July 4, 1961 G. A. HARTUNG 2,991,083

GOLF PUTTING PRACTICE DEVICE

Filed April 24, 1956 3 Sheets-Sheet 1

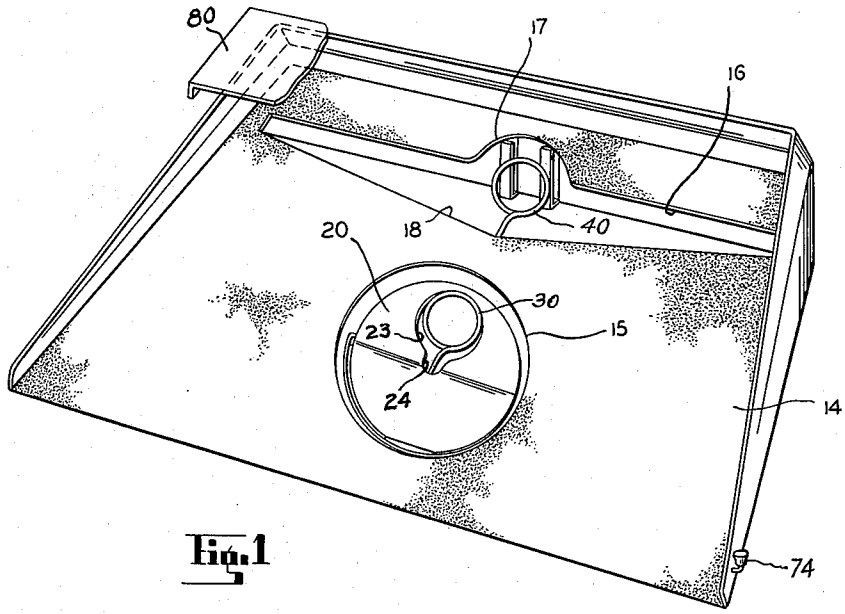


Fig. 1

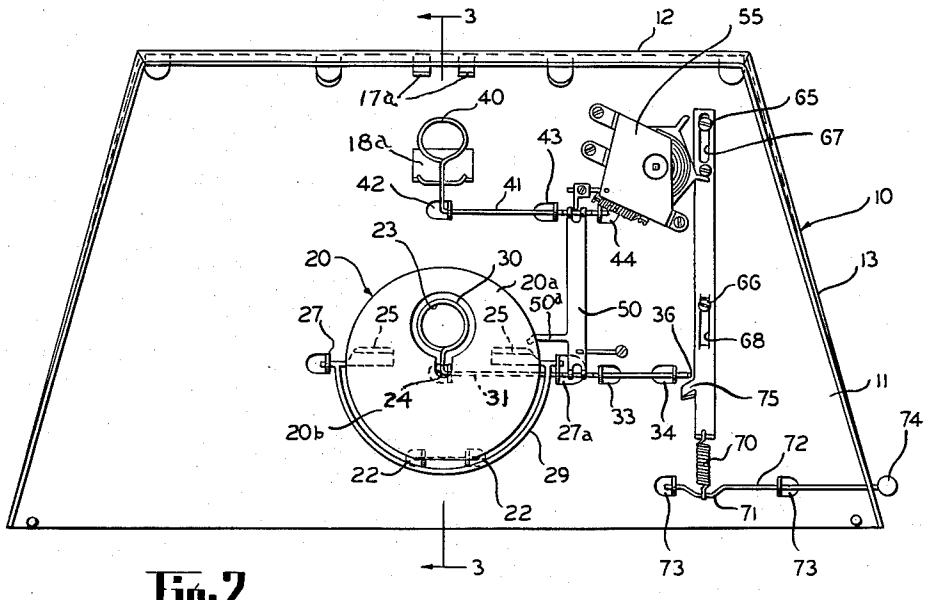


Fig. 2

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July 4, 1961 G. A. HARTUNG 2,991,083

GOLF PUTTING PRACTICE DEVICE

Filed April 24, 1956 3 Sheets-Sheet 2

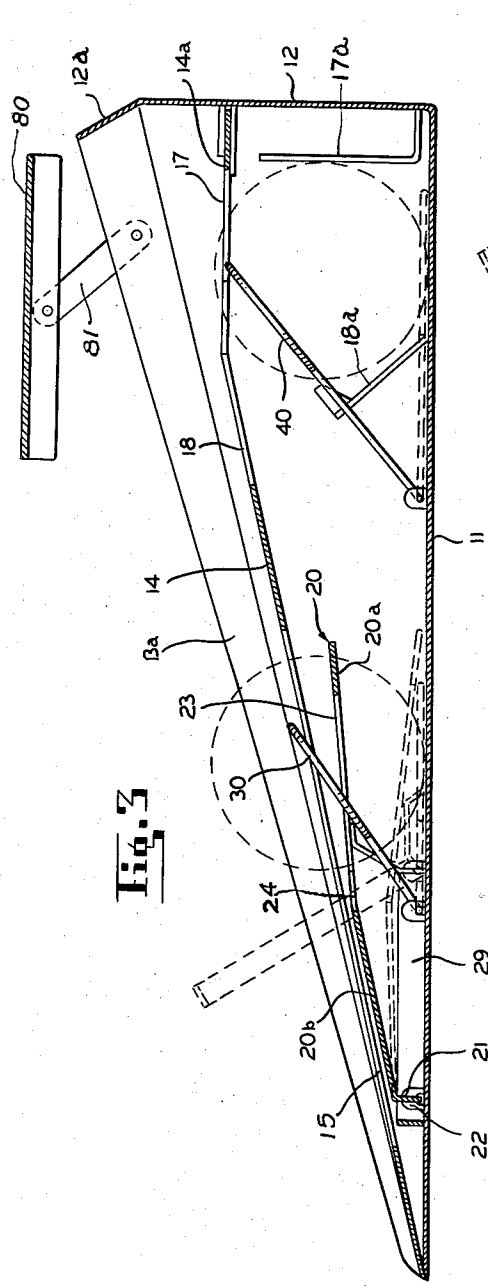


Fig. 7

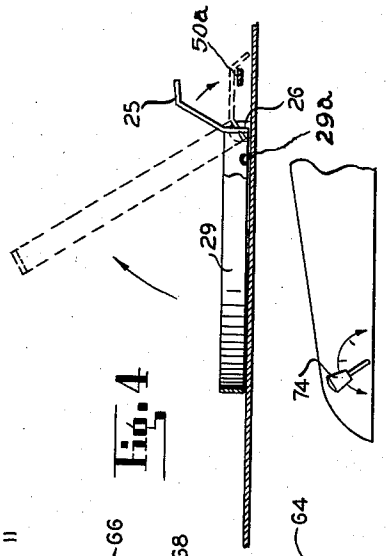


Fig. 4

Fig. 8

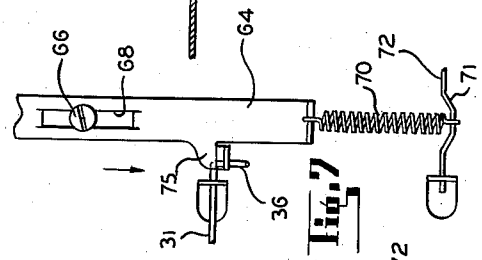


Fig. 7

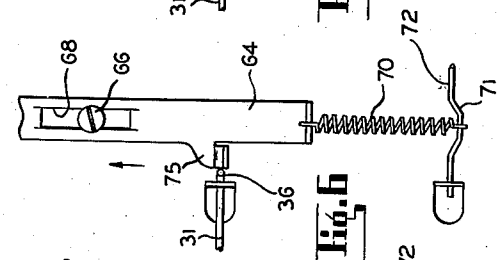


Fig. 6

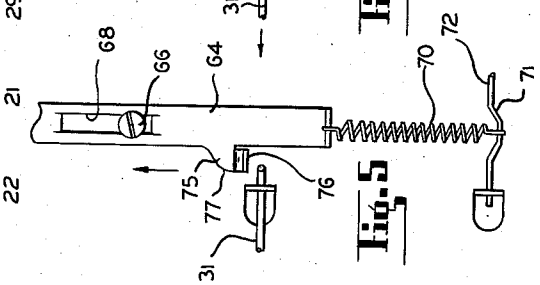


Fig. 5

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July 4, 1961 G. A. HARTUNG 2,991,083

GOLF PUTTING PRACTICE DEVICE

Filed April 24, 1956 3 Sheets-Sheet 3

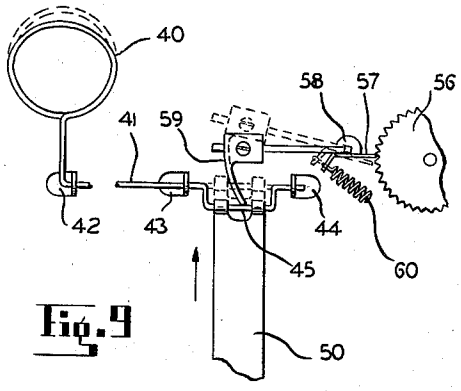


Fig. 9

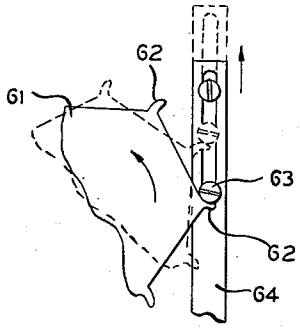


Fig. 12

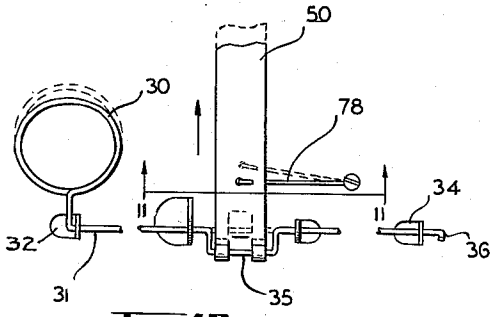


Fig. 10

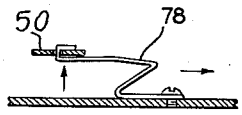


Fig. 11

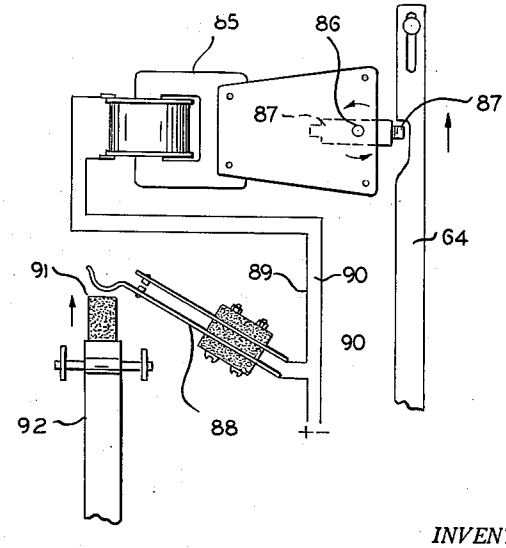


Fig. 13

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2,991,083

GOLF PUTTING PRACTICE DEVICE

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Filed Apr. 24, 1956, Ser. No. 580,204
3 Claims. (Cl. 273—179)

This invention relates to improvements in a golf putting practice device and has for its principal object to provide a simple and inexpensive device simulating a golf hole adapted for putting practice either in the home or on an outdoor putting surface.

A further object of the invention is to provide a practice putting device of the character described including means for automatically ejecting a golf ball and returning it toward the user either when the ball is deposited in the golf hole itself, or when the ball misses the hole and passes therebeyond to the end of the receiving surface of the device.

The invention may best be understood by reference to the accompanying drawings, in which—

FIGURE 1 is a perspective view of the device with certain parts omitted;

FIGURE 2 is a top plan view of the device with the ball receiving ramp removed to show details of the operating mechanism;

FIGURE 3 is an enlarged longitudinal cross-section of the device taken generally on line 3—3 of FIGURE 2, showing in full lines the ball receiving and ejecting mechanism in normal position, and in dotted lines the ball receiving and ejecting mechanism in depressed position ready for actuation of the ejecting mechanism thereof;

FIGURE 4 is a fragmentary detail view of the bail used in conjunction with the hole, showing said bail in normal lowered position in full lines, and in elevated position in dotted lines;

FIGURES 5, 6 and 7 are fragmentary detail views of a portion of the ball tripping or ejecting mechanism, showing said mechanism in three operating positions;

FIGURE 8 is a fragmentary detail view of the tensioning adjustment lever for the ejecting spring;

FIGURE 9 is a detail fragmentary view showing a portion of the means for controlling the tripping mechanism;

FIGURE 10 is a fragmentary detail view of another portion of the tripping control means;

FIGURE 11 is a detail section of a portion of the tripping mechanism taken on the line 11—11 of FIGURE 10;

FIGURE 12 is a fragmentary detail view of a portion of the actuating means for the tripping mechanism; and

FIGURE 13 is a fragmentary detail view showing a modified form of device employing an electric motor for actuating the ejecting mechanism instead of a spring-wound escapement mechanism of the kind employed in the form of the device shown in the preceding figures.

Referring now to the embodiment of my invention disclosed in FIGURES 1 to 12, inclusive, of the drawings, my improved form of practice device comprises a hollow casing, indicated generally at **10**, made of sheet metal or the like and having a bottom wall **11**, an upright rear wall **12** and forwardly diverging side walls **13**, **13** connected to the ends of the rear wall **12** and tapering downwardly and forwardly to a level immediately adjacent the bottom wall **11**. An upwardly and rearwardly inclined putting surface or ramp **14** is suitably fixed along its side edges to the side walls **13** and along its rear edge to the rear wall **12**. The front edge of the ramp **14** is arranged to meet the bottom wall **11** along the front edge of the latter to complete an enclosure for the actuating mechanism. A relatively short rear end portion of the ramp **14** is substantially flat, as indicated at

14*a*. The side walls **13** have inwardly inclined extensions **13*a*** extending above the adjacent surface of the ramp **14**, while the rear wall **12** has a similar inwardly inclined extension **12*a*** connecting between the rear ends of the side wall extensions **13*a*, 13*a***.

The ramp **14** has a circular aperture **15** centrally of and adjacent the front edge thereof. This aperture is substantially the same diameter as a conventional golf hole or cup and constitutes the putting target of the device. The ramp **14** also has a transversely disposed trough, herein consisting of an open slot **16** disposed along its upper rear end, a part of said slot extending into and including the flattened rear portion **14*a*** of said ramp. The slot **16** has a rearwardly curved notched portion **17** at its center which is so shaped and spaced from the front edge **18** of said slot as to receive a golf ball in loosely fitting engagement therein. The front and rear edges of the slot **16**, at opposite sides of the notched portion **17**, are tapered toward opposite sides of the ramp, as clearly shown in FIGURE 1. The slot **16** is so formed that when a golf ball is rolled up the ramp and passes beyond the target aperture or hole **15**, it will drop by gravity into the slot **16**, and due to the inwardly and downwardly tapering front edge **18** of said slot, the ball will be caused to roll toward the center and drop by gravity into the central space formed in front of the notched portion **17** of said slot.

Means for restricting lateral movement of the ball when it lodges in the central notched portion **17** consists of a pair of spaced upright bars **17*a*** fixed at opposite sides of and below said notched portion; and an upright plate **18*a*** fixed below the front edge **18** of the slot.

Means are provided for automatically ejecting the golf ball either when it is received in the target hole **15** or in the central receiving area of the transverse slot **16**.

Referring first to the receiving and rejecting mechanism associated with the target hole **15**, a ball receiving plate **20** is mounted within the hollow base **10** for vertical movement with respect to the rim of the target hole **15**. Said receiving plate consists of a disc-like member of substantially rigid material, such as metal or plastic, having a diameter slightly less than that of the hole **15**. The front edge of the receiving plate **20** is suitably hinged on the floor **11** as by means of a downwardly extending flange portion **21**, hinged at its bottom edge to a pair of opposing upstanding ears **22**, **22** fixed to the floor. The rear portion **20*a*** of the plate, constituting slightly more than one-half of its area, is disposed at a slight downward angle relative to the front portion **20*b*** of said plate. As shown in FIGURES 1 and 3, an aperture **23** is formed in the rear portion **20*a*** of said plate, said aperture being circular in shape excepting for a forwardly extending notch **24** at its front edge. The purpose of this aperture **23** will presently be described.

The receiving plate **20** is normally held with its front portion **20*b*** substantially parallel with, but slightly below, the rim of hole **15** and with its rear portion **20*a*** at a downwardly inclined angle relative to said rim, as shown in FIGURE 3. Means for supporting said plate in this position consists of a pair of rocking levers **25**, **25** which engage the undersurface of the plate along a line substantially parallel with the pivotal axis of said plate at opposite sides of the aperture **23** in said plate. The rocking levers **25** each consist of elongated metal or plastic strips bent at an angle of slightly more than 90° and having a pivot pin **26** projecting outwardly therefrom for engagement in ears **27** or **27*a*** fixed in upstanding relation on the bottom **11** of the casing.

An arcuate bail **29** is arranged to fit immediately adjacent and within the front edge of the rim of the hole and extending approximately one-half the diameter of

said rim. The two ends of said bail are fixed to the rocking levers **25** at a slightly obtuse angle, so that when the bail is in its normal lowermost position slightly below the rim of the hole and resting on the bottom wall **11**, the free ends of the rocking levers **25** will extend upwardly and rearwardly to support the free end of the receiving plate **20** in the normal putting position shown in full lines in FIGURE 3. The plate and the leverage system will be normally maintained in this position by the weight of the bail **29** until the leverage system is overbalanced by imposing the additional weight of a ball upon said plate, as will presently be more fully described.

The ejecting mechanism associated with the ball receiving plate **20** and the hole **15** includes an ejector arm **30**, preferably formed of stiff steel wire, having its free end bent into circular shape of substantially less diameter than that of the aperture **23** in the rear end of the plate **20**. The front end of the ejector arm **30** is bent substantially at 90° to said arm to form a shaft **31** pivoted in an upstanding ear **32** fixed on the bottom wall **11**. A notch **29***a* is formed in the adjacent edge of the bail **29** to accommodate the shaft **31** when said bail is in lowered position. The shaft **31** also passes through an ear **27***a*, and a pair of ears **33**, **33***a* fixed on the bottom wall **11** at spaced points, as shown in FIGURE 2.

A portion of the shaft **31** between the ear **27***a* and the ear **33** is offset to form a crank arm indicated at **35** in FIGURE 10. The extreme end of the shaft **31** terminates in a right angled finger **36** as seen in FIGURES 5 to 7 and in FIGURE 10. In the form shown, the crank arm **35** and the finger **36** are both disposed in a plane substantially at right angles to the ejector arm **30**.

The arrangement of parts just described is such that the circular ejector arm **30** normally extends at an upward and rearward angle beneath the aperture **23** in the supporting plate **20** as indicated in FIGURES 1 and 2, so that said arm can be pivotally swung upwardly through the aperture **23** to eject a ball which comes to rest on the rear end of the supporting plate **20** over the aperture **23**, as will presently appear.

A second ball ejector arm **40**, very similar to the ball ejector arm **30** just described, is pivotally mounted beneath the central ball receiving area formed by the notch **17** and the adjacent widened portion of the transverse slot **16** at the rear end of the ramp **14**. Details of this ball ejector arm **40** are shown in FIGURE 9 in which it will be seen that said arm has a shaft portion **41** pivotally mounted in upstanding ears **42** and **43** and an offset crank arm portion **45** corresponding substantially in form and arrangement to the crank arm **35** of shaft **41** associated with the front ejector arm **30**.

As will be seen from FIGURE 2, the shafts **31** and **41** of the two ejector arms **30** and **40** are connected for simultaneous actuation by a link **50** connecting the crank arms **35** and **45** together. Mechanism for actuating the ejector arms is automatically responsive to the depression of either ejector arm, due to the weight of a ball thereon, which actuating mechanism, when released, causes both arms to flip upwardly and forwardly on their pivotal shafts **31** and **41** so as to eject the ball and throw it forwardly for return along the floor to the player.

In the form of actuating mechanism shown in FIGURES 2 to 12, inclusive, said mechanism utilizes a conventional spring-wound escapement or timing device indicated generally at **55**. This escapement device may be of any well known form similar to the escapement mechanism of an ordinary clock, and including a key wound spring adapted to energize a train of gears in a conventional manner, excepting that rotation of one of the intermediate gears **56** in the gear train is controlled by a pivoted stop arm **57** which locks the gear train against movement as shown in full lines in FIGURE 9, excepting when the stop arm **57** is swung out of engagement with the gear **56**, as shown in dotted lines in the same figure. The stop arm **57** is pivoted on an upright pin **58** and carries a contact finger **59** at its outer end adapted to be engaged by the crank arm **45** of shaft **41** when the latter is swung or rocked to its rearwardmost position, as indicated in dotted lines in FIGURE 2. Since the shafts **41** and **31** are connected by link **50** for simultaneous pivoting movement, the arrangement is such that when either of the ejecting arms **30** or **40** is depressed beyond their normal intermediate positions by the weight of a ball, the pivoted stop arm **57** will be moved rearwardly by crank arm **45** against the tension of spring **60** so as to release the gear **56** of the escapement mechanism and permit the latter to start in motion. Movement of the escapement mechanism will cause a large toothed wheel **61** operated by the gearing to rotate in the direction indicated by the arrow in FIGURE 12. A plurality of teeth **62**, **62** are spaced circumferentially a substantial distance apart about the gear wheel **61**. One of the gear teeth **62** will then engage a pin **63** fixed on a reciprocating bar **64** which is suitably guided for longitudinal movement along the bottom plate **11**, as by pins **65**, **66** fixed to the bottom and engaging longitudinal slots **67**, **68** near opposite ends of the bar **64**.

Spring means is provided normally urging the bar **64** toward the front of the device. In the form shown, this spring means consists of a coil spring **70** connected between the front end of the bar **64** and a crank arm portion **71** of a transversely extending rod **72** pivotally mounted in upstanding ears **73**, **73** fixed on the bottom of the device. The rod **72** extends laterally through the side wall **13** and terminates in a lever **74** which may be set and held at various angles in any suitable manner to increase or decrease the tension of the spring **70**.

The reciprocating bar **64** has a laterally extending detent **75** adjacent its front end adapted for engagement with the finger **36** at the end of the shaft **31**, which shaft, as previously mentioned, carries the ejecting arm **30** at its opposite end. This detent **75** has a relatively straight front face **76**, preferably inclined upwardly relative to the bar **64**, and a forwardly curved cam-like rear face **77** (see FIGURES 5, 6 and 7). The rocking shaft **31** and the front end of the connecting link **50** is arranged for slight lateral movement, but these last-named parts are normally urged toward the right, as seen in FIGURE 10, by a spring **78** shown in enlarged detail in FIGURE 11. This spring **78** also serves to urge the connecting link **50** and the crank arm **35** upwardly to a generally intermediate position.

When the reciprocating bar **64** is in its forwardmost position, as indicated in FIGURE 2, the detent **75** is disposed in front of the finger **36**, and in general alignment therewith. When the reciprocating bar is moved rearwardly, as indicated by the arrow in FIGURE 6, the finger **36** and the shaft **31** are moved to the left by engagement of the finger with the rear cam-like surface **77** of said detent. When the bar **64** is moved to its extreme rearward position, as shown in FIGURE 5, the finger **36** will be returned slightly to the right where it is in spaced relation in front of the detent **75**. In this latter position, the finger **36** is ready to be engaged and rocked forwardly to produce a quick upward flip of the two ejecting arms **30** and **40** when the reciprocating bar **64** is tripped and released for forward movement, as will be described in greater detail in connection with the operation of the device.

A foldable auxiliary backing plate **80** may be pivotally supported on links **81** in position to be swung rearwardly into engagement with the extension **12***a* so as to assume a forwardly inclined position for stopping balls projected toward the device with excessive speed.

The use and operation of the form of device shown in FIGURES 1 to 12, inclusive, is as follows: The two ejector arms **30** and **40** normally assume a rearwardly and upwardly inclined angle, substantially as shown in FIGURE 2, with the free ends of said arms approxi-

mately at the level of the adjacent portions of the ramp **14** and **14***a*, respectively. In this position, which may be termed the normal or intermediate position, the finger **36** on shaft **31** will be disposed in a general upright but forwardly inclined angle, as shown in full lines in FIGURE 10. In this same position the link **50** connects the crank arm **35** of shaft **31** with the crank arm **45** of shaft **41** to hold both of the ejecting arms **30** and **40** in their normal intermediate positions above mentioned. As will be seen in FIGURE 9, the pivoted lock arm **57** will be held under tension of the spring **60** in engagement with the gear **56** so as to hold the gearing of the timing mechanism **55** against rotation.

Now assuming that the putting device as a whole is placed in operating position on the floor, and a ball is directed toward the said device so as to roll up the ramp **14**. Should the ball be properly directed toward the target hole **15**, it will roll upon the rear end **20***a* of the receiving plate **20**. In normal position said receiving plate will be maintained with its front portion **20***b* substantially in alignment with, but slightly below, the adjacent rim of the target hole, as shown in FIGURE 3, said plate being normally maintained in this position by the upstanding lever arm **25** on the bail **29** as previously described. The bail **29** is of sufficient weight to hold the plate **20** in its elevated position shown in FIGURE 3, and, if necessary, to restore the plate to its normal elevated position when there is no additional weight of the ball upon said plate.

When a ball falls into the rear end of the target hole **15**, however, it will be directed so as to center itself over the aperture **23** in the receiving plate **20**. The weight of the ball will be sufficient to overbalance the weight of the bail **29** and cause the plate **20** and the arm **30** to swing downwardly into their dotted line positions shown in FIGURE 3, with the ball resting in part upon the arm **30**.

Simultaneously, the bail **29** will be swung upwardly to its dotted line position shown in FIGURES 3 and 4. The bail thus serves two purposes: first, to hold the ball against rolling forwardly out of the hole **15**, and secondly, to urge the ball rearwardly, to center over the aperture **23**.

The depression of the arm **30** below its normal inclined position by the ball will cause the shaft **31** on which the arm **30** is carried to swing or rock rearwardly, as indicated in dotted lines in FIGURE 10. This will, in turn, cause a rearward movement of the link **50** so as to swing the finger **59** on the pivoted lock arm **57** rearwardly out of engagement with the teeth of gear **56**. This frees the spring-wound escapement or timing mechanism and starts the large wheel **61** thereof to rotate in a counterclockwise direction, as indicated by the arrow in FIGURE 12. At the beginning of rotation of the wheel **61**, one of its teeth **62** will be engaged with pin **63** on the reciprocating bar **64**. As the timing gears continue in operation, the wheel **61** will move the bar **64** rearwardly and gradually increase the tension of the spring **70** at the forward end of said bar. When the wheel **61** reaches a fully "cocked" position slightly beyond that indicated in dotted lines in FIGURE 12, the tooth **62** engaging the bar will rotate out of engagement with pin **63** on said bar, to trip or release the latter for a quick forward movement under the increased tension on the spring **70**.

It will be understood that when the bar **64** reaches its rearwardmost fully "cocked" position, the finger **36** on shaft **31** will be disposed in a generally upright position in front of the detent **75** and in longitudinal alignment therewith, as shown in FIGURE 5. Accordingly, when the bar **64** is tripped for forward movement, as just described, the bar **64** will be moved forward with a snap action so that the detent **75** will engage the finger **36** on shaft **31** and flip said finger forwardly, as indicated in FIGURE 7. Such forward flipping action of the finger **36** will be transmitted through the shaft **31** to the ejecting arm **30** so as to cause said arm to fly upwardly and eject the ball upwardly and forwardly beyond the front end of the device.

During the initial flight of the ball it will strike the bail, then in raised position as seen in dotted lines in FIGURE 3, thereby tending to force said bail downwardly, and aid in restoring the plate **20** to its normal putting position as will presently appear.

The tension of the spring **70** is sufficient to expel the ball first in the air and then with a rolling motion a substantial distance from the device so as to return it to the user. The amount of flip and distance of roll of the ball may, of course, be varied by adjusting the tension of the spring **70** by means of the lever **74** shown in FIGURE 8. When the forward flipping motion occurs, the link **50** transmits a similar forward flipping motion to the rear ejecting arm **40**, as indicated in full lines in FIGURE 9. In this position of the parts the finger **59** on the spring pressed locking arm **57** will be restored to its full line locking position to stop further rotation of the gears of the escapement mechanism. This will complete one cycle of operation of the ejecting mechanism and the several parts will be restored to their normal putting position ready for the next cycle of movement.

The link **50** may have a finger **50***a* projecting at one side thereof, adapted to extend beneath the adjacent rocking lever **25** of the bail **29** when the latter is in elevated position, to aid in restoring said rocking lever and the plate **20** supported thereby to raised normal putting position.

It will be further understood that the same ball ejecting operation will be caused when the ball is putted toward the device and passes up the ramp into the tapered slot **16** and is thence rolled by gravity so as to drop on the ejecting arm **40**. Since the shaft **41** of the rear ejecting arm **40** is connected through link **50** for simultaneous movement with the shaft **31** of the front ejecting arm **30**, the same flipping cycle will be effected regardless of whether the ball is deposited on the rear ejecting arm **40** or the front ejecting arm **30**.

It will be further understood that due to the time necessary for rotation of the wheel **61** to take the reciprocating bar into releasing position, the device has a delayed ejecting action which is particularly desirable in a device of this character. This delayed action gives the player sufficient time to observe the ball either in the hole or in the rear slot.

FIGURE 13 shows a modified form of actuating device for the reciprocating bar **64**, which actuating device consists of an electric motor **85** having a rotating shaft **86** with a pair of opposed engaging arms **87**, **87** carried thereby. Operation of the motor **85** is controlled through a conventional switch **88** connected at opposite sides to supply lines **89** and **90** leading to the motor **85**. The switch **88** is closed by an insulated contact member **91** mounted on the inner end of a link **92**, which link corresponds to the link **50** of the form shown in FIGURES 2 to 12, inclusive.

Although I have shown and described certain embodiments of my invention, it will be understood that various changes and modifications may be made without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In a golf practice device, a base, a ramp on the base having a hole therein, a ball ejector lever mounted on the base beneath the hole for engagement by a ball deposited by gravity in the hole, the lever being pivoted for upward and forward swinging movement through the hole to eject the ball bodily from the hole toward the front of the ramp, a spring associated with the lever beneath the ramp biasing the lever in a direction to eject the ball, releasable means under the ramp for holding

the lever against movement under the urge of the spring and means responsive to the depression of the lever by the weight of the ball for releasing the holding means whereby the lever is actuated by the spring to discharge the ball from the hole a ball receiving plate beneath and co-extensive with the hole aperture to encircle the ball ejector lever, a free portion of the ball receiving plate being supported in its normal putting position by rocking support means on said base fixed at opposite ends to a semicircular bail surrounding the front portion of said plate and within the adjacent cup rim, said bail being disposed in non-ball retarding position below the cup rim when the rocking support means is in position to hold the plate in its normal putting position, and said rocking support being tiltable by said plate when the latter is forcibly depressed by the weight of a ball, to swing said bail upwardly to a ball-retaining position above the cup rim, when the ball is initially deposited on the ball receiving plate.

2. The structure of claim 1 wherein the hole simulates a golf cup hole in size and the ball receiving plate is

pivotally mounted on said base, adjacent the front portion of said hole and normally supported below the level of said ramp for depression by a ball, said plate having an aperture adjacent its rear portion, for receiving a ball putted into said hole and the ejecting lever is disposed in registering relation with said aperture in position for engagement by the ball when it is received in the aperture of the plate.

3. The structure of claim 1 wherein the bail in its upwardly swung position is adapted to urge the ball into the aperture adjacent the rear portion of the plate, for engagement with the ejecting lever.

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