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(54) **TELESCOPING AND FOLDING SHOE HORN**

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(57) **ABSTRACT**

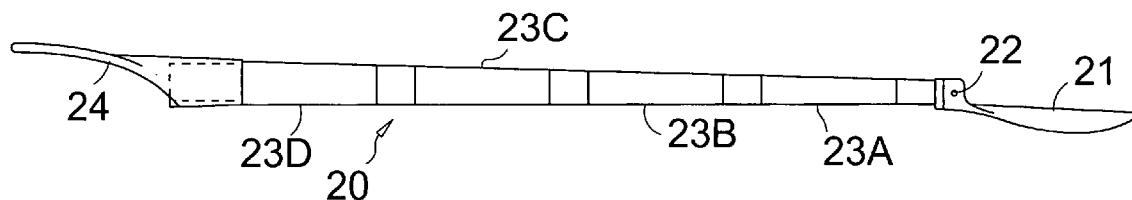
A shoe horn shaped handle has a series of telescoping sleeves which telescope within the handle for storage and extend out for use. A mating shoe horn shaped pivotable head attaches to an outer end of the outer most sleeve. The pivotable head pivots over, locks, and nests with the handle in a pocket storage configuration. The pivotable head pivots open for use as a long handled shoe horn. A variety of different pivotable heads may be attached as individual replacement heads.

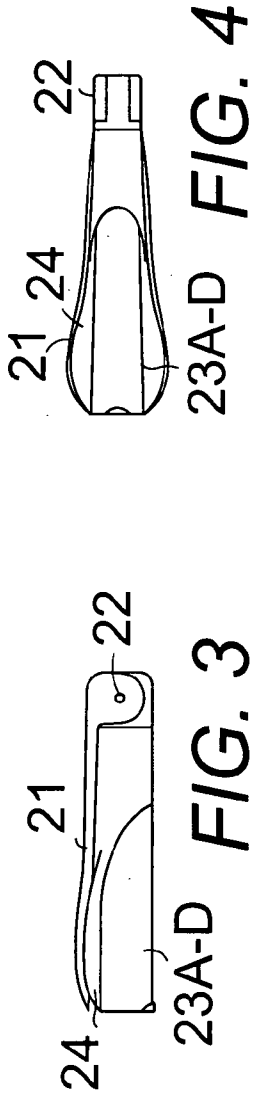
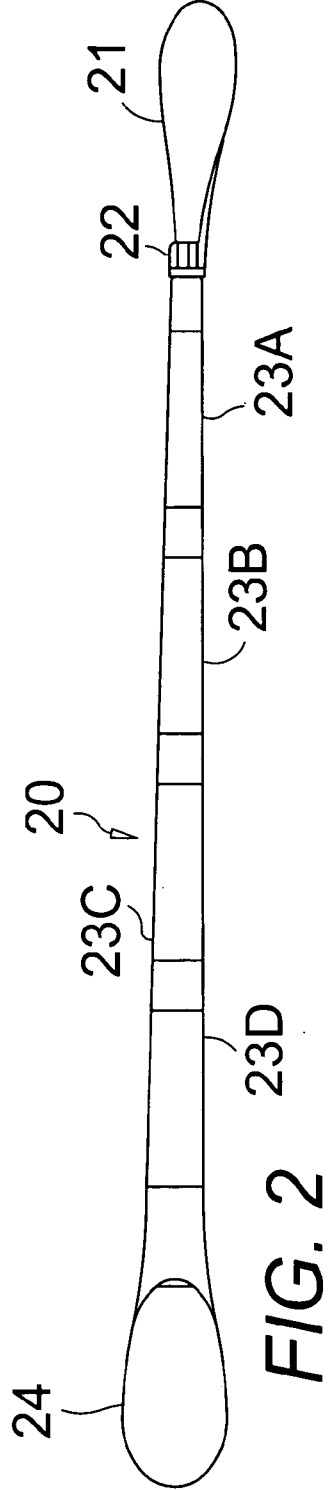
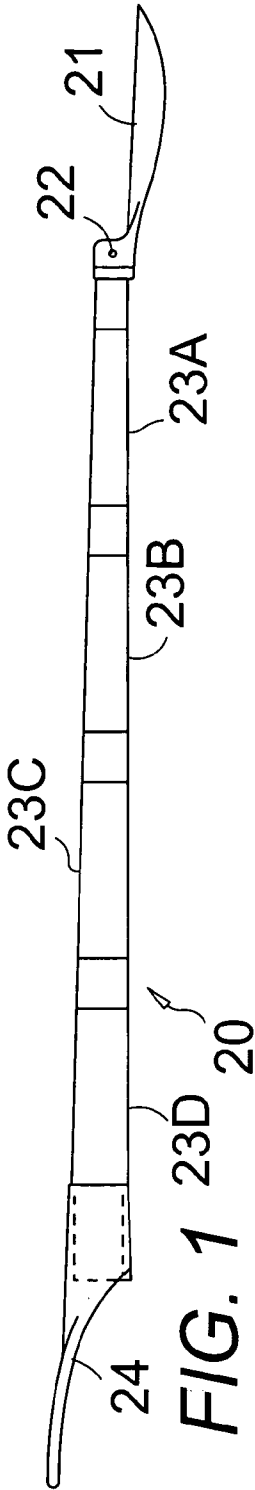
(21) Appl. No.: **11/353,811**

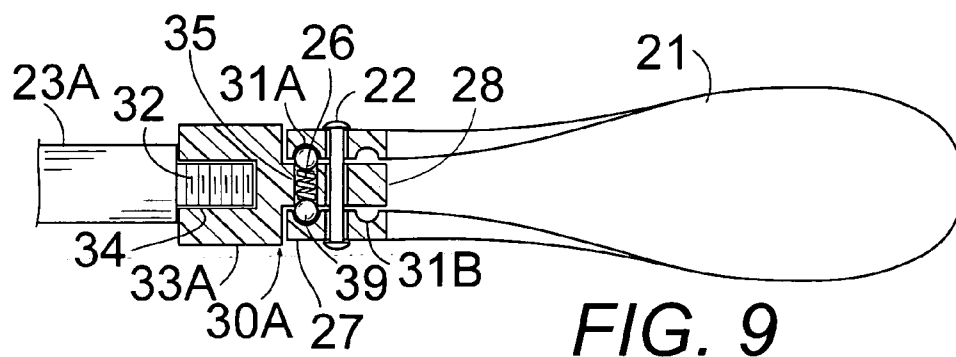
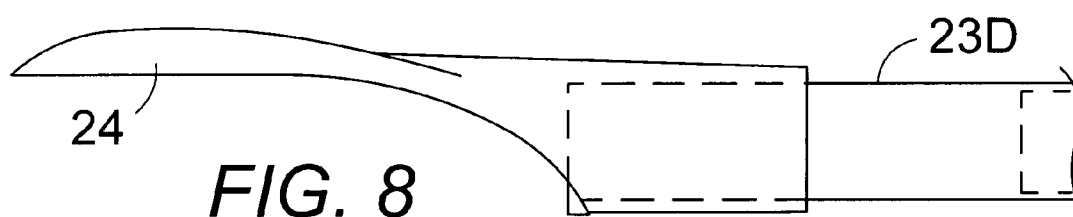
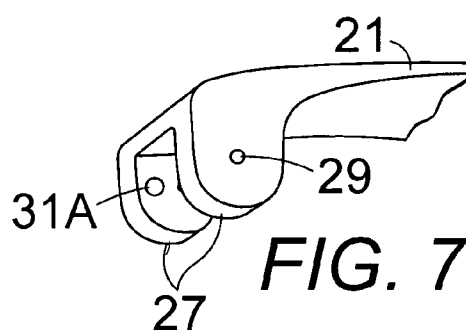
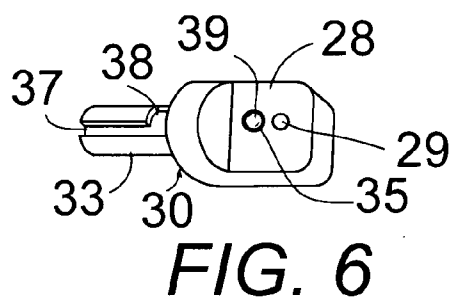
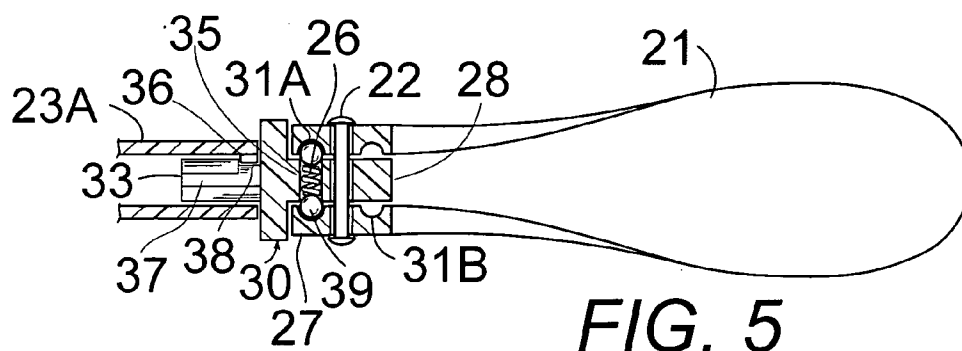
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A47G 25/82 (2006.01)







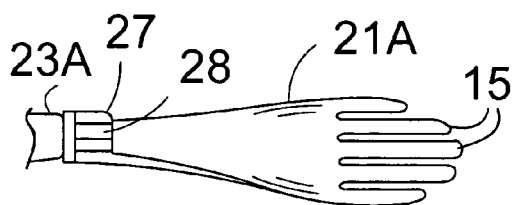


FIG. 10A

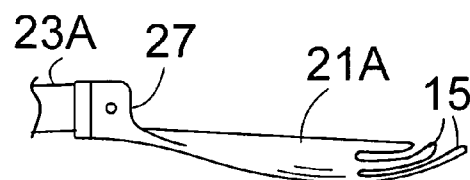


FIG. 10B

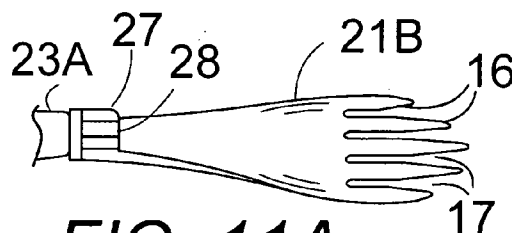


FIG. 11A

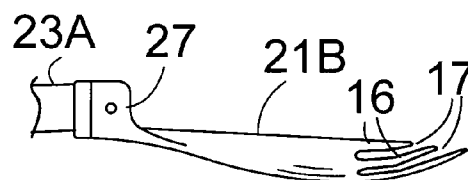


FIG. 11B

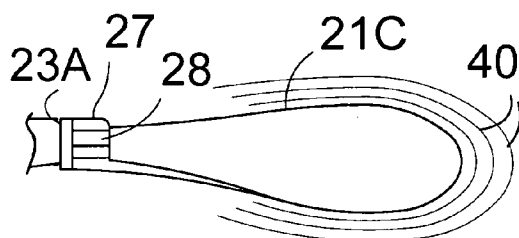


FIG. 12A

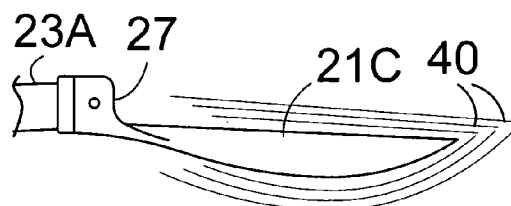


FIG. 12B

TELESCOPING AND FOLDING SHOE HORN**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] Not Applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable.

THE NAMES OF THE PARTIES TO A JOINT RESEARCH OR DEVELOPMENT

[0003] Not Applicable.

BACKGROUND OF THE INVENTION

[0004] 1. Field of the Invention

[0005] The present invention relates to shoe horns and particularly to a shoe horn device having a handle in a shoe horn configuration with a long telescoping handle extension and a shoe horn head at an opposite end of the handle extension which folds over the handle in its retracted position for a more compact arrangement to fit into a pocket or purse of a user, wherein the shoe horn head is replaceable with other types of heads for use with the device.

[0006] 2. Description of Related Art Including Information Disclosed Under 37 CFR 1.97 and 1.98

[0007] A shoe horn is a great aide and often necessary to assist a user in inserting a foot into a shoe or slipping a shoe over a foot, especially for very tight-fitting shoes. A long handled shoe horn is a great convenience for putting on a shoe without bending over by simply holding the shoe horn against an inside back of a shoe from a standing position while slipping the foot into the shoe. For people who cannot bend over, such as people with leg injuries, or cannot easily bend over, such as elderly or other joint stiffened people, a long handled shoe horn is a necessity for putting on shoes without bending over.

[0008] With the current mobile lifestyle and various activities away from home requiring having to removes shoes and put them on again having a portable long handle shoe horn is a great convenience to some and necessity to others as indicated above. Some such situations include exercise classes or sports participation, such as swimming or bowling, medical visits, or just trying on clothing or shoes at a self-service shoe store. Prior art devices do not address this problem in an easy-to-use compact portable shoe horn which extends out to a useful length.

[0009] U.S. Pat. No. 6,695,182, issued Feb. 24, 2004 to Shrewsbury, depicts an extendable shoehorn device for permitting a user to put a shoe on a foot without having to bend over. The extendable shoehorn device includes a handle assembly having a pocket clip thereon. An offset shoehorn member is mounted to an end of the handle assembly for permitting a user to more easily put a shoe on their foot.

[0010] U.S. Pat. No. D302,490, issued Aug. 1, 1989 to Denney, provides the ornamental design for a shoe horn.

[0011] U.S. Pat. No. 4,355,745, issued Oct. 26, 1982 to Nelson, shows a specially constructed shoe horn for persons

having limited body bending movements. The device has an elongated pivotable handle, which enables a person to put on footwear without substantial bending at the waist, hips or knees.

[0012] U.S. Pat. No. 5,884,823, issued Mar. 23, 1999 to Carroll, claims a collapsible shoe horn that includes a shoe horn tongue having a generally thin and smooth body portion for aiding the user in putting on a pair of shoes. The side edges of the shoe horn tongue are slightly curved upwardly in a concave manner so that the shoe horn tongue conforms to the shape of the heel of a human foot. A neck portion is integral with and extends from the bottom of the shoe horn tongue. The neck portion has a pair of opposing flanges, each flange having a dap opening formed within the interior side thereof for receiving opposing ends of a shoe horn handle. The dap openings have a smooth dimple-like dap surface extending from the outer exposed surface of each neck flange for protecting the shoe horn user from the sharp ends of the shoe horn handle.

[0013] U.S. Pat. No. 6,386,216, issued May 14, 2002 to Cubelli, describes a cane and grasping device provided with a shoehorn. An upper tubular member is telescoped within a lower sleeve or sheath having a cane foot at its lowermost end. The sleeve is adjustably set along the member to set the length of the cane by a detent assembly employing a pawl and aperture arrangement. An article grasping mechanism is located at the lower end of the upper tubular member and includes a pair of toothed jaws with meshing teeth. The jaws extend from the tubular member at one end, opposite a handle attached to the tubular member at the other end. A lever is attached at the handle end and is coupled to the jaws via cables and pulleys. The jaws are biased open and are closed by the cables as the handle is squeezed closed. The sleeve encloses the jaws in the closed state when not in use. When the sleeve is removed from juxtaposition over the jaws, the jaws are biased open by torsion springs. The handle and lever are then used to close the open jaws over an article to be grasped.

[0014] U.S. Pat. No. 3,788,531, issued Jan. 29, 1974 to Oldfield, claims a collapsible shoehorn with two shoehorn curved sections telescoping together for storage and telescoping out for usage.

[0015] U.S. Patent Application #20040255995, published Dec. 23, 2004 by Garrett, illustrates a walking stick having a shoehorn/gripper and magnet accessories. The walking stick or cane comprises a support having a foot at one end thereof and a handle at the other. A gripper device adjacent the foot includes a shoehorn assembly pivoted to the support for movement toward and away from the foot for grasping objects between the end of the foot and the shoehorn assembly. The gripper device is operated by a trigger mounted adjacent the handle and a rod generally parallel to the support. In one embodiment, the shoehorn assembly includes a shoehorn which acts to grasp an object. The walking stick may have an adjustable length, by providing telescoping sections.

[0016] What is needed is an easy-to-use compact portable shoe horn which fits into a pocket or purse of a user and opens easily and extends out into a shoe horn with a rigid elongated handle extension of a useful length.

BRIEF SUMMARY OF THE INVENTION

[0017] An object of the present invention is to provide an easy-to-use compact portable shoe horn with a handle in a shoe horn configuration having a long handle extension which telescopes closed and has a shoe horn head pivotally attached to an outer end of the handle extension which pivots and locks in place over the handle for a compact unit which fits into a pocket or purse of a user for storage, and transportation and opens easily by snapping the shoe horn end open away from the handle extension in a locked open position with the handle extension telescoping out to form a shoe horn with a rigid elongated handle of a useful length.

[0018] A related object of the present invention is to provide a shoe horn shaped handle which fits comfortably in a hand of a user and has a handle extension in the form of a series of telescoping sleeves with a mating shoe horn shaped pivotable head on an outer end of an outer sleeve which pivots open for use while holding the handle and pivots closed nesting with the handle with the sleeves all telescoped together inside the handle.

[0019] Another object of the present invention is to, provide replaceable pivotable heads which may include a shoe horn, a back scratcher, a pick-up magnet, a pick-up hand, or other types of heads requiring an extended length handle.

[0020] In brief, the handle in the shape of a shoe horn has a handle extension formed by a number of increasingly smaller sleeves which telescope together to fit within the handle to provide a pocket size item with the handle extension telescoped down and a shoe horn head at an outer end of the sleeves pivoted over the handle and which sleeves telescope out to form the handle extension to make the handle a useful length and with the shoe horn head pivoted open to enable a person to use the shoe horn in a standing position.

[0021] The handle extension comprises of a series of tubular sleeves telescoping into each other which telescope down to fit within the shoe horn shaped handle. This particular shoe horn shape handle serves three purposes. First, with the sleeves extended to form the handle extension, the shoe horn shaped handle forms a self sufficient shoe horn with a long handle even without the pivoting shoe horn head attached to the other end of the telescoping sleeves. Second, the shoe horn shaped handle receives the mating pivoted shoe horn head in a highly efficient compact fit with the two shoe horn shapes conforming to each other to cradle together in a very compact arrangement. Third, using one of the interchangeable heads on the other end of the rod in place of the pivoting shoe horn head, the shoe horn shaped handle makes a handle with a very comfortable grip fitting into the palm of the users hand enabling easy manipulation of the pivotable shoe horn head or other interchangeable heads.

[0022] The pivotable head is attached to an outer end of an outermost sleeve by a pivotable means of allowing the pivotable head to pivot open and lock in an extended work configuration and pivot closed and lock in a folded over storage configuration and a removable means of attaching the pivotable head to the outermost telescoping sleeve.

[0023] A folding shoe horn is one of a number of removable interchangeable pivotable heads attachable to the tele-

scopic sleeve. Other tips would include magnetic pick-up, back scratcher, golf putter, grasping device, etc.

[0024] With the telescoping rod collapsed and the shoe horn folded over it, it then becomes pocket size. Unfolded and extended, the shoe horn would be twenty-nine to thirty inches long.

[0025] An advantage of the present invention is that it provides a useful long handled shoe horn which enables use in a standing position and collapses down to fit in a pocket or purse.

[0026] Another advantage of the present invention is that it provides a portable pocket tool with a collapsible and expansible handle having a variety of replaceable heads for different functions.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0027] These and other details of my invention will be described in connection with the accompanying drawings, which are furnished only by way of illustration and not in limitation of the invention, and in which drawings:

[0028] FIG. 1 is a side elevational view of the telescoping and folding long handled shoe horn device of the present invention in a fully expanded configuration with the shoe horn shaped handle grip portion seen at a left end and the pivotable head mating shoe horn seen at a right end pivoted open at an outer end of the extended telescoping sleeves;

[0029] FIG. 2 is a top plan view of the present invention of FIG. 1;

[0030] FIG. 3 is a side elevational view of the present invention of FIG. 1 with all of the sleeves telescoped together in the handle and the pivotable head folded over and nesting with the shoe horn shaped handle so that the device is fully contracted for storage;

[0031] FIG. 4 is a top plan view of the present invention of FIG. 3 in the fully contracted configuration;

[0032] FIG. 5 is a top plan view in partial section of the pivotable shoe horn shaped head showing the pivot and locking connection between the pivotable head and an outer end of the outermost telescoping sleeve and a twist plug connection of the pivotable head with the outermost telescoping sleeve;

[0033] FIG. 6 is a perspective view of the twist plug and the protrusion of the pivotable head base;

[0034] FIG. 7 is a partial perspective view showing the flanges of the pivotable head which connect to the protrusion of the pivotable head base of FIG. 6;

[0035] FIG. 8 is a side elevational view of the shoe horn shaped gripping handle shown with the telescoping sleeves extended;

[0036] FIG. 9 is a top plan view in partial section of the pivotable shoe horn shaped head showing the pivot and locking connection between the pivotable head and a threaded outer end of the outermost telescoping sleeve and a mating threaded opening in the pivotable head base;

[0037] FIG. 10A is a top plan view of an alternate back scratcher embodiment of the pivotable head;

[0038] FIG. 10B is a side elevational view of the alternate back scratcher embodiment of the pivotable head of FIG. 10A;

[0039] FIG. 11A is a top plan view of an alternate grasper head embodiment of the pivotable head;

[0040] FIG. 11B is a side elevational view of the alternate back grasper head embodiment of the pivotable head of FIG. 11A;

[0041] FIG. 12A is a top plan view of an alternate magnetized head embodiment of the pivotable head;

[0042] FIG. 12B is a side elevational view of the alternate magnetized embodiment of the pivotable head of FIG. 12A.

DETAILED DESCRIPTION OF THE INVENTION

[0043] In FIGS. 1-12, a telescoping and pivoting shoe horn device 20 comprises a shoe horn shaped hand grip handle 24 at one end having a series of telescoping sleeves 23A-23D slidable inside the handle with a pivotable head 21 in the shape of a mating shoe horn pivotally attached to on outer end of an outer sleeve 23A and the pivotable head pivots open with the sleeves fully extended into a handle extension for use as a shoe horn at either end with an elongated handle, as shown in FIGS. 1 and 2, and alternately, with the sleeves telescoped together within the handle, the pivotable head 21 pivots closed over the handle 24 nesting with the handle, as shown in FIGS. 3 and 4, for compact storage in a pocket or purse.

[0044] The collapsible and expansible handle comprises an outer gripping portion 24 in the shape of a shoe horn and a series of increasingly smaller sleeves 23D, 23C, 23B, and 23A which sleeves telescope together to fit within the outer gripping portion in a fully collapsed position, as shown in FIGS. 3 and 4, to fit within a pocket of a user and which sleeves 23A-23D telescope out to a fully extended configuration to form a handle extension for use as an elongated handle, as shown in FIGS. 1 and 2, to enable a user, holding a proximal end of the handle to contact a floor with a distal end of the handle from a standing position. The device can be held from either end to use as a long-handled shoe horn.

[0045] A pivotable head 21 and 21A-21C attaches to an outer end of an outermost extensible telescoping sleeve 23A by a means for pivoting the pivotable head from a first locked position pivoted over the handle 21 and the telescoping sleeves 23A-23D in the fully collapsed position, as shown in FIGS. 3 and 4, to a second locked position pivoted away from the handle and the telescoping sleeves 23A-23D in the fully extended position, as shown in FIGS. 1, 2, 5, and 10-12. The pivotable head 21 and 21A-21C has a shape conforming to the shoe horn shape of the gripping portion of the handle 24 so that the pivotable head 21 and 21A-21C contacts and nests with the shoe horn shaped gripping portion of the handle in the fully collapsed position with the pivotable head 21 and 21A-21C pivoted over the gripping portion 24, as shown in FIGS. 3 and 4.

[0046] Both the shoe horn shaped gripping portion of the handle 24 and the pivotable head 21 are each alternately usable as a shoe horn and a handle conforming to a palm of a hand of a user.

[0047] The pivotable head 21 and 21A-21C is removable from the outermost extensible telescoping sleeve 23A and replaceable thereon by any other pivotable head of a variety of types including one of a list of pivotable head functional tools including a shoe horn 21 of FIGS. 1-5 and 9, a back scratcher 21A of FIGS. 10A and 10B using an array of spaced end fingers 15, a grasper head 21B of FIGS. 11A and 11B for retrieving external items using an array of end pointed fingers 16 and notches 17 between the pointed fingers, and a magnetic head 21C of FIGS. 12A and 12B for retrieving external metal items using a surrounding magnetic field 40.

[0048] In FIGS. 5-7 and 9, the means for attaching the pivotable head comprises a pivotable head base 30 and 30A comprising a first end 33 and 33A having a means for attaching the pivotable head base to the outer end of the outermost sleeve and a second end having a base protrusion 28 with two opposing parallel flat sides having a base pivot pin hole 35 therethrough with a pivot pin 22 through the base pivot pin hole 29 and an adjacent cylindrical opening 35 therethrough with a pair of spring-loaded locking balls 39 and a communicating spring 35 positioned within the cylindrical opening with one of the balls 39 protruding from each of two opposing parallel flat sides of the base protrusion adjacent to the base pivot pin hole 29 and a pivotable head extension comprising a pair of spaced parallel flanges 27 protruding orthogonally therefrom straddling the two opposing parallel flat sides of the base protrusion 28, each of the flanges having a center flange pivot hole 29 for receiving an end of the pivot pin 22 therein and a detente 31A and 31B on each side of the flange pivot hole 29 in alignment with the locking ball 39 so that when the pivotable head is pivoted open in the fully extended position the balls 39 engage a first pair of detentes 31A on one side of the pivot pin to lock the pivotable head in a pivoted open position and when the pivotable head is pivoted closed in a closed position over the handle the balls engage a second pair of detentes 31B on the other side of the pivot pin to lock the pivotable head in the pivoted closed position. When a user applies force to pivot the pivotable head 21 and 21A-21C, the pivotable head pivots to release the balls unlocking the pivotable head.

[0049] In FIGS. 5-7, one means for attaching the pivotable head base 30 to the outer end of the outermost sleeve 23A comprises a hollow cylindrical open outer end of the outermost sleeve having a sleeve inner protrusion 36 adjacent to the outer end and a twist plug 33 extending from the pivotable head base 30, the twist plug having a cylindrical body to fit within the cylindrical open outer end of the outermost sleeve and an insertion portion 37 of a groove mating with the sleeve inner protrusion along the length of the plug in an outer surface of the plug extending from an outer end of the plug and a locking portion 38 of the groove extending orthogonally from the insertion portion of the groove around a portion of the circumference of the tube, the locking portion 38 of the groove communicating with the insertion portion 37 of the groove so that the sleeve inner protrusion 36 engages the insertion portion 37 of the groove when the twist plug 33 is inserted in the outer end of the outer sleeve 23A and the sleeve inner protrusion 36 further engages the locking portion 38 of the groove when the twist plug 33 is turned in the outermost sleeve 23A to lock the pivotable head base 30 to the outermost sleeve 23A.

[0050] In FIG. 9, an alternate means for attaching the pivotable head base 30A to the outer end of the outermost sleeve 23A comprises a protruding threaded outer end 32 of the outermost sleeve 23A and a mating threaded opening 34 in a connecting portion 33A of the pivotable head base 30A to receive the protruding threaded outer end 32 to lock the pivotable head base 30A to the outermost sleeve 23A.

[0051] The components are preferably fabricated of metal or sturdy plastic.

[0052] It is understood that the preceding description is given merely by way of illustration and not in limitation of the invention and that various modifications may be made thereto without departing from the spirit of the invention as claimed.

1. A telescoping and pivoting shoe horn device comprising:

a collapsible and expansible handle comprising an outer gripping portion and a series of increasingly smaller sleeves which sleeves telescope together to fit within the outer gripping portion in a fully collapsed position to fit within a pocket of a user and which sleeves telescope out to a fully extended position to form a handle extension for use as an elongated handle to enable a user holding a proximal end of the elongated handle to contact a floor with a distal end of the handle from a standing position;

a pivotable head attached to an outer end of an outermost telescoping sleeve by a means for pivoting the pivotable head between a first locked position with the pivotable head pivoted onto the handle when the telescoping sleeves are in the fully collapsed in a pocket storage configuration position and a second locked position with the pivotable head pivoted out straight extending from the outer end of the outermost sleeve with the telescoping sleeves in the fully extended position to form a long handled shoe horn of a useful length so that with the shoe horn head pivoted open to enable a user to use the shoe horn in a standing position, and means for locking the pivotable head in the first locked position and alternately means for snapping the shoe horn end open away from the handle extension in a locked open position with the handle extension telescoping out to lock the pivotable head in the second locked position to form a shoe horn with a rigid elongated handle of a useful length, the pivotable head having a shape conforming to the shape of the gripping portion of the handle so that the pivotable head pivots over, locks, and contacts and nests with the gripping portion of the handle when the sleeves are in the fully collapsed position with the pivotable head pivoted over the gripping portion to form a telescoping and pivoting shoe horn device;

wherein the gripping portion of the handle conforms to a palm of a hand of a user.

2. The device of claim 1 wherein the pivotable head is removable from the outermost telescoping sleeve and replaceable thereon by any of a variety of pivotable heads.

3. The device of claim 2 wherein the pivotable head is removable from the outermost telescoping sleeve and replaceable thereon by one of a variety of pivotable heads taken from the list of pivotable heads including a shoe horn,

a back scratcher, a grasper for retrieving external items, and a magnetic head for retrieving external metal items.

4. The device of claim 1 wherein the means for attaching the pivotable head comprises a pivotable head base comprising a first end having a means for attaching the pivotable head base to the outer end of the outermost sleeve and a second end having a base protrusion with two opposing parallel flat sides having a base pivot pin hole therethrough with a pivot pin through the base pivot pin hole and an adjacent cylindrical opening therethrough with a pair of spring-loaded locking balls positioned within the cylindrical opening with one of the balls protruding from each of two opposing parallel flat sides of the base protrusion adjacent to the base pivot pin hole and a pivotable head extension comprising a pair of spaced parallel flanges protruding orthogonally therefrom straddling the two opposing parallel flat sides of the base protrusion, each of the flanges having a center flange pivot hole for receiving an end of the pivot pin therein and a dent on each side of the flange pivot hole in alignment with the locking ball so that when the pivotable head is pivoted open in the fully extended position the balls engage a first pair of dents on one side of the pivot pin to lock the pivotable head in a pivoted open position and when the pivotable head is pivoted closed in a closed position over the handle the balls engage a second pair of dents on the other side of the pivot pin to lock the pivotable head in the pivoted closed position, wherein a user applies force to pivot the pivotable head, the pivotable head pivots to release the balls unlocking the pivotable head.

5. The device of claim 4 wherein the means for attaching the pivotable head base to the outer end of the outermost sleeve comprises a hollow cylindrical open outer end of the outermost sleeve having a sleeve inner protrusion adjacent to the outer end; and a twist plug extending from the pivotable head base, the twist plug having a cylindrical body to fit within the cylindrical open outer end of the outermost sleeve and an insertion portion of a groove mating with the sleeve inner protrusion along the length of the plug in an outer surface of the plug extending from an outer end of the plug and a locking portion of the groove extending orthogonally from the insertion portion of the groove around a portion of the circumference of the tube, the locking portion of the groove communicating with the insertion portion of the groove so that the sleeve inner protrusion engages the insertion portion of the groove when the twist plug is inserted in the outer end of the outer sleeve and the sleeve inner protrusion further engages the locking portion of the groove when the twist plug is turned in the outermost sleeve to lock the pivotable head base to the outermost sleeve.

6. The device of claim 4 wherein the means for attaching the pivotable head base to the outer end of the outermost sleeve comprises a protruding threaded outer end of the outermost sleeve; and a mating threaded opening in the pivotable head base to receive the protruding threaded outer end to lock the pivotable head base to the outermost sleeve.

7. A telescoping and pivoting shoe horn device comprising:

a collapsible and expansible handle comprising an outer gripping portion in the shape of a shoe horn and a series of increasingly smaller sleeves which sleeves telescope together to fit within the outer gripping portion in a fully collapsed position to fit within a pocket of a user and which sleeves telescope out to a fully extended position to form a handle extension for use as an

elongated handle to enable a user holding a proximal end of the elongated handle to contact a floor with a distal end of the handle from a standing position;

a pivotable head attached to an outer end of an outermost telescoping sleeve by a means for pivoting the pivotable head between a first locked position with the pivotable head pivoted onto the handle when the telescoping sleeves are in the fully collapsed position and a second locked position with the pivotable head pivoted out straight extending from the outer end of the outermost sleeve with the telescoping sleeves in the fully extended position, the pivotable head having a shape conforming to the shoe horn shape of the gripping portion of the handle so that the pivotable head contacts and rests with the shoe horn shaped gripping portion of the handle when the sleeves are in the fully collapsed position with the pivotable head pivoted over the gripping portion;

wherein both the shoe horn shaped gripping portion of the handle and the pivotable head are each alternately usable as a shoe horn and a handle conforming to a palm of a hand of a user; and

wherein the means for attaching the pivotable head comprises a pivotable head base comprising a first end having a means for attaching the pivotable head base to the outer end of the outermost sleeve and a second end having a base protrusion with two opposing parallel flat sides having a base pivot pin hole therethrough with a pivot pin through the base pivot pin hole and an adjacent cylindrical opening therethrough with a pair of spring-loaded locking balls positioned within the cylindrical opening with one of the balls protruding from each of two opposing parallel flat sides of the base protrusion adjacent to the base pivot pin hole and a pivotable head extension comprising a pair of spaced parallel flanges protruding orthogonally therefrom straddling the two opposing parallel flat sides of the base protrusion, each of the flanges having a center flange pivot hole for receiving an end of the pivot pin

therein and a dent on each side of the flange pivot hole in alignment with the locking ball so that when the pivotable head is pivoted open in the fully extended position the balls engage a first pair of dents on one side of the pivot pin to lock the pivotable head in a pivoted open position and when the pivotable head is pivoted closed in a closed position over the handle the balls engage a second pair of dents on the other side of the pivot pin to lock the pivotable head in the pivoted closed position, wherein a user applies force to pivot the pivotable head, the pivotable head pivots to release the balls unlocking the pivotable head.

8. The device of claim 7 wherein the means for attaching the pivotable head base to the outer end of the outermost sleeve comprises a hollow cylindrical open outer end of the outermost sleeve having a sleeve inner protrusion adjacent to the outer end; and a twist plug extending from the pivotable head base, the twist plug having a cylindrical body to fit within the cylindrical open outer end of the outermost sleeve and an insertion portion of a groove mating with the sleeve inner protrusion along the length of the plug in an outer surface of the plug extending from an outer end of the plug and a locking portion of the groove extending orthogonally from the insertion portion of the groove around a portion of the circumference of the tube, the locking portion of the groove communicating with the insertion portion of the groove so that the sleeve inner protrusion engages the insertion portion of the groove when the twist plug is inserted in the outer end of the outer sleeve and the sleeve inner protrusion further engages the locking portion of the groove when the twist plug is turned in the outermost sleeve to lock the pivotable head base to the outermost sleeve.

9. The device of claim 7 wherein the means for attaching the pivotable head base to the outer end of the outermost sleeve comprises a protruding threaded outer end of the outermost sleeve; and a mating threaded opening in the pivotable head base to receive the protruding threaded outer end to lock the pivotable head base to the outermost sleeve.

* * * * *