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(54) **GAMES STROKE PRACTISING APPARATUS.**

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GB-A- 27 103
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US-A-2 737 432
US-A-3 397 892
US-A-3 595 583
US-A-4 326 718

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Description

This invention relates to games stroke practising apparatus, in general.

Particular reference will be made hereinafter to practising golf strokes, but apparatus according to this invention could be used for practising other types of games strokes, such as cricket strokes or baseball strokes.

In the past many devices have been provided for practising golf. The general aim of such devices is to enable a player to perfect the stance for addressing the ball and the swing. It is generally considered that the correct swing is performed in a single plane, called the swing plane and to date all sorts of rules for stance and body alignment have been formulated to enable a golfer to achieve the correct swing. For example those who have become successful golfers have attempted to define arbitrary rules by reference to their own body positions and feelings.

During a game of golf many different strokes are performed, often under less than ideal conditions and of course the greater the number of variables, the less the chance of performing consistently. It follows that if a constant swing can be mastered and used for all strokes, the number of variables are greatly reduced and more consistent results can be obtained. Different strokes may be played according to the situation by selecting the correct ball position relative to the player, i.e. to be hit upon the down stroke, at the bottom of the swing or on the up stroke, the correct club and the correct angle of the striking face of the club relative to the swing plane. This angle may be selectively varied to produce inswingers or outswingers.

A typical prior art device used for guiding players is shown (see GB—A—27103) in the form of a practice apparatus including a support, an elevated crank arm mounted by the support for pivotal movement about a supposed golf stroke swing axis located by the support means to pass through the upper body, neck and head of the user in a golf swing stance and substantially within the plane of symmetry of the user's upper body, and a shoulder guide supported by the crank arm assembly, which has a cranked portion spaced above the swing axis. In this known device, the crank arm extends solely between its pivotal mount on the support and the shoulder region of the user. The shoulder guide is provided by way of straps attached to the free end of the crank arm and passing over the shoulders of a player and under his armpits, whereby the user is constrained for an unnatural movement as the golf swing stroke is performed. By this form of device, the complexity of the body movement as outlined above cannot be taken into account.

In another known practice apparatus (US—A—3 595 583) including support means adapted to be associated with the user, a shoulder guide supported by the support means is formed by a harness joined to a platform through a hook and eye connection. This harness is connected with a shaft of a golf club by a shoulder bar and an arced member. In this known device, too, the harness constrains the user's houlders for movement in fixed relationship to the club shaft by the shoulder bar and the arced member, without the user's shoulders being able to pivot about any defined axis, so that there is no possibility of controlling the body for the correct golf swing movement, either.

This invention aims to alleviate the disadvantages associated with such prior art devices and to provide practising apparatus which will be reliable and efficient in use and will, in particular, guide the user's body in a predetermined way for pivotal movement about a golf stroke swing axis.

With the foregoing and other objects in view, this invention in one aspect resides broadly in practice apparatus for positioning a user in a golf stance and for guiding the user's body through a golf stroke, which practice apparatus includes support means; an elevated crank arm assembly supported by the support means for pivotal movement about a golf stroke swing axis located by the support means to pass through the upper body, neck and head of the user in a golf swing stance and substantially within the plane of symmetry of the user's body; and a shoulder guide supported by said crank arm assembly, said crank arm assembly having a cranked portion spaced above the swing axis; and is characterized in that a pivot mounting is arranged on the cranked portion; said shoulder guide is mounted on the pivot mounting for pivotal movement relative to the cranked portion about a shoulder guide pivot axis which intersects and is inclined to the swing axis; and the shoulder guide extends beneath the cranked portion for engagement with the shoulders of a user disposed in a golf swing stance In such apparatus, the shoulder guide will pivot relative to the crank arm assembly, which defines the natural golf swing axis, so that there is a proper control of the user's upper body for the correct golf swing movement as a whole, the pivotal arrangement of the shoulder guide thus enabling a player to perform a natural action-guided swing which may be repeated for consistency after practising with the apparatus.

There are various possibilities of realizing the apparatus according to the invention, which have been set out in the subclaims and are described in the following by way of detailed features:

Advantageously, the apparatus may include a hand guide assembly supported thereby for guiding movement of a player's hand in a selected motion.

The support means may be supported on a base stand assembly whereby it may be disposed to restrain a players body for movement in a selected manner. Alternatively, the support means may be associated with a harness adapted to be secured about the players body so as to support the hand guide assembly in a suitable manner. In one form, the support means is adapted for selective connection to a stand or to a body harness whereby it can be used indoors in

association with the stand to enable the player to practice strokes or connected to the body harness for outdoor practice. Of course separate practising devices could be used for both indoor and outdoor practice.

The support stand may be height adjustable to suit different players and it may include an adjustable mounting for the support means whereby the latter can be supported at various inclinations. In this respect it will be appreciated that in in the game of golf, the inclination of the swing plane varies with the length of the various club used such that a golfer stands more upright when driving, compared to putting using a relatively short club.

The hand guide assembly may be a frame fixed to the support means and adapted to provide a guide path in the swing plane along which the players hand may move when practising strokes with a club or bat or the like or it may be in the form of hand restraining means pivotally secured to the support means for movement with the hands in the desired motion. Alternatively the hand guide assembly may be in the form of a club or bat portion supported for pivotal motion in the desired manner and adapted to be grasped by the player. If desired the hand guide assembly may include sensors adapted to provide an alarm or indication when the players hands move incorrectly.

In a preferred form the support means includes an inclined pivot frame extending away from a pivotal support on the base stand and body restraining means are utilized to control pivotal movement of the upper body portion during stroking to pivotal movement about the axis of said pivotal support. The body restraining means may include, apart from the shoulder guide head location means. The axes of the crank arm and the shoulder guide may be disposed at any suitable angle to the swing plane, depending on the configuration of the stroke to be performed. If desired the shoulder guide may be universally mounted. It may be adapted to pivot freely about its mounting on the inclined crank arm or it may pivot in a controlled manner relative to pivotal movement of the crank arm. Preferably the latter is mounted on a bearing assembly adjustably secured to an arcuate guide frame on the base stand whereby the angle of inclination of the swing plane axis may be selectively varied and there being provided height adjustment means on the guide frame. If desired the arcuate guide frame may be formed concentrically about the intersection of the central pivot axis and the inclined axis.

In order that the present invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings which illustrate preferred embodiments of the invention, wherein:—

Figure 1 is a side view of a preferred form of practising apparatus made according to one aspect of the present invention;

Figure 2 is a corresponding view illustrating the apparatus with the player in the backswing position;

Figure 3 is a view of the apparatus from the opposite side and illustrated with the player in the follow through position;

Figure 4 is a rear view of the apparatus with the player in the follow through position;

Figure 5 is a front view of an alternate form of the invention, and

Figure 6 illustrates a further embodiment of the invention.

Figure 7 is a perspective view illustrating an arm restraint mechanism for use with the various embodiments of this invention.

Referring to Figures 1 to 4 it will be seen that the practising apparatus 10 comprises a base stand assembly 11 including a base board 11a upon which a player can stand and which supports a vertical post 12 having clamping means 13 at its upper end for adjustably securing a curved guide rail 14 integral with a stem 14a which engages telescopically in the post 12. An adjustable bearing mount 15 is slidable along the guide rail 14 and it is provided with lever operated eccentric clamping means 16 for securing it in any selected position along the curved guide rail 14 such that the inclination of the bearing mount may be varied. The inclination of an axis 19 of the bearing mount 15 may be read directly from the scale marked on the guide rail 14. Furthermore the centre of curvature of the rail is at a point 9 on the axis 19 such that the height of this point does not vary with adjustments in the inclination of the bearing mount 15. If desired the guide rail 14 could be provided with a rack engaged by a hand wheel operated pinion on the mount 15 whereby the hand wheel could be rotated to move the mount 15 along the rail 14.

The bearing mount 15 supports a stub axle 17 on which a hub 18 is supported by suitable bearings. The hub 18 supports a crank arm 20 which extends away from the rail 14 to support a head cap locator 21 and an adjustable pivotal mounting 22 for a hand guide assembly 23. The arm 20 also provides an intermediate mounting for a fixed cross club guide bar 24 substantially in a swing plane 8 and a pivot mounting for the shoulder yoke 25. The latter includes a cross bar 26 having curved shoulder straps 27 at each end and adapted to rest about a players shoulder. It will be seen that the hand guide assembly 23 maintains the hands in the swing plane 8 disposed at right angles to the pivot axis 19 and that an axis 28 of the shoulder yoke pivot mounting 29 intersects the axis 19 at the point 9, being the point of intersection between the inclined axis 19 and the swing plane 8. Thd head locator 21 includes a cap portion 30 which is mounted on a hub 31 for reciprocation along the axis 19 against a spring bias to provide adjustment for different players.

The hand guide assembly 23 is pivotable about an axis 32 spaced from but parallel to the axis 19 whereby a curved hand abutment bar 33 carried at the free end of the guide 23 will pivot in the

swing plane 8. The guide 23 includes a top mounting portion 34 which may move through the releasable mounting 29 for adjustment to suit various players arm lengths. Also if desired a supporting member 35 may be pivotally secured at 36 to the hub 31 whereby the angle of the swing plane, in which the hand guide assembly 23 moves, relative to the inclined axis 19 may be selectively varied to non-parallel positions with respect to the axis 19.

The shoulder yoke 25 may be connected by a first pair of cables 37 extending from a respective side of the yoke 25 about guide pulleys 38 to a fixed point on the mounting 15 such that pivotal movement of the arm 20 about the stub axle 17 will cause the shoulder yoke 25 to pivot. A second pair of cables 39 may pass from opposite sides of the yoke 25 about pulleys 40 to the mounting 22 from the guide 23, whereby pivotal movement of the yoke 25 relative to the arm 20 will cause the hand guide 23 to pivot about its support axis 32. It will be seen that a central bar 41 of the hand guide assembly extends beyond the curved hand abutment bar 33 to provide a stop against which the players hands may be restrained. During initial practice, the cables 37 are connected to the yoke 25 in order to provide a positive guide to the pivotal co-ordination between movement of the shoulders and the body during practice. At the same time the cables 39 cause the hand guide assembly 23 to move in co-ordination with the shoulder yoke 25. This arrangement causes the yoke 25 to pivot about its inclined axis 28 in controlled manner as the players upper body portion swivels between the back swing position and the follow through position, causing the arm 20 to pivot about its support axis to opposite sides of the central position illustrated in Figure 1.

If desired the device can be used effectively without either or both sets of cables secured. Additionally, the distance of the points of connection of the cables on the shoulder yoke 25 may be varied to achieve the desired relative pivotal movements between the arm 20 about the inclined axis 19, the pivoting of the shoulder yoke 25 and the pivoting of the hand guide assembly 23. The hand abutment bar 33 may be adapted for attachment of removable extension pieces thereto. Because the abutment bar 33 moves in the swing plane, such extension pieces could be adapted to extend into the path of the club head to provide a further indication or guide for performing the stroke in the swing plane. The extension pieces could be of any desired shape or form to provide coincidence with the club head or shaft at desired stations along the club swing path. The extension pieces could be fitted to either end of the abutment bar 33. Such extension pieces could be used for example, for slow motion training.

The practising apparatus 10 also provides a leg guide bar 42 having a hooked outer end portion 43 which extends about the appropriate leg to ensure the correct stance, as illustrated. The bar 42 may be supported adjustably at either side of the post 12 for use by left or right hand players. As will be seen in Figures 2 to 4 the cross club guide bar 24 provides a guide or stop for the club shaft in the backswing and follow-through positions.

In use, adjustment of the bearing mount 15 along the guide rail 14 will vary the inclination of the guide plane but it will not vary the height of the point of intersection 9 of the axes 19 and 28 which will remain a fixed position reference for the players body. Of course the radius of the guide rail 14 may be varied from that illustrated. For example the radius of the rail or the form of its curve may be arranged whereby the shoulder yoke 25 is elevated as the apparatus is adjusted for use with longer clubs.

When practising, the player first adopts a stance position as illustrated in Figure 1. The player then pivots to the backswing position as shown in Figure 2 with the hands held against the hand abutment bar 33 and the extension of the central bar 41 and with the club shaft abutting the club guide bar 24. The player then performs a stroke whereby the body pivots to the opposite side as shown in Figures 3 and 4 with the club shaft abutting the opposite portion of the club guide bar 24. During this action the upper body portion is restrained for pivotal movement about the swing plane axis 19, the shoulders pivot about a fixed axis 28 relative to the swing plane axis 19 and the hands move in the swing plane 8. Accordingly, it will be seen that the players hands and shoulders are controlled for movement about a fixed swing axis 19 and by practising strokes guided by the apparatus 10 a player will learn to swing accurately in a controlled manner about a single swing axis such that the player may concentrate on placement of the ball, club choice and angle of strike to achieve the desired stroke. Also if desired the base board 11a may provide indications 44 for feet placement, so that the players feet are correctly placed relative to the ball target. The device can be used with a target ball such as squash ball or without a target ball if desired. The latter could be associated with sensing apparatus to provide an indication of the distance and/or direction of the probable ball motion resulting from a practice stroke.

If desired the shoulder yoke assembly 25 could be interconnected with either or both the bearing mount 15 and the hand guide assembly 23 by suitable mechanical linkages or with gear linkages in lieu of the cable linkages illustrated.

Referring to Figure 5 it will be seen that the apparatus is generally similar to the previously described embodiment except that the swing plane swing assembly 50 comprises a rigid frame having a top rail 51 fixed to the pivot arm 20 and which acts as a club shaft guide bar, and a curved guide rail 52 integral with the rail 51 and along which the players hands may move for guided movement in the swing plane. For this purpose the mounting 53 for securing the rail 51 to the pivot arm 20 is adjustable for pivotal movement about the rail 51 whereby the inclination of the swing plane relative to the upper body pivot axis 19 may be varied as well as for movement along

the arm 20. An intermediate rail 54 is provided for forearm guidance. In use, the players hands move in abutting relationship along the curved rail 52 for motion in the swing plane.

The practising apparatus described in the above embodiments may be used for right and left hand golfers. In order to convert the apparatus illustrated in Figures 1 to 5 for left hand practice the leg guide is swapped to the opposite side of the stem so as to hold the left leg in the correct attitude. The leg bar 42 is fully adjustable as illustrated.

In both the above described embodiments the club is held freely by the player. However in the embodiment illustrated in Figure 6, the swing plane guide assembly 60 supports a golf club handle simulator 61 for movement in the desired swing plane. This is achieved by forming the guide assembly 60 in two parts which are pivotally connected together at 62. One end of the assembly 60 connects pivotally at 63 to the inclined arm 64 while the opposite end connects pivotally to the handle 61. These pivotal connections are arranged for pivotal movement about parallel axes whereby the handle 61 is restrained for movement in the desired swing plane. Furthermore, it will be seen that the inclined arm 64 is supported fixedly by an adjustable pivot mounting 65 and that a shoulder yoke assembly 66 and the head locator can pivot about an axes parallel to the pivot axes of the swing plane guide assembly. Height adjustment of the shoulder yoke 66 is adjustable independently of the pivot mounting 65 by relative movement of the two part adjustor 67 mounted between the pivot mounting 65 and the yoke 66.

Figure 7 illustrates an arm restraint assembly 70 which may be attached to either side of the shoulder yoke 25, as shown in dotted outline in Figure 1, for movement therewith and adapted to prevent lifting of the elbow of the rear arm when the latter is moved to the backswing position and to guide movement of the arm through the stroke. For this purpose the restraint assembly includes a slotted mounting bracket 71 which may be secured to the cross bar 26 by engagement of a slot 72 about studs 73 fixed to the cross bar 26. The bracket 71 may be clamped in the selected position by tightening finger nuts 74 when the bracket 71 is positioned to suit the user. The bracket 71 includes an arm 75 which is cranked forwardly and downwardly to provide a pivotal mounting for the guide assembly 76.

As illustrated, the guide assembly 76 includes a central support strut 77 and a curved arm saddle 78 which in use engages about the upper portion of the player's arm. The guide assembly 76 is pivotable about the axis 79 which extends parallel to the shoulders whereby in use the upper arm portion including the elbow is restrained for movement in a plane at right angles to the shoulders. The upper end of the support strut 77 is provided with an adjustable stop 80 adapted to limit rearward movement of the guide assembly 76. If desired a counterweight may be fitted to the opposite end of the shoulder yoke 25 to balance the weight of the restraint assembly 70. Apertures 81 in the cross bar 26 provide alternate mountings for the cables 37 and 39 whereby the relative pivotal movement between the support stand, the shoulder yoke 25 and the hand guide assembly 23 may be varied to suit individual requirements.

In a further aspect of this invention the support means is supported by a universal joint so that it can pivot and rotate freely to follow the players movements and sensing means are provided to monitor the movements. The shoulder yoke may also pivot freely and be provided with monitoring means. The univesal joint may be provided with locking means to enable the practising apparatus to be used as described above, or after a player has gained confidence in his stance and swing he may unlock the universal joint and other constraints, switch on the monitoring apparatus and play some strokes. The apparatus will not guide the player but the monitoring apparatus will show up variations from the ideal stroke thus a player may use the apparatus to correct faults in play. The monitoring apparatus may be electronic or mechanical as appropriate.

The practising apparatus described above may also incorporate guide means for the lower body portion. This could be in the form of a hip yoke or rest mounted for adjustment to suit various players and pivotable about both horizontal and vertical axis so that the hip yoke is guided for the desired movement. The pivotal mountings for the hip yoke may be formed by linkages to enable preselected movement, other than circular, to be achieved by the hip yoke. Such pivot assemblies could also be used elsewhere in the apparatus to achieve any desired guiding motion. In a simple form the hip yoke could be supported for pivotal movement about a horizontal axis at the upper end of an arm pivotally secured to the base for movement about an upwardly extending axis.

The practising apparatus may also be used to assist golfers to determine correct club lengths when purchasing new clubs since the club lengths may be arranged so as to maintain the stance dictated by the practising apparatus.

It will of course be understood that the above has been given by way of illustrated example only and all such modifications and variations thereto as would be apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of the invention as defined in the appended claims.

Claims

1. Practice apparatus (10) for positioning a user in a golf stance and for guiding the user's body through a golf stroke, said practice apparatus (10) including support means (11);

an elevated crank arm assembly (20; 64) supported by the support means (11) for pivotal movement about a golf stroke swing axis (19) located by the support means (11) to pass through the upper body, neck and head of the

user in a golf swing stance and substantially within the plane of symmetry of the user's upper body;

and a shoulder guide (25; 66) supported by said crank arm assembly, said crank arm assembly (20; 64) having a cranked portion (20a) spaced above the swing axis (19);

characterized in that a pivot mounting (29; 53; 63) is arranged on the cranked portion (20a);

said shoulder guide (25; 66) is mounted on the pivot mounting (29, 63) for pivotal movement relative to the cranked portion (20a) about a shoulder guide pivot axis (28) which intersects and is inclined to the swing axis (19); and

the shoulder guide (25) extends beneath the cranked portion (20a) for engagement with the shoulders of a user disposed in a golf swing stance.

2. Practice apparatus (10) as claimed in Claim 1, characterized in that the support means (11), the crank arm assembly (20) and the shoulder guide (25) are interconnected by a linkage (37) whereby the shoulder guide (25) is constrained to pivot about the shoulder guide pivot axis (28) as the crank arm assembly (20) pivots about the golf stroke swing axis (19).

3. Practice apparatus (10) as claimed in Claim 2, characterized in that the linkage includes a pair of cables (37) fixed to the support means (11) and to the shoulder guide (25) at respective positions spaced from said shoulder guide pivot axis (28) and at opposite sides thereof.

4. Practice apparatus (10) as claimed in Claim 2 or 3, characterized in that the shoulder guide pivot axis (28) intersects with the golf stroke swing axis (19) adjacent the centre of a user's golf stroke swing plane.

5. Practice apparatus (10) as claimed in any one of Claims 1 to 4, characterized in that a hand guide assembly (23) is connected pivotally to the crank arm assembly (20) and extends downwardly therefrom to guide a player's hand for movement in a selected motion about the golf stroke swing axis (19).

6. Practice apparatus (10) as claimed in Claim 5, characterized in that the hand guide assembly (23) is linked by linkages (39) to the shoulder guide (25) whereby the hand guide assembly (23) is controlled for pivotal movement relative to pivotal movement of said shoulder guide (25).

7. Practice apparatus (10) as claimed in Claim 6, characterized in that the crank arm assembly (20) extends forwardly beyond the head position of a user and beyond the golf stroke swing axis (19) to provide an adjustable pivotal mounting (22) for the hand guide assembly (23).

8. Practice apparatus (10) as claimed in any one of Claims 5 to 7, characterized in that the hand guide assembly (23) is provided in the form of a swing plane guide assembly (60) and supports a golf club handle simulator (61).

9. Practice apparatus (10) as claimed in any one of the preceding claims, characterized in that the support means (11) includes an adjustable base stand assembly (12, 13, 14) whereby the height of the crank arm assembly (20) may be selectively varied.

10. Practice apparatus (10) as claimed in any one of the preceding claims, characterized in that the crank arm assembly (20) is pivotally connected to the support means (11) whereby the crank arm assembly (20) may be pivoted selectively about a horizontal axs (9) transverse to the golf stroke swing axis (19), which transverse horizontal axis (9) intersects the golf stroke swing axis (19) at a position substantially coincident with the point of intersection of the golf stroke swing axis (19) and the pivot axis (28).

Patentansprüche

1. Übungsgerät zum Aufstellen eines Benutzers in einem Golfstand und zum Führen des Benutzerkörpers während eines Golfschlags, wobei das Gerät Stützmittel (11);

eine von den Stützmitteln (11) getragene erhöhte Kurbelarmanordnung (20; 64) zur Schwenkbewegung um eine durch die Stützmittel (11) unter Passieren von Oberkörper, Hals und Kopf des Benutzers in einem Golfschwung-Stand und im wesentlichen innerhalb der Symmetrieebene des Oberkörpers des Benutzers festgelegte Golfschlag-Schwungachse (19);

und eine von der Kurbelarmanordnung getragene Schulterführung (25; 66) umfaßt, wobei die Kurbelarmanordnung einen über der Schwungachse (19) zu dieser beabstandeten Kröpfteil (20a) aufweist;

dadurch gekennzeichnet, daß

an dem Kröpfteil (20a) ein Schwenklager (29; 53; 63) angeordnet ist;

die Schulterführung (25; 66) an dem Schwenklager (29, 63) zur Schwenkbewegung relativ zu dem Kröpfteil (20a) um eine Schulterführung-Schwenkachse (28) gelagert ist, die die Schwungachse (19) schneidet und zu dieser geneigt ist; und

die Schulterführung (25) sich unterhalb des Kröpfteils (20a) zwecks Angreifens an den Schultern eines in einem Golfschwung-Stand befindlichen Benutzers erstreckt.

2. Übersgerät (10) nach Anspruch 1, dadurch gekennzeichnet, daß die Stützmittel (11), die Kurbelarmanordnung (20) und die Schulterführung (25) durch eine Verbindung (37) miteinander verbunden sind, wodurch die Schulterführung (25) gezwungen ist, um die Schulterführung-Schwenkachse (28) zu schwenken, wenn die Kurbelarmanordnung (20) um die Golfschlag-Schwungachse (19) schwenkt.

3. Übungsgerät (10) nach Anspruch 2, dadurch gekennzeichnet, daß die Verbindung ein Paar Seile (37) umfaßt, die mit den Stützmitteln (11) und der Schulterführung (25) an jeweils zu der Schulterführung-Schwenkachse (28) beabstandeten Stellen und an aneinander gegenüberliegenden Seiten derselben befestigt ist.

4. Übungsgerät (10) nach Anspruch 2 oder 3, dadurch gekennzeichnet, daß die Schulterführung-Schwenkachse (28) die Golfschlag-

Schwungsachse (19) nahe der Mitte einer Golfschlag-Schwungebene des Benutzers schneidet.

5. Übungsgerät (10) nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß eine Handführungsanordnung (23) schwenkbar mit der Kurbelarmanordnung (20) verbunden ist, und sich von dieser nach unten erstrecekt, um die Hand eines Spielers zur Bewegung in bestimmten Bewegungsablauf um die Golfschlag-Schwungsachse (19) zu führen.

6. Übungsgerät (10) nach Anspruch 5, dadurch gekennzeichnet, daß die Handführungsanordnung (23) durch Bindungen (39) mit der Schulterführung (25) verbunden ist, wodurch die Handführungsanordnung (23) zur Ausführung einer Schwenkbewegung entsprechend der Schwenkbewegung der Schulterführung (25) kontrolliert ist.

7. Übungsgerät (10) nach Anspruch 6, dadurch gekennzeichnet, daß die Kurbelarmanordnung (20) sich nach vorn über die Kopfposition eines Benutzers und über die Golfschlag-Schwungachse (19) hinaus erstreckt, um eine einstellbare Schwenklagerung (22) für die Handführungsanordnung (23) zu schaffen.

8. Übungsgerät (10) nach einem der Ansprüche 5 bis 7, dadurch gekennzeichnet, daß die Handführungsanordnung (23) in Form einer Schwungebene-Führungsanordnung (60) vorgesehen ist und einen Golfschlägerhandgriff-Simulator (61) trägt.

9. Übungsgerät (10) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Stützmittel (11) eine einstellbare Grundstandanordnung (12, 13, 14) umfassen, wobei die Höhe der Kurbelarmanordnung (20) wahlweise veränderbar ist.

10. Übungsgerät (10) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Kurbelarmanordnung (20) schwenkbar mit den Stützmitteln (11) verbunden ist, wodurch die Kurbelarmanordnung (20) wahlweise um eine quer zur Golfschlag-Schwungachse (19) verlaufende Horizontalachse (9) schwenkbar ist, die die Golfschlag-Schwungachse (19) an einer Stelle schneidet, die im wesentlichen mit dem Schnittpunkt der Golfschlag-Schwungachse (19) und der Schwenkachse (28) zusammenfällt.

Revendications

1. Appareil d'entraînement (10) pour positionner un utilisateur dans une posture de golf et pour guider le corps de l'utilisateur au cours d'un coup de golf, ledit appareil d'entraînement (10) comportant un moyen formant support (11);

un ensemble de bras coudé surélevé (24; 64) supporté par le moyen formant support (11) en vue d'un mouvement de pivotement autour d'un axe de swing de coup de golf (19) fixé par le moyen support (11) pour passer à travers la partie supérieure du corps, le coup et la tête de l'utilisateur dans une posture de swing de golf et sensiblement dans le plan de symétrie de la partie supérieure du corps de l'utilisateur;

et un guide d'épaule (25; 66) supporté par ledit ensemble de bras coudé, ledit ensemble de bras coudé (20; 64) comportant une partie coudée (20a) espacée au-dessus de l'axe de swing (19);

caractérisé en ce que

un montage à pivot (29; 53; 63) est disposé sur la partie coudée (20a);

ledit guide d'épaule (25; 66) est monté sur le montage à pivot (29; 63) en vue d'un mouvement de pivotement par rapport à la partie coudée (20a) autour d'un axe de pivotement de guide d'épaule (28) qui coupe l'axe de swing (19) et est incliné par rapport à celui-ci; et

le guide d'épaule (25) s'étend en dessous de la partie coudée (20a) pour coopérer avec les épaules d'un utilisateur qui se trouve dans une posture de swing de golf.

2. Appareil d'entraînement (10) tel que revendiqué à la revendication 1 caractérisé en ce que le moyen support (11), l'ensemble de bras coudé (20) et le guide d'épaule (25) sont interconnectés au moyen de dispositifs de connexion (37) de sorte que le guide d'épaule (25) est contraint à pivoter autour de l'axe de pivotement du guide d'épaule (28) lorsque l'ensemble de bras coudé (20) pivote autour de l'axe de swing d'un coup de golf (19).

3. Appareil d'entraînement (10) tel que revendiqué à la revendication 2 caractérisé en ce que la liaison comporte une paire de câbles (37) fixés au moyens support (11) et au guide d'épaule (25) à des positions respectives espacées par rapport à l'axe de pivotement du guide d'épaule (28) et selon des côtés opposés de celui-ci.

4. Appareil d'entraînement (10) tel que revendiqué à la revendication 2 ou à la revendication 3 caractérisé en ce que l'axe de pivotement du guide d'épaule (28) coupe l'axe de swing d'un coup de golf (19) au voisinage du centre d'un plan de swing d'un coup de golf de l'utilisateur.

5. Appareil d'entraînement (10) tel que revendiqué dans l'une quelconque des revendications 1 à 4, caractérisé en ce qu'un ensemble formant guide de mains (23) est connecté en pivotement à l'ensemble de bras coudé (20) et s'étend vers le bas à partir de celui-ci pour guide la main d'un joueur en vue de sont mouvement d'une façon choisie autour de l'axe de swing d'un coup de golf (19).

6. Appareil d'entraînement (10) tel que revendiqué à la revendication 5 caractérisé en ce que l'ensemble formant guide de mains (23) est reliée par des liaisons (39) au guide d'épaule (25) de sorte que l'ensemble de guidage de mains (23) se trouve commandé en vue de son mouvement de pivotement par rapport au mouvement de pivotement du guide d'épaule (25).

7. Appareil d'entraînement (10) tel que revendiqué à la revendication 6 caractérisé en ce que l'ensemble de bras coudé (20) s'étend vers l'avant au delà de la position de la tête d'un utilisateur et au delà de l'axe de swing d'un coup de golf (19) pour fournir un montage pivotant réglable (22) pour l'ensemble de guidage de mains (23).

8. Appareil d'entraînement (10) tel que revendi-

qué dans l'une quelconque des revendications 5 à 7, caractérisée en ce que l'ensemble de guidage de mains (23) est conçu sous la forme d'un ensemble de guidage de plan de swing (60) et supporte un simulateur de manche de club de golf (61).

9. Appareil d'entraînement (10) tel que revendiqué dans l'une quelconque des revendications précédentes caractérisée en ce que le moyen support (11) comporte un ensemble formant plaque de base adjustable (12, 13, 14) de sorte que la hauteur de l'ensemble de bras coudé (20) puisse être modifiée de façon sélective.

10. Appareil d'entraînement (10) tel que revendiqué dans l'une quelconque des revendications précédentes caractérisé en ce que l'ensemble de bras coudé (20) est relié en pivotement au moyen support (11) de sorte que l'ensemble de bras coude (20) puisse pivoter de façon sélective autour d'un axe horizontal (9) transversal par rapport à l'axe de swing de coup de golf (19), lequel axe horizontal transversal (9) coupe l'axe de swing de coup de golf (19) en une position sensiblement coïncidant avec le point d'intersection de l'axe de swing de coup de golf (19) et l'axe de pivotement (28).

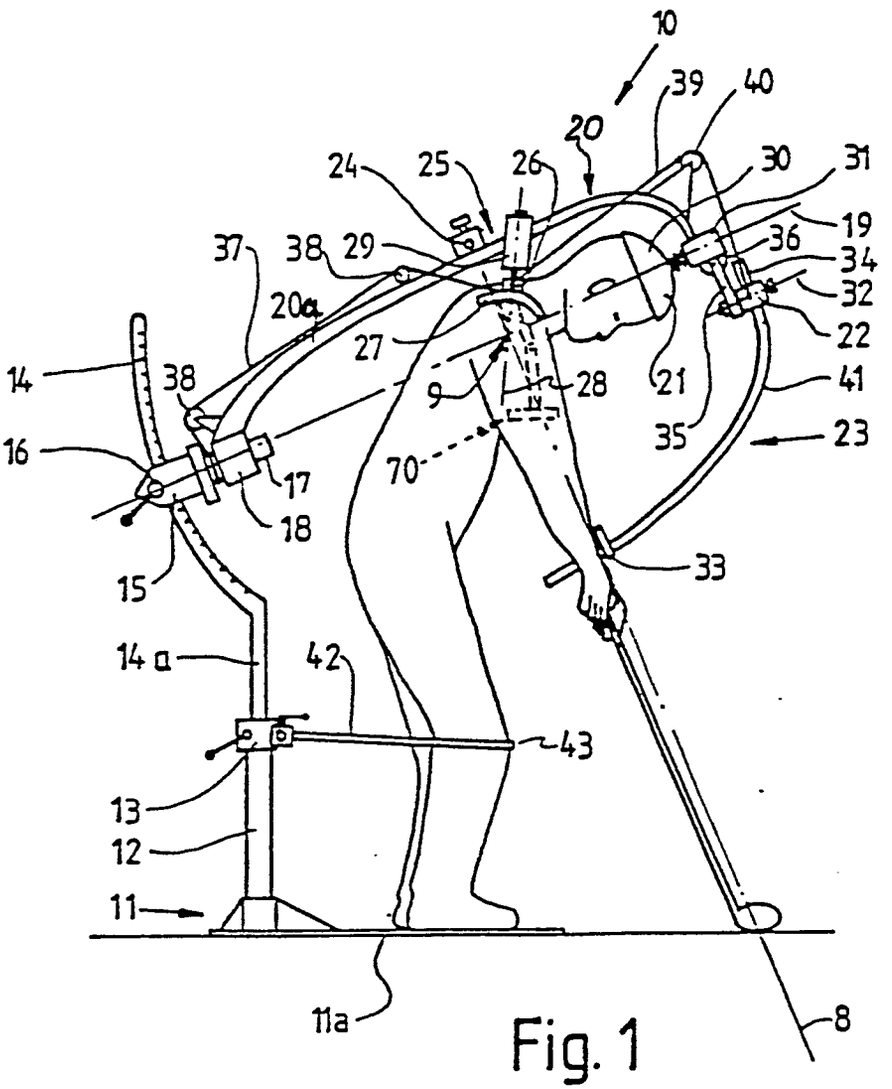

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Fig. 1

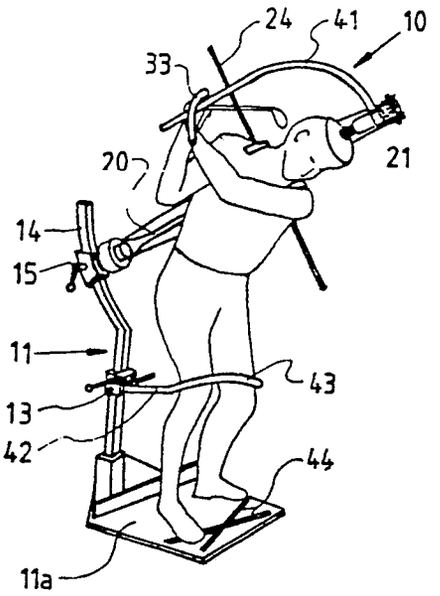


Fig. 2

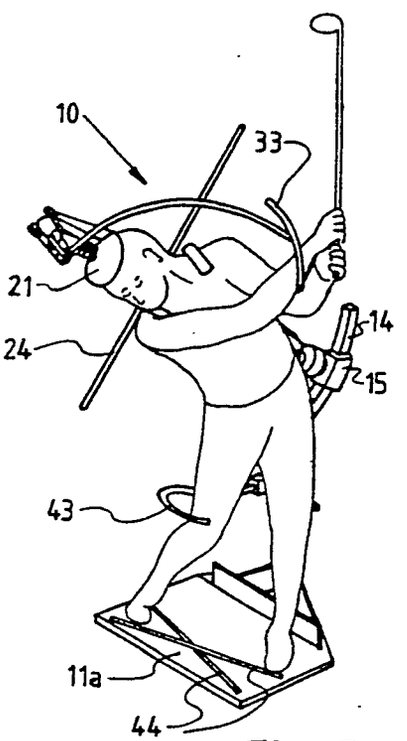


Fig. 3

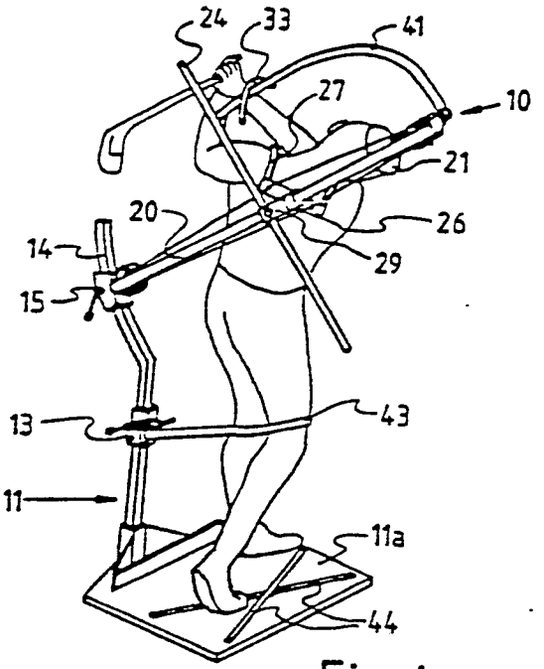


Fig. 4

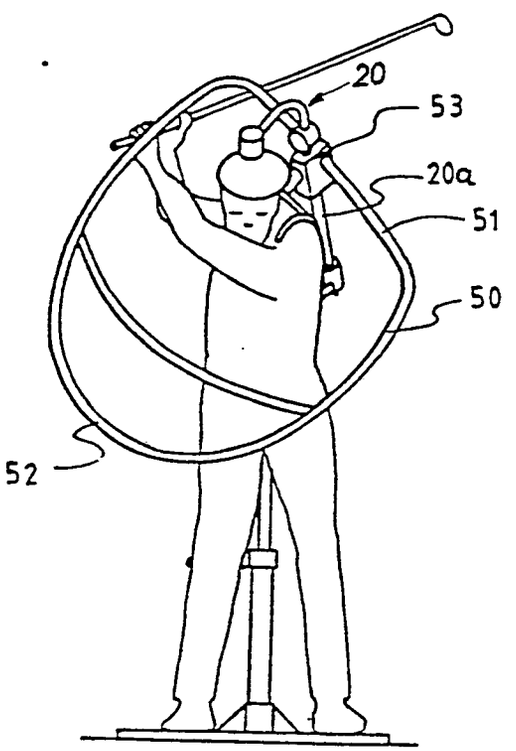


Fig. 5

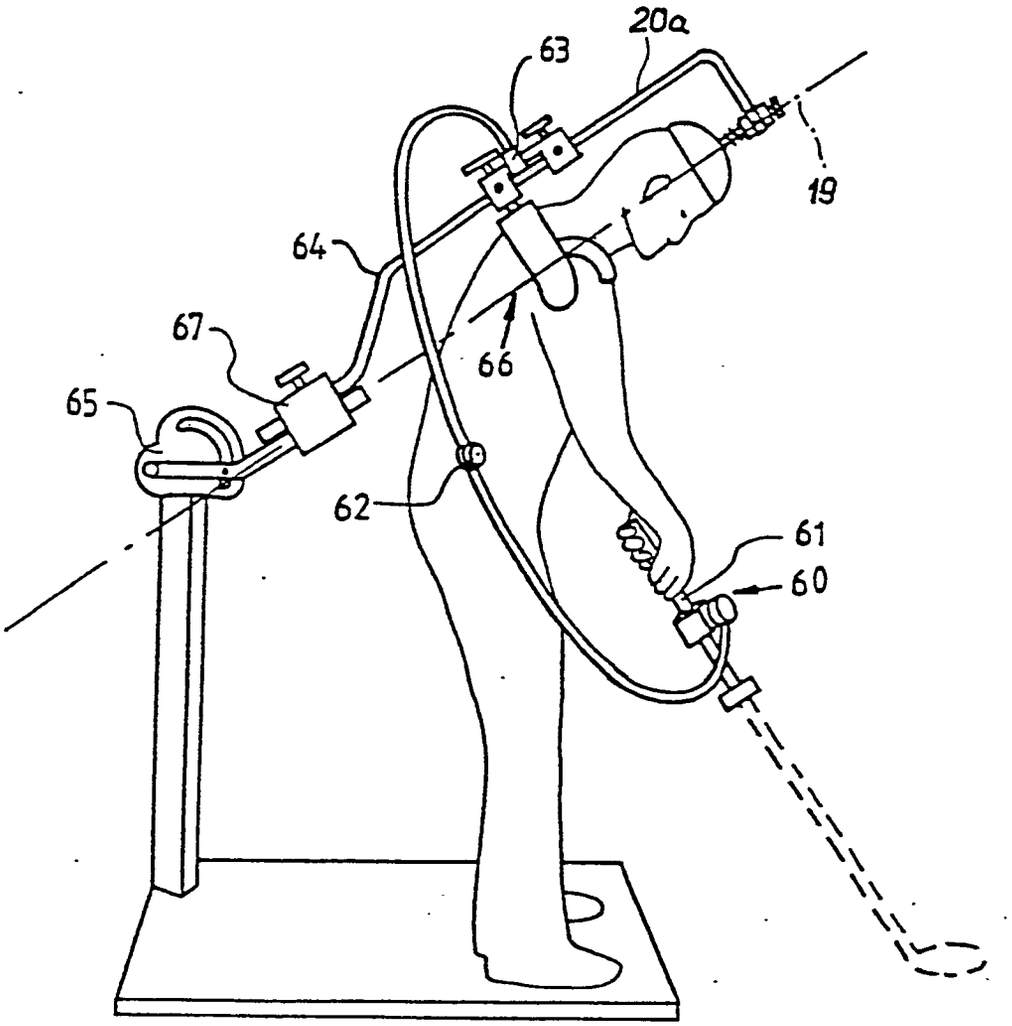


Fig. 6

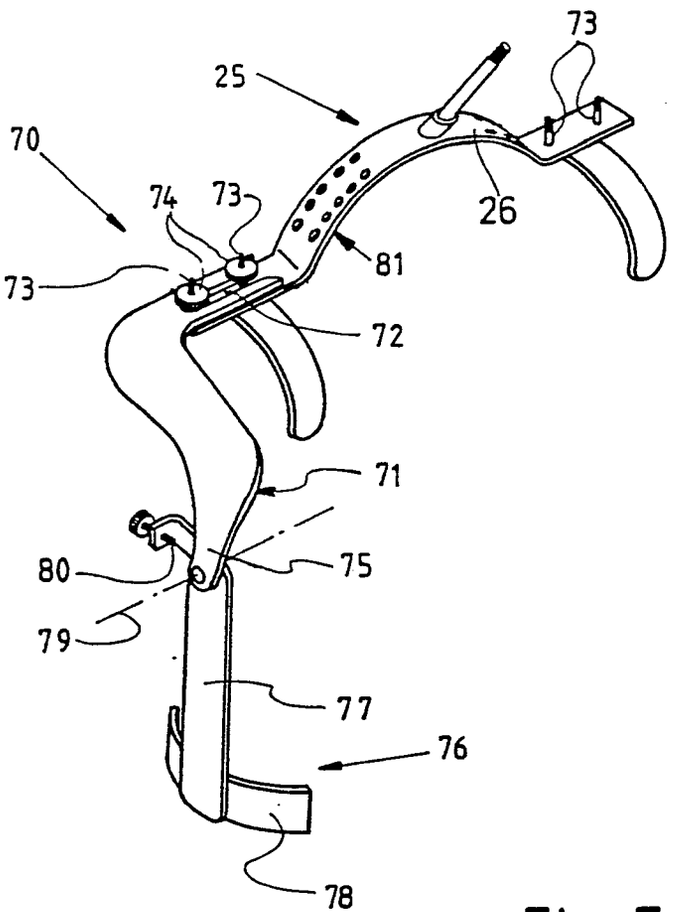


Fig. 7