This invention relates to an apparatus to be used for practicing golf, enabling golfers to hit a golf ball correctly so that they may drive the ball in any direction and distance at will.

It is an important object of the present invention to provide an apparatus to be used for practicing golf, which automatically detects and indicates the deviation, up or down and right or left, from the direction in which a golf ball should be driven, when the ball which is fixedly mounted on the free end of a bar or rod in the apparatus is hit.

It is a further object to provide an apparatus to be used for practicing golf, which detects and indicates the deviation, up or down and the right or left, from direction in which a golf ball should be driven, when the ball which is fixedly mounted on the free end of a bar or rod in the apparatus is hit, the detection and indication being accomplished by electrical means which retains each indication first made until golf practice has been concluded.

Another object is to provide apparatus as described above in which the bar holding the ball has sufficient durability to withstand strong mechanical shocks when hit repeatedly, while retaining its responsiveness and sensitivity for detection purposes.

According to the present invention, a practice ball is attached to the end of a steel bar fixed in a case. The bar is movable up and down and is somewhat elastic. The bar is supported in a stationary horizontal position, but is movable freely laterally, in a slotted guide. The bar support includes an electrical resistance which is variable in accordance with the intensity of mechanical shock imparted to the bar by hitting the ball. The intensity of mechanical shock imparted to the bar by hitting the ball. The intensity of striking force is indicated by a meter connected in circuit with the electrical resistance and calibrated to read distance. Along a wall of the guide are contact members placed so that if the bar support of the striking ball comes in contact with them, indications are obtained showing whether the ball was hit too high or too low. On the steel bar itself, are spaced test points by means of which due to vibrations of the bar, are obtained indications of improper hitting of the ball in right and left directions. The results of each test are kept and serve as guides for correcting future practice play.

A further and auxiliary object of the invention is to provide means for keeping the steel bar and practice golf ball locked up in such a condition and to prevent their use, unless a proper coin is deposited in the apparatus. This makes the apparatus available for use for a certain limited time.

Other objects and advantages will become apparent from the following detailed description taken together with the drawings, wherein:

FIG. 1 is a plan view of a preferred embodiment of one part of the apparatus.

FIG. 2 is a front end view of the apparatus of FIG. 1.

FIG. 3 is a plan view partially schematic of a mechanism used to indicate lateral movements of the bar and ball.

FIG. 4 is a side view partially schematic of a mechanism used in obtaining an indication of the distance the ball is hit.

FIG. 5 is a diagram of a circuit employed in the apparatus.
3 the outer end of shaft 40 so that the ball 30 will strike plate 44 at the end of travel of the ball after being struck. A coil spring 39 is mounted on shaft 40 between bearing 42 and plate 44 to bias the shaft outwardly or forwardly of the case 21. Secured near the rear end of shaft 40 at the rear side of bracket 41 is a flange 43 which limits outward movement of the shaft under pressure of spring 39. Secured to the rear end of the shaft is an insulating body 45 on which is wound electrical resistance coil 46. A stationary contact member 47 contacts the underside of coil 46 which is movable axially to the rear with shaft 40. Thus when the shaft and coil move axially to the rear or to the left as viewed in Fig. 4, the effective electrical resistance between contact 47 and the front or right end terminal 46c of the resistance coil is reduced. It will be apparent that the reduction in electrical resistance will be dependent upon the force with which ball 30 strikes plate 44 to move shaft 40 against resistance of spring 39.

In Fig. 5 are shown details of the circuit 55 which involve measurement and indication of the striking force applied to the ball 30. Indicator circuit 48 includes a conventional voltmeter 39 connected in series with battery 50, electrical contact 47 and variable resistance 46. The voltmeter 48 has a needle or pointer return spring so that it floats free and stops wherever it is positioned. In normal operation before ball 30 is struck the pointer will be located at the left end of the meter dial scale SC shown in Fig. 6. After the ball is struck, the pointer P will move to a position on the dial scale depending on the minimum resistance value of coil 46 which remains momentarily in series with the meter 49. This resistance value is taken between contact 47 and the meter. The dial scale SC of the meter 49 may be calibrated to read striking force or flying distance of the simulated golf ball.

Circuit 55 further includes indicator means 51 used for indicating whether the ball is struck so that it flies too high or low with respect to an optimum path defined by slot 24 in the case. Indicator means comprises the upper contact member 25, lower contact member 26 and end contact member 27. Bar 28 which carries ball 30 extends outwardly of case 21 between contact members 25, 26, and will not touch them if the ball is struck exactly right. However, if the ball moves too high or too low in its flight, bar 28 will contact member 25 or 26 respectively. Lamp L3 or L4 described below will light up when the bar 28 touches one of the contact members.

An indicator circuit 52 forming part of circuit 55 serves to indicate excessive movement of the ball to the left or right in direction L or R. Excessive movement to the left results in clockwise pivoting of fork 32 by pin 31 shown in Fig. 3, so that contacts 38 shown in Figs. 3 and 5 are closed by finger 36. Excess movement to the right results in clockwise pivoting of fork 32 by pin 31 and finger 36 closes contacts 37. These effects are indicated by lighting of lamp L1 or L2 in the indicator circuit 52.

Circuit 55 includes the visual indicating means comprising lamps L1-L4. Circuit 55 further includes a control circuit 54 comprising relays R1-R5 which control lighting of the lamps which stay lighted until extinguished in the manner described below. A switch assembly 57 including two switches Sw1 and Sw2 is used to extinguish all lighted lamps and to return the pointer P of meter 49 to its zero position. A audible alarm 56 including a relay B and bell BL is used to call attention to the lighting of any of the lamps by ringing once; or by continuing ringing if no lamp lights to indicate flight of ball 30.

The relays R1-R4 of control circuit 54 each have four sets of three contacts. Relay R1 has contacts R1-1, R1-2, R1-3 and R1-4. Relay R2 has contacts R2-1, R2-2, R2-3 and R2-4. Relay R3 has contacts R3-1, R3-2, R3-3 and R3-4. Relay R4 has contacts R4-1, R4-2, R4-3 and R4-4. Contacts R1-1 may be taken as representative. The sets of contacts having a movable contact C1 and two fixed contacts C2 and C3. The movable contact C1 is normally closed with contact C2 when the relay is de-energized and contact C1 closes with contact C3 while opening with respect to contact C2 when the relay is energized.

Circuit 55 includes a stepdown transformer T whose primary winding is connected via a fuse 59 and ON-OFF switch 60 to alternating current power supply terminals 58. One secondary winding S1 is connected in series with a rectifier 6 for applying direct voltage smoothed by shunt capacitor C1 to movable coils 37, 38, bar 28, voltmeter 49 and the open contacts C3 of each set of relay contacts R1-1, R1-2, R3-1, R4-1 and R5-1. It will be noted that all the contacts C2 of relay contacts R1-1, R1-2, R3-1, R4-1 and R5-1 are open circuited. The coil of relay R1 is connected at one end to fixed contact 37" and to movable contact C1 of relay set R1-1.

At its other end the relay coil is connected to the closed contacts of relay set R2-2. The coil of relay R2 is connected at one end to fixed contact 38" and to the movable contact of contact set R2-1. The other end of this relay coil is connected to the closed contact C2 relay contact set R1-1-inter P which has moved to contact member 25 and the movable contact of contact set R3-1, and at the other end to the closed contact of contact set R4-2. The coil of relay R4 is connected at one end to contact member 26 and to the movable contact of contact set R4-1, and at the other end to the closed contact C2 of contact set R3-2. The coil of relay R5 is connected at one end to contact member 27 and to the movable contact of contact set R5-1, and at the other end to the closed contact C2 of contact set R3-3. Each of lamps L1-L4 is connected at one end to one end of secondary winding S2 of the transformer T. This applies alternating current to the lamps. The other ends of the lamps are connected respectively to the open contacts C3 of contact sets R1-2, R2-2, R3-2 and R4-2. It will be noted that the closed contacts of relay contact sets R1-3, R2-3, R3-3 and R4-3 are connected in series with the other end of the coil of relay R5. The movable contact of contact set R4-3 is connected to the closed contacts of switch Sw1.

The audible alarm 56 of the apparatus has an activating relay B whose coil is connected at one end to secondary winding S2. The other end of the coil of relay B is connected to a series arrangement of closed contacts C2 of contact set R3-4 and the contact of contact set R5-4. The movable contact of relay B includes an armature AR which carries an element CL used to strike bell BL.

Switches Sw1 and Sw2 have normally open fixed contacts Sc1 and Sc2. A resistor SwR1 is connected between contact Sc2 and junction point J1 which is located between contacts Sc1 and Sc2. Another resistor SwR2 is connected between junction point J1 and one terminal of secondary winding S1.

The movable contacts of contact sets R1-2 and R2-2 are connected to the fixed closed contact C2 of contact set R5-4. The movable contact of set R5-4 is connected to the fixed closed contact SC1 of switch Sw1 along with the movable contacts of contact sets R4-3, R5-2 and R5-3, and with the open contacts of contact sets R1-4, R2-4, R3-4 and R4-4.

The sets of relay contacts R1-1, R2-1, R3-1, R4-1 and R5-1 serve as holding elements to keep their respective relay coils energized by connecting the coils directly to the transformer winding S1, once these relay coils are energized even momentarily. As a result, if the coil of relay R1 is energized lamp L1 will light through closed contacts C1, C3, set R1-2, set R3-2 and set R4-2 as long as the relay R1 is energized. Similarly lamp L2 will light when relay R2 is energized. Lamp L3 will light when relay R3 is energized and lamp L4 will light when,
relay R4 is energized. The lamps will stay lit as long as their associated relays are energized.

In FIG. 5 relays R1–R5 are marked respectively RIGHT, LEFT, HIGH, LOW and CENTER. This is indicative of their functions in the circuit. Similarly the lamps L1–L4 are designated respectively RIGHT, LEFT, HIGH and LOW.

The lamp relays, meter and other electrical parts of the circuit are disposed in an indicator box or case 61 shown in FIG. 6, in order to avoid subjecting them to the rather severe mechanical shock imparted to the struck ball 30. For convenience, switch button 62 which operates the switch assembly 57 shown in FIG. 5 is located on top of the case 21 as clearly shown in FIGS. 1 and 2. This is done so that the switch assembly 57 can be operated to turn out any lighted lamps and to turn off the ringing bell after the player has noted the hits of hitting ball 30 and is ready for the next practice stroke.

The bell BL is placed behind screen 67 in box 61. The dial SC of meter 40 is located at the top of the front panel of the box 61. Lamps L3 and L4 are located to the left and right respectively of the meter behind colored lenses 65, 66. Lamps L1 and L2 are placed behind colored windows 63, 64 respectively shaped as arrows pointing respectively right and left. The ball results in no lamp lighting, but the bell BL rings continuously. The force of the blow applied to ball 30 and hence the distance the free ball would travel is indicated by the position assumed by the pointer P on the dial of meter 49. Operation of switch assembly 57 by pressing button 62, extinguishes all lighted lamps, stops the ringing of the bell and restores the pointer of the meter to zero position on the dial of the meter.

By the arrangement described above there is thus obtained an indication of high, low, left or right deviation of ball flight by lighting of one or more lamps L1–L4 together with one strike of the bell BL. A correct hit will result in no lamp lighting, but the bell BL rings continuously. The force of the blow applied to ball 30 and hence the distance the free ball would travel is indicated by the position assumed by the pointer P on the dial of meter 49. Operation of switch assembly 57 by pressing button 62, extinguishes all lighted lamps, stops the ringing of the bell and restores the pointer of the meter to zero position.

In the apparatus as described in connection with FIGS. 1–6 the errors in direction of flight of the ball are indicated only qualitatively by lighting of a lamp and striking of the bell. It is desirable however, to obtain indications of the errors or deviations in direction of flight of the ball. To accomplish this the means illustrated in FIGS. 12 and 13 may be employed.

Referring to FIG. 12 there is illustrated means for indicating quantitatively the high or low deviation in flight of ball 30 from the correct optimum angular path. The contact members 25 and 26 at the edges of slot 24 in the front wall of case 21 are replaced by a series of upper contact members 71 and a series of lower contact members 72. The upper contact members are designated respectively 71–1, 71–2, 71–3, ..., 71–n and the lower contact members are designated respectively 72–1, 72–2, 72–3, 72–n. The upper contact members are supported in alignment and spaced apart on insulating means 73. The lower contact members are supported in alignment and spaced apart on insulating means 74. Each of the individual contact members is connected to an indicator 81.

Indicator 81 has a group 77 of relays 75 individually connected to the upper contact members respectively. The indicator 81 has another group 78 of relays 76 individually connected to the lower contact members respectively. A line pointer 82 in indicator 81 is movable along an inclined dial or scale 81' having upper spaced scale divisions 79 corresponding to the upper contact members 71 respectively and lower scale divisions 80 corresponding to the lower contact members 72. The indicator further includes an upper lamp 86 located behind a colored window 68 and a lower lamp 87 located behind a colored window 69. The lamps 86, 87 are in circuit with the relays 75, 76 respectively via wires 84, 85. The relay groups 77, 78 are connected via circuitry 83 in a manner somewhat similar to the arrangement of relays R3, R4 in FIG. 5, so that if any one of the relays 75, 76 is energized, all the other relays are deactivated.

The slant of scale 81 corresponds to the optimum angle of flight of ball 30.

In operation of the apparatus schematically illustrated in FIG. 12, it will be apparent that if bar 28 during

through contacts Be and R5–4. Contacts R5–4 will remain closed due to closure of contacts R5–1. Contacts Be will open and close repeatedly so that the bell BL will be struck repeatedly and will ring continuously.

When ball 30 is struck it moves in direction D and collides against plate 44. The force of impact is indicated by the position assumed by the pointer P of meter 49 on the dial scale SC of the meter. The resistance 46 in circuit with the meter returns to its original value at once as compressed spring 39 restores the plate 44 and shaft 40 to their original positions. The pointer of the meter remains however, at its position of maximum deflection on the meter dial. When the player notes this reading and then pushes button 62, switch Sw2 is closed at contact Sc2. This applies a voltage to the meter 49 through resistors SwR1 and SwR2. The voltage is supplied by rectified current from secondary winding S1 and is reverse in polarity from that supplied by battery 50. Thus the pointer of the meter is restored to zero position on the dial of the meter.
flight touches any one of the upper or lower contact members 71, 72, its associated relay will be energized and the dial pointer 82 will move to the corresponding scale division 79 or 80. This provides a quantitative indication of the distance at which the flight is away from the optimum trajectory. The scale divisions are staggered in position so that there will be no ambiguity as to the indication of the pointer 82. Furthermore either the upper or lower lamp 86, 87 will light indicating positively, but qualitatively whether the deviation in flight was too low or too high.

FIG. 13 shows schematically the means for indicating quantitatively the deviation to the left or right of the path of flight of ball 30 from the correct path. In this arrangement the fork arm 32 is now pivotally mounted on the axially vertical pin 34 and the members 35, 37 and 38 shown in FIG. 3 are omitted. Finger 36 is now attached directly to the end of arm 32 which has a contact element 36' connected wire 36' to terminal 36a. Contact element 36' rides over an arcurate array of stationary contact points. The contact points of group 91 are designated respectively 91-1, 91-2, 91-3 etc. The contact points are connected respectively to a group 95 of relays 94. The relays in turn are connected to an indicator 98 having a pointer 99 normally centered at zero position but movable to the left to divided scale 96 or to the right to divided scale 97. The indicator 98 is connected wire 98' to terminal 98a. Indicator 98 will have a battery connected to terminals 36a, 98a in the same manner as illustrated for meter 49 in FIG. 5.

In operation of the apparatus of FIG. 13, when fork 32 is swung counterclockwise indicative of a left deviation of the flight of ball 30 indicated by arrow L, contact member 36' will move to one of contact members 92. A right deviation of the flight of the ball in direction R will result in movement of member 36' to one of contact members 91. The result will be a deflection of pointer 99 to either scale 96 or 97. If the pointer 99 has no return spring as described for the pointer of meter 49, then the pointer will remain in one of the scale divi sions to indicate quantitatively the angular deflection left or right of the free flight of the ball.

In FIGS. 14 and 15 is shown another way of mounting ball 30 instead of employing the spring steel bar 28. In this arrangement ball support member 101 has a member 103 which replaces bar 28 and performs its electrical functions in the circuit of FIG. 5. The assembly 101 is intended to provide controlled axial movement of bar 103 for operating the left-right indicating means of the apparatus shown in FIGS. 1, 3, 5 and 6. The bar 103 extends axially through one end of a cylindrical sleeve 108 secured to an arm 102 integral with a cup flange 112. The cup flange is rotatably supported on bearings 115 and is held by bolt 114, washer 116 and nut 117 in a base member 113 which is secured in a stationary position to framework 23. The base member 113 has a depressed flange portion 118 across which extends arm 102 and which limits angular rotation of arm 102. Spring means (not shown) engages arm 102 to hold bar 103 normally in a position axially parallel to the right side of case 21 as shown in FIG. 7.

Inside of sleeve 108 is an outer helical spring 105 secured between end 102-1 of the arm 102 and flanged inner end 103-1 of bar 103. Another helical spring 104 is concentric with spring 105 but is wound in opposite direction. Spring 104 is secured at one end to an axial extension 102-2 of arm 102 and at the other end to an axial extension 103-2 of arm 103. An inner helical flange 109 is provided on arm 103. This flange is located between resilient ring washers 110 and 111 seated in a compartment defined between flanges 110' and 111' formed at the outer end of sleeve 108. The washers 110, 111 will limit axial movement of arm 103. The springs 104 and 105 will cooperate if shaft 103 and ball 30 tend to rotate by resisting such axial movement. At the same time they will cooperate in permitting bar 103 to move axially and in restoring the bar 103 to the extended position showing after ball 30 is struck.

FIGS. 7-11 illustrate means for enclosing ball 30 and bar 103 in an outer shell 22 to provide and maintain the protection of the apparatus is prevented. Parts of the apparatus corresponding to that of FIGS. 1, 2, 14 and 15 are identically numbered and perform the functions described above.

Referring first to FIGS. 7-10 it will be noted that an aperture 24' is provided in front wall 22' of case 21' at the lower end of said bar 121 horizontally disposed and case 21' and is slidable through aperture 24'. An angle structure 122 is formed on the forward end of bar 121. This structure extends above and along the right side of ball 30 when bar 121 is extended. This arrangement partially encloses the ball and prevents it from being struck. Bar 103 forming part of assembly 101 is prevented from lateral movement by a fork 129 best shown in FIGS. 9 and 10. This fork has legs 128 disposed vertically and on opposite sides of bar 103. The fork has a foot 127 which bears against the underside of bar 121 and is held thereby a coil spring 126 supported on a pin 130 which also pivotally supports fork 129 at the underside of bar 121.

Fork 129 can be pivoted upwardly out of the way of bar 103 when bar 121 is retracted by means of a stationary cam 131 mounted at the underside of the top wall of casing 21. Bar 121 is contacted by legs 128 to pivot the legs up in the direction of arrow 128 being the bar 121 for lateral movement.

Bar 121 has rack gear teeth 124 formed in its right edge as viewed in FIGS. 7 and 9. These teeth are engaged by an axially vertical gear 120 driven by a motor 123 mounted inside the casing 21. Power supply terminals 58 is ganged with poles c, c' of switches CSw1 and CSw2. The circuit is arranged so that when
a coin CN of proper denomination is deposited in a suitable receptacle 152 indicated schematically, the coin will operate to close switch 69 and throw poles c, c' to contacts a, a' respectively, as indicated by arrow CC. The circuit also includes switch timing means 150 shown in block form in FIG. 11 and which operates to open switch 69 and throw poles c, c' to contacts b, b' respectively a predetermined time after the CN is deposited, so that ball 30 can be struck for a time limited by the operating time of the switch timing 150.

Suppose now that a coin is deposited in receptacle 152. Switch 60 will be closed to apply power to circuit 55. Switch poles c, c' will be thrown to contacts a, a'. Switch LSW1 will be in closed position because arm 121 is in fully extended position. Relay R11 is energized to close contacts C1, C3 of sets R11-1, R11-3 and open contacts C1', C2' of set R11-2. The motor 123 is energized via closed contacts a', c', C1', C3' of set R11-3 and a, a, and rotates in one direction to retract bar 121. As the finger 125 leaves switch LSW1 it opens but relay R11 remains energized through closed contacts of sets R11-1 and R11-2. The bar 121 retracts until finger 125 reaches switch LSW2 whereupon switch LSW2 closes and relay R12 becomes energized. This opens contacts of sets R12-2 to deenergize relay R11 and closes contacts of sets R12-1 and R12-3. The motor circuit is broken at open contacts b, c and b', c' and the arm 121 remains retracted.

The ball 30 can now be struck freely one or more times depending on the operating time of switch timing 150. The switch timer will operate to open switch 60 and close contacts b, b'. The motor will not be energized, but to run in opposite direction and extend the bar 121. When the finger 125 moves away from switch LSW2 this switch opens but relay R12 remains energized through closed contacts of sets R12-1 and R12-2. When the finger 125 reaches switch LSW1 it closes the switch, energizes relay R11 and breaks the motor circuit to stop the motor. The apparatus is now ready for deposition of another coin CN to cycle the circuit again. This arrangement prevents undesired and unauthorized use of the apparatus unless proper payment is made by deposition of a coin of certain denomination.

What I claim is:

1. An apparatus for golf practice comprising: a case having a front wall, said wall having a slot formed therein, said slot having an end, an electrically conductive bar rotatably axially movably mounted in the case and normally resting against said end, said bar having a first end extending axially out of the case through said slot at one end thereof, conductive members respectively located at the edges of said slot, a ball mounted at the outer free end of the bar and disposed to be struck by a golf club, first electrical indicating means for indicating the force with which the ball is struck, second electrical indicating means for indicating excessive high and low movement of the ball after being struck, third electrical indicating means for indicating excessive high and low movement of the ball after being struck, fourth electrical indicating means for indicating excessive left and right movement of said ball, a second conductive member disposed to be contacted by the bar near the other end of said slot, electrical signal means, fourth circuit means connecting said second conductive member and said signal means for activating said signal means when the bar contacts said second conductive member, and means for deactivating said fourth circuit means only in the event an indication is provided by any of the second and third indicating means, whereby said electrical signal means indicates travel of the ball in a perfect predetermined trajectory after being struck.

2. Apparatus as recited in claim 1, further comprising other circuit means connected in circuit with said first, second, third and fourth circuit means for keeping active the first, second and third indicating means and said signal means after actuation, and disabling means in circuit with the other circuit means to deactivate all the indicating means and signal means to condition the same for new indications and signals.

3. An apparatus for golf practice comprising: a case having a front wall, said wall having a slot formed therein, said slot having an end, an electrically conductive bar rotatably axially movably mounted in the case and normally resting against said end, said bar having a first end extending axially out of the case through said slot at one end thereof, conductive members respectively located at the edges of said slot, a ball mounted at the outer free end of the bar and disposed to be struck by a golf club, first electrical indicating means for indicating the force with which the ball is struck, second electrical indicating means for indicating excessive high and low movement of the ball after being struck, third electrical indicating means for indicating excessive high and low movement of the ball after being struck, fourth electrical indicating means for indicating excessive high and low movement of the ball after being struck, fifth electrical indicating means for indicating excessive left and right movement of said ball, a second conductive member disposed to be contacted by the bar near the other end of said slot, electrical signal means, fourth circuit means connecting said second conductive member and said signal means for activating said signal means when the bar contacts said second conductive member, and means for deactivating said fourth circuit means only in the event an indication is provided by any of the second and third indicating means, whereby said electrical signal means indicates travel of the ball in a perfect predetermined trajectory after being struck.
trial indicating means for indicating excessive right and left lateral movement of the ball with respect to said wall after the ball is struck, first movable means carried by said case and located at the other end of said slot for receiving a blow from the ball at its end of travel after being struck, second movable means inside the case responsive to radial movement of the bar relative to said bar mounting, first circuit means interconnecting said first movable means and first indicating means whereby the force with which the ball strikes said first movable means is indicated, second circuit means interconnecting said conductive members and said indicating means whereby an indication is obtained when said bar touches either conductive member during rotational movement of the bar thereby indicating excessive high and low movement of said ball, and third circuit means interconnecting said second movable means and said third indicating means whereby an indication is obtained when the bar moves radially thereby indicating excessive left and right movement of said ball, a second bar disposed adjacent the first named bar in the case, said second bar being movable lengthwise through said wall between extended and retracted positions, said second bar in its extended position being disposed to partially conceal the ball and first bar, said second bar in its retracted position exposing the ball and outer free end of the first bar, means in the case for releasably engaging the bar and preventing lateral movement thereof when the second bar is extended, and a motor in the case operatively connected to the second bar for retracting and extending the same.

5. Apparatus as recited in claim 4, further comprising a coin receptacle, other circuit means connected to said motor and responsive to deposit of a coin in said receptacle for actuating the motor to retract the second arm and release the means engaging the bar against lateral movement, and timing means operatively arranged for actuating said other circuit means to operate the motor and extends said second bar a predetermined time after the coin is deposited in said receptacle.

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