May 1, 1962 L. MAGAZANIK ET AL 3,031,889

DEVICE FOR SIMULATING THE PLAY OF GOLF

Filed June 26, 1959

3 Sheets-Sheet 1

FIG. 1

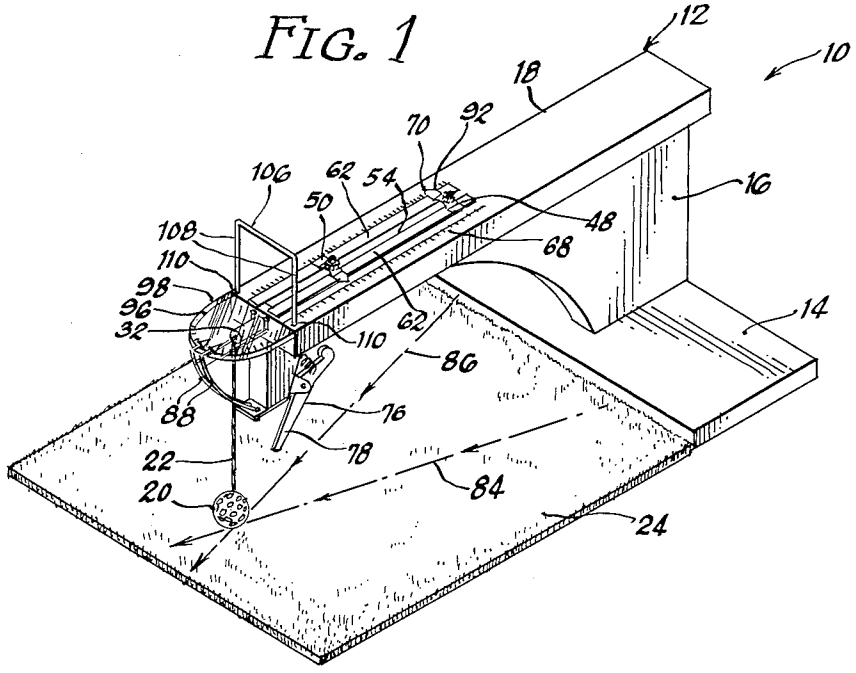
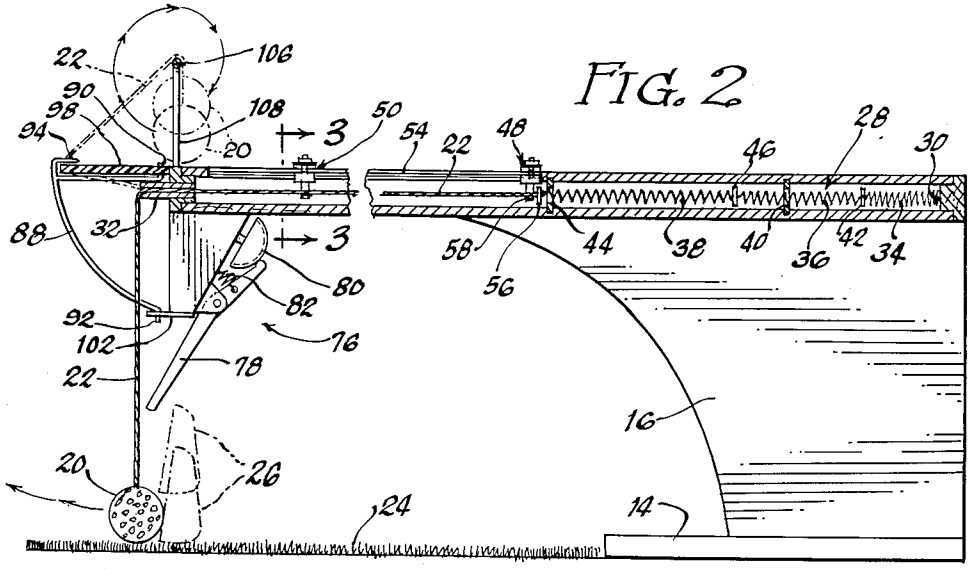


FIG. 2



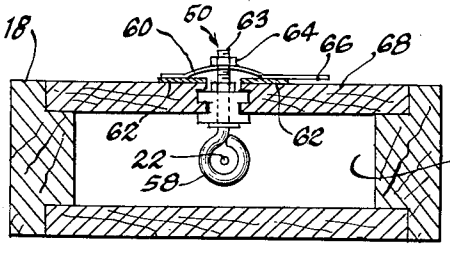


FIG. 3

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3 Sheets-Sheet 2

FIG. 4

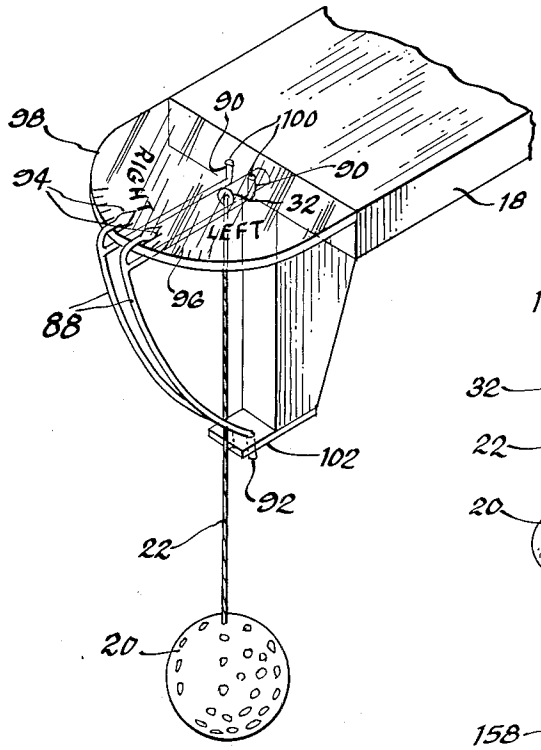
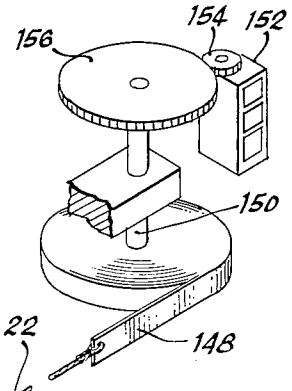


FIG. 6



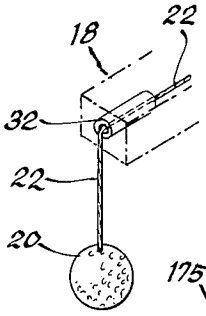


FIG. 7

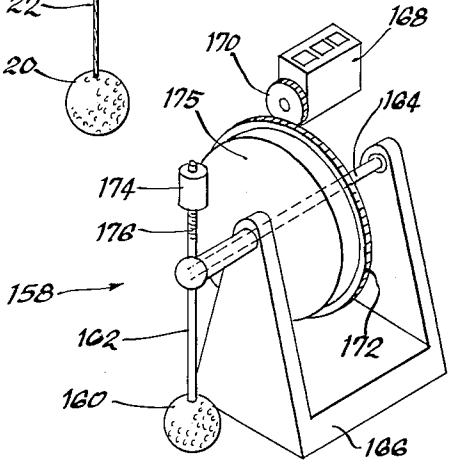
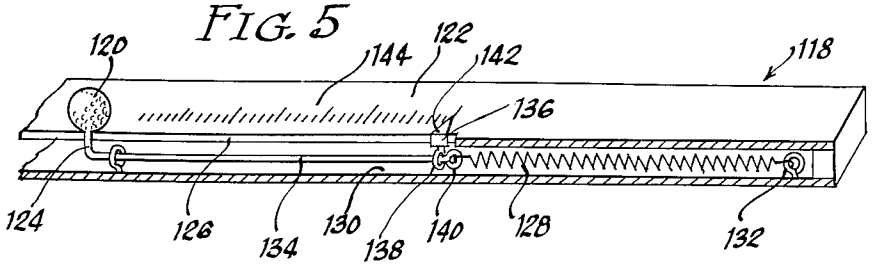


FIG. 5



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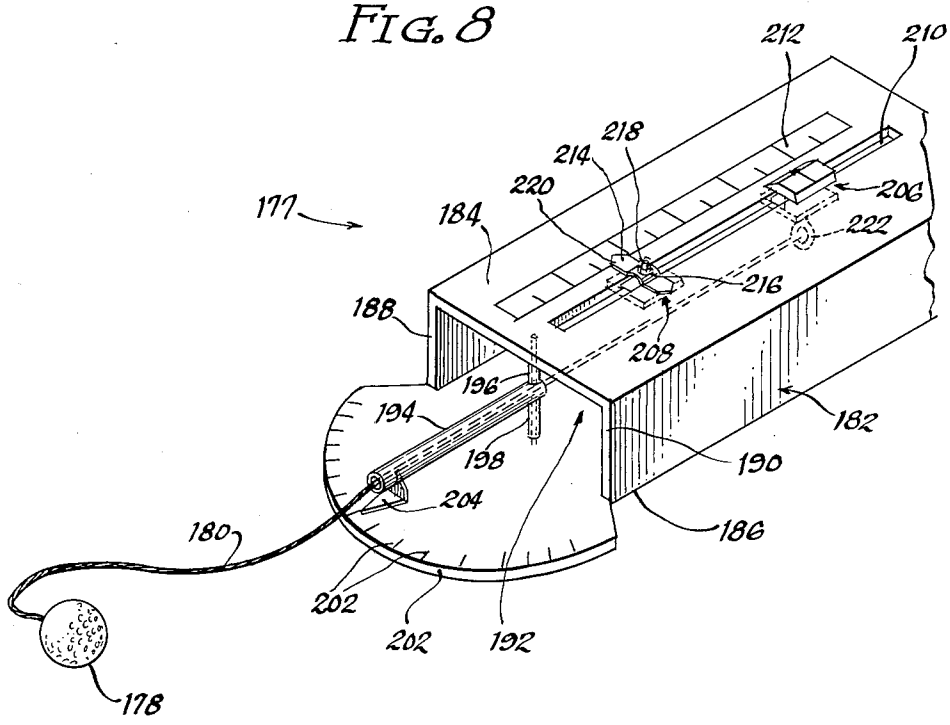
May 1, 1962 L. MAGAZANIK ET AL 3,031,889

DEVICE FOR SIMULATING THE PLAY OF GOLF

Filed June 26, 1959 3 Sheets-Sheet 3

FIG. 8



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3,031,889

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DEVICE FOR SIMULATING THE PLAY OF GOLF

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Filed June 26, 1959, Ser. No. 823,126

1 Claim. (Cl. 73—380)

This invention relates to a new and improved device for simulating the play of golf, so that a player may practice his golf strokes at home or in any other convenient place.

One object of the invention is to provide a new and improved device in which a ball may be struck by a golf club in the normal manner, and in which means are provided to indicate the force or power with which the ball is struck.

A further object is to provide a new and improved device of the foregoing character, in which means are provided to check or limit the flight of the ball so that it may easily be retrieved.

A further object is to provide a new and improved device of the foregoing character, which is arranged so as to provide an indication of the force of the stroke over an extremely wide range, so that the device may be employed to register any type of stroke, from a light putting stroke to a vigorous driving stroke.

Another object is to provide a new and improved device having means for indicating the direction in which the ball is struck, as a check upon the directional accuracy of the golf stroke.

A further object is to provide a new and improved device having means for producing a signal or indication if the ball is topped by the golf club, rather than being hit squarely.

It is another object to provide a new and improved device in which the ball is suspended for swinging movement on a cord or other tether, and in which means are provided to intercept and catch the tether when the ball swings upwardly.

A further object is to provide a new and improved device of the foregoing character having swingable means engageable by the tether to indicate the direction in which the ball is hit.

It is a further object to provide a new and improved device in which extension of the tether is resiliently resisted, and in which means are provided to indicate the amount by which the tether is extended when the ball is hit.

Another object is to provide a golf simulating device which is easy to use and low in cost, yet gives valuable assistance to a player in improving his game.

Further objects and advantages of the present invention will appear from the following description, taken with the accompanying drawings, in which:

FIG. 1 is a perspective view of a golf simulating device to be described as an illustrative embodiment of the present invention.

FIG. 2 is a fragmentary longitudinal section taken through the device of FIG. 1.

FIG. 3 is a fragmentary cross-section, taken generally along a line 3—3 of FIG. 2.

FIG. 4 is an enlarged perspective view corresponding to a portion of FIG. 1.

FIG. 5 is a perspective view, partly in section, of a modified golf simulating device.

FIGS. 6 and 7 are perspective views showing two additional modified embodiments of the present invention.

FIG. 8 is a perspective view showing still another modified embodiment of the present invention.

As already indicated, FIGS. 1–4 illustrate a device or machine 10 for simulating the play of golf, so that a

player may practice his strokes indoors or in any convenient place. The device 10 is adapted to indicate the strength and accuracy of the stroke.

The illustrated device 10 is formed with a frame 12 comprising a base 14 adapted to rest upon a floor or other supporting surface. The base 14 may be in the form of a flat board or plate. An upright member 16 extends upwardly from the top of the base 14, at the rear end thereof. It will be seen that a substantially horizontal arm 18 extends forwardly from the upright 16.

A golf ball 20 is movably secured to the machine 10 so that the ball may be struck with a golf club. The ball 20 is preferably not a standard golf ball, but rather is a lightweight practice ball, which may be of the hollow perforated type. In this case, the ball 20 is suspended from the outer end of the arm 18 by a cord or other tether 22. The ball 20 may be suspended at any desired elevation, but preferably at a level slightly above the floor or other supporting surface. A piece of carpet 24 may be placed under the ball 20 to simulate grass and to protect the supporting surface from being marred. Of course, in many cases the carpet will not be necessary.

When the ball 20 is struck with a golf club 26, shown in broken lines in FIG. 2, the ball will swing forwardly and upwardly and will exert a pull on the cord 22. The amount of pull is proportional to the force or power of the stroke, and is an indication of the distance which the ball would have carried under actual golfing conditions.

In this case, the pull on the cord 22 is resisted in a resiliently yieldable manner by a spring arrangement 28, disposed in a cavity or chamber 29 formed in the arm 18. The spring arrangement 28 extends between a fixed anchor 30 and the free end of the cord 22. It will be seen that the cord 22 extends in a substantially horizontal direction from the spring arrangement 28 to a guide sleeve 32 mounted on the outer end of the arm 18. The cord 22 passes through the guide sleeve 32 and hangs downwardly with the ball 20 at the lower end of the cord.

Various types of extension, compression or other springs may be employed in the spring arrangement 28, but the illustrated machine 10 utilizes a plurality of coiled extension springs 34, 36 and 38. In order to increase the usefulness of the golf simulating machine, it is preferred that the springs 34, 36 and 38 be of progressively graduated strengths, and that they be connected in series between the cord 22 and the anchor 30. Thus, the spring 34 is relaively light or weak in strength, the spring 36 is of medium strength, and the spring 38 is of relatively high strength. The weak spring 34 is adapted to stretch easily in response to light strokes on the ball 20, such as putting strokes. For heavier strokes, the intermediate spring 36 is extended, and for vigorous strokes, such as driving strokes, the spring 38 comes into play.

Provision is made for limiting the stress upon the weaker springs in the spring arrangement 28. Thus, the extension of the weak spring 34 is limited by a pair of stops 40 and 42. As shown, the stop 40 takes the form of an eye through which the intermediate spring 36 normally extends. The stop 42 is in the form of a cross-pin or other enlargement at the outer end of the weak spring 34. It will be seen that the stop 42 is larger in size than the opening in the eye 40 so that the stop 42 cannot pass through the eye. Thus, the extension of the weak spring 34 will be arrested when the stop 42 engages the eye 40.

Similarly, the extension of the intermediate spring 36 is limited by stops 44 and 46. The stop 44 is in the form of a stationary eye, while the stop 46 takes the form of a pin or other enlarged member at the end of the spring 36. The stop 46 is too large to pass through the eye 44. After the intermediate spring 36 has been fully extended, any further pull on the cord 22 can extend only the

heaviest spring 38 which is sufficiently strong to resist maximum force on the cord, without being damaged.

It will be evident that the cord or tether 22 extends easily at first, so that even extremely light putting strokes on the ball 20 produce observable extension of the cord. For heavier strokes on the ball, the lighter springs 34 and 36 become fully extended, and further extension of the cord 22 is resisted by the heaviest spring 38. This arrangement prevents excessive extension of the cord when the heaviest driving strokes are delivered to the ball 20.

In order that the extension of the cord 22 may readily be observed, the machine 10 is equipped with one of more sliders adapted to be carried outwardly on the arm 18 as the cord is extended. The illustrated device is provided with two sliders 48 and 50, which are movable along a slideway 54 on the upper side of the arm 18. When the cord 22 is extended, the first slider 48 is pushed outwardly along the slideway 54 by a pin or other enlarged stop 56 at the outer end of the heaviest spring 38. In this case, the cord 22 extends through an eye 58 on the lower end of the slider 48. The stop 56 is too large to pass through the eye 58, with the result that the stop 56 pushes the slider 48 outwardly. The cord 22 passes freely through the eye 56 so that the cord does not drag the slider 48 inwardly when the cord is retracted by the spring arrangement 28.

The second slider 50 is similar to the first slider 48. However, additional resistance is afforded to the outward movement of the slider 50, so as to extend the range of the machine and prevent the slider 50 from traveling beyond the position to which it is pushed by the slider 48. To resist the outward movement of the cord 22, the slider 50 may be made more massive than the slider 48. Moreover, means may be provided to afford frictional resistance to the movement of the slider 50. As shown to best advantage in FIG. 3, a leaf spring 60 may be mounted on the slider 50 so as to bear against a pair of stationary bars 62 on the upper side of the arm 18. In this case, the spring 60 is secured to the slider 50 by means of a screw 63 extending upwardly from the slider. A nut 64 may be threaded onto the screw 63 and may be adjusted to vary the frictional resistance afforded by the spring 60. One end of the spring 60 may be formed into a pointer 66 adapted to cooperate with a scale 68 on the upper side of the arm 18. The scale 68 may be calibrated directly in terms of distance so as to indicate the approximate distance which the ball would have been been carried under actual golfing conditions. Similarly, a pointer 70 may be mounted on the first slider 48, although in this case the friction spring 60 is not employed. The pointer 70 may be arranged to cooperate with a distance scale 72 on the upper side of the arm 18.

For relatively light strokes, the second slider 50 is not used. Instead, it is simply slid to the outer end of the arm 18 where it will be out of the way. When the ball 20 is hit, the first slider 48 will be moved outwardly by an amount which may be taken as an indication of the strength of the stroke on the ball. When heavier strokes are contemplated, the second slider 50 is moved inwardly against the first slider 48. When the ball is struck, the friction spring 60 affords additional resistance to the outward movement of the sliders 48 and 50. Thus, the range of the machine is extended so that it will handle both extremely light and extremely heavy strokes. One or more additional sliders may be provided on the machine, if desired.

Occasionally, the player may top the ball 20 with the golf club 26. In that case, the club will merely graze the top of the ball, or may miss it entirely. However, the club will hit the cord 22, which will tend to pull the cord outwardly so as to give a false reading. To detect such topping of the ball and to disqualify the stroke, the machine 10 is provided with a topping signal device 76, comprising a movable lever or other member 78, spaced above the ball 20 by a distance slightly less than the height of the club head 26. The lever 78 extends to a point adjacent the cord 22 so that the club will hit the lever whenever it hits the cord. When the lever 78 is moved, a suitable signal is given, so that the reading on the machine will be disregarded. In this case, the signal is given by a bell 80 adapted to be struck by the upper arm of the lever 78. A spring 82 normally biases the lever 78 against the bell 80. When the lever 78 is struck, it engages and rings the bell 80 on the return movement of the lever.

Because the ball 20 is suspended from the free outer end of the arm 18, the ball may be struck by either right or left handed players. A right handed player will generally strike the ball along a diagonal line 84, while a left handed player will direct his stroke along an oppositely angled diagonal line 86. These lines 84 and 86 may actually be marked on the baseboard 14 and the carpet 24, or may be left to the imagination of the player. It is preferred to direct the golf club along the diagonal lines in order to obviate any possibility that the golf club may strike the upright 16.

The machine 10 is provided with means for indicating any deviation of the ball from its intended path. As shown, such means take the form of vanes or other swingable members 88 adapted to be engaged by the cord 22 if the ball 20 is hit in a direction differing significantly from the intended direction. In the illustrated machine, there are two of the vanes 88 on opposite sides of the cord 22. If the ball 20 is properly hit, the cord 22 will swing upwardly between the vanes 88, leaving them undisturbed. If the ball 20 is hit to one side or the other, the cord 22 will swing the corresponding vane to a new position, indicating the direction in which the ball would have traveled under actual golfing condition.

Each of the illustrated vanes 88 is skeletal in construction, being made of a single piece of wire or the like, with vertical pivots 90 and 92 at its upper and lower ends. A pointer 94 may be welded or otherwise secured to each vane 88 to cooperate with a scale 96 on a plate 98. Preferably, the plate 98 is generally semi-circular in shape. It is convenient to form the plate 98 of transparent plastic material. The pivots 90 at the upper ends of the vanes 88 may be journaled in openings 100 formed in the plate 98. An apertured bracket 102 may be employed to support the lower pivots 92.

Additional means are provided to catch the ball 20 so as to prevent it from bouncing back against the vanes 88 after it has swung upwardly as far as the cord 22 will allow. Such bouncing movement of the ball and the cord might disturb the positions of the vanes and give a false directional reading. In this case, the ball 20 is caught by a cross-bar 106 which is spaced above the guide 32 so as to intercept the cord 22 when the ball 20 swings upwardly. As shown, the cross-bar 106 extends between a pair of uprights 108 which are adjustably mounted on the outer end of the arm 18 so that the elevation of the cross-bar 106 may be varied. In the illustrated construction, the uprights 108 are slidably received in openings 110 formed in the arm 18.

As shown to advantage in FIG. 2, the ball tends to spin around the bar 106 when the cord 22 engages the bar. Thus, the cord may be wrapped several times around the bar 106 before the ball 20 comes to rest. The height of the bar 106 is adjusted so that the ball 20 can swing under the bar without striking the top of the supporting arm 18. Of course, it is a simple matter for the player to unwind the cord 22 so that the ball may be returned to its original position for another stroke.

At this point it may be helpful to summarize the use and operation of the golf simulating device 10. Initially, the ball 20 is suspended on the end of the cord, so that the ball either rests upon the carpet 24, or is elevated slightly above the carpet. The exact position of the ball may be adjusted by changing the length of the cord

22. A right handed player will strike the ball 20 by swinging a golf club along the diagonal line 84. If the player is left handed, he will swing the club along the oppositely angled diagonal line 86. By swinging along the diagonal lines, the player avoids any possiblity of striking the upright 16.

Before the player hits the ball 20, he will adjust the vanes 88 so that they extend parallel to the intended direction of travel of ball 20. Thus, for a right handed player, the vanes 88 will be parallel to the line 84. The vanes will be spaced slightly from the cord 22 so that the cord will be free to swing in the desired direction between the vanes without striking either of them.

When the ball is struck, it may deviate from the desired direction. In that case, the cord 22 will push one of the vanes 88 outwardly to indicate the direction in which the ball is hit. The direction will be indicated on the scale 96.

The ball 20 will swing upwardly until the cord 22 is intercepted by the bar 106, whereupon the ball will spin around the bar. This will wrap the cord several times around the bar 106, so that the ball will be caught. Thus, it will be impossible for the ball or the cord to return downwardly to disturb the positions of the vanes 88.

If the player tops the ball, the golf club will strike the signal lever 78, which will ring the bell 80. The ringing of the bell disqualifies the stroke, because a false indication of distance may be obtained when the club strikes the cord 22 after topping the ball.

When the ball 20 is struck, it swings forwardly and pulls the cord 22 outwardly through the guide 32. The springs 34, 36 and 38 resist the extension of the cord 22. As the cord 22 is pulled outwardly, the relatively weak spring 34 is extended until the stop 42 strikes the eye 40. Until the weak spring 34 is fully extended, the stronger springs 36 and 38 do not extend to any great extent. The provision of the weak spring 34 allows an observable extension of the cord 22 when the ball 20 is lightly hit, as with a putting stroke.

For somewhat heavier strokes, the intermediate spring 36 is extended until the stop 46 engages the eye 44. When the ball 20 is hit vigorously, the heavy spring 38 permits still further extension of the cord 22.

The extension and partial retraction of the cord 22 occurs rapidly, but is registered by the slider 48, which is pushed outwardly by the member 56 on the cord. The slider 48 remains in its outwardly displaced position when the cord is retracted by the spring assembly 28. After each stroke, the player returns the slider 48 to its original position at the inner end of the slideway 54.

When a vigorous stroke is contemplated, the second slider 50 is pushed inwardly against the slider 48. Both sliders are pushed outwardly when the cord 22 is extended. The friction spring 60 restrains the outward movement of the slider 50 so as to limit the extension of the cord 22 to some extent, and prevents the sliders from coasting beyond the position to which they are pushed by the member 56. The provision of the second slider 50 extends the range of the device so that even the most vigorous strokes will not cause the slider 50 to engage the outer end of the slideway 54. The scales 68 and 70 along the slideway 54 may be calibrated in terms of distance, so as to indicate the distance which the ball would have traveled under actual golfing conditions.

FIG. 5 illustrates a somewhat modified golf simuiating device 118, comprising a ball 120 which is movable along a horizontal supporting member 122. In this case, the ball is mounted on the upper end of a rod 124 which extends upwardly through a slot 126 in the support 122. It will be apparent that the rod 124 is slidable along the slot 126.

The outward movement of the ball 120 is resisted by a spring 128 which extends horizontally within a chamber or cavity 130 formed in the support 122. The spring 128 is connected between an anchor 132 and a horizontal portion 134 of the rod 124.

The movement of the ball 120 is registered by a slider 136 which is movable along the slot 126. The horizontal rod 134 extends through an eye 138 along the lower end of the slider 136. When the ball 120 is struck, the slider 136 is pushed outwardly by an enlarged stop member 140 on the rod 134. The member 140 is too large to pass through the eye 138 and thus is effective to move the slider 136 outwardly. A suitable pointer 142 may be formed on the slider 136 to cooperate with a scale 144 on the support 122. It will be recognized that two or more sliders may be employed, as in FIG. 1. Moreover, the single spring 128 may be replaced with a series of springs, as in FIG. 2.

FIG. 6 illustrates another modified arrangement which utilizes the ball 20, the cord 22, and the guide 32 of FIGS. 1–4. However, the extension of the cord 22 is resisted by a spirally coiled spring 148 having its outer end connected to the inner end of the cord. The inner end of the spring 148 is connected to a rotatable shaft 150. When the cord 22 is extended, the spring 148 is unwound, which causes rotation of the shaft 150. The amount of rotation may be registered on a revolution counter 152, which may be coupled to the shaft 150 by suitable gears 145 and 156. The spring 148 ultimately retracts the cord 22 to its original position. This causes the shaft 150 to rotate in the opposite direction, but the counter 152 may be of the type which registers rotation in one direction only. Thus, the reading on the counter 152 will not be disturbed. The reading on the counter gives an indication of the strength of the stroke delivered to the ball 20. Of course, the counter 152 may be calibrated directly in terms of the distance which the ball would have traveled under actual golfing conditions.

FIG. 7 illustrates another modified device 158, utilizing a golf ball 160 which is suspended at the lower end of a rod 162. It will be seen that the rod 162 is secured to a horizontal shaft 164 which is rotatably supported on a stand 166. The rod 162 extends radially from one end of the shaft 164. When the ball 160 is struck, the shaft 164 is rotated. The extent of rotation may be indicated by a revolution counter 168 which may be coupled to the shaft 164 by suitable gears 170 and 172. The weight of the ball 160 may be partially or entirely counterbalanced by a counterweight 174 threaded onto an arm 176 which extends radially from the shaft 164 in a direction opposite to the direction of the rod 162. The weight 174 may be adjusted along the arm 176 to obtain the desired counterbalancing action. The revolution counter 168 will indicate the strength with which the ball 160 is struck. It is preferred to calibrate the counter 168 in terms of the distance which the ball would travel under actual golfing conditions.

If the ball 160 is only partially counterbalanced, it will return by its own weight to its original position. If the weight 174 is adjusted so that the ball is completely counterbalanced, it may be returned by the player to its original position.

In the arrangement of FIG. 7, the resistance to the movement of the ball 160 is afforded by the inertia of the shaft 164 and the rotating system connected thereto. The frictional resistance to the rotation of the shaft 164 also retards the movement of the ball 160. The inertia of the shaft 164 may be increased by the mounting of a flywheel 175 thereon.

FIG. 8 illustrates another modified device 177 for simulating the play of golf. The device 177 utilizes a ball 178 which is adapted to be placed upon any suitable supporting surface, such as a floor, the ground, or the like, so that the ball may be struck by a golf club in the normal manner. It will be apparent that the ball 178 may be placed on an ordinary golf tee, if deisred. A cord or other tether 180 is connected to the ball to limit its flight, so that it will be easy to retrieve. As shown, the cord 180

is made sufficiently long so that there will be considerable slack in the cord when the ball is placed in the position from which it is to be hit. In this way, the cord 180 may be arranged so that it will be out of the way of the golf club.

The illustrated device 177 includes a box or housing 182 having upper and lower walls 184 and 186. As shown, vertical side walls 188 and 190 extend between the upper and lower walls 184 and 186. Within the housing 182, a longitudinal cavity 192 is formed. The front of the housing 182 may be open to provide access to the cavity or chamber 192.

In this case, the cord 180 extends longitudinally through a swingable guide in the form of a tube 194. Vertical pivots 196 and 198 extend upwardly and downwardly from the inner end of the tube 194 and are journaled in the upper and lower walls 184 and 186 so that the tube 194 will be free to swing in a horizontal arc. As shown, the lower wall 186 has a generally semi-circular extension 200 which projects forwardly from the housing 182. Suitable graduations 202 are provided along the edge of the extension 200 so that it will serve as a dial to indicate the direction of the guide tube 194. A pointer 204 may be mounted on the outer portion of the tube 194 so as to be movable along and immediately above the dial 200.

When the ball 178 is struck, it flies freely until the cord 180 is pulled taut. The tightening of the cord swings the guide 194 to the direction in which the ball has been hit.

Initially, the guide tube 194 is normally set to the center or zero point on the dial 200, although the guide tube may be adjusted initially to any other position. The ball 178 is placed in line with the tube 194. After the ball 178 has been hit, the tube 194 indicates any deviation from the intended direction of the ball.

Means are provided to indicate the force or power with which the ball 178 is hit. As in the case of the first embodiment, such means include one or more gliders or sliders, two such sliders 206 and 208 being illustrated. It will be seen that the sliders 206 and 208 are movable along a longitudinal slot 210 formed in the upper wall 186 of the housing 182. The movement of the cord 180 is transmitted to the first or rear slider 206, so that it will be moved forwardly along the slot 210, when the ball 178 is struck. The slider 206 is preferably made freely slidable along the slot 210, so that the movement of the slider 206 is resisted only by the friction due to its own weight. Of course, the mass of the slider 206 resists acceleration of the slider. Because of its easy slidability, the slider 206 is moved to an observable extent, even when the ball 178 is lightly hit, as with a putting stroke. A scale 212 may be provided on the top wall 186 to indicate the distance which the slider 206 travels. The scale 212 may be calibrated in terms of the distance which the ball 178 would have travelled under normal golfing conditions.

When the ball 178 is to be hit lightly, the second or front slider 208 is moved initially to the extreme front end of the slot 210, so as to be out of the way of the slider 206. To indicate the force of heavier strokes, the slider 208 may be moved rearwardly against the slider 206, so that the slider 208 will resist the forward movement of the slider 206. It is preferred that the front slider 208 be arranged to provide considerable resistance to movement along the slot 210. Thus, the illustrated slider 208 is provided with a leaf type friction spring 214 which bears against the upper side of the wall 184 on both sides of the slot 210. The force of the spring 214 may be adjusted by tightening or loosening a nut 216 which is mounted on a screw 218 extending upwardly through the spring 214. Thus, the arrangement of the slider 208 is much the same as that of the slider 59 shown in FIG. 3. One end of the spring 214 may be formed in which a pointer 220 is adapted to cooperate with the scale 212.

When the slider 208 is in use, the force exerted by the cord 180, due to the flight of the ball 178, pulls both sliders 206 and 208 forwardly along the slot 210. The amount by which the slider 206 is moved indicates the distance which the ball 178 would have travelled under normal golfing conditions.

As shown in FIG. 8, the inner end of the cord 180 is connected directly to an eye 222 extending downwardly from the rear slider 206. A spring arrangement, such as shown in FIG. 2, may be provided to resist forward movement of the slider 206. However, it has been found that the device will operate in a highly satisfactory manner without any such arrangement, and with the cord connected directly to the slider 206. It will be understood that the housing 182 may be placed directly on the floor, ground or other supporting surface. Thus, the golf simulating device is easy and highly convenient to use.

Various other modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claim.

We claim:

In a device for simulating the play of golf, the combination comprising a ball adapted to be struck by a golf club, a line having one end connected to said ball, a body having a slideway thereon, a first slider connected to the other end of said line and mounted on said slideway for movement therealong, the friction between said first slider and said slideway offering resistance to the extension of said line when said ball is struck, a first pointer on said first slider, a low-range scale on said body along said slideway and adjacent said first pointer for indicating the extension of said line, a second slider mounted on said slideway ahead of said first slider and engageable with said first slider, means on said second slider affording frictional resistance to movement thereof along said slideway, said second slider when engaged with said first slider affording adidtional resistance to the extension of said line, a second pointer on said second slider, and a high-range scale on said body along said slideway and adjacent said second pointer for indicating the extension of said line, said first and second sliders affording substantially the only resistance to extension of said line.

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