

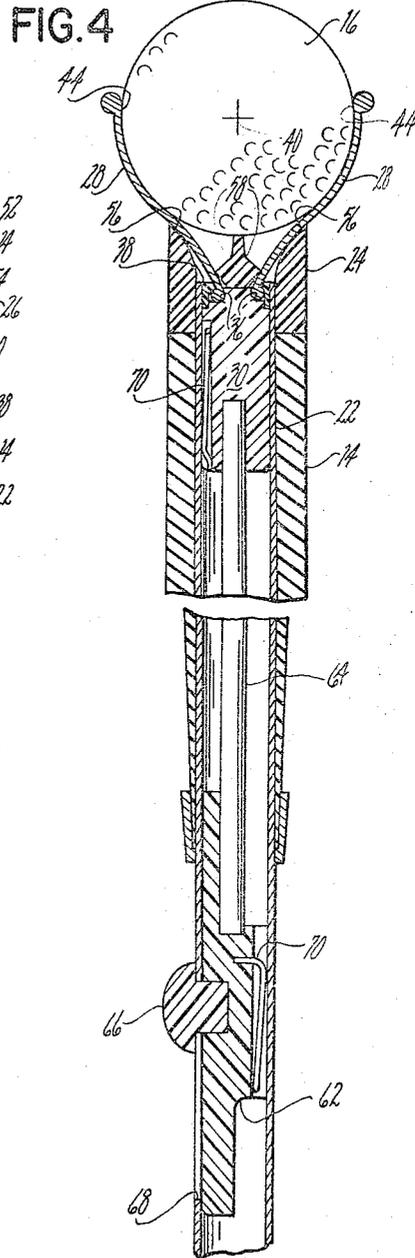
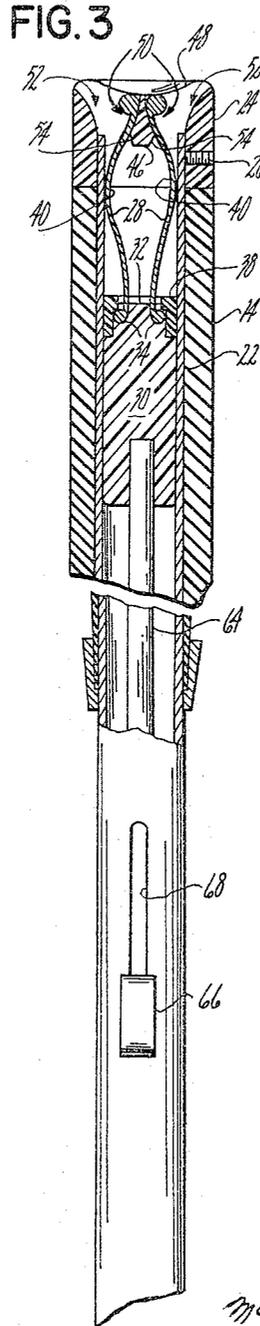
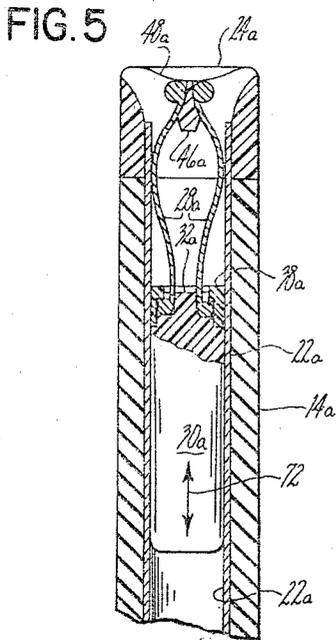
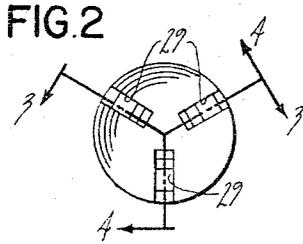
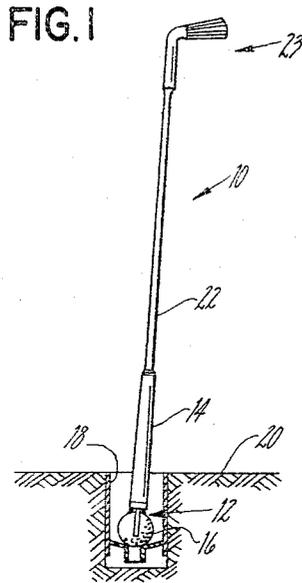
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COMBINED GOLF CLUB AND BALL RETRIEVER

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COMBINED GOLF CLUB AND BALL RETRIEVER
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 mesne assignments, to Retrever Industries Incorporated,
 Manchester, Conn., a corporation of Connecticut
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The present invention relates to golfing equipment, and more particularly to a combined golf club and ball retriever.

A general object of the present invention is to provide a device for retrieving golf balls, which device is adapted to be retracted inside the handle portion of a golf club when not in use.

Another general object of the present invention is to provide a ball retrieving device in the handle of a golf club so that a golf ball in the hole, or cup, of a putting green can be readily engaged by said device and retrieved from the hole without requiring the golfer to stoop over to retrieve his ball.

Still another general object of the present invention is to provide a ball retrieving device in the handle of a golf club which device is concealed from view when not in use and which device does not interfere with normal use of the golf club.

A more specific object of the present invention is to provide a ball retrieving device in the handle of a golf club, which device is adapted to releasably engage a golf ball so that the ball must be physically extracted from the device precluding inadvertent dropping of the ball after it has been retrieved.

The drawings show preferred embodiments of the invention and such embodiments will be described, but it will be understood that various changes may be made from the constructions disclosed, and that the drawings and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawings:

FIG. 1 is a side view of a golf club equipped with a retrieving device of the present invention and showing the golf club in an inverted position for use as a ball retriever;

FIG. 2 is a top view of the handle portion of the golf club of FIG. 1;

FIG. 3 is a side view, partly in section, of the handle portion shown in FIG. 2 taken along the line 3-3 of that figure;

FIG. 4 is a sectional view of the FIG. 2 handle taken along the line 4-4 of that figure and showing the ball retrieving device extended; and

FIG. 5 is a sectional view similar to FIG. 3 but showing an alternative embodiment.

Referring now with greater particularity to the drawings, FIG. 1 shows a golf club 10 equipped with a ball retrieving device 12 of the present invention. The club is shown inverted with the handle portion 14 downward in position for retrieving a golf ball 16 from a hole, or cup, 18 in a green 20. While the device 10 is adapted for use in the handle portion of any golf club, it is particularly well suited to golf clubs having a tubular shank 22. As shown in FIGS. 3 and 4, the tubular shank 22 extends upwardly inside the handle 14 which may comprise a rubber grip securely attached to the outside of the shank to yield a handle of annular cross section. With further reference to FIG. 1, the retrieving device 12 is preferably provided in a putter as indicated by the clubhead at 23,

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because the putter is most frequently used on putting greens and hence readily available for retrieving balls.

Turning now to the construction of the ball retrieving device 12 in greater detail, FIG. 3 shows the various parts in their retracted position inside the hollow handle portion 14 of the golf club 10. A cap 24 is snugly received on the upper end of the tubular shank 22 and may be secured thereto by any convenient means. As shown, said means comprises at least one set screw 26 threadably received in a threaded radially extending opening provided therefor in the cap 24. Three or more arcuate fingers 28, 28 are adapted to move generally axially through said cap from the retracted position shown in FIG. 3 to the extended position shown in FIG. 4. Three or more circumaxially equally spaced openings 29, 29 in the cap 24 (best shown in FIG. 2) are of appropriate width for accommodating these fingers and the radially inner and outer edges of these openings are uniquely shaped to act on these fingers in a manner to be described hereinbelow.

The lower ends of these fingers are attached to a cylindrical slide 30 which is slidably received in the cylindrical bore of the tubular shank 22. These fingers may be pivotally connected to the upper end 32 of the slide 30 by any convenient means, but preferably, the lower end portion of each finger 28 is bent into a small diameter loop 34, which loop is received in a socket-like notch 36 defined in said upper end 32 of the slide 30. Three such notches 36, 36 are equally spaced circumaxially around the slides circumference and a ring 38 encircles the fingers and is snugly received circumferentially on the slide. As so arranged, the fingers 28, 28 will be seen to be pivotally connected to the slide for limited rotation in radially extending planes equally arranged angularly about the axis of the tube 22.

As best shown in FIG. 4, the intermediate portions 40, 40 of the fingers 28, 28 are curved to form a parti-spherical socket for receiving a golf ball 16 and at the uppermost ends 44, 44 of each finger 28 an outwardly formed loop is provided to aid the golfer in engaging his ball.

The cylindrical slide 30 will be seen to be movable in an axial direction within the tubular shank 22 from and to a first position shown in FIG. 4 whereat the upper end 32 of the slide engages the underside 46 of the cap 24. As shown, this first slide position corresponds to the extended position of the fingers 28, 28. These fingers are made long enough to extend upwardly beyond the concave topside 48 of the cap to just beyond the center 40 of the golf ball 16, and further, the fingers are made from a somewhat resilient material so that the ball can be releasably held between these fingers and said concave cap.

A second slide position, best shown in FIG. 3, will be seen spaced axially downwardly from the first slide position of FIG. 4. This second slide position corresponds to the retracted position of the three fingers 28, 28 which are received in the three openings 29, 29 in the cap 24. In accordance with the present invention, these openings have radially inner and outer edges which are defined by inner and outer finger engaging surfaces 50 and 52 respectively.

The inner finger engaging surface 50 thereof has a lower portion 54 which acts upon the inside of each finger during movement toward the extended position of FIG. 4 to urge the uppermost ends 44, 44 thereof radially outwardly. The outer finger engaging surface 52 has an upper portion 56 which acts upon the outside of the finger during return movement towards the retracted position of FIG. 3 to urge the fingers radially inwardly. These inner and outer finger engaging surfaces also serve

to support each extended finger in a position for engaging a golf ball. So long as the slide 30 remains in its first position, the fingers 28, 28 will be supported in the position shown by the cooperative action of these surfaces 50 and 52. The lower portion 54 of the inner surface 50 assures that the fingers remain spread in position for engaging a ball while the upper portion 56 of the outer surface 52 provides a fulcrum for the resilient fingers when the ball is inserted therebetween. It should also be noted that in so engaging a ball, the said lower surface portion 54 provides a reaction force on the finger at a point spaced downwardly from the point engaged by the upper surface portion 56 resulting in a reduction in the reactive force which would otherwise have to be carried by the pivotal connection at the lower end of the finger. It has been found that this strain relieving feature permits a less expensive pivot construction than would be required if the openings 29, 29 in the cap 24 were of more conventional configuration.

With further reference to the uniquely shaped openings 29, 29, the inner surface 50 of each opening will be seen to have an upper portion 58 which is appropriately shaped to accommodate the uppermost end 44 of the finger 28 as best shown in FIG. 3. The said upper portion 58 is adapted to urge the uppermost end 44 of the finger radially outwardly as the finger is retracted inside the opening 29. It will be seen that as the finger is so moved, the intermediate portion 40 thereof will engage the inner surface of the tubular shank 22 and the finger will be deformed thereby. Since the lower end of the finger is securely held by the slide 30, the finger will tend to straighten under the influence of the said upper portion 58 of the inner surface 50 in the manner of a leaf spring. As so constructed and arranged, each finger will be seen to be releasably held in the retracted position shown. It will also be apparent that as the uppermost ends 44, 44 of the fingers are so engaged, further downward movement of the slide is prevented by the projection formed between the upper and lower portions 58 and 54 respectively. The above-mentioned second slide position, which is spaced downwardly from the first, is determined by the stopping action exerted by these projections in the inner surfaces 50, 50 on the uppermost ends 44 of the three arcuate fingers 28, 28.

In further accord with the present invention, means are preferably provided for moving the slide 30 from and to said first position whereat the fingers are extended in ball engaging position. As shown in FIGS. 3 and 4, said means comprise a second slide 62 connected to said first-mentioned slide 30 by a rod 64. A knob 66 is fixed to said second slide and protrudes through an elongated slot 68 in the tubular shank 22 just below the handle portion 14 as shown. As so constructed, manual means for operating the retrieving device are conveniently provided at a location readily accessible to the golfer.

Another feature of the retrieving device shown lies in the provision of friction means on at least one of these slides. As shown, said means comprises a spring 70 carried by one or the other or both of said slides to urge the slide away from the adjacent inner wall of the tubular shank 22. This spring serves a very useful function in that it avoids inadvertent extension of the device when the golf club is being used as a golf club and avoids inadvertent retraction of the device when the golf club is being used to retrieve a golf ball. It will also be apparent that the spring 70 permits the slides 30 and 62 to be made slightly undersize to loosely fit the bore of any one of a variety of tubular shank sizes.

In FIG. 5 an alternative construction is shown wherein the manual means for moving the fingers 28a, 28a are omitted. In place of the above-described manual means for operating the retrieving device, inertial means are provided in the form of a relatively heavy slide 30a which can be propelled from and to the above-described first and second slide positions by imparting a sudden change

of speed to the golf club in one or the other of the axial directions indicated by the doubled ended arrow 72. The weight of the slide 30a is preferably such that brisk movement of the hand-held club will be enough to set the slide in motion in either direction. The above-described frictional means between the slide 30a and the tubular shank 22a might also be employed in this embodiment. However, in this event the frictional force would have to be kept low enough to permit the golfer to move the slide by brisk movement of the club.

Finally, and still with reference to FIG. 5, it should be noted that the fingers 28a, 28a are held in the retracted positions shown by their own resiliency as described hereinabove with reference to the FIG. 3 construction. Thus, it will be apparent that in order to dislodge these fingers a fairly large inertial force might occasionally be required, especially in the event that dirt or other foreign matter were to become lodged inside the cap 24a. While the magnitude of the inertial force attainable might be increased by simply increasing the weight of the slide 38a, it will also be apparent that this approach could adversely effect the balance of the club. In keeping with this rather arbitrary limit on the weight of the slide, it has been found that the concave upper surface 48a allows the golfer to create a rather large inertial force with a slide of acceptable weight. If the golfer taps the handle against some convenient object, the concave cap permits him to dislodge the fingers in the event that they fail to extend by the normal method.

The invention claimed is:

1. In a golf club having a tubular shaft, a generally cylindrical slide movable axially in the upper end portion of said shaft, at least three bowed spring fingers having their lower ends pivotally secured to the upper end of said slide in equally circumaxially spaced relationship so that the concave face of each finger is disposed inwardly, a cap secured in the upper end of said shaft and having circumaxially spaced radial slots which are spaced from its center to receive and permit sliding movement of the said fingers as the slide moves between an extended position wherein it and the fingers engage the center portion of the cap, the fingers also engaging the outer edges of the slots, and a retracted position wherein the free ends of the spring fingers are nested within the said slots adjacent the center portion of the cap, the radially inner and outer surfaces of said slots being shaped to guide said fingers substantially axially during initial movement of said slide from its retracted position and then to spread said fingers outwardly during final movement of the slide into its extended position and to retain them in spread position for releasable resilient engagement with a golf ball, and means for moving said slide selectively between its extended and retracted positions.

2. The improvement in a golf club as set forth in claim 1 wherein the means for moving said slide selectively includes a rod secured to and extending downwardly from said slide in the club shaft, a second slide secured to the lower end of said rod, and a manually engageable knob secured to said second slide, the shaft being provided with an elongated slot to accommodate movement of the said knob.

3. In a golf club having a tubular shaft, a relatively heavy cylindrical slide movable axially in the upper end portion of said shaft by inertial force caused by brisk movement of the club, at least three bowed spring fingers having their lower ends pivotally secured to the upper end of said slide in equally circumaxially spaced relationship so that the concave face of each finger is disposed inwardly, a cap secured in the upper end of said shaft and having circumaxially spaced radial slots which are spaced from its center to receive and permit sliding movement of the said fingers as the slide moves between an extended position engaging the center portion of the cap and a retracted position wherein the free ends of the spring fingers are nested within the slots adjacent the center portion of

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the cap, the radially inner and outer surfaces of said slots being shaped to guide said fingers substantially axially during initial movement of the slide away from its retracted position and then to spread said fingers outwardly during final movement of the slide into extended position and to retain them in spread position for releasable resilient engagement with a golf ball.

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