Feb. 26, 1929. 1,703,375

A. C. VOLK

GOLF INSTRUCTING APPARATUS

Filed Nov. 15, 1927 3 Sheets-Sheet 1

FIG. 1

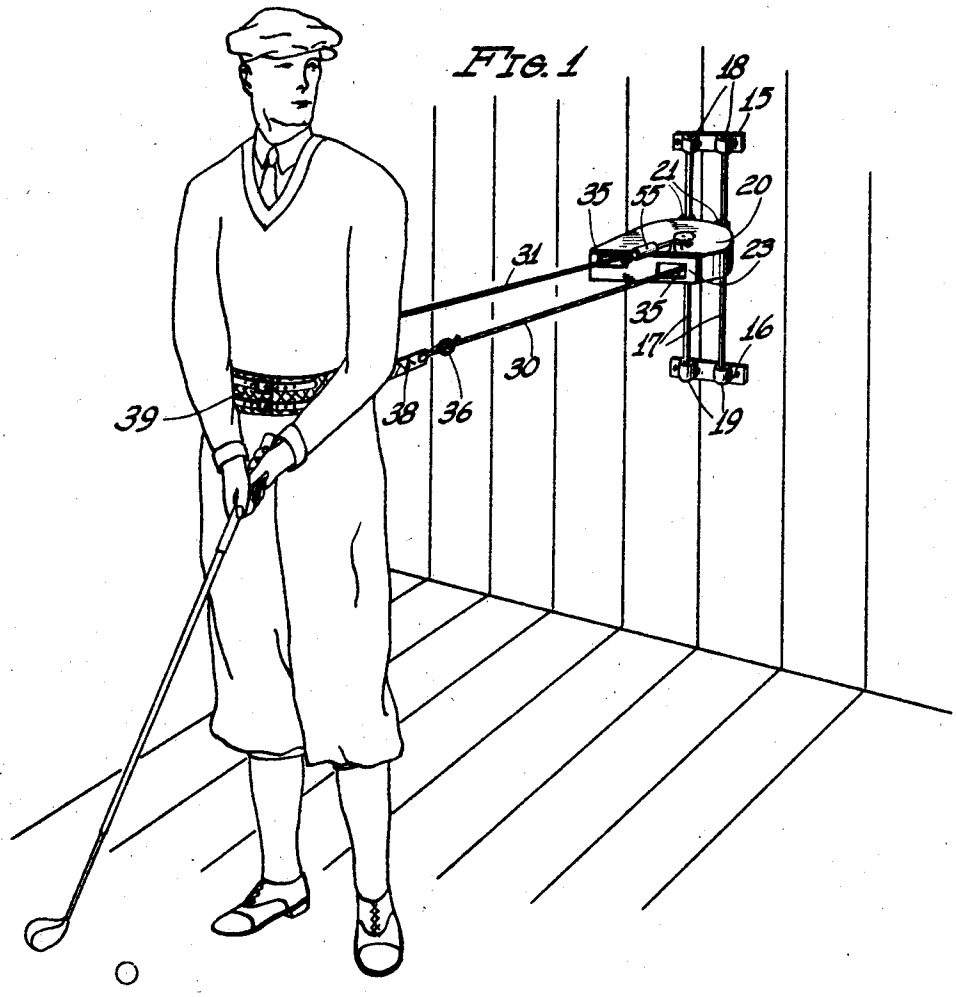
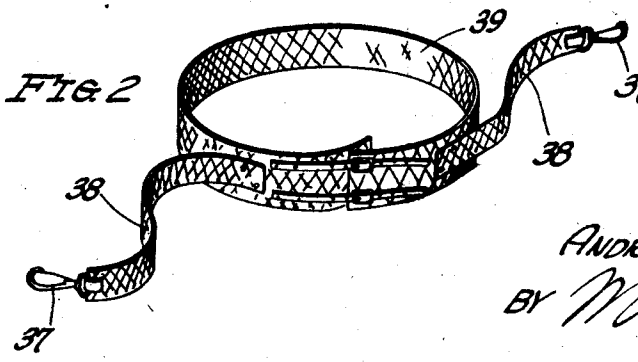


FIG 2



INVENTOR
ANDREW C. VOLK
BY Munn & Co.
ATTORNEY

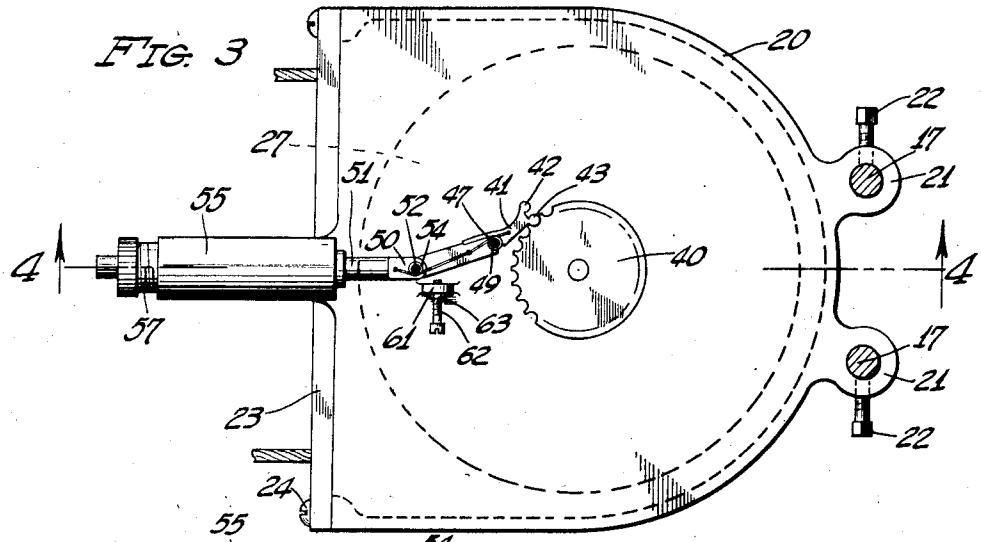
Feb. 26, 1929. 1,703,375

A. C. VOLK

GOLF INSTRUCTING APPARATUS

Filed Nov. 15, 1927 3 Sheets-Sheet 2

FIG. 3



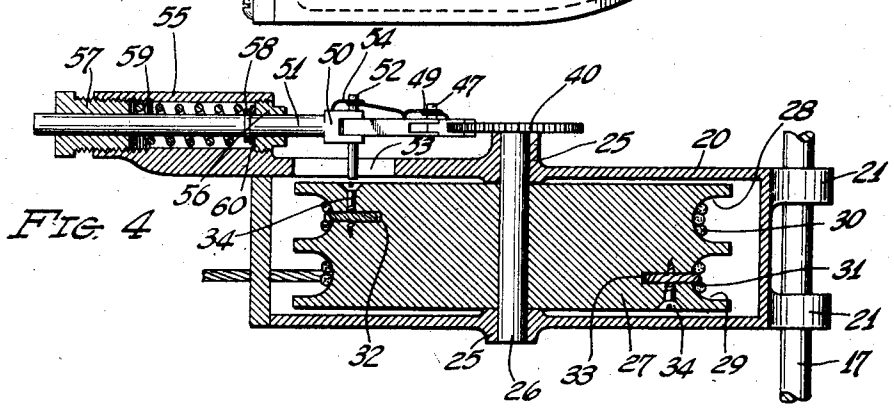


FIG. 4

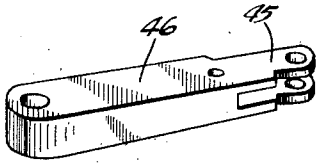


FIG. 5

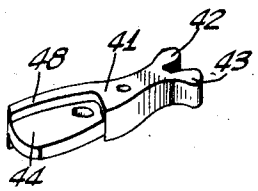


FIG. 6

INVENTOR
ANDREW C. VOLK
BY Munn & Co.
ATTORNEY

Feb. 26, 1929. 1,703,375

A. C. VOLK

GOLF INSTRUCTING APPARATUS

Filed Nov. 15, 1927 3 Sheets-Sheet 3

FIG. 7

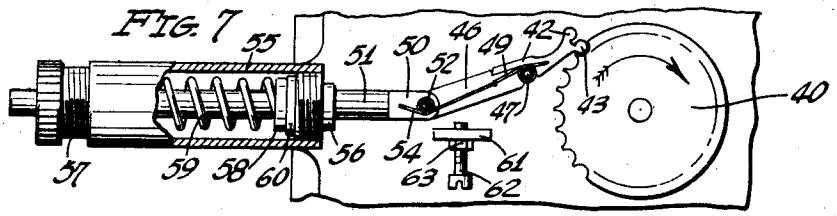


FIG. 8

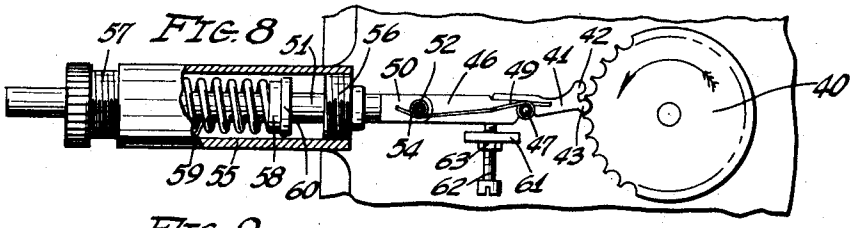


FIG. 9

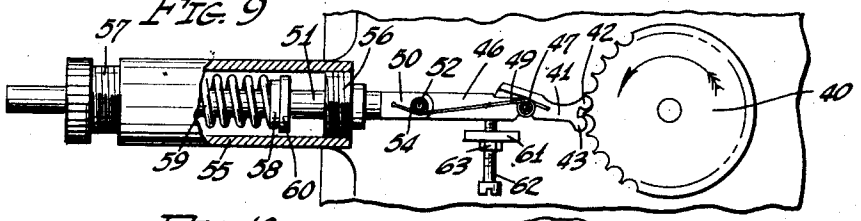


FIG. 10

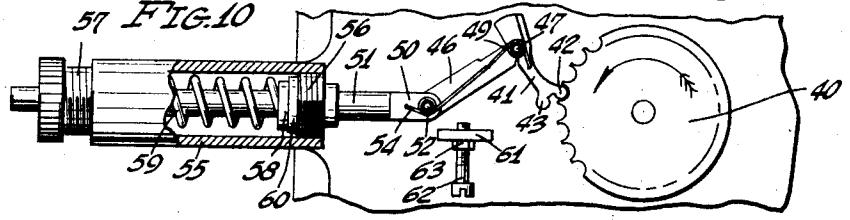


FIG. 11

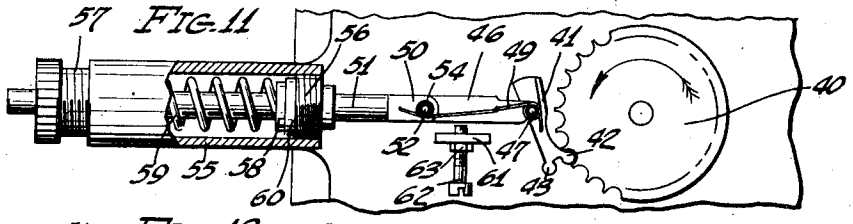
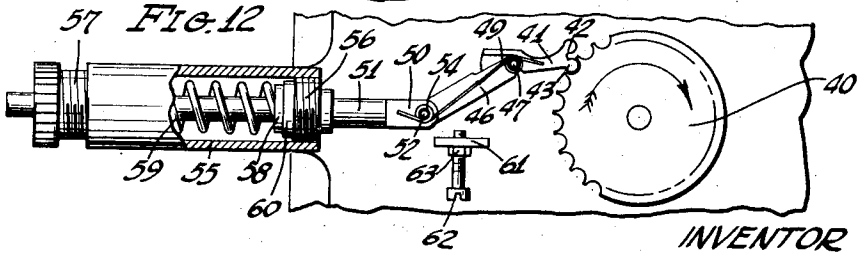


FIG. 12



INVENTOR

ANDREW C. VOLK

BY Munn & Co.

ATTORNEY

Patented Feb. 26, 1929. 1,703,375

UNITED STATES PATENT OFFICE.

ANDREW C. VOLK, OF DULUTH, MINNESOTA.

GOLF INSTRUCTING APPARATUS.

Application filed November 15, 1927. Serial No. 233,448.

My invention has reference generally to exercising apparatus and particularly, although not necessarily, to apparatus for instructing golf players in the science of the golf swing.

A common fault in the golf swing and one which strongly contributes to slicing, topping, sclaffing, and mistiming is the improper pivoting of the body in relation to the movement of the arms on the downward swing. Particularly in the full swing, as with a wooden club or a mid-iron, the natural tendency at the top of the swing is to turn the body simultaneously with downward movement of the arms. This results in the hands leading the club head in respect to the ball, producing some or all of the faults previously mentioned.

It is a purpose of my invention to provide an apparatus capable of being readily applied to the body and operating to restrain pivoting of the body in a golf swing in a manner to delay body pivoting at the top of the down swing momentarliy and just long enough to cause the arms to initiate the down swing independently of the body, that is to say, in advance of any turning movement of the body whence the proper relation is assumed of the arms, body, and club head to the perfect striking of the ball.

I will describe only one form of golf instructing apparatus embodying my invention and will then point out the novel features in claims.

In the accompanying drawings:

Fig. 1 is a view showing in perspective one form of golf instructing apparatus embodying my invention in applied position to the body and ready for use;

Fig. 2 is a detail perspective view of the belt embodied in the apparatus shown in Fig. 1;

Fig. 3 is an enlarged top plan view of the control mechanism embodied in the apparatus with the supporting rods therefor in section;

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3;

Figs. 5 and 6 are detail perspective views of the link and pawl, respectively, embodied in the mechanism shown in Figs. 3 and 4;

Figs. 7 to 12 inclusive are enlarged plan views partly in section of the pawl and ratchet device showing the various positions which it occupies during one cycle of operation of the apparatus.

In its present embodiment, my apparatus comprises a support adapted to be attached to a wall or other vertical structure, and which includes upper and lower brackets 15 and 16, and a pair of rods 17, the ends of which are received in sockets 18 and 19 on the brackets 15 and 16, respectively, whereby the rods are supported in upright and parallel spaced position. A casing 20 is mounted on the rods 17 for vertical adjustment by the provision of ears 21 slidable on the rods and capable of being locked in fixed position thereon by means of set screws 22 (Fig. 3). The casing 20 is preferably of the form shown in Fig. 3, with its flat side open but normally closed by a cover plate 23 secured in place by screws 24.

The casing 20 is provided centrally with bearings 25 in which is journaled a shaft 26, and secured to this shaft is a sheave 27 provided on its periphery with two separate and distinct annular grooves 28 and 29 in which cords 30 and 31, respectively, are trained with their inner ends secured in pockets 32 and 33, respectively, by means of screws 34, all as clearly shown in Fig. 4. The opposite ends of the cords are extended from the casing through openings 35 in the cover plate 23, their outer extremities being provided with rings 36 adapted to be engaged by snap hooks 37 secured to the ends of tangential extensions 38 of a belt 39. In the use of my invention as a golf instructing apparatus, the belt 39 is applied to the body, as illustrated in Fig. 1, and by reason of its construction it would be manifest that it may be adjusted to embrace the body with sufficient security to prevent circumferential movement thereof on the body so that it will turn with any pivotal movement of the body.

As shown in Figs. 3 and 4, the upper end of the shaft 26 has fixed thereto a ratchet wheel 40 engaged by a pawl 41 having two teeth 42 and 43. It is essential that the teeth 42 and 43 be rounded as illustrated, and that the teeth of the ratchet wheel 40 be such that the intervening recesses be rounded to receive the teeth 42 and 43. The pawl is provided with a reduced extension 44 as clearly illustrated in Fig. 6, which is disposed within the bifurcated end 45 of a link 46, a pivot pin 47 being extended through the link end 45 and the reduced portion 44 and thus providing a pivotal support for the pawl. The portion 44 is so reduced as to provide lips 48 along one edge of the pawl to engage the bifurcated end 45 and limit the pivotal movement of the pawl in

one direction and to the position shown in Fig. 3. A spring 49 is associated with the pawl and pivot pin to yieldably urge the pawl to the position shown in Fig. 3. The link 46 in turn is pivotally mounted on the bifurcated end 50 of a rod 51, a pin 52 being extended through the meeting ends of the link and rod to pivotally connect the two and into a slot 53 in the upper side of the casing 20 as illustrated in Fig. 4. A spring 54 is mounted on the pin 52 and is associated with the rod 51 and link 46 so as to yieldably urge the latter toward the ratchet wheel 40 in order to maintain the pawl 41 in engagement with the ratchet wheel. The rod 51 is movable longitudinally within the sleeve 55, cast integral with the casing 20 and closed at its opposite ends by screw plugs 56 and 57 provided with openings through which the rod 51 is extended. The rod is provided with a collar 58, and interposed between the collar and the plug 57 is an expansible spring 59 which operates to urge the rod inwardly toward the ratchet wheel. The tension of this spring in respect to the rod 51 can be varied by an adjustment of the plug 57. A washer 60 of rubber or other suitable material is mounted on the rod 51 so as to be interposed between the collar 58 and the plug 56 for the purpose of reducing wear and preventing injury to the collar and plug when the rod is driven inwardly by the spring 59. The rod is secured against any turning movement within the sleeve by reason of the pin 52 and the slot 53. Thus, the link 46 and the pawl 41 are maintained in proper operative relation to the ratchet wheel 40.

An ear 61 is formed on the upper side of the casing 20, and threaded in this ear is a set screw 62 having a lock nut 63 for securing the screw in any adjusted position. This screw is designed to limit movement of the link 46 in a clockwise direction about the pin 52 as a center, and by reason of its adjustment the movement of the link can be varied as desired for a purpose to be described hereinafter.

In practice, the belt 39 is applied to the body, preferably at a point just above the hips, as illustrated in Fig. 1, it being necessary that the belt be adjusted sufficiently tight to prevent movement thereof on the body so that any turning movement of the body will impart a corresponding movement to the belt. With the extensions 38 attached to the cords 30 and 31, the operator moves away from the casing 20 a distance sufficient to remove any slack from the cords so that the latter are extended horizontally from the casing, all as illustrated in Fig. 1. In the proper execution of the golf swing, the body pivots or turns to the right on the upswing of the club and to the left on the downswing, the left pivot exceeding in movement that of the right to complete the follow-through. With the belt 39 applied as described, it will be clear that under the pivotal movement of the body on the upswing of the club, the belt is actuated or turned circumferentially to exert a pull on the extension 38 which is transmitted to the cord 30 thereby unwinding the cord from the sheave 27 and thus rotating the latter in a clockwise direction as when viewed in Fig. 7. Simultaneously, the other extension 38 is moved rearwardly and the cord 31 wound upon the sheave 27 an amount corresponding to the unwinding of the cord 30.

At the beginning of the aforesaid turning movement of the sheave 27, the control device is in the position illustrated in Fig. 7 wherein the tooth 43 of the pawl 41 is in engagement with the ratchet wheel 40. With rotation of the sheave the ratchet wheel is likewise rotated in a clockwise direction, as indicated by the arrow, and by reason of the mounting and positioning of the pawl 41, it rides freely over the teeth of the ratchet wheel so as not to restrict rotation of the latter or the sheave 27. Thus, body pivoting during the upswing of the club is not restricted by the apparatus. Upon reaching the top of the swing pivoting of the body is reversed so as to rotate the belt 39 in the opposite direction to that rotated during the upswing. As a consequence, a pull is now exerted on the cord 31 thereby rotating the sheave 27 and the ratchet wheel 40 in a counterclockwise direction as indicated by the arrow in Fig. 8. By reason of the tangential position of the pawl 41 such rotative movement of the ratchet wheel is opposed by the pawl, but yieldingly so, and because of the mounting of the pawl. Under the pull exerted on the cord 31 the ratchet wheel moves the pawl from the tangential position shown in Fig. 7 to the radial position shown in Fig. 8. This longitudinal movement of the pawl is transmitted through the link 46 to the rod 51 moving the latter outwardly through the cylinder 55 to the position illustrated in Fig. 8. Such movement is yieldingly opposed by the spring 59, and consequently the pull exerted on the cord 31 must be sufficient to overcome the tension of the spring before the sheave can respond to permit unwinding of the cord 31. The requisite pull is sufficient to restrain or delay reverse pivoting of the body of the operator at the instant of initiating the downswing so that the arms are permitted to initiate the downswing in advance of any turning movement of the body. However, this checking in body pivoting is only momentary as, in order to properly execute the downswing, it is necessary that the body pivot to the left, but in a trailing order with respect to the downswing of the arms.

The release of the ratchet wheel from the

influence of the pawl and the consequent release of the cord 31 to remove any further restraint to pivotal movement of the body of the operator is effected by continued rotation of the ratchet wheel to swing the pawl from the position shown in Fig. 8 to that shown in Fig. 9. By reference to these figures it will be seen that the link 46 is in contact with the screw 62 thus transferring the pivot point of the pawl from the pin 52 to the pin 47. As a consequence, by continued rotation of the ratchet wheel after the link has engaged the screw the ratchet wheel will operate to swing the pawl about the pin 47 as a center. The instant the pawl passes the dead center position shown in Fig. 9, the spring 59 is released, driving the rod 51 inwardly and thus causing the link 46 and the pawl to assume the position shown in Fig. 10. In this position of the pawl it rides on the teeth of the ratchet wheel and thus offers no further hindrance to the rotation of the sheave so that the cord 31 is now free to be unwound from the sheave and the operator's body free to perform the reverse pivot to complete the golf swing.

Under continued rotation of the ratchet wheel the pawl operates to swing the link 46 to the aligned position shown in Fig. 11 in respect to the rod 51, and it is to be noted that the curvature of the adjacent side of the pawl is such as to permit the teeth of the ratchet wheel to slide freely thereover. In this new position of the pawl the tooth 42 thereof is now in engagement with the teeth of the ratchet wheel so that when the latter is rotated in a reverse direction it will operate to restore the pawl and the link to the normal position shown in Fig. 7. The manner in which this movement of the pawl is effected will be clear from a consideration of Fig. 12.

Assuming that the golf swing has been completed and it is desired to repeat the swing in order that the operator may be trained in the momentary checking of the reverse pivot to allow the arms to initiate the downswing, the club is returned to an addressing position with respect to the ball, thereby restoring the cords 30 and 31 to normal position and in so doing rotating the sheave in a clockwise direction to restore the control device to normal position. Thus the apparatus is ready for a second operation to control the body pivoting in the manner described. This momentary checking in the body pivoting accomplishes the particular result sought in this adaptation of my apparatus, and by the repeated use of the apparatus a golf player may teach himself the art of delaying body pivoting until the arms have initiated the downswing, and thereby eliminate some of the many disastrous results possible in the driving of a golf ball.

Adjustment of the spring 59 permits the pulling force required to rotate the sheave and move the control device to released position to be varied to suit a particular operator, while the screw 62 in controlling the throw of the link 46 can vary the duration of the checking or restraining action in respect to the body pivoting in order to compensate for different defective characteristics in the swing of golf players. It will be understood that by feeding the screw 62 inwardly in the direction of the link throw of the latter from the normal position shown in Fig. 7 to a position corresponding to that shown in Fig. 9, the distance to be traveled by the link will of necessity be shortened so that the time required to move the pawl 41 to the released position shown in Fig. 10 will be correspondingly shortened by reason of the fact that immediately following movement of the link into engagement with the screw that pawl is sprung to released position under continued movement of the ratchet wheel and the expansive action of the spring 59. Conversely, adjustment of the screw outwardly increases the throw of the link and consequently prolongs the checking or restraining period.

Adjustment of the belt permits the apparatus to be applied to players having different waist measurements, and by virtue of the vertical adjustability of the casing 20 on the rods 17, the apparatus can be adapted to players of different heights.

Although I have herein shown and described only one form of golf instructing apparatus embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention and the spirit and scope of the appended claims.

I claim:

1. An apparatus of the character described comprising means adapted for attachment to the body, and mechanism operatively connected to said means to momentarily restrain the body against movement in one direction and then permit the body to move in that direction.

2. An apparatus of the character described comprising means adapted for attachment to the body, and mechanism operatively connected to said means to permit freedom of movement of the body in one direction and to restrain the body against movement in another direction.

3. An apparatus of the character described comprising means adapted for attachment to the body, and mechanism operatively connected to said means to permit freedom of movement of the body in one direction and momentarily restrain the body against movement in a reverse direction.

4. A golf instructing apparatus comprising means adapted for attachment to the body to turn therewith, and mechanism operatively

connected to said means to yieldingly restrain the body against turning movement in one direction.

5. A golf instructing apparatus comprising means adapted for attachment to the body to turn therewith, and mechanism operatively connected to said means to permit freedom of turning movement of the body in one direction and to yieldingly restrain the body against turning movement in a reverse direction.

6. A golf instructing apparatus comprising means adapted for attachment to the body to turn therewith, and mechanism operatively connected to said means to momentarily restrain the body against turning movement in one direction.

7. A golf instructing apparatus comprising means adapted for attachment to the body to turn therewith, and mechanism operatively connected to said means to permit freedom of turning movement of the body in one direction and momentarily restraining the body against turning movement in a reverse direction.

8. A golf instructing apparatus comprising means adapted for attachment to the body so as to be moved by and with the body when pivoting as in swinging a golf club, and mechanism operatively connected to said means for yieldably restraining the body against pivoting at the top of the swing until downward swinging movement of the arms has been initiated.

9. A golf instructing apparatus comprising means adapted for attachment to the body so as to be moved by and with the body when pivoting as in swinging a golf club, mechanism operatively connected to said means for yieldably restraining the body against pivoting at the top of the swing until downward swinging movement of the arms has been initiated, and means for adjusting the mechanism to vary its restraining action.

10. In an apparatus of the character described, a member mounted for rotation, means for rotating the member in either direction, and means operating to yieldingly restrain the member against rotation in one direction, the last means being adjustable to vary the torque required to cause it to yield and permit rotation of the member in said direction.

11. In an apparatus of the character described, a member mounted for rotation, means for rotating the member in either direction, a ratchet wheel fixed to the member for rotation therewith, and a pawl urged into engagement with said wheel in a manner to yieldably restrain the wheel against rotation in one direction.

12. In an apparatus of the character described, a member mounted for rotation, means for rotating the member in either direction, a ratchet wheel fixed to the member for rotation therewith, a pawl pivoted to occupy one position in which it opposes movement of the wheel in one direction and another position in which the wheel is free to rotate, means for urging the pawl to the first-mentioned position, a mounting for the pawl by which it can move from the first-mentioned position to the second-mentioned position under the rotative movement of said wheel, and yieldable means connected to said mounting and operating to urge the pawl into engagement with said wheel.

13. In an apparatus of the character described, a member mounted for rotation, means for rotating the member in either direction, means operating to yieldingly restrain the member against rotation in one direction for a portion of its movement in said direction, and adjustable means controlling the last means in a manner to control the action of said restraining means in respect to said wheel.

14. An apparatus of the character described comprising a support, mechanism vertically adjustable on the support and including a sheave rotatable in either direction, cords trained in opposite directions about the sheave, a belt to which the cords are connected tangentially and at different points so that when the belt is applied to the body movement of the latter in either direction and in the plane of the belt will produce rotation of the sheave in one direction or the other, and means operating to yieldably restrain the sheave against rotation in one direction.

15. In an apparatus of the character described, a member mounted for rotation, means for rotating the member in either direction, a ratchet wheel fixed to the member for rotation therewith, a rod, a link pivoted on the rod, a pawl pivoted on the link to occupy one extreme position in which it is aligned with the link and another extreme position in which it is at an angle to the link, said pawl being yieldably urged to the last-mentioned position and in either position engaging said ratchet wheel, and means for urging said rod in such direction that the pawl will be maintained in engagement with the ratchet wheel and rotation of the latter yieldingly restrained as long as the pawl occupies the last-mentioned position.

16. In an apparatus as embodied in claim 15 wherein adjustable means is provided for controlling movement of the link in the manner and for the purpose described.

17. In an apparatus of the character described, a member mounted for rotation, means for rotating the member in either direction, and means operating to restrain the member against rotation in one direction for a portion of its movement in said direction.

18. In an apparatus of the character described, a member mounted for rotation,

means for rotating the member in either direction, and means operating to restrain the member against rotation in one direction for a portion of its movement in said direction, and then quickly releasing the member to permit unrestrained movement of the remainder of its movement.

19. A golf instructing apparatus comprising means adapted for attachment to the body so as to be moved by and with the body when pivoting as in swinging a golf club, and mechanism operatively connected to said means for yieldably restraining the body against pivoting at the top of the swing until downward swinging movement of the arms has been initiated, said mechanism including means operable by the first means for restoring the mechanism to normal position upon movement of the body to an addressing position so that when repeating the golf swing the mechanism will again act to yieldingly restrain the body against pivoting until downward swinging movement of the arms has been initiated.

20. A golf instructing apparatus comprising means adapted for attachment to the body so as to be moved by and with the body when pivoting as in swinging a golf club, mechanism operatively connected to said means for yieldably restraining the body against pivoting at the top of the swing until downward swinging movement of the arms has been initiated and means for adjusting the mechanism to vary its restraining action, said mechanism including means operable by the first means for restoring the mechanism to normal position upon movement of the body to an addressing position so that when repeating the golf swing the mechanism will again act to yieldingly restrain the body against pivoting until downward swinging movement of the arm has been initiated.

ANDREW C. VOLK.