 70 in Fig. 3. The actuating spring 72 is received in the hollow projector, as is best shown in Fig. 7, and is disposed between the front wall 74 of the projector, and the end wall 76 of the molded main body of the toy. The nearer end wall 78 of the projector is disposed outside the body of the toy, and carries the operating knob, which is integral with the projector.

It will be evident that in assembling the toy it is merely necessary to drop the projector into the L-shaped slot 70, with the spring 72 in position, following which the addition of the bottom 20 holds the projector in place. The projector is guided on bottom by the bottom wall 20; on top by the top wall 12; on the right by the adjacent side wall 18; and on the left by the adjacent parts marked 50 in Fig. 1. When the projector is drawn back the spring is compressed. If desired the rearward motion may be limited by the introduction of appropriate stop means, here molded in the corner of the main body, as shown at 79 in Figs. 1, 6 and 9. The top wall 12 may be provided with a series of raised scale indications, shown at 80 in Figs. 1 and 9. These help guide the operator of the toy so that he may repeat a length of stroke which he has found to be successful, or change a length of stroke found to be unsuccessful.

Before leaving the description of the projector, attention is directed to the fact that the near end wall 16 of the main body of the game is displaced or offset inwardly at the projector, to provide room for the operating knob 30, without having the knob project beyond the said wall 16. This is convenient in boxing, shipping, or storing the toy, for it will fit in a flat rectangular cardboard box dimensioned to just receive the main body of the game.

As so far described it has been assumed that the bottom 20 is a flat surface. However, one of the advantages of using sheet metal is that it may be shaped somewhat to improve the operation of the game. Thus referring to Fig. 8, attention is directed to the parts 82, 84 and 86. These are shallow channels or trough-like parts which are depressed downward as viewed in Fig. 1 (or upward as viewed in Fig. 8). The part 84 acts as a guide to receive and hold a line of balls waiting to be fired. The sloping part 86 (Fig. 8) helps guide the lowermost ball to a position in front of the projector when the projector is fully retracted. The channel 82 helps guide the ball being fired so that it moves on a straight line up to the narrowed guide passage 88 (Fig. 1).

Reverting to Fig. 8, the bottom 20 may have some sloping ridges at appropriate points, here marked 90. These are convex downward as viewed in Fig. 8, and convex upward as viewed in Fig. 1. They serve slightly to prevent the ball from being trapped completely dead by an obstacle in front of which the guide is provided.

The game may be provided with a desired number of balls, in this case five. They are all permanently sealed inside the game, and therefore inaccessible, and cannot be lost, yet all of them are readily restored to initial firing position by first tilting the board toward the upper right hand corner, and then tilting it toward the near end and then toward the left until the balls are

aligned along the partition wall 24. Each time the projector is retracted and let go, one ball is fired.

The pockets 32 may be given suitable score values. Similarly the stalls between the partitions 38 may be given suitable score values. A different score value, say three times as high, may be provided for a second ball gotten into the same stall as a first ball. A premium score value, perhaps ten times the sum of the score values of the five stalls, may be provided in the event that the five balls are landed into all five stalls, with one in each stall.

If desired one of the balls may be colored differently from the others. For example, there may be four white balls and one black ball, and in the case of certain pockets it may be provided that the black ball should be credited with a double score value, thus adding further complexity and interest to the game. All of this scoring information is lithographed directly on the bottom wall 20.

If desired, the lithography on the bottom may be pictorialized. For example, in one specific case the firing channel above the plunger is drawn to resemble a bazooka, and the pockets 32 are each formed at an illustration of a piece of armament, such as a heavy tank, a medium tank, jeep, a heavy truck, a machine gun, an anti-aircraft gun, or an anti-tank gun. These are each given an appropriate score value. The game is thus made into a kind of war game, but it is obvious that the bottom may be lithographed to adopt some other motif. The lithography and score values have therefore been omitted from the drawing.

It is believed that the construction, method of assembly, and method of operation of our improved ball control game, as well as the advantages thereof, will be apparent from the foregoing detailed description. The game has a rich, lustrous, finished appearance, because almost all of the game structure is made of glass-like transparent plastic. However, the game may be mass produced at low cost because substantially all of the game structure is molded in a single piece, in a single molding operation. The bottom is inexpensively stamped out of sheet metal, appropriately lithographed to add everything that is needed in the way of color, illustration, and score markings. To assemble the toy the balls and the ball projector with its spring are dropped in position, and the bottom added and riveted in place by means of rivets formed integrally with the main molded body. The game is characterized by a smooth, dependable operation which is intriguing and challenging to the user. The balls cannot be lost.

It will be apparent that while we have shown and described the invention in a preferred form, changes may be made in the structure disclosed without departing from the scope of the invention, as sought to be defined in the following claims. In the claims the term "ball intercepting element" is intended to be generic to the pins, pockets, stalls, and partitions.

We claim:

1. A ball control-type game device comprising integrally molded top, end, and side walls closed by a bottom and a ball projecting projector, said projector being approximately square in section and hollow but with at least one side missing, a vertical side of said projector being received in a slot in the near end wall, a compression spring disposed in the hollow space of the projector for normally pushing the projector forward, and a

handle formed at the rear end of the projector.

2. A game device comprising top and end and side walls molded out of transparent moldable plastic to form a single body which is generally enclosed except at the bottom, a generally opaque bottom made of relatively thin sheet material and having apertures for the reception of rivets, the periphery of said molded plastic body surrounding the bottom to protect the edge of the bottom, and a ball, a plurality of ball intercepting elements molded integrally with said top wall and projecting downwardly from said top wall toward the bottom, the lower ends of some of said ball intercepting elements being shaped to form spacer surfaces and rivets, which rivets project further in the direction away from the top and which rivets pass through said apertures and are headed beneath the sheet material bottom to hold said bottom against said spacer surfaces, said elements which have rivets thereby acting as spacers between the top wall and the bottom of the game device.

3. A game device comprising top and end and side walls molded out of transparent moldable plastic to form a single body which is generally enclosed except at the bottom, a generally opaque bottom made of sheet metal, and a ball, said sheet metal bottom being indented and thereby shaped to cooperate with the ball to help control the same during its passage over said bottom, the periphery of said molded plastic body surrounding the bottom and being appropriately stepped outwardly to receive the bottom within its periphery and upwardly against its step in order to properly space the bottom from the top wall and in order to protect the edge of the sheet metal forming the bottom, at least one ball intercepting element molded integrally with said top wall and projecting downwardly from said top wall toward the bottom, the lower end of at least one ball intercepting element reaching said bottom to support the same and to supplement the spacer action of the stepped periphery, said molded body being shaped to form integral rivets which rivets project in the direction away from the top and which rivets pass through mating parts of the sheet metal bottom and are headed beneath the bottom in order to hold the same in assembled relation with the body.

4. A game device comprising top and end and side walls molded out of transparent moldable plastic to form a single body which is generally enclosed except at the bottom, a generally opaque bottom made of relatively thin sheet material and having apertures for the reception of rivets, the periphery of said molded plastic body surrounding the bottom to protect the edge of the bottom, a ball, and a resiliently movable ball projector, a plurality of ball intercepting elements molded integrally with said top wall and projecting downwardly from said top wall toward the bottom, the lower ends of some of said ball intercepting elements being shaped to form spacer surfaces and rivets which rivets project further in the direction away from the top and which rivets pass through said apertures and are headed beneath the sheet material bottom to hold said bottom against said spacer surfaces, said elements which have rivets thereby acting as spacers between the top wall and the bottom of the game device, said ball projector being received upwardly into a part of said molded body and being positioned thereby against upward movement, the part of said molded body receiving said ball projector also bearing sideways against the projector and

thereby serving to position the same against undesired lateral movement while permitting the desired ball projecting movement, the aforesaid bottom serving to complete the mounting of said ball projector by supporting it from beneath against downward movement.

5. A game device comprising top and end and side walls molded out of transparent plastic to form a single body which is generally enclosed except at the bottom, a generally opaque bottom made of relatively thin sheet material, at least one ball, and a resiliently movable ball projector, the periphery of said molded plastic body surrounding the bottom and being appropriately stepped outwardly to receive the bottom within its periphery and upwardly against its step in order to properly space the bottom from the top wall and in order to protect the edge of the thin sheet material forming the bottom, a plurality of ball intercepting elements molded integrally with said top wall and projecting downwardly from said top wall toward the bottom, said molded body being shaped to form integral rivets which rivets project in the direction away from the top and which rivets pass through mating parts of the sheet material bottom and are headed beneath the bottom in order to hold the same in assembled relation with the body, said ball projector being positioned by a mating part of said molded body against undesired movement while permitting the desired ball projecting movement, one of said ball intercepting elements being a wall disposed immediately adjacent to and at an angle leading rearwardly and sideways to the ball projector in order to guide and return a ball to the ball projector.

6. A game device comprising top and end and side walls molded out of transparent moldable plastic to form a single body which is generally enclosed except at the bottom, a generally opaque bottom made of sheet metal, at least one ball, and a resiliently movable ball projector, said sheet metal bottom being indented and thereby shaped to cooperate with the ball to help control the same during its passage over said bottom, the periphery of said molded plastic body surrounding the bottom to protect the edge of the sheet metal forming the bottom, said molded body be-

ing shaped to form integral rivets which rivets project in the direction away from the top and which rivets pass through mating parts of the sheet metal bottom and are headed beneath the bottom in order to hold the same in assembled relation with the body, at least one ball intercepting element molded integrally with said top wall and projecting downwardly from said top wall toward the bottom and disposed immediately adjacent to and at an angle leading rearwardly and sideways to the ball projector in order to guide and return a ball to the ball projector.

7. A game device as defined in claim 4, in which the ball intercepting elements comprise pins in the form of inverted frustocones, pockets extending downwardly from the top wall, scoring stalls at the near end of the game, and a partition wall extending generally longitudinally of the game and separating one side of the game device to form a ball storage and ball projecting compartment at the resilient ball projector.

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