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Oppenheimer

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[45] **Nov. 4, 1975**

[54] **SWING TRAINING APPARATUS**

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[52] **U.S. Cl.** ..... **273/191 B;** 273/186 R; 273/191 A

[51] **Int. Cl.** **A63b 69/36**

[58] **Field of Search** 273/186, 191, 192, 26, 273/193, 194

[56] **References Cited**

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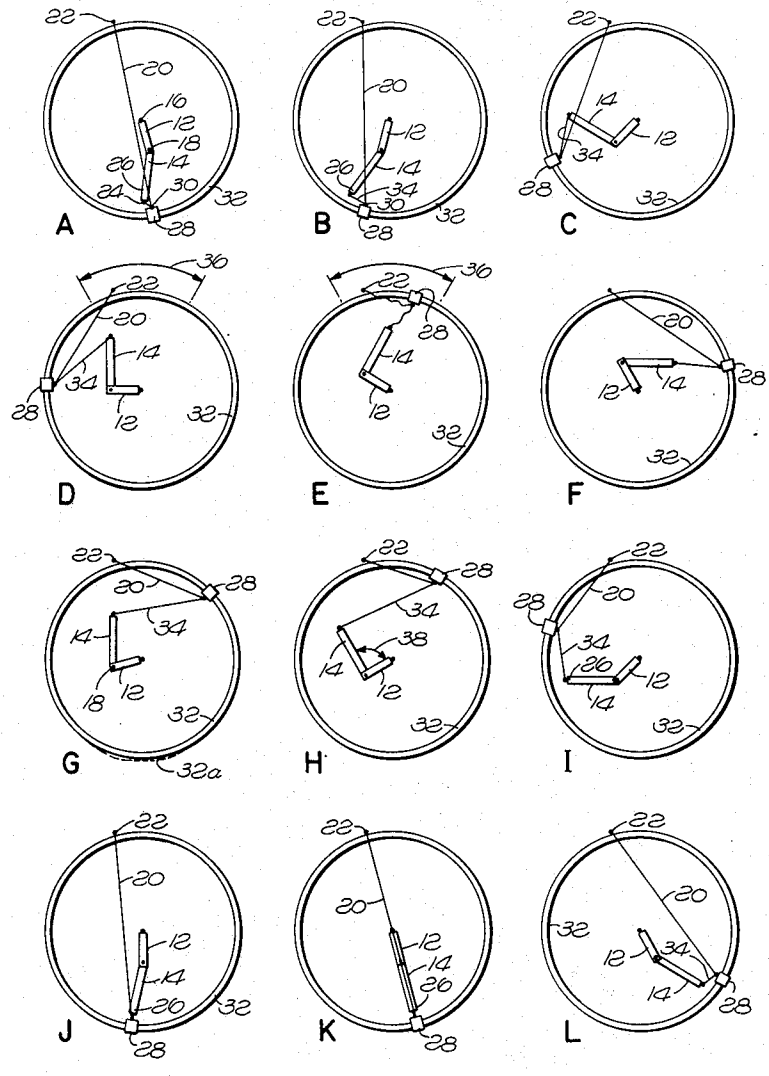
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Primary Examiner—George J. Marlo
Attorney, Agent, or Firm—Nilsson, Robbins, Bissell, Dalgarn & Berliner

[57] **ABSTRACT**

Apparatus for use by one manipulating a device to be swung such as a golf club, bat or the like. A flexible cord is anchored at one end thereof and has the opposite end affixed to the device to be swung at a point displaced from the grip end thereof. A slide assembly engages the cord between the ends thereof to shorten and lengthen the amount of cord available between the slide assembly and the point of attachment to the swing device as the device is swung by the user. In one embodiment, the cord is threaded through a tubular member disposed to permit additional cord to be pulled therethrough as a swing is executed, while in an additional embodiment, a slider traverses a guide mechanism during the swing and thereby permits additional cord to be presented between the swing device and the slide.

11 Claims, 19 Drawing Figures



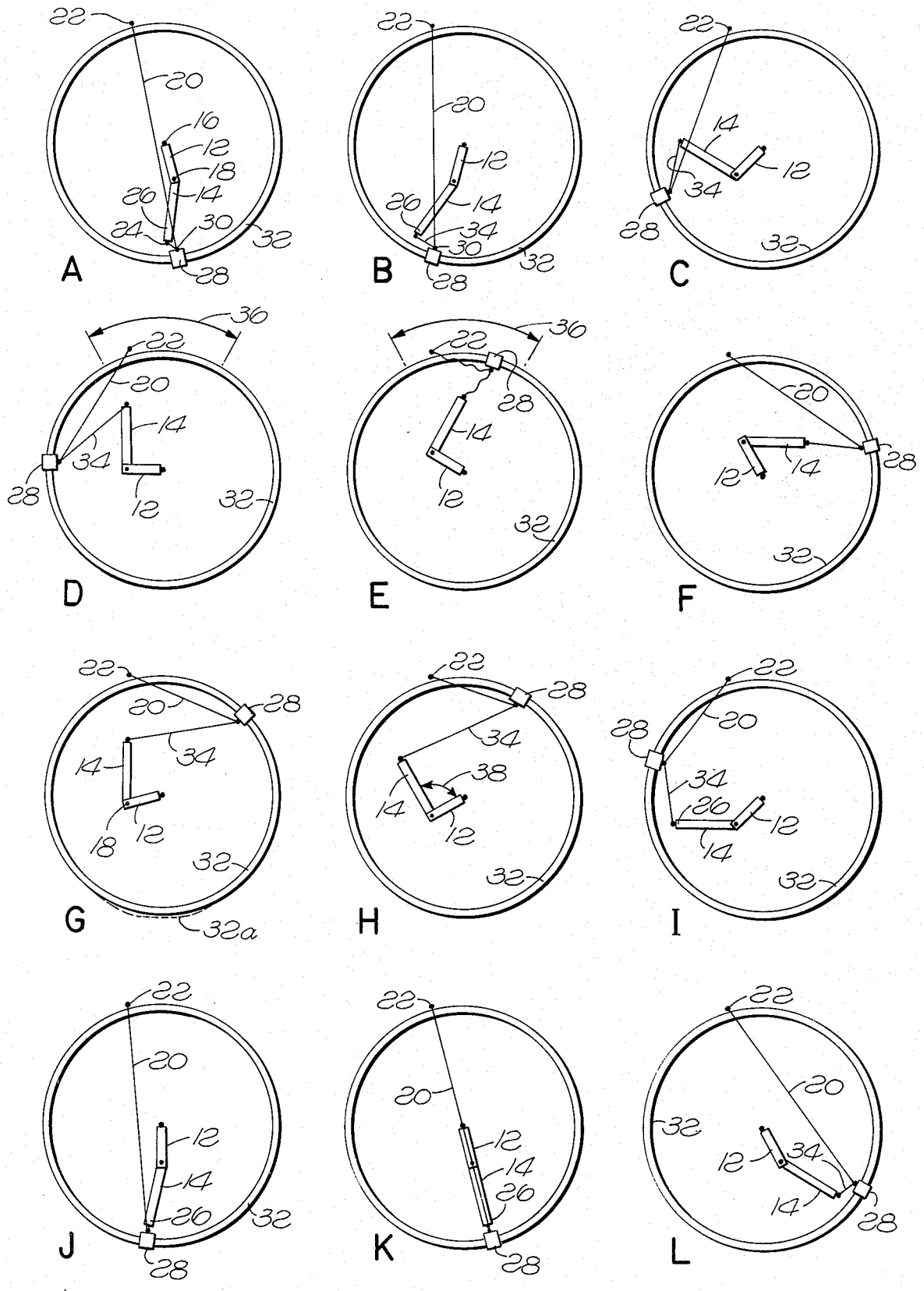
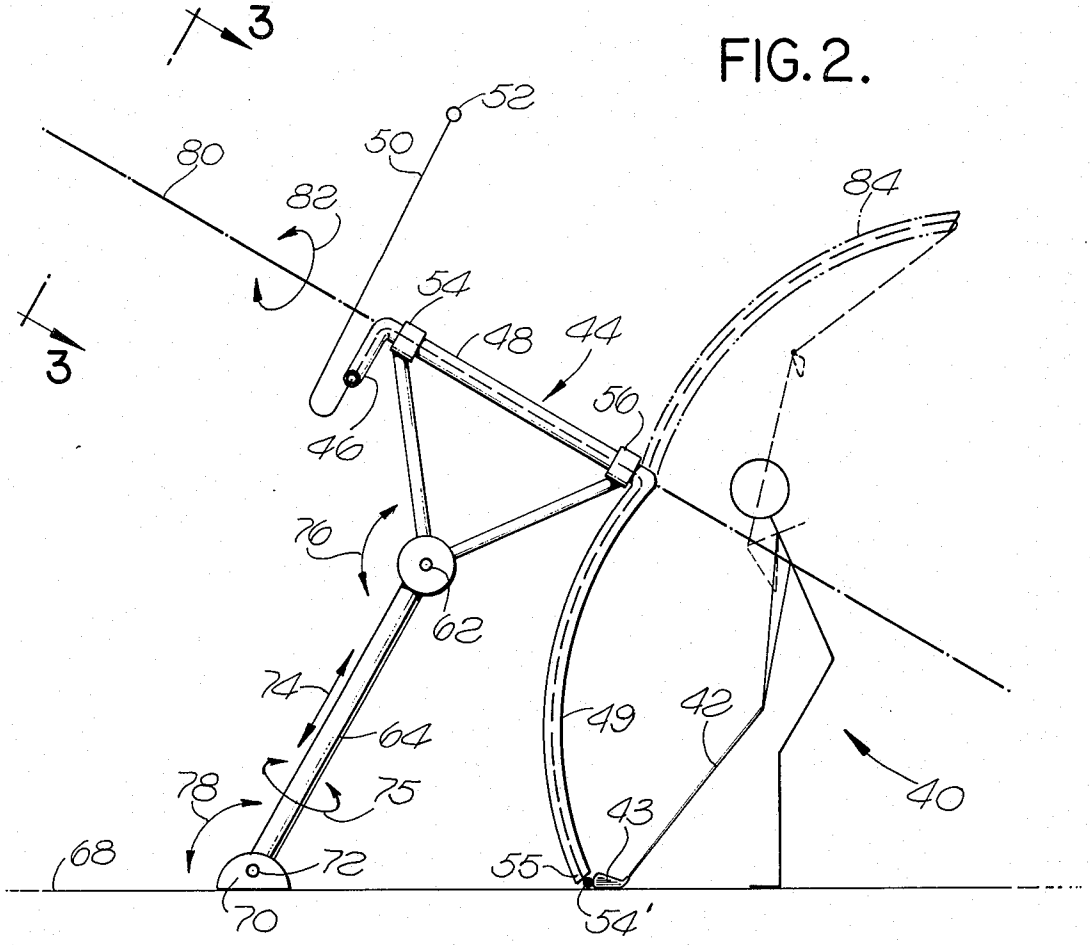


FIG.1.

FIG. 2.


3
3
52
50
80
82
84
54
48
44
46
50
70
62
74
64
49
42
78
75
43
40
68
72
55
70
54'

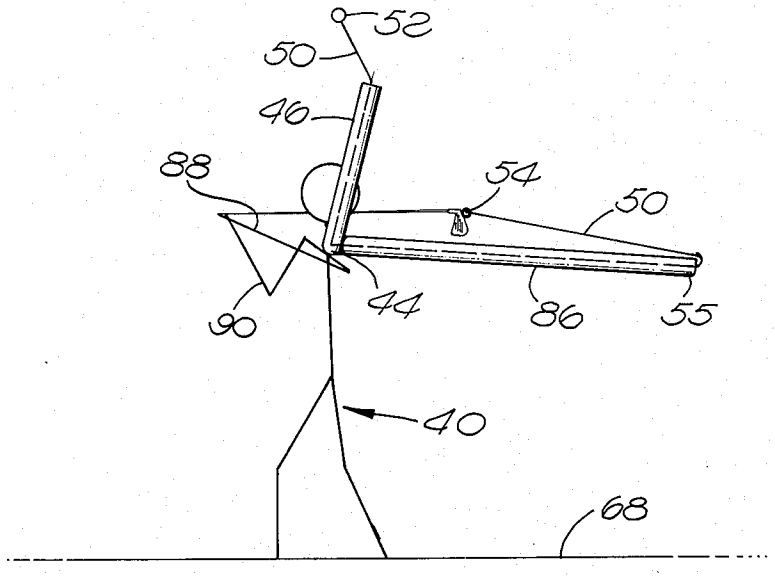

52
50
40
88
54
50
44
86
55
90
40
68

FIG. 3.

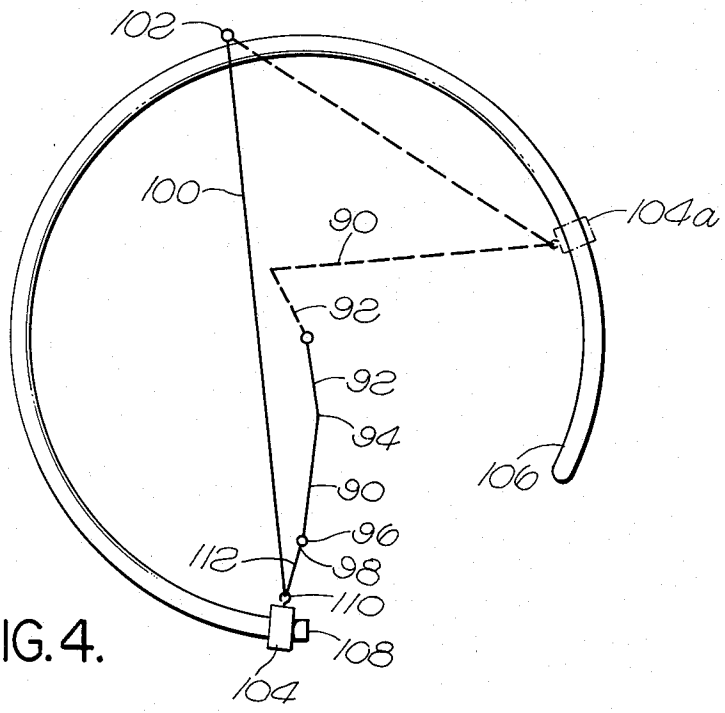


FIG. 4.

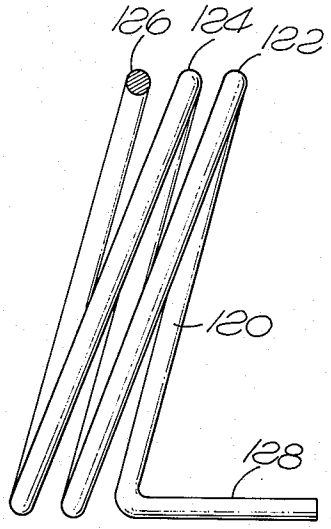


FIG. 5.

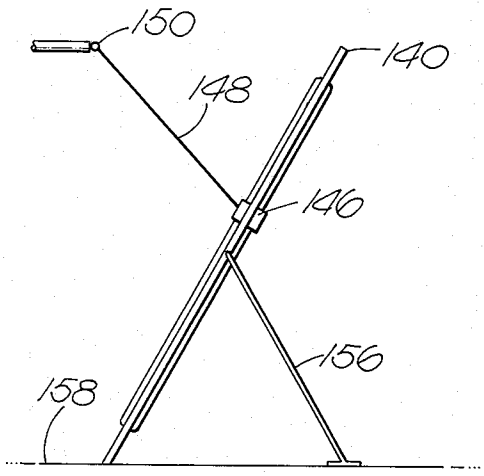


FIG. 6.

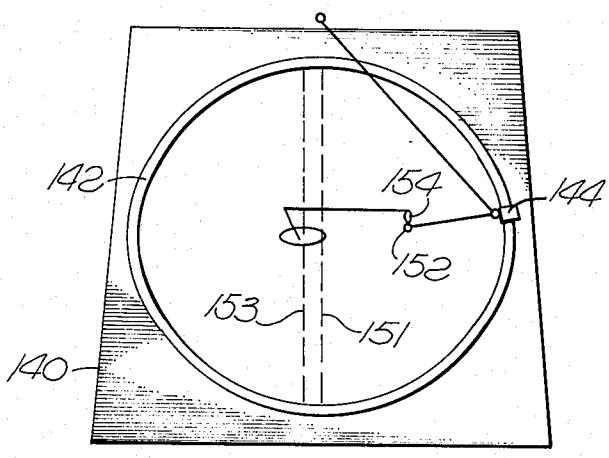


FIG. 7.

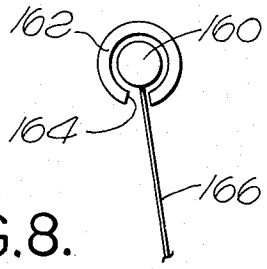


FIG. 8.

SWING TRAINING APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to swing training devices and more particularly to devices adapted specifically to enable the user of the swing device to develop accurate timing and thus maximum speed thereof at a predetermined desired point in the swing.

The present invention is useful with any device to be swung by a user such as in executing the games of softball, baseball, golf, bowling, or the like. However, for purposes of ease of description and understanding and clarity of illustration, the apparatus of the present invention will be described in conjunction with the utilization thereof in a golf swing.

In any swing and particularly in a golf swing, there is a great tendency of the user to uncock his wrists too early in the swing thereby precluding development of maximum clubhead speed at the point of impact of the clubhead with the golf ball. Many attempts have been made in the past to instruct users in the proper swing techniques thereby to enable development of maximum clubhead speed at the point of impact. However, there is no apparatus or teaching technique known to applicant which properly brings the clubhead to the point of impact while producing maximum clubhead speed at that point. The closest prior art known to applicant is U.S. Pat. Nos. 3,595,583; 3,462,156; and 2,103,502.

SUMMARY OF THE INVENTION

A swing training apparatus wherein there is provided a flexible cord which is anchored at one end thereof and at the other end is affixed to a swing device at a point displaced from the grip end thereof. Means is provided for slidably engaging the cord intermediate the ends thereof so as to vary the length of the cord between the point of attachment to the swing device and the means slidably engaging the cord with the smallest length of cord between said points being provided at approximately the position in a desired swing wherein maximum speed of the device is to be attained.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A through 1L are schematic diagrams illustrating the principles of the present invention by showing the various portions thereof at desired positions throughout the execution of a swing;

FIGS. 2 and 3 illustrate one embodiment of a structure constructed in accordance with the principles of the present invention shown at two positions during a swing;

FIG. 4 schematically illustrates another embodiment of apparatus constructed in accordance with the present invention;

FIG. 5 illustrates yet an additional embodiment of apparatus constructed in accordance with the present invention;

FIGS. 6 and 7 illustrate yet an additional embodiment of apparatus constructed in accordance with the present invention; and

FIG. 8 illustrates an alternative embodiment which a portion of the apparatus constructed in accordance with the present invention may take.

DESCRIPTION OF THE VARIOUS EMBODIMENTS

Referring now to FIG. 1, a model illustrating the principles of the present invention is shown. A double-lever system comprising lever 12 and lever 14 is illustrated. The lever 12 is pivoted at 16 for rotation about that point freely through 360°. Levers 12 and 14 are pivoted together for rotation about the point 18 and again may rotate freely a full 360°. If desired, the pivot 18 may be replaced by a universal joint to allow the lever 14 to not only pivot about the point 18 but also to rotate upon its axis as would a golf club during the normal swinging motion thereof by a user. A flexible cord 20 is shown anchored at one end 22 thereof and at the opposite end 24 attached to the end 26 of the lever 14 opposite the pivot point 18. A weighted slider 28 engages the cord 20 in slidable fashion by use of an eye 30 through which the cord 20 passes. The weighted slider is slidably disposed upon an arcuate guide 32. The guide 32 may be tilted to represent the plane within which the head of a golf club may be swung during normal use.

The model shown in FIG. 1A is, as will be recognized by those skilled in the art, in the classical address position of a golfer at the commencement of the golf swing. For purposes of discussion of FIG. 1A, it will be assumed that the model represents a golfer who is right-handed and is standing in the address position as shown in FIG. 1A facing outwardly from the plane of the page.

As the model commences the traditional back swing, the lever 12 and the lever 14 are moved in a clockwise direction. In this manner, the slide 28 is also caused to begin to traverse the guide 32 in a clockwise direction and as such occurs, the amount of cord at 34 between the end 26 of the lever 14 and the eye 30 increases or lengthens from that shown at address. As will be noted in FIG. 1C, as additional force is applied, the amount 34 of the cord continues to increase as the slide 28 moves in the clockwise direction along the guide 32. When the model has reached the position shown in FIG. 1F, those skilled in the art will recognize the top of the back swing position in the golf swing. As is therein illustrated, the lever 14 is approximately horizontal to the surface upon which the golfer would be standing with a straight left arm represented by the lever 12. In this position, the slide 28 has moved approximately 270° clockwise and has caused the cord 20 to be in a taut position as it was in FIG. 1A. In moving between the position shown in FIG. 1C to that shown in FIG. 1F, the slide 28 will move through an arc of approximately 70° as shown by the arrow 36 in FIG. 1D wherein the cord 20 and particularly that portion 34 thereof no longer remains taut. During the movement of the levers 12 and 14 from the address position at FIG. 1A to the top of the back swing position at FIG. 1F, sufficient velocity must be imparted to the slide 28 to cause it to move through the arc represented by the arrows 36 of its own momentum. The slack portion 34 of the cord 20 is more graphically illustrated in FIG. 1E.

FIGS. 1G through 1L illustrate the model executing the classic golf downswing. As the lever 12 is moved from the top of the backswing position shown in FIG. 1F to the position shown in FIG. 1G, the lever 14 through the forces applied moves as illustrated. As such occurs, force applied to the cord 20 through the section 34 thereof causes the slide 28 to commence to move in a counterclockwise direction along the guide 32 and continues to pick up speed. As a result thereof, the slide catches up with the end 26 of the lever 14 at a position just prior to impact as illustrated in FIG. 1J. It

will be noted that from the position of the lever **14** and the slide **28** in FIGS. **1I** and **1J** that the lever **14** has moved somewhat less than 90° while the slide has moved greater than 120°. In so moving, the amount or length of cord **34** between the end **26** of the lever **14** and the eye **30** on the slide **28** becomes increasingly less until it is at its smallest length just prior to, during and just after passage of the end **26** through the point of impact as shown at FIGS. **1J** and **1K**. It should also be noted at this point in time that the end **26** and the slider **28** are moving simultaneously through the point of impact. FIG. **1L** represents the model after impact and at the commencement of the follow-through as will be recognized by those skilled in the art.

It can be seen from the model as illustrated in FIG. **1** that the classic swing represented by the two-lever system is perfectly timed through the combination of the slidable member **28** and the cord **20** attached to the lever **14** as illustrated and above described. By such timing and by the movement of the slide, maximum efficiency in the transfer of energy is accomplished since maximum clubhead speed is imparted and proper alignment of the clubhead (the lever **14**) is accomplished by the weight **28** lagging behind, then catching up at the point of impact with the end of the lever **14** and thereafter passing it on the followthrough.

By utilizing the model as illustrated in FIG. **1**, one may construct an apparatus utilizing the principles illustrated which could be used by an individual holding a golf club to thereby practice the traditional swing and accomplish the timing to the perfection possible in accordance with this invention. As one example of such an apparatus, one may merely support a guide in the form of a rod in an arcuate configuration as at **32** in FIG. **1** with a weighted slider **28** positioned thereover. The term arcuate will be understood to mean any curved configuration such as a circle, ellipse or the like. The guide member may also be pivotally suspended to permit it to rotate on an axis vertically disposed to accommodate backswing and downswing motions. Alternatively, the guide may be composed of a pair of ellipsoid segments, orthogonally disposed and interconnected at the bottom. The guide **32** may be positioned with its plane vertical and the user displaced therefrom or, if desired, the guide **32** may be tilted and made sufficiently large that a golfer may stand with his body substantially in the center thereof. Means would then be provided to attach the end of the cord **20** to the head of a golf club and the user may then manipulate the weight **28** to cause it to slide as above described. The point of attachment of the cord to the clubhead may be used to achieve proper clubhead alignment as desired for any particular application. That is, the point of attachment may be varied to cause the club face to open, close, be hooded or laid open at the point of impact. Also if desired, the cord may be attached to the club shaft from which the clubhead has been removed with the weight of the slider being the weight of the clubhead. Alternatively, the slider may be weighted any amount desired as if the user is swinging a weighted bat or several clubs. The bottom of the guide **32** may be flattened as shown at **32*a*** (FIG. **1G**) to represent the golf clubhead passing through the point of impact in a relatively straight line with respect to the surface of the earth.

Alternatively, a structure as illustrated in FIGS. **2** and **3** may be utilized without departing from the principles set forth in accordance with the present invention. As is illustrated in FIG. **2**, a golfer shown generally at **40** viewed from the left side of a right-handed golfer is holding a golf club **42** having a head **43**. A cord **50** is anchored at one end **52** thereof while the opposite end **54'** is affixed to the head **43** of the golf club **42**. The cord **50** is then threaded through a hollow member shown generally at **44** and including a first end **46**, a center section **48** and a second end section **49**. The hollow member **44** is journaled for rotation by bearings **54** and **56** which are supported by rods which are pivoted to rotate about a point **62** to which there is affixed an additional rod **64** supported upon the base **68** by a plate **70** which is also pivoted at the point **72**. The rod **64** is adjustable longitudinally as shown by the arrow **74** to accommodate different heights of users **40**. The entire mechanism may be pivoted about the pivot points **62** and **72** as illustrated by the arrows **76** and **78** respectively to accommodate different swing planes for different users. The rod **64** may rotate (arrow **75**) to allow for a hook or slice. The entire hollow member **44** is rotatable about the longitudinal axis **80** as indicated by the arrow **82**. As will be recognized by those skilled in the art, the end **46** of the member **44** may be replaced by an appropriate cam surface or equivalent structure.

As the user **40** swings the golf club **42**, the end **49** will be rotated inwardly from the plane of the paper and upwardly to a position as shown in the dotted lines **84** while performing the classic backswing for a right-handed golfer. As such occurs, the flexible cord **50** is drawn through the hollow member **44** and the length between the clubhead **43** and the end **55** of the member **49** becomes longer. The backswing is continued until the classic top of the backswing position thereof is reached, as is shown in FIG. **3** which is a partial view of FIG. **2** taken about the lines **3—3**. As is shown in FIG. **3**, the end **49** of the member has now been rotated to a position as shown at **86** with the cord **50** extending between the end **55** thereof and the point of attachment **54** to the clubhead **43**. The other end **46** of the member **44** is positioned as illustrated with the cord **50** extending therefrom to the point of attachment at its opposite end **52**. The arm of the golfer is shown generally at **88** and **90**, **88** being the straight left arm of the golfer.

As with the model, as the golfer commences his downswing by moving the clubhead **43** in a counterclockwise direction as viewed in FIG. **3**, the cord **50** commences to lengthen pulling the end **49** of the member **44** along with it in a counterclockwise direction. As the downswing is continued, the end **55** of the member **49** moves faster and faster, ultimately catching the clubhead **43** at a position just prior to impact and continuing therewith through impact until just past the same and then passing the clubhead **43** as the classic follow-through is concluded. Thus, as with the model, the cord extending between the clubhead **43** and the end **55** of the member **49** is shortest at approximately the point of impact of the clubhead **43** with the golf ball and at that point, the clubhead is traveling the fastest and has then aligned into the proper position by bringing the clubhead **43** into virtual contact with the end **55** of the member **49**.

An alternative arrangement of a structure in accordance with the present invention is illustrated in FIG. **4** to which reference is now made. As is therein illustrated, a club **90** is held in position by the arm **92** of a

golfer and is gripped at the point **94** thereof. The clubhead **96** is attached to one end **98** of a cord **100**, the opposite end **102** of which is anchored. A slider **104** is slidably positioned upon a guide **106** for free movement thereabout. As will be noted, the guide **106** terminates at **108**. The cord **100** is attached by means of a releasable engagement such as a hook **110** to the slider **104**. There is thus provided a length of cord **112** between the point **96** and the hook **110**, as was the case in the model as well as the structure illustrated and described in FIG. **2**. As the golfer goes from the address position shown in FIG. **4** to a position at the top of the backswing which is illustrated in dashed lines, the slider **104** is moved to the position shown at **104A** as was the case with respect to FIG. **1F** in the model. As the golfer then moves back toward the position of impact, the slider **104** lags behind the clubhead **96** then speeds up and catches the clubhead just prior to the point of impact and remains with it therethrough. In the device shown in FIG. **4**, the slider **104** then passes the terminal point **108** of the guide **106** and is free to project through the air for a distance commensurate with the velocity imparted thereto at the point it leaves the terminus **108** of the guide **106**. Thus, a user may work with the structure shown in FIG. **4** until such a time as he has perfected his timing so as to cause the clubhead **96** and the weight **104** to arrive simultaneously at the terminus **108** (the point of impact) and cause the slide **104** to travel the greatest distance through the air after leaving the guide **106**.

An alternative arrangement of a device to accomplish substantially the same result as that shown in FIG. **4** but without a projectile traveling through the air is shown in FIG. **5** to which reference is hereby made. As is illustrated in FIG. **5**, a structure similar to that of FIG. **4** is provided. However, instead of providing a terminus for the guide **120**, a plurality of convolutions **122, 124** and **126** are provided. Also provided is a rearwardly extending leg or foot **128** which may be utilized to support the entire structure for use. In operation, a structure in accordance with FIG. **5** would include the weighted slider **104** as illustrated in FIG. **4** positioned upon the guide **120**. Upon performing the desired swing, the slider **104** would release from the clubhead **96** (illustrated in FIG. **4**) and would then travel along the convolutions **126, 124** and **122** of the guide means **120**. The distance which the slider **104** travels along the convolutions would provide an indication of the velocity thereof at its moment of release from the clubhead **96**. The only requirement with a structure of that such as shown at FIG. **5** is that convolutions be so disposed that they do not interfere with the movement or travel of the slider **104**.

An additional structure is shown in FIG. **6** and FIG. **7** which may be utilized in accordance with the teachings of the present invention. As is therein shown, a support **140** in the form of a large plate has attached thereto a guide **142** upon which there is positioned a slider **144**. The slider as shown particularly in FIG. **6** at **146** is broken to receive the support member **140**. The flexible cord **148** is shown anchored at one end **150** thereof with the opposite end **152** being affixed to the clubhead **154** of a golf club. Support apparatus schematically illustrated at **156** may be utilized to support the structure upon a base or foundation **158** in such a manner as to permit the support member **140** to be tilted to any desired position for utilization with any user. As shown in FIG. **7** the dotted line **151** represents a diameter of the circle defined by the guide **142**. The line **153** represents the center of the player who is using the apparatus. Thus is illustrated the position of the player in lining up to the right of the ball (right-handed player) and in executing the swing.

As shown in FIG. **8**, the slider may take the form of a weighted member **160** which is disposed internally of a guide member **162** having a slot **164** provided therein through which the cord **166** may extend and be attached to the clubhead as previously described. The cord **166** will be rigid for a short distance from the member **160** to preclude binding against the guide **162** in the slot **164**.

As will be recognized by those skilled in the art, there has been disclosed several embodiments of structure which may be utilized by a user swinging a device in such a manner as to perfect timing thereof thereby to impart maximum speed to the device at the desired point of impact. The apparatus may take many forms other than those illustrated in the drawings and described above without departing from the scope of the claims which follow:

What is claimed is:

1. Swing training apparatus for perfecting timing of the swing of a device to be swung by a user thereof comprising:

a guide means;

a slider engaging said guide means for movement therealong;

a flexible cord anchored at one end remote from said user and said guide means and attached at its other end to said swing device;

means slidably connecting said slider to said cord between the ends thereof to provide varying lengths of said cord between said slider means and said swing device during the swinging thereof with the smallest length of cord between said swing device and said slider at approximately the position in a desired swing of said device where maximum speed thereof is attained.

2. Swing training apparatus as defined in claim **1** wherein said guide means is a hollow tubular member having an elongated slot therethrough and said slider is internally disposed within said guide means with said cord extending through said slot.

3. Swing training apparatus as defined in claim **1** wherein said guide means is an arcuate member adjustably disposed to accommodate users of varying physical sizes.

4. Swing training apparatus as defined in claim **3** wherein said arcuate member is supported upon a planar support member and said slider encircles only a portion of said guide means.

5. Swing training apparatus for perfecting timing of swing of device to be swung by a user thereof comprising:

a slider;

guide means;

means for slidably mounting said slider on said guide means;

a flexible cord;

means for anchoring one end of said cord remote from said user and said guide means;

means for attaching the other end of said cord to said device to be swung at a point displaced from the grip end thereof;

means for slidably attaching said cord, intermediate the ends thereof, to said slider, whereby upon the user swinging said device, said slider traverses at least a portion of said guide means.

6. Swing training apparatus as defined in claim **5** wherein said guide means is a continuous member.

7. Swing training apparatus as defined in claim **5** wherein said slider completely encircles said guide means.

8. Swing training apparatus as defined in claim **5** wherein said guide means terminates at a point adjacent the position where maximum speed for said device to be swung is developed in a desired swing thereof.

9. Swing training apparatus as defined in claim **8** wherein said cord is automatically released from said slider upon its reaching the terminus of said guide means thereby allowing said slider to be projected.

10. Swing training apparatus as defined in claim **5** wherein said guide means comprises an elongated member disposed to include a plurality of convolutions spaced to allow said slider to traverse the entire distance of said guide means without interference from adjacent convolutions thereof.

11. Swing training apparatus as defined in claim **10** wherein said cord is automatically released from said slider upon its reaching maximum velocity and being adjacent the desired point of impact.

* * * * *