

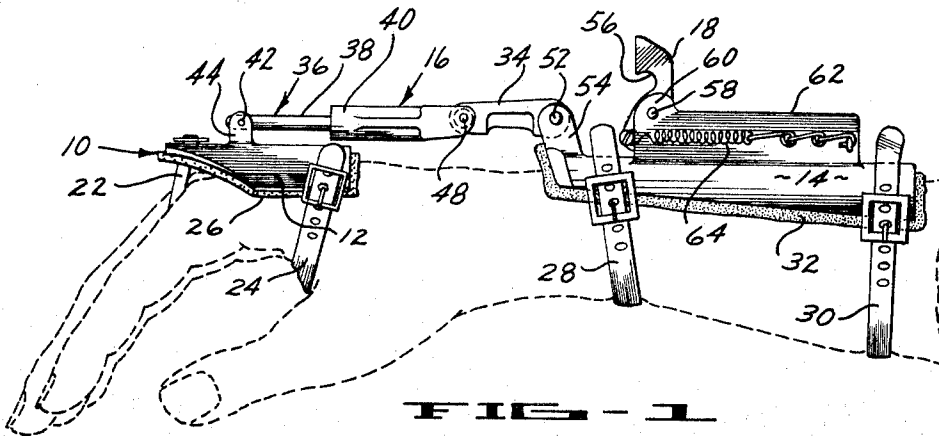
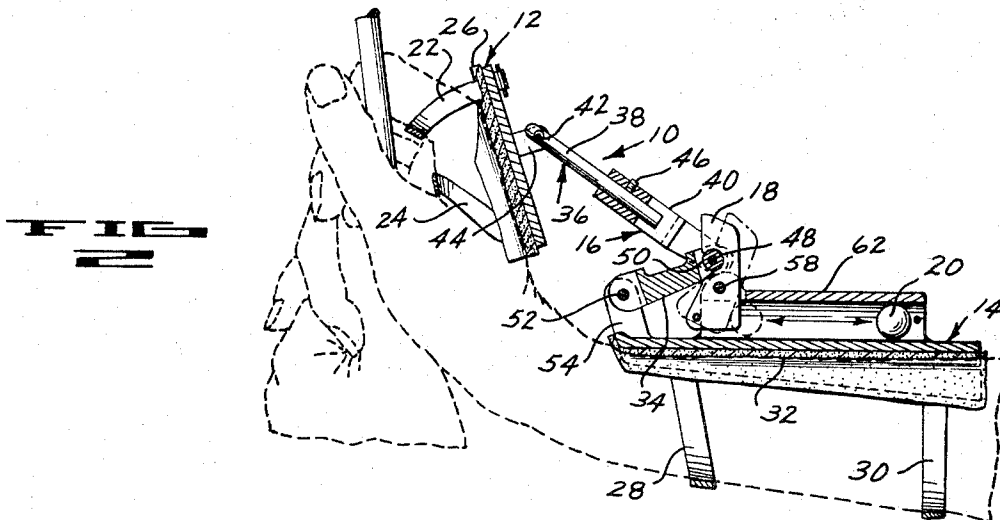
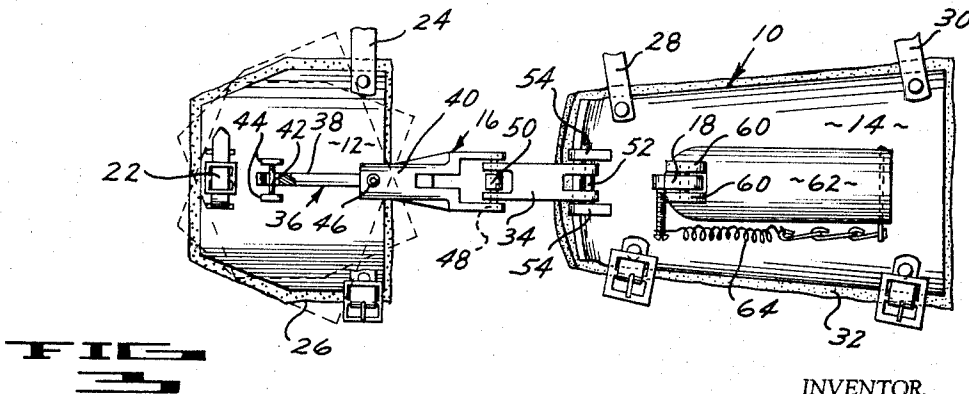
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WRIST LOCK APPARATUS

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1

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WRIST LOCK APPARATUS
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ABSTRACT OF THE DISCLOSURE

Wrist lock apparatus attachable to the hand and forearm of a golfer and including a mechanism to lock the wrist during the backswing, the mechanism having a weight centrifugally movable during the downswing to release the mechanism for wrist uncocking.

The present invention relates to wrist lock apparatus, and more particularly to apparatus operative to prevent a golfer from prematurely uncocking his wrists during the downswing movement.

In most golf shots the upswing of the club is accompanied by a cocking of the right wrist, assuming for purposes of discussion that the player is right-handed. That is, the hand is bent backwardly at the wrist, particularly at the top of the stroke. On the downswing the golfer's right wrist should not be uncocked until just prior to addressing the ball. Many golfers prematurely uncock their wrists during the downswing and consequently spoil their shots.

Accordingly, it is an object of the present invention to provide wrist lock apparatus to prevent premature uncocking of the wrist during the downswing.

Another object of the invention is to provide wrist lock apparatus of the aforementioned character which permits a limited degree of relative lateral movement between the hand and forearm during a downswing so that while premature uncocking of the wrist is prevented, a rigid, unyielding binding of the hand to the forearm is not present.

A further object of the invention is the provision of wrist lock apparatus of the aforementioned character which is easily mounted to the hand and forearm, and which is relatively light in weight and does not interfere with the golfer's swing, other than to control relative movement between the hand and forearm during a portion of the downswing.

Another object of the invention is the provision of wrist lock apparatus of the aforementioned character which automatically locks the relative positions of the hand and forearm during the upswing, and automatically unlocks or releases during the downswing by virtue of the centrifugal forces developed on such downswing. In this regard, it is a related object of the invention to provide such an apparatus in which the apparatus can be adjusted to fit various persons and can be easily altered to unlock or release according to the velocity of the particular individual's downswing.

Yet another object of the invention is to provide wrist lock apparatus of the aforementioned character which locks in any position of the upswing.

Other objects and features of the invention will become apparent from consideration of the following description taken in connection with the accompany drawings, in which:

FIG. 1 is a side elevational view of wrist lock apparatus mounted upon the right hand of a right-handed golfer, according to the present invention, the apparatus being shown in its unlocked or release position;

FIG. 2 is a longitudinal cross-sectional view of the apparatus of FIG. 1, the apparatus being shown in its locking position; and

2

FIG. 3 is a plan view of the apparatus of FIG. 1, the apparatus being shown in its release position.

Referring now to the drawings, there is illustrated wrist lock apparatus 10 comprising, generally a hand section 12 adapted for securement to the golfer's hand, a forearm section 14 adapted for securement to the golfer's forearm, a linkage 16 connecting the sections 12 and 14, a locking arm 18 cooperative with the linkage 16 to lock together the sections 12 and 14, and a weight or ball 20 operative to effect disengagement between the locking arm 18 and the linkage 16 to thereby unlock or release the sections 12 and 14.

The hand section 12 is concave to better fit the back of the golfer's hand and includes an outward or forward portion which is tapered and which mounts a flexible loop 22 at its outer extremity for receiving the middle finger of the hand. The rearward extremity mounts a flexible strap 24 which is adapted for disposition about the base of the golfer's fingers and is secured by a conventional buckle or the like. The concave hand section 12 is preferably made of metal or substantially rigid plastic material to the underside of which is adhered a pad 26 made of cloth or foam material to provide a comfortable fit upon a golfer's hand.

The forearm section 14 is also concave and is adapted to extend longitudinally along the golfer's forearm. The forward extremity of the section 14 mounts a flexible strap 28 which is adapted to fit about the golfer's wrist, and the rearward extremity of the section 14 mounts a similar flexible strap 30 adapted to fit about the forearm of the golfer. Both straps 28 and 30 are secured in position by conventional buckles or the like for securely mounting the section 14 to the golfer's forearm. Like the hand section 12, the forearm section 14 includes a coextensive pad 32 adhered to its underside and made of a suitably resilient material to provide a comfortable fit.

The linkage 16 is articulated and includes an elongated inner or rearward linkage arm 34 and an elongated outer or forward linkage arm 36, the linkage arm 36 having a pair of extensible and retractable arm sections 38 and 40.

The forward extremity of the arm section 38 is pivotally mounted to the hand section 12 by a pin 42 which is carried by a pair of transversely spaced mounting tabs 44 secured to the hand section 12. The opposite extremity of the arm section 38 is telescopically carried within a central bore of the arm section 40, and secured in adjusted position by a conventional set screw 46.

The other end of the arm section 40 is bifurcated and is pivotally mounted to the adjacent bifurcated extremity of the linkage arm 34. The pivotal connection between the linkage arm 34 and the arm section 40 of the linkage 16 constitutes the intermediate portion of the linkage 16 and comprises a pin 48 disposed through the adjacent bifurcated extremities of the arm section 40 and the linkage arm 34, and a roller 50 rotatably and centrally located on the pin 48.

The opposite extremity of the linkage arm 34 is also bifurcated and is pivotally mounted upon a pin 52 which is carried by a pair of mounting tabs 54 secured to the forward extremity of the forearm section 14.

The roller 50 is movable from a release position, as illustrated in FIG. 1, to a locking position, as illustrated in FIG. 2 upon upward and rearward movement of the hand section 12 relative to the forearm section 14 during a cocking movement of the golfer's wrist.

Upon rearward or cocking movement of the hand section 12, the roller 50 is received within a detent 56 provided in the leading edges of the upper extremity of the elongated, vertically oriented locking arm 18. The arm 18 is pivotally mounted to the forearm section 14

3

by a pin 58 which is carried by a pair of transversely spaced-apart mounting tabs 60 which form a part of an elongated, semi-cylindrical ball guide 62 which is secured to the forearm section 14. The lower extremity of the locking arm 18 below the pin 58 extends into the open forward end of the hollow, semi-cylindrical interior of the ball guide 62, as best illustrated in FIG. 2.

The locking arm 18 is biased to a locking position, as illustrated in FIG. 1, by a tension spring 64 which is secured between the lower extremity of the locking arm 18 and the rearward extremity of the ball guide 62 of the forearm section 14 to thereby tend to pivot the locking arm 18 in a counter-clockwise direction, as viewed in FIG. 1.

The pin connecting the spring 64 to the ball guide 62 extends transversely of the ball guide 62 across the rearward open end of the guide and acts as a rearward stop for the ball 20 which is located within the guide 62.

The ball 20 is adapted to roll within the guide 62 from one end to the other, and thereby engage and disengage the lower extremity of the locking arm 18. During an upswing by the golfer, the ball 20 will roll away from the locking arm 18 toward the rearward extremity of the ball guide 62, as illustrated in FIG. 2, by virtue of the weight of the ball and the downward attitude of the rearward extremity of the ball guide 62 during the upswinging movement.

The various pivotable elements of the apparatus 10 are generally longitudinally aligned, as best viewed in FIG. 3, and pivot about horizontal axes which are generally mutually parallel. However, sufficient looseness of fit is provided at the pin 42 to permit a limited relative lateral movement between the sections 12 and 14, thereby avoiding a binding or constricting feeling to the golfer. Overcome of this freedom of lateral movement does not exist at the pins 48, 52 and 58 so that alignment between the roller 50 and detent 56 is always maintained. Locking together of the sections 12 and 14 thus primarily locks the sections against the forward and downward movement of the hand section 12 which constitutes the uncocking action.

In operation, the sections 12 and 14 are strapped in position as illustrated. During the upswing the cocking movement of the golfer's wrist raises his hand relative to his forearm, which moves the roller 50 into the detent 56, the locking arm 18 pivoting rearwardly a slight amount, against the bias of the spring 64, to permit the roller 50 to pass beneath the arcuate, overhanging lip of the detent. The detent then surrounds the upper portion of the roller 50 and prevents disengagement therebetween until the locking arm 18 is moved in a clockwise direction to its release position, in which the detent lip is pivoted out of the way of the roller to permit the roller to move to its forward or release position.

The sections 12 and 14 are thus locked at the top of the golfer's stroke so that he cannot uncock his wrist. During the downstroke, the attitude of the ball guide 62 changes so that the forward extremity of the guide becomes downwardly disposed. The weight of the ball 20 plus the centrifugal forces developed on the ball during the arcuate downswing causes the ball to forcefully strike the lower extremity of the locking arm 18 to pivot the arm 18 in a clockwise direction for release of the roller 50.

The engagement of the ball 20 is arranged to occur just prior to addressing the golf ball, in accordance with good golfing practice, so that the wrist is uncocked at the desired time. If necessary, the spring rate of the spring 64 can be changed to require a faster or slower swing for unlatching the locking arm 18. The same result can be accomplished also by adjusting the weight of the ball 20.

From the foregoing it will be apparent that wrist lock apparatus has been provided which is automatically operative to lock the golfer's wrist in a cocked position

4

during his upswing, and which is operative to prevent uncocking of the wrist during the downswing until just prior to addressing the ball.

Various modifications and changes may be made with regard to the foregoing detailed description without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. Wrist lock apparatus comprising:

a hand section including means for mounting said hand section to the back of a golfer's hand;

a forearm section in spaced relation to said hand section and including means for mounting said forearm section to the golfer's forearm;

articulated linkage means including a first arm connected at one extremity to said hand section, a second arm connected at one extremity to said forearm section, and an intermediate portion pivotally connected to the opposite extremities of said first and second arms and movable between a locking position and a release position upon relative movement of said sections accompanying cocking and uncocking movements, respectively, of the golfer's wrists, at least one of said first and second arms including adjustably extensible and retractable portions;

a locking arm mounted on said forearm section for movement between a locking position and a release position, and including locking means engageable with said intermediate portion upon location of said locking arm and said intermediate portion adjacent one another in said locking positions to lock the same together and prevent said uncocking of the golfer's wrist;

and centrifugally operative weight means operative upon said locking arm during the golfer's downswing to move said locking arm to said release position to disengage said locking means and said intermediate portion whereby said uncocking movement of the golfer's wrist is permitted.

2. Wrist lock apparatus according to claim 1 and including spring means connected to said forearm section and said locking arm and tending to move said locking arm to said locking position.

3. Wrist lock apparatus according to claim 1 wherein said weight means comprises a ball rollable toward said locking arm during a golfer's downswing and away from said locking arm during a golfer's upswing, and further comprising a ball guide carried by said forearm section and constraining said ball against movement other than said movements toward and away from said locking arm.

4. Wrist lock apparatus according to claim 1 wherein said intermediate portion includes a roller and said locking means is constituted by a detent in said locking arm for retaining said roller in said locking position of said locking arm and for releasing said roller in said release position of said locking arm.

5. Wrist lock apparatus according to claim 1 wherein said hand and forearm sections are laterally movable relative to said linkage means.

6. Wrist lock apparatus comprising:

a hand section including means for mounting said hand section to the back of a golfer's hand;

a forearm section in spaced relation to said hand section and including means for mounting said forearm section to the golfer's forearm;

a pair of linkage arms pivotally connected to said hand and forearm sections, respectively;

means pivotally connecting together said linkage arms and including a roller movable with said linkage arms upon relative movement of said sections accompanying cocking and uncocking movements, respectively, of the golfer's wrist;

a locking arm pivotally intermediate its extremities to said forearm section and including a detent in one

5

extremity for receiving said roller during said cocking movement;

bias means connected between said forearm section and said locking arm for biasing said locking arm to locate said detent over at least a portion of the received 5 said roller to lock said sections together and prevent said uncocking movement of the golfer's wrist;

a ball guide on said forearm section adjacent the opposite extremity of said locking arm;

a ball in said ball guide rollable of its own weight and 10 under centrifugal force during the golfer's downswing against said opposite extremity of said locking arm to move said locking arm against the bias of said bias means and thereby disengaging said detent and said roller to release said sections for relative 15 movement whereby said uncocking movement of the golfer's wrist is permitted.

7. Wrist lock apparatus according to claim 6 wherein

6

at least one of said linkage arms includes adjustably extensible and retractable portions to predetermine the extent of said wrist cocking movement required to effect engagement between said roller and said detent.

8. Wrist lock apparatus according to claim 6 wherein said hand and forearm sections are laterally movable relative to said linkage means.

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U.S. DEPARTMENT OF COMMERCE

PATENT OFFICE

Washington, D.C. 20231

**UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION**

Patent No. 3,400,934

September 10, 1968

Herman D. Muehl

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 74, cancel "a locking arm pivotally intermediate its extremities to," and insert -- a locking arm pivotally mounted intermediate its extremities to --.

Signed and sealed this 10th day of February 1970.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

WILLIAM E. SCHUYLER, JR.

Commissioner of Patents