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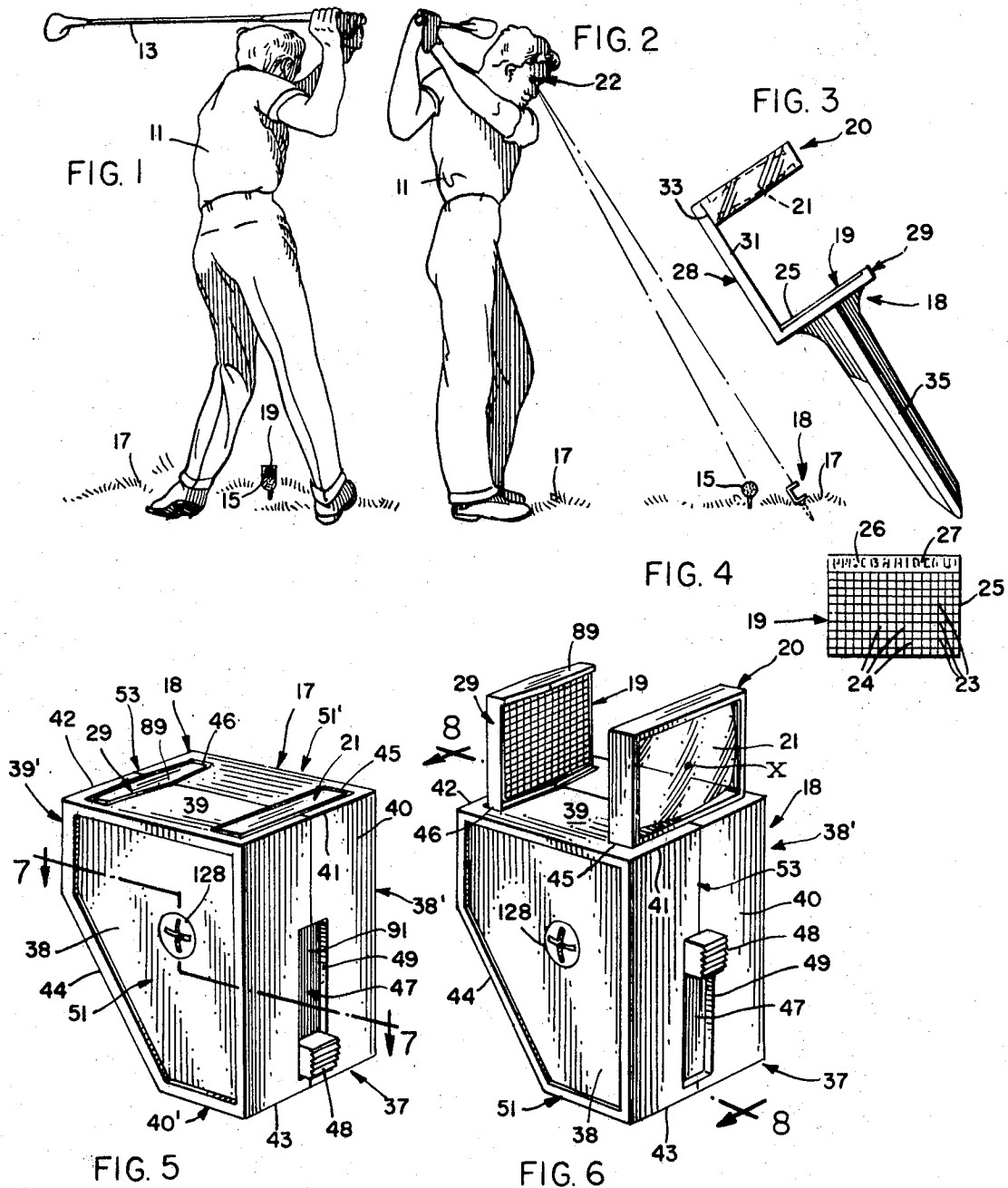
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3,524,650

MOTION DETECTING AND INDICATING DEVICE

Filed Jan. 2, 1968

2 Sheets-Sheet 1



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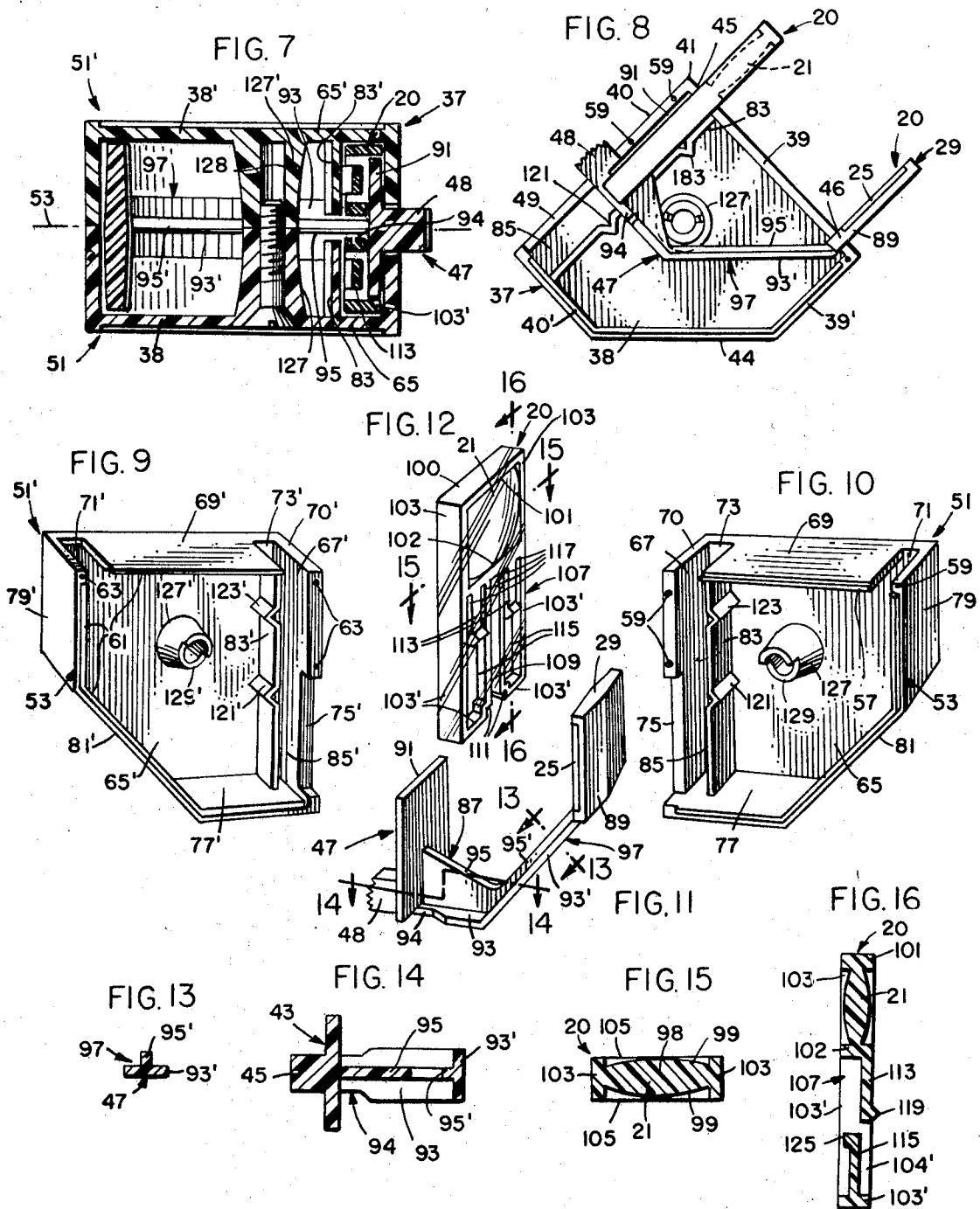
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MOTION DETECTING AND INDICATING DEVICE
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ABSTRACT OF THE DISCLOSURE

An optical device for use by golfers to detect and indicate relative movement of a golfer's head with respect to a golf ball, in position to be stroked, during the performance, by the golfer, of a ball striking club swing, the device being disposable on the ground, adjacent the ball to be stroked, and comprising an objective pattern and a magnifying lens spaced therefrom in position to focus, on the golfer's eye, a magnified highly visible image of a portion of the pattern.

The present invention relates in general to motion detection, and has more particular reference to an optical device for visually indicating movement of a golf player's head, with respect to a golf ball, during club swinging movement, performed by the player, in stroking the ball.

In playing golf, a club having a grasping handle and a ball striking head at its opposite ends is employed to hit the ball, said head having a planar ball striking face, and the accuracy of ball movement or flight depends principally upon the relative inclination of the striking face with respect to the ball, at the moment of impact. Ball striking skill therefore, depends upon the player's ability to accurately control the club head so that the ball striking face of the club, at the moment of impact, will be applied to the ball precisely at the angle required to produce the desired direction of ball movement or flight. In the performance of a perfect ball hitting stroke it is considered essential that the head of the player remain stationary with respect to the ball being stroked, since movement of the player's head, during the ball striking swing of the club, is apt to impart unwanted deviation in the path of the club head and thereby alter, no matter how slightly, the desired relative inclination of the club face with respect to the ball, at the moment of impact.

An important object of the present invention is to provide a device for visually indicating whether or not a player's head is stationary during the performance of a ball striking club swing; a further object being to provide a compact, readily pocketable device adapted to be placed upon the ground or turf, in front of the club head when it is in ball addressing or ball striking position, so that the eyes of the player, while making practice swings, may remain primarily fixed upon it, to thus develop a consistent swing pattern.

Another important object is to provide a device of the character mentioned embodying means forming an objective viewing pattern and a lens disposed in spaced relation in front of the pattern forming means, the lens being shaped to focus the pattern upon the eye of an observer spaced from the device a distance substantially equal to that of a golfer's eye from a golf ball during the performance of a ball clubbing stroke, the lens having sufficient depth of focus to accommodate a wide range of variant eye to ball distances, to thereby accommodate all golfers regardless of eye to ball distance.

Another important object is to provide a device of the character mentioned including means for supporting the same upon the ground or turf, at an angle presenting the axis of the optical lens of the device in alignment with the eye of a golfer in ball stroking position; a

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further object, in this connection, being to mount the optical lens and the objective viewing pattern forming means in aligned spaced relation, as in a suitable support frame, and to provide means formed on, or attachable to the frame for supporting it upon the ground, adjacent the ball to be stroked, in position presenting the axis of the lens at the required angle; a further object being to provide spike means, formed on or attachable to the device, for anchoring it in the ground or turf at a desired viewing angle; a still further object, in a modified embodiment, being to support the lens and objective means at the required angle, on a preferably box-like support frame having a flattened ground or turf engaging base surface adapted to support the lens and objective viewing means at the required angle.

Another important object is to provide a device of the character mentioned embodying a preferably box-like support frame forming a housing within which a viewing lens, together with objective viewing pattern forming means, may be normally housed and enclosed in a position concealed from view and protected against scratching and dirt accumulation thereon, including means operable to project the lens and objective pattern forming means outwardly of the housing, as through openings in a side wall thereof, into aligned operative position to permit the objective pattern forming means to be viewed, through the lens, by the eyes of a golfer in ball stroking position, when the device is supported on the ground or turf adjacent a golf ball in position to be stroked.

Another important object of the invention is to form the lens by molding the same of clear transparent plastic material; a further important object being to form the objective viewing pattern as a rectangular grid comprising closely spaced mutually normal lines printed or otherwise formed on a preferably white backing sheet, a preferably black alignment spot being applied to the lens at its geometric center.

Another important object of the invention is to provide a motion indicating device embodying the combination of means forming a highly visible objective viewing pattern and a magnifying lens through which the pattern may be observed in magnified condition, by the eye of an observer, spaced from the lens a distance of the order of the eye to ball spacing of a golfer in ball stroking position, whereby any movement of the head of the golfer with respect to the ball being stroked may be evidenced by substantial, that is to say, magnified relative movement of the pattern as viewed in the magnifying lens.

Other important objects, and advantages of the invention reside in structural details incorporated in a convenient pocketable box-like housing comprising molded plastic sections assembled in position enclosing opposite sides of frame means carrying the objective pattern forming means and the viewing lens in appropriately spaced and aligned relationship; in the formation of the objective pattern and lens carrying frame in such a manner that it has an inexpensive molded plastic element forming a panel adapted to mount the objective pattern forming means and a spaced mounting portion for supporting the lens; in forming the lens as a separately molded item, and in providing the lens and its support frame with interfitting means for securing the lens in mounted position on the frame, the parts being formed so that they will be held together in mounted position by the enclosing housing, without employment of positive attachment means for securing the lens on its carrying frame; in providing resilient fingers on the shiftable lens assembly, in position to bear yieldingly upon the enclosing frame in order to prevent rattling of the lens or of the lens carrying frame within the housing; in providing interfitting latch means on the lens carrying assembly and on the housing for

yieldingly latching the lens and its carrying frame in retracted position, within the housing, and also in projected position, with the lens and the objective viewing pattern means exposed outwardly of the housing, in aligned relationship; and in forming the molded plastic lens element with an integral projecting rim, on opposite sides of the lens and extending outwardly of the opposite faces thereof, to guard the lens surfaces against abrasive contact with external objects.

The foregoing and numerous other important objects, advantages and inherent functions of the invention will become apparent as the same is more fully understood from the following description which, taken in conjunction with the accompanying drawings, discloses preferred embodiments of the invention.

Referring to the drawings:

FIG. 1 is a rear view of a golfer and a golf ball in position to be stroked, the golfer being depicted with ball striking club disposed at the top of a ball striking swing of the club, a form of motion detecting device embodying the present invention being shown in position to be viewed by the golfer, adjacent the ball being stroked;

FIG. 2 is a side view of the golfer, the ball and the motion detecting device shown in FIG. 1;

FIG. 3 is an enlarged view of the motion detecting device shown in FIGS. 1 and 2, the same embodying means forming an objective viewing pattern, a viewing lens spaced from the pattern forming means and through which the same may be viewed from a distance, and means for supporting the components of the device on the ground adjacent the ball to be stroked;

FIG. 4 depicts a preferred form of viewing pattern adapted for use as a component in motion indicating devices embodying the present invention;

FIGS. 5 and 6 are perspective views of a preferred embodiment of the invention comprising a housing within which a panel, supporting means forming a viewing pattern, and a viewing lens, spaced from the panel, may be enclosed and concealed, as shown in FIG. 5, and from which the panel and lens components may be projected outwardly of the housing into operating position, as shown in FIG. 6, the housing being formed to support the panel and lens at a desired inclination with respect to ground level adjacent a ball to be stroked;

FIGS. 7 and 8 are sectional views respectively taken substantially along the lines 7—7 and 8—8 in FIGS. 5 and 6;

FIGS. 9 and 10 are perspective views looking into a pair of cooperating housing half sections which form the housing of the device shown in FIGS. 5 and 6;

FIG. 11 is a perspective view of a lens carrying frame embodying a panel for supporting pattern forming means, of the sort shown in FIG. 4, in alignment with the axis of a lens mounted on the frame;

FIG. 12 is a perspective view of a lens component adapted to be interfittingly mounted upon the frame shown in FIG. 11 in order to dispose the lens in spaced apart vertical alignment with respect to the pattern carrying panel; and

FIGS. 13 through 16 respectively are sectional views taken substantially along the lines 13—13, 14—14, 15—15 and 16—16, in FIGS. 11 and 12.

To illustrate the invention the drawings show a golfer 11 grasping a golf club 13 and depicted in conventional position, at the top of a ball stroking swing, to impact the ball striking head of the club 13 upon a ball 15 disposed on the ground or turf 17 in front of the golfer, a head motion detecting and indicating device 18 embodying the present invention being shown on the turf adjacent and preferably within eighteen inches of the ball.

Indicating devices embodying the present invention essentially comprise objective pattern forming means 19 and an element 20 forming a magnifying lens 21 disposed in front of the pattern means 19 and between it and the eye 22 of the golfer, the lens being configured so that a

magnified image of a portion of the pattern means will be seen by the golfer, the device, when in use, being disposed on the turf, adjacent the ball 15, in position so that the golfer may view the pattern forming means 19, through the lens, without taking his or her eye off the ball.

While the means 19 may provide any suitable highly visible pattern for viewing, it is preferable that the pattern be of relatively simple character, such as a grid comprising a series of intersecting horizontal and vertical, preferably equally spaced lines 23, 24. While the spacing of the parallel grid lines is not at all critical, line spacing may be of the order of 0.05 inch, the same, when magnified about 5 diameters providing a highly visible image, at the lens 21, comprising about four spherically aberrated squares having approximately quarter inch sides, which appear to shift about in jerky, highly visible fashion, in response to any movement of the head of the golfer, with respect to the ball and the device 18, while swinging the club.

In order to make such jerky movement more clearly apparent, an index marking may be applied on the lens 21 itself, preferably in black. While such marking may comprise intersecting lines, circles and the like, a single dot X disposed preferably at the center of the lens will serve as an index with respect to which the magnified image of the pattern means 19 will appear to move transversely in the lens.

The pattern forming means 19 may conveniently comprise a rectangular card 25 carrying the design printed or otherwise formed on a face thereof. If desired, the pattern may be omitted from a portion of the card, as by leaving out the topmost horizontal grid line 23, to provide a space 26 for receiving printed material, presented in characters 27 so tiny as to be substantially illegible, when directly viewed, but easily read when observed, at close range, through the lens 21.

The lens 21 may be formed of polystyrene, acrylic plastic, or any other suitable lens material, and the device may include suitable frame means 28 for mounting and supporting the viewing pattern 20 and the lens 21 in spaced aligned relationship. The frame means may also incorporate suitable means for supporting the device in or on the ground, in position to be used adjacent a golf ball 15 in position to be stroked.

A relatively simple and inexpensive embodiment of the invention is shown in FIG. 3, in which the frame 28 provides a panel 29 for the support of the objective pattern card 25, and a support arm 31 secured to and extending at right angles from the panel 29 preferably medially of a side edge thereof. The lens 21 may be cemented or otherwise firmly secured to the panel remote end of the arm 31, as indicated at 33. Means forming an anchoring spike 35 adapted to be pressed into the ground or turf, adjacent the ball 15 to be stroked, may be provided for supporting the device 17 at a desired inclination with respect to the ground. If desired, the spike 35 may be formed on the panel 29 in position extending outwardly of its lens remote side; but the spike, if desired, may be formed as a part separate from, yet readily attachable on the frame 28.

As shown in the embodiment illustrated in FIGS. 5 through 16, the frame may be formed as a hollow housing 37 in which the pattern plate 19 and the lens 21 may normally be enclosed and housed, in concealed position.

The housing 37 may comprise spaced parallel side walls 38, 38' and peripheral edge walls including a pair of mutually normal top walls 39 and 40, intersecting to form a housing corner 41, a pair of end walls 39' and 40' each, respectively, extending at right angles to the walls 39 and 40 to form housing corners 42 and 43, at the ends of the walls 39 and 40 remote from the corner 41. The length of the walls 39' and 40' is of the order of one half that of the walls 39 and 40, and the housing includes a flat bottom wall 44 extending between and connected with the ends of the walls 39' and 40', remote from the corners 42 and 43, said wall 44 making an angle

of 45° with the walls 39' and 40', to thereby support the lens 21 and panel 29 at a desired inclination with respect to the eye of a player in position to stroke a ball on the ground or turf adjacent the device.

The housing 37 may also be formed with openings 45 and 46, in its top wall 39, at the opposite ends thereof and respectively adjacent the corners 41 and 52, through which openings the lens 21 and the pattern carrying panel 29, respectively, may be drawn to retracted, inoperative position enclosed within the housing, or moved to operative position outwardly of the housing, whenever it is desired to use the device for its intended purpose. A manually operable frame or slide 47 disposed within the housing and affording a carrier for the viewing pattern card 25 and the lens 21, is provided for projecting and retracting the same through the openings 46 and 45, said slide 47 having a manually operable thumb piece 48 projecting outwardly of the housing, as through a slot 49 in the wall 40, in position for manual operation to move the slide within the housing.

The housing 37 may conveniently comprise a pair of cooperating housing half sections 51 and 51', the same preferably being each the mirror image of the other, on opposite sides of a parting plane 53, except that one section, such as the section 51 shown in FIG. 10, may be formed with marginal ribs 57 and dowel projections 59, at the meeting edges of the half sections, at the parting plane 55, while the other section, such as the section 51', shown in FIG. 9, may be formed with rib receiving grooves 61 and dowel receiving cavities 63 to aid in holding the sections together in interfitting alignment.

As shown the housing half sections 51 and 51' may comprise cooperating cup-shaped shells formed of suitable molded plastic material, such as high impact polystyrene or other suitable relatively tough moldable plastic material. As shown more especially in FIGS. 9 and 10 of the drawings, the cooperating half section shells 51 and 51' may each comprise a wall 65, 65' which form the opposite side walls 38, 38' of the housing, and peripheral walls extending at right angles with respect to the walls 65 and 65' to form a pair of open side shells adapted to be secured together with their marginal side edges in facing and interfitting engagement. The peripheral walls may include a pair of mutually normal walls 67, 69 and 67', 69', adapted to form the housing walls 39 and 40, the walls 69 and 69', at their opposite ends being formed with openings 71, 73 and 71', 73' which respectively form the opposite ends of the housing openings 46 and 45. The side walls 67 and 67' also are formed with corresponding shallow recesses 75, 75' adapted to define the slot-like opening 49, which accommodates the slide actuating thumb piece 48 of the assembled device. The housing segments 51 and 51' may also include wall portions 77, 79 and 77', 79' extending at right angles respectively with respect to the wall portions 67, 69 and 67', 69', at the ends thereof, remote from the corner 42. The length of the walls 77, 77' and 79, 79' is of the order of half that of the walls 67, 67' and 69, 69'; and the ends of the walls 77, 77', and 79, 79', remote from the junction thereof with the walls 67, 67', and 69, 69', are interconnected by inclined walls 81, 81', extending at an angle of the order of 45° with respect to the walls 77, 79 and 77', 79', to form the housing bottom wall 44.

The housing members 51 and 51' may each be provided with a partition wall 83, 83' extending between the walls 69, 69' and 77, 77' inwardly of and parallel with respect to the wall 67, 67' to provide pockets 85, 85', for the accommodation of the opposite halves of the lens component 21, when it is in retracted position in the housing, each pocket being connected, at one end, with a corresponding opening 73, 73'.

The lens and the viewing target carrying frame 47 may comprise a molded element of plastic material, such as polystyrene, preferably the same material of which the housing components 51, 51', are formed, so that the com-

ponents and the frame if desired may be formed simultaneously in a common mold. The frame includes a lens mounting portion 87 and a spaced plate portion 89 forming the panel 29 upon which a viewing pattern card 25 may be cemented. The lens support portion 87 may comprise a plate 91 sized to extend within the chamber 85, 85', in sliding engagement with the inner face of the wall portions 67, 67', on opposite sides of the slot 49 defined by the notches 75, 75', the thumb piece 48 being formed medially on and projecting outwardly of the lower end of the plate 91, through the slot 49. The plate 91 covers said slot when the lens and the viewing panel 29 are in retracted position within the housing. Inwardly of the plate 91, the frame 47 is formed with a strip-like portion 93 comprising an extension of the lower portions of the thumb piece 45 beneath the lower edge of the plate 91, said portion being integral with and extending medially of the plate at its lower edge. The strip-like portion 93 has a section of minimal width 94 at and adjacent the plate 91, and may have greater width in its plate remote portions, as shown in FIGS. 11 and 14. An upstanding rigidifying flange 95 may be formed along and medially of the portion 93, said flange 95, at one end being integrated with the inner face of the plate 91 on the side thereof remote from the finger piece 48.

The portion 93 is formed to extend within and lie against the shell portions 77, 77', which form the housing wall 40', when the frame is in retracted position. At the inner end of the frame portions 93 and 95, remote from the plate 91, the frame forms an integral inclined arm 97, which extends upwardly and outwardly of the portions 93 and 95, at an angle of the order of 45°, said inclined arm comprising a strip portion 93' and a medial upstanding flange portion 95' comprising integral extensions of the frame portions 93 and 95. Accordingly, the arm forming strip 93', when the frame is in retracted position, may rest upon the medial portions of the inclined housing wall 44, at the meeting edges of the wall portions 81 and 81'. At its end, remote from the frame portions 93 and 95, the arm 97 is integrally secured to and supports the panel portion 89, medially of the lower edge thereof. The panel 89 is thus carried in position with its rear face in sliding engagement with the inner surface of the housing wall 39', formed by the shell portions 79 and 79', said panel extending, at its opposite side edges in sliding engagement with the inner faces of the housing side walls 38 and 38', thereby positioning the upper edge portions of the panel 29 in the opening 46.

The lens element 20, in the embodiment shown in FIGS. 5 through 15, preferably comprises a molded component of clear transparent plastic material, such as Lucite or polystyrene, embodying the lens 21 comprising a portion 98 having opposite convex surfaces 99 configured to provide the desired degree of magnification, the portion 98 being enclosed in an integral, preferably rectangular frame 100 comprising top, bottom and opposite side members 101, 102 and 103, the opposite edges 105 of which preferably lie in planes disposed slightly outwardly of the medial portions of the curved lens surfaces 99, whereby the frame 100 tends to guard the curved faces of the lens, especially the central portions thereof, against abrasive contact with the opposite sides of the lens housing channel 85, 85', when the lens is moved therein between its retracted and projected positions. In addition to its lens forming portions, the lens component 20, as shown more particularly in FIGS. 12 and 16, may include mounting portions 107 extending downwardly from the lower side 102 of the lens forming portions, said mounting portions 107 being adapted to slidably engage with the housing partitions 83 and 83' within the channel portions 85, 85' and to interfittingly engage with the lens mounting portions 87 of the carrying frame 47. In this connection, the housing partitions 83 and 83' abut and are preferably integral with the housing walls 38 and 38', along an edge of the partitions, the opposite

edges of which are spaced inwardly of the open edges of the cup-like shells 51 and 51', so that, when the shells are assembled in position forming the housing 37, with their edges in abutting and interfitting engagement, the facing edges of the partitions 83, 83' are spaced apart, within the housing, sufficiently to permit the narrow plate adjacent portions 94, of the frame 47, to extend slidably between the facing edges of said partitions.

The mounting portion 107 of the lens element 21 is formed with a medial slot 109 extending, from the bottom frame member 102 of the lens portion, to the lens remote end of the element. At the open end of the slot 109, the element 21 may be formed with a pair of shoulders 111, on opposite sides of the slot and facing toward the lens remote end of the element. The mounting portion 107 is enclosed within a frame comprising extensions 103' of the members 103, which form the opposite sides of the lens frame, said extensions 103' projecting downwardly of the lens frame to the lens remote end of the element and thence mutually inwardly, along said remote end, to the opposite sides of the slot 109, continuations 104' of said extensions 103' define the opposite sides of the slot, from its open end to its inner end, at the lower side member 102 of the lens frame. The slot defining continuations 104' of said extensions 103' are cut away on the side of the element, which, when mounted on the frame 47, faces the panel 91. Accordingly, the lens element may be mounted on the frame in position with the strengthening flange 95 of the frame extending within the lower or lens remote portions of the slot 109, and with the shoulders 111 bearing upon and receiving the narrow portion 94 of the frame member 93, on opposite sides of the strengthening flange 95, the edges of the plate 91 being snugly received within the cavity defined by the lower lens frame member 102 and the frame extensions 103' along the sides and at the lens remote end of the mounting portion 107.

The lens component 20 thus may be interfittingly fitted upon the plate 91, of the lens mounting portion 87 of the carrying frame 43, and held in place thereon when the frame and lens element are assembled in the housing cavity 85, 85'. In the space between the central slot 109 and the opposite sides 103' of the mounting portion 107, resilient latching and anti-rattle fingers 113 and 115, may be provided between slots 117 formed in the mounting portion. The latching fingers 113 on opposite sides of the notch 109, may be formed integral with and may extend downwardly from the bottom lens frame member 102, the lens remote ends of the fingers 113 providing outwardly extending detents 119 forming latches adapted to engage in keeper notches 121, 121' and 123, 123' formed in spaced relation in the partitions 83, 83', said detent notches facing into the housing channel 85, 85' in position to latchingly engage the detents 119, respectively, when the carrier frame 47 is in retracted and in projected position.

The resilient anti-rattling or shock absorbing fingers 115 are mounted on and extend upwardly from the frame portions 103', at the lens remote end of the mounting portion 107, said fingers 115, at their free ends, adjacent the latching detents of the latching fingers 113, being formed with outwardly facing presser portions 125 adapted to bear upon the plate 91 and thereby urge the lens element thereon in a direction toward the housing partitions 83, 83' thereby yieldingly holding the lens element against unconfined or rattle promoting movement within the channels 85, 85'.

The housing shells 51, 51', may each be formed centrally with an embossment 127, 127', for the accommodation of fastening means such as a screw 128 for securing the housing sections together in position enclosing the mounting frame and lens element, one of the embossments, such as the embossment 127, being bored to receive the fastening screw 128 applied therein through a countersunk opening on the outer side of the housing

wall 65. The other embossment, such as the embossment 127', may be formed with screw threads for receiving the correspondingly threaded stem of the fastening screw 128. The embossments, at their inner or meeting ends may be cut away, as at 129, 129', in order to accommodate the flange portions 95 and 95' of the carrying frame 43, when the same is in lens projecting position, depicted in FIG. 8.

The bottom wall 44 is adapted to support the lens 21 with its axis inclined at an angle of the order of 45° with respect to ground level to monitor head motion of golfers when swinging long clubs, such as the so-called woods and irons; but when the lens is in projected position outwardly of the box, the device may be disposed with its side 39' resting on the ground to support the lens with its axis extending vertically in position to monitor strokes made with putters, during the performance of which the player commonly crouches over the ball with downwardly inclined eye disposed vertically above the ball to be stroked.

It is thought that the invention and its attendant advantages will be fully understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention or sacrificing any of its attendant advantages, the forms herein disclosed being preferred embodiments for the purpose of demonstrating the invention.

The invention is hereby claimed as follows:

1. An optical instrument, for placement adjacent a golf ball to be stroked to indicate head movement to a golfer during a ball stroking swing of a club, comprising a frame, means forming a viewable pattern supported on the frame, a lens spaced from and aligned with the pattern on the frame for focusing an enlarged image of a portion of the pattern upon the eye of a golfer in ball stroking position, and means on the frame for supporting the lens pattern on and at an angle with respect to the ground, said frame forming a housing, and said lens and pattern being supported in spaced relation on support means within the housing and being movable in said housing between a retracted position, presenting the lens and pattern normally in position enclosed within the housing, and a projected position, presenting the lens and pattern in motion indicating position outwardly of the housing.

2. An optical instrument, as set forth in claim 1, and wherein said support means comprises a carrier disposed in said housing.

3. An optical instrument, as set forth in claim 2 including latch means for securing the carrier, lens and pattern in their retracted and projected positions.

4. An optical instrument, as set forth in claim 2 including manually operable means on the carrier and extending outwardly of the housing for shifting the carrier between projected and retracted positions, within the housing.

5. An optical instrument, as set forth in claim 2, wherein the carrier comprises an arm having an upstanding panel carrying the pattern on a face thereof, and a lens seating portion spaced from the panel.

6. An optical instrument, as set forth in claim 2, wherein the lens comprises a mounting portion and the carrier is formed with a lens seating portion formed for interfitting engagement with said mounting portion to detachably secure the lens in mounted position on the carrier.

7. An optical instrument, as set forth in claim 2, wherein the carrier is formed with a plate portion spaced from the pattern and forming a lens seat, while the lens is secured on a mounting portion comprising a rim sized to peripherally embrace the plate portion of the carrier.

8. An optical instrument, as set forth in claim 2, wherein the housing is formed with an internal channel opening at one end outwardly of the housing, the carrier being formed with a plate portion spaced from the pattern

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and extending in said channel in sliding engagement with a side thereof, the lens being carried in said channel on a mounting portion sized to peripherally engage said plate portion and to extend between the same and the opposite side of said channel, in sliding engagement therewith, whereby the lens and its mounting portion are held in interfitting engagement with the plate portion of the carrier, by and between the opposed walls of said housing channel.

9. An optical instrument, as set forth in claim 2, wherein the housing comprises a pair of spaced opposite side walls and peripheral walls including a pair of oppositely, outwardly and downwardly inclined, mutually normal top walls meeting at the apex of the housing, a pair of downwardly and inwardly inclined side walls extending at right angles to said top walls, at their apex remote ends, said top walls being appreciably longer than said side walls, and a bottom wall extending between and interconnecting the lower ends of said side walls, and making an angle of the order of 45 degrees with respect to said side walls.

10. An optical instrument, as set forth in claim 9, wherein, one of said top walls has a pair of transverse openings formed therethrough, at its opposite ends, respectively adjacent and remote from the apex of the housing, through which apex adjacent and remote openings the lens and pattern, respectively, may be projected from and retracted into the housing.

11. An optical instrument, as set forth in claim 10, wherein said other top wall being formed with a medial longitudinally extending slot, in its apex remote portions, for the accommodation of a manually operable carrier shifting finger piece.

12. An optical instrument, as set forth in claim 2, wherein the housing comprises a pair of cooperating cup-shaped mirror image half sections each having a bottom wall and peripheral walls extending at the edges thereof and forming matching rims, means to secure the half sections together with said rims in abutting registration, said rims providing a pair of flat, mutually normal peripheral housing wall portions meeting at an apex, to form the top of the housing, a partition formed on and extending from the bottom wall in each of said half sections, in position to be in a common plane, in the housing, said

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partitions being spaced from and extending parallel to one of said mutually normal housing wall portions and providing mutually facing spaced apart edges in the housing, said partitions serving to define a chamber extending along and opening, outwardly of the housing, through a transverse lens slot formed through the other of said mutually normal wall portions, adjacent said apex, said carrier comprising an arm mounted in the housing, between the facing spaced edges of the partition, for movement in a direction longitudinally of said chamber, toward and away from the said other of said mutually normal wall portions, said lens being secured on an end of said arm for movement therewith, in said chamber and through said transverse slot and said pattern being secured on the arm, remote from the lens in position to be exposed outwardly of the housing through another transverse slot in said other of said mutually normal walls remote from said lens slot.

13. An optical instrument, as set forth in claim 12, wherein the partitions are formed with spaced keeper notches opening into the chamber and latch members are mounted on the lens in position to latchingly engage said notches to hold the lens, the carrier and the pattern in retracted and in projected positions.

14. An optical instrument, as set forth in claim 12, wherein the housing is formed with a longitudinally extending slot in said one of said mutually normal wall portions, in the end thereof remote from said apex, said slot opening into said chamber, said carrier being formed with a manually operable finger piece projecting outwardly of said chamber through said longitudinally extending slot.

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