



US008152232B2

(12) **United States Patent**  
**Colboch**

(10) **Patent No.:** **US 8,152,232 B2**  
(45) **Date of Patent:** **Apr. 10, 2012**

(54) **HANDLE FOR MOTION ACTIVATED FURNITURE**

(75) Inventor: **Robert Colboch**, Athens, TN (US)

(73) Assignee: **P.I. Inc.**, Athens, TN (US)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 291 days.

(21) Appl. No.: **12/555,430**

(22) Filed: **Sep. 8, 2009**

(65) **Prior Publication Data**

US 2010/0060043 A1 Mar. 11, 2010

**Related U.S. Application Data**

(60) Provisional application No. 61/094,649, filed on Sep. 5, 2008.

(51) **Int. Cl.**  
**A47C 1/035** (2006.01)

(52) **U.S. Cl.** ..... **297/85 C**; 297/463.1; 74/502

(58) **Field of Classification Search** ..... 297/85 C, 297/463.1; 16/428, 442; 74/501.6, 502, 74/502.2, 502.4, 502.6

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

3,831,406 A \* 8/1974 Gebhard et al. .... 70/1.5  
4,300,781 A \* 11/1981 Riggs ..... 280/11.212  
4,704,044 A \* 11/1987 Yoshigai ..... 74/489

5,050,444 A \* 9/1991 Nishimura ..... 74/502.2  
5,107,720 A \* 4/1992 Hatfield ..... 74/502  
5,277,080 A \* 1/1994 Roelle ..... 74/502.4  
5,292,170 A \* 3/1994 LaPointe et al. .... 297/85 C  
5,351,365 A \* 10/1994 Hauck ..... 16/422  
5,497,676 A \* 3/1996 Barnard ..... 297/463.1  
5,894,631 A \* 4/1999 Chiu ..... 16/110.1

\* cited by examiner

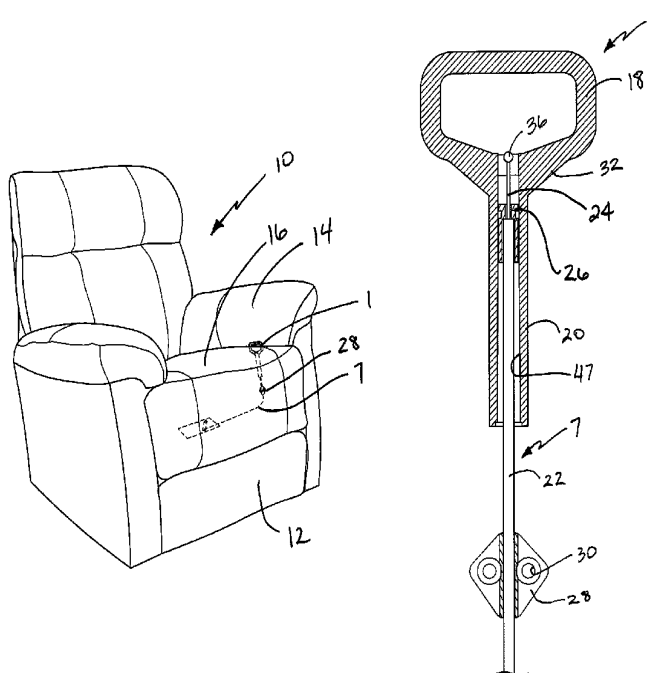
*Primary Examiner* — Peter R. Brown

(74) *Attorney, Agent, or Firm* — Barnes & Thornburg LLP; Mark J. Nahnsen

(57) **ABSTRACT**

A release handle is adapted to activate a portion of a chair or sofa, such as a foot rest or a recline mechanism. The handle allows a user to selectively control the movement of functions of the chair. The handle is coupled to a cable, which is used to release a mechanism on the chair, such as the footrest. The handle includes a grip ring that is coupled to an annular tube at one end. The annular tube is adapted to be positioned over sheath of the pull cable. The annular tube protects the cable within the sheath to prevent wear to the cable to prevent breakage. The handle also includes a retention slot positioned at the top of the annular tube, at the junction of the tube and the grip ring. The retention slot is adapted to allow an end fitting of the cable to be snapped into the handle to secure its position. The handle also includes a pass through slot that is adapted to allow the barrel end of the cable to pass through the annular tube to allow the barrel end to be rotate 90 degrees and snapped into the retention slot.

**22 Claims, 16 Drawing Sheets**



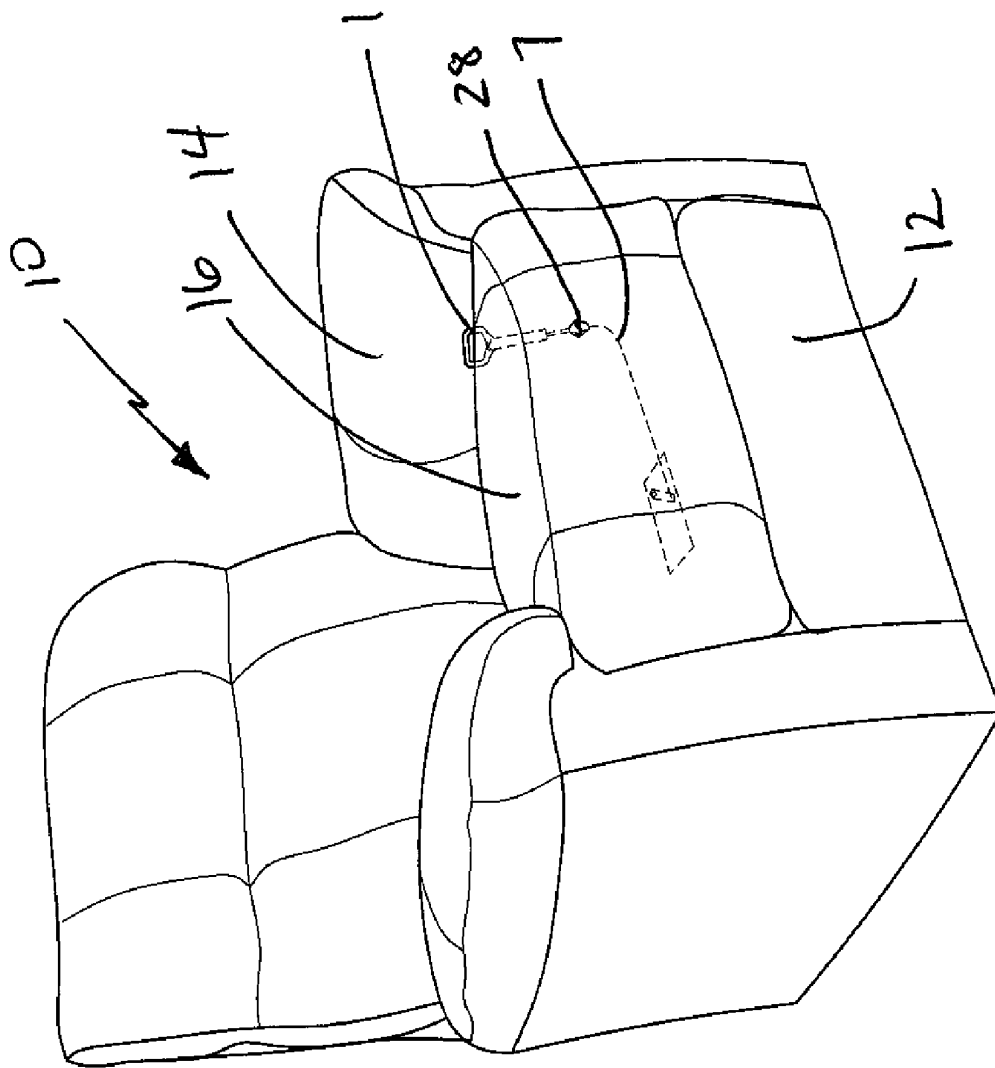


FIG. 1

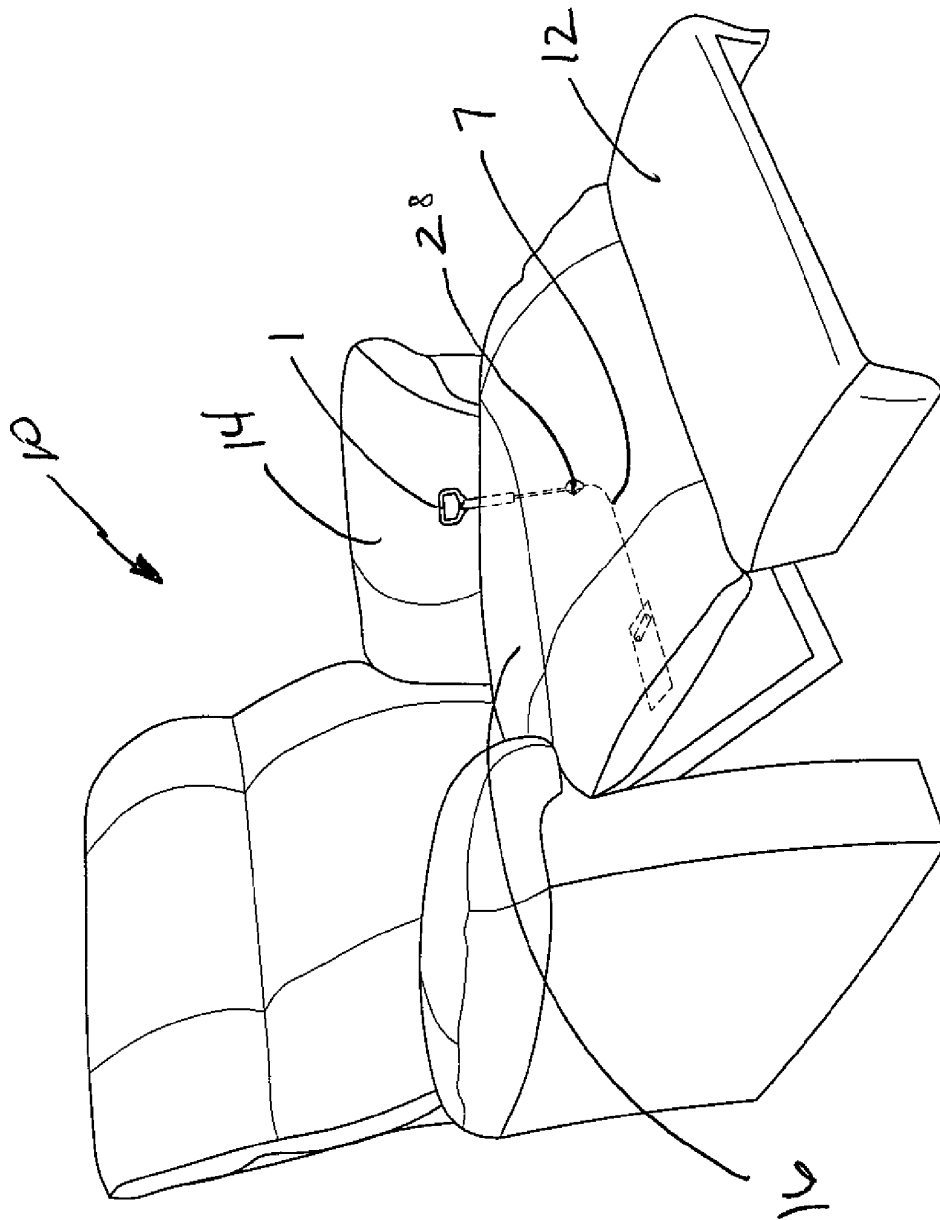


FIG. 2

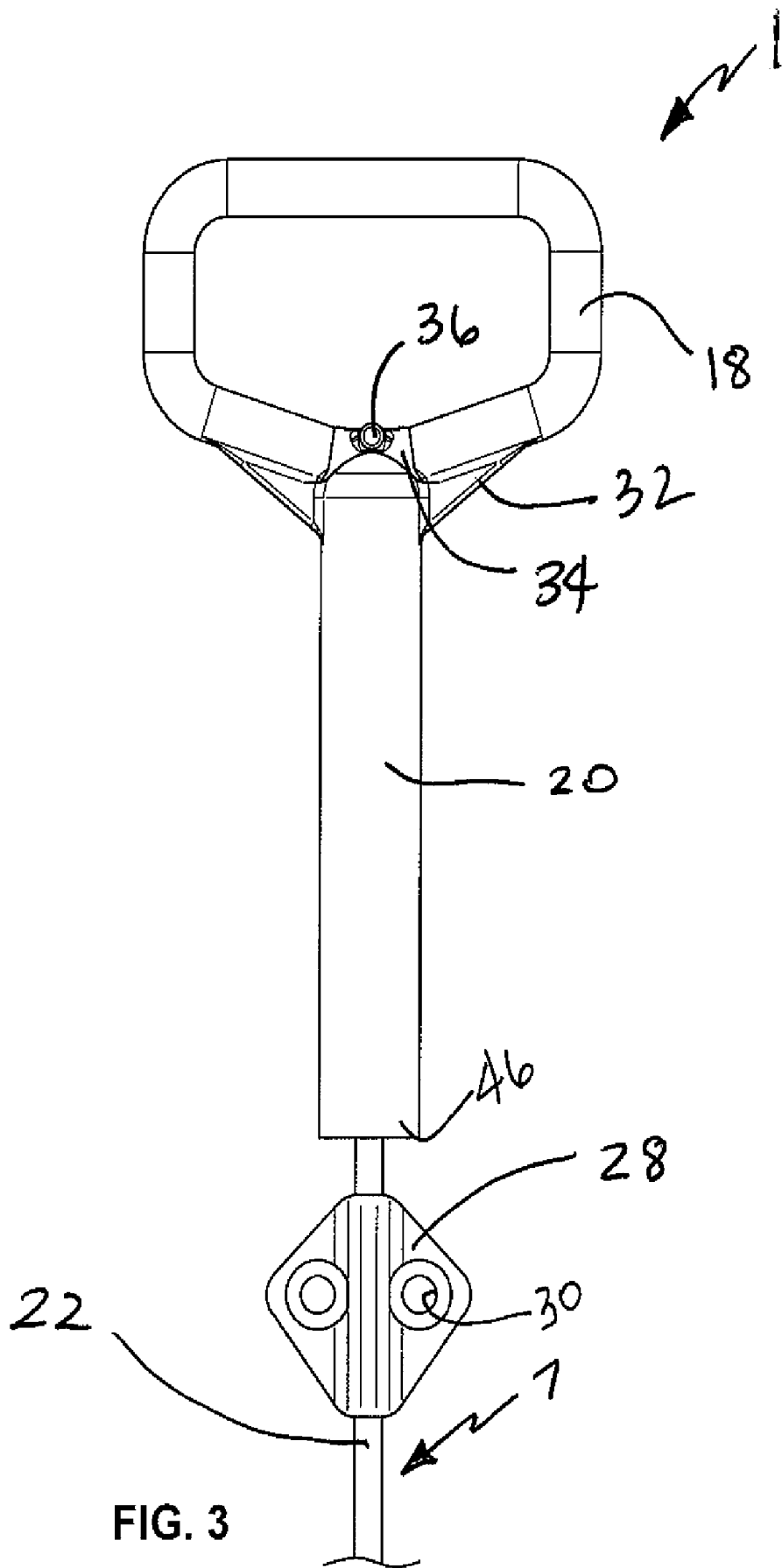


FIG. 3

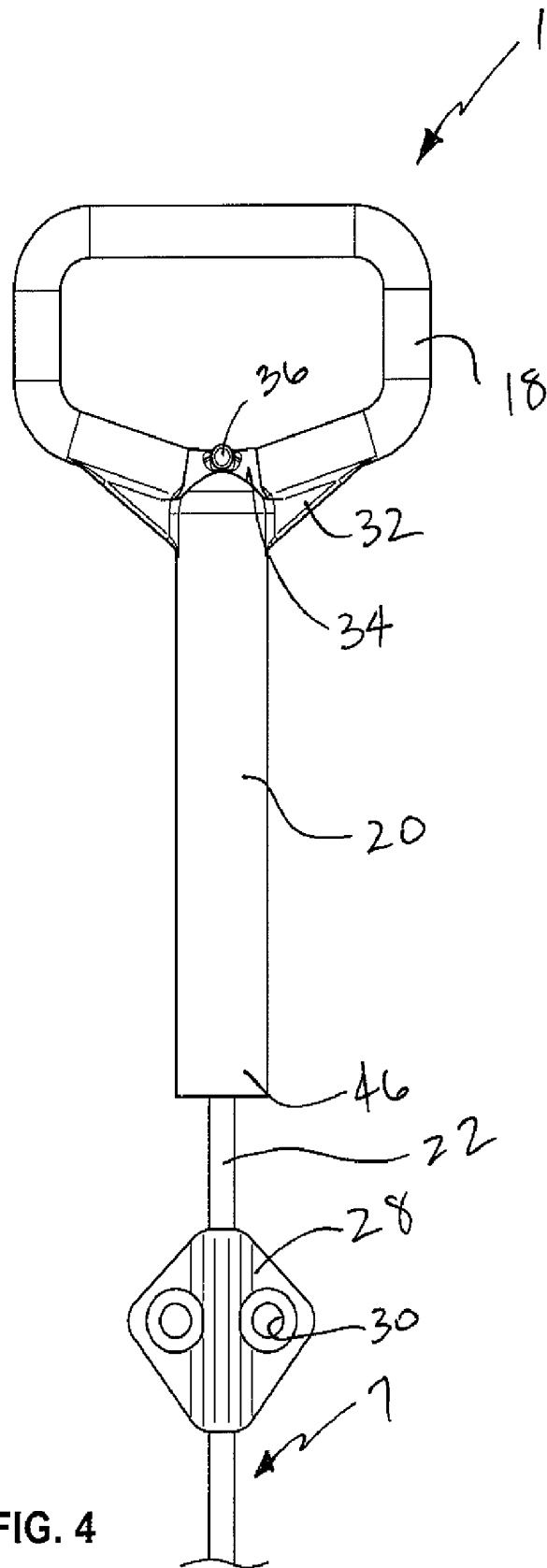


FIG. 4

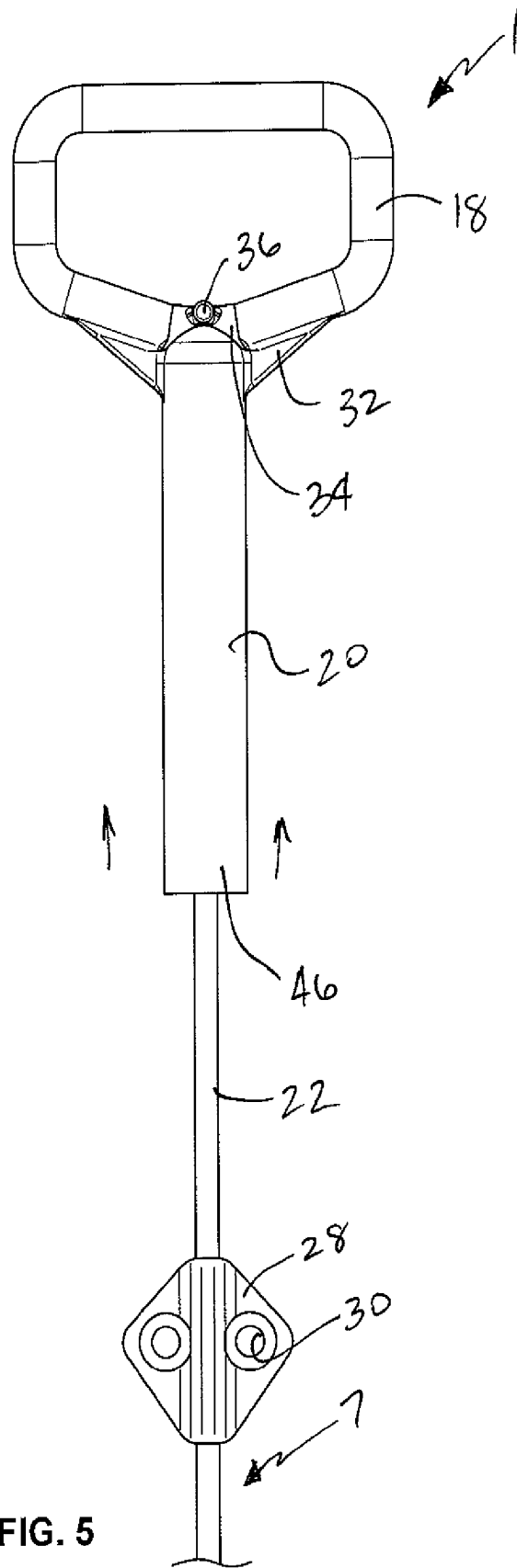


FIG. 5

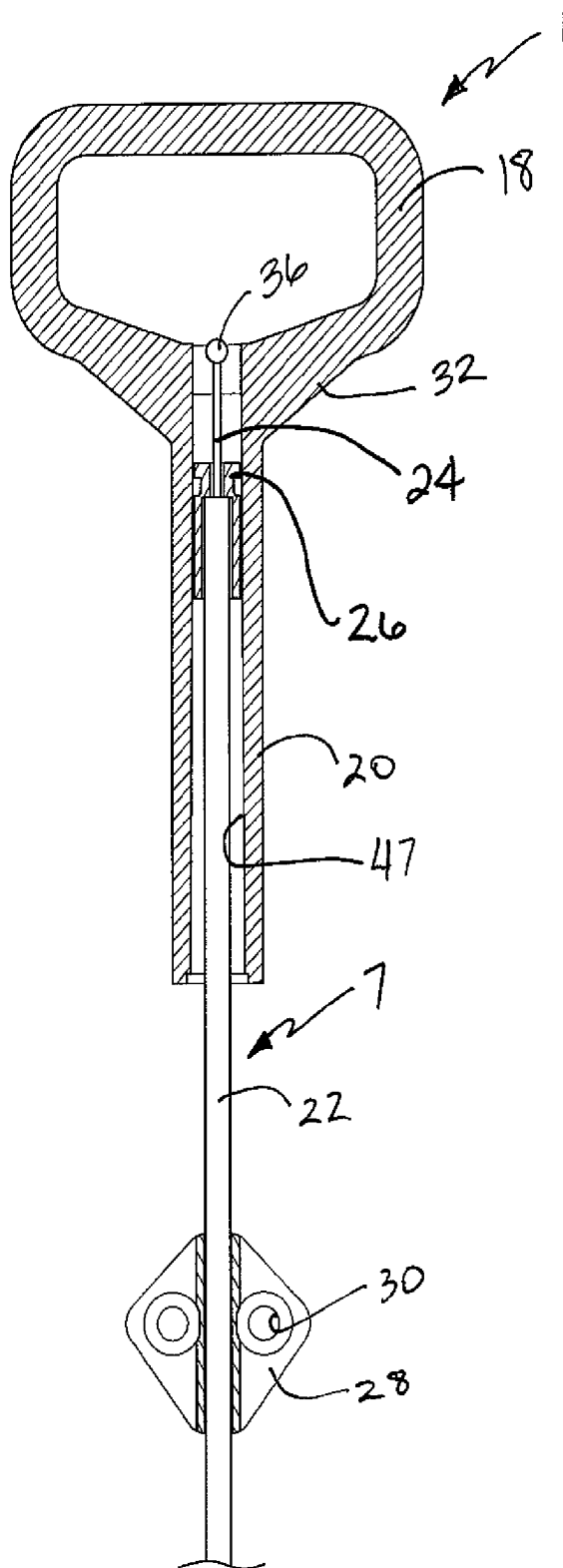


FIG. 6

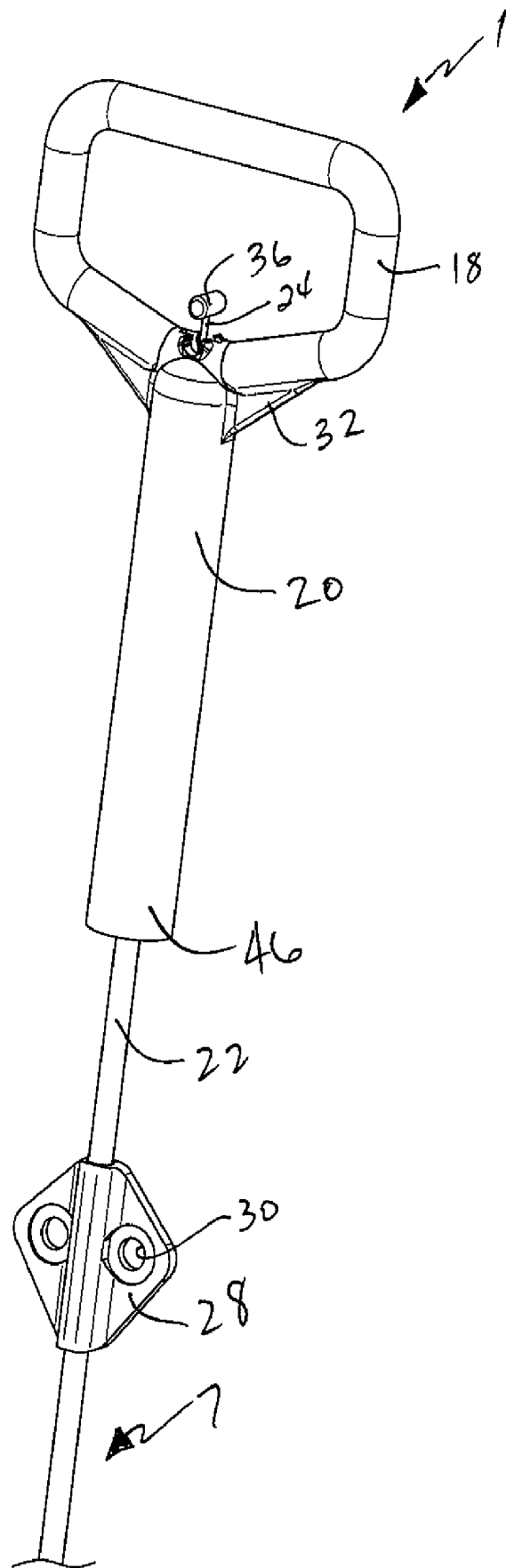


FIG. 7



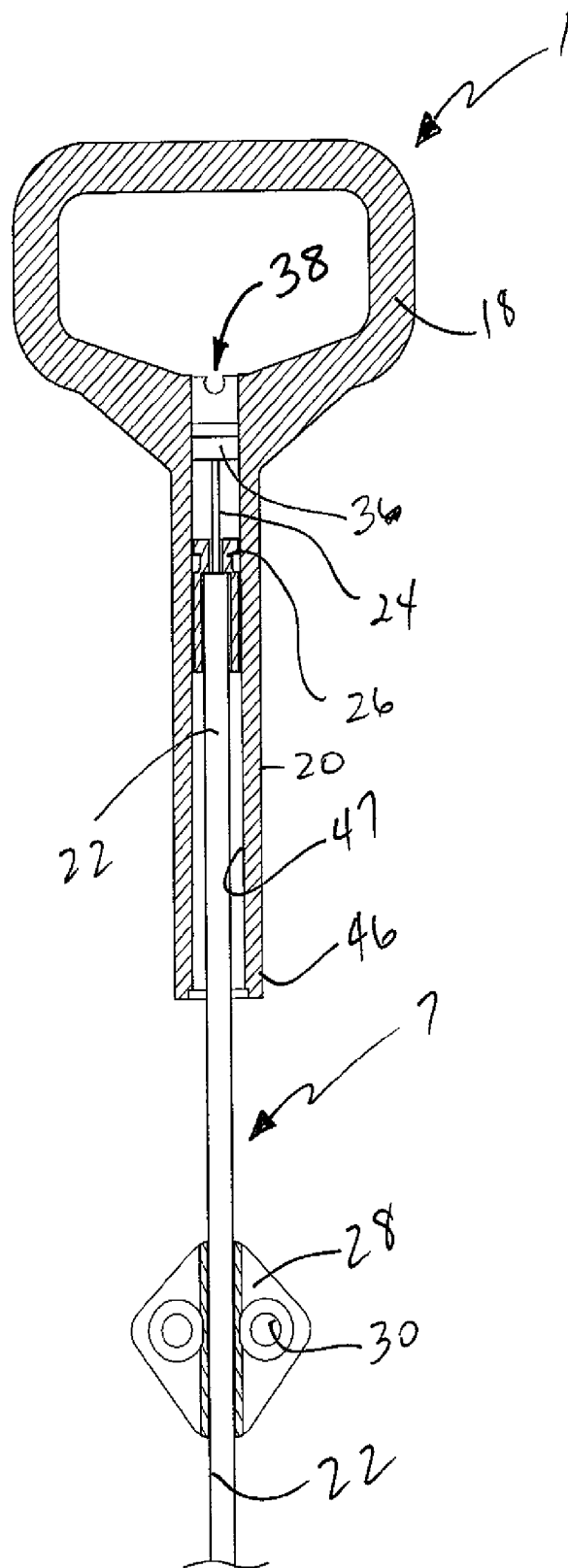


FIG. 8

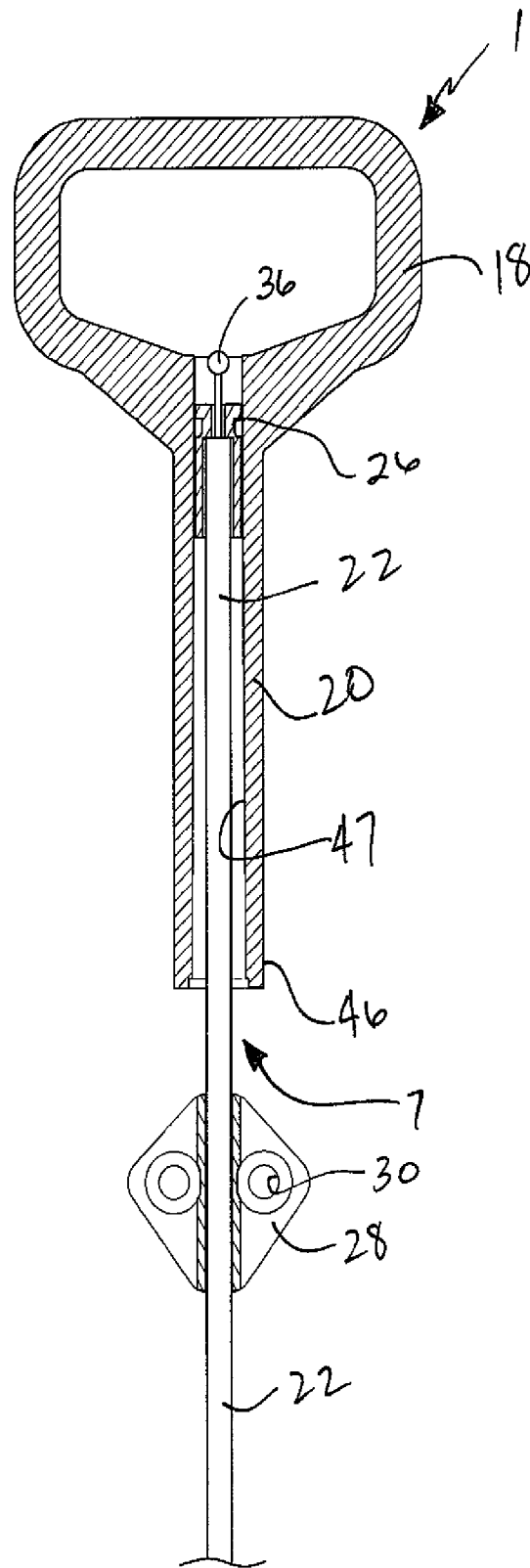


FIG. 9

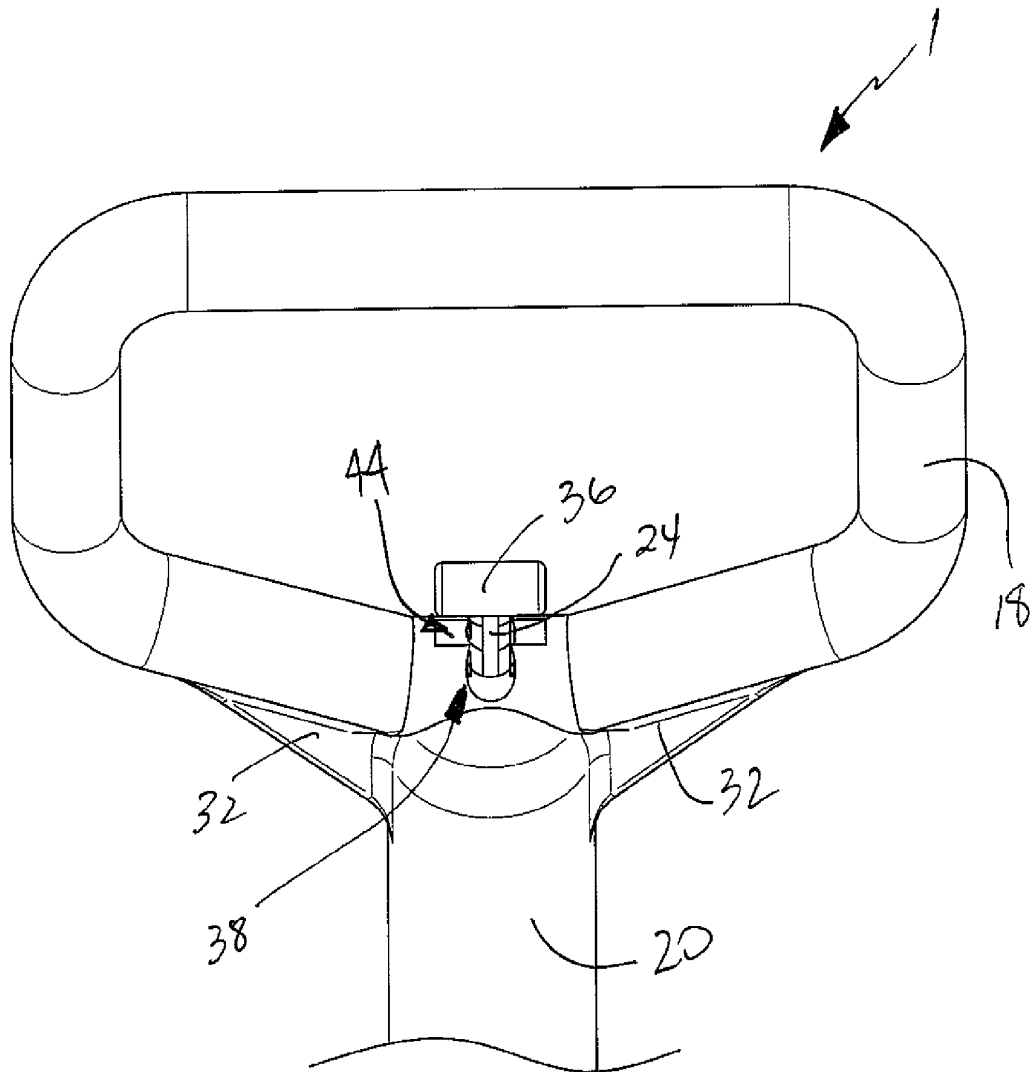


FIG. 10

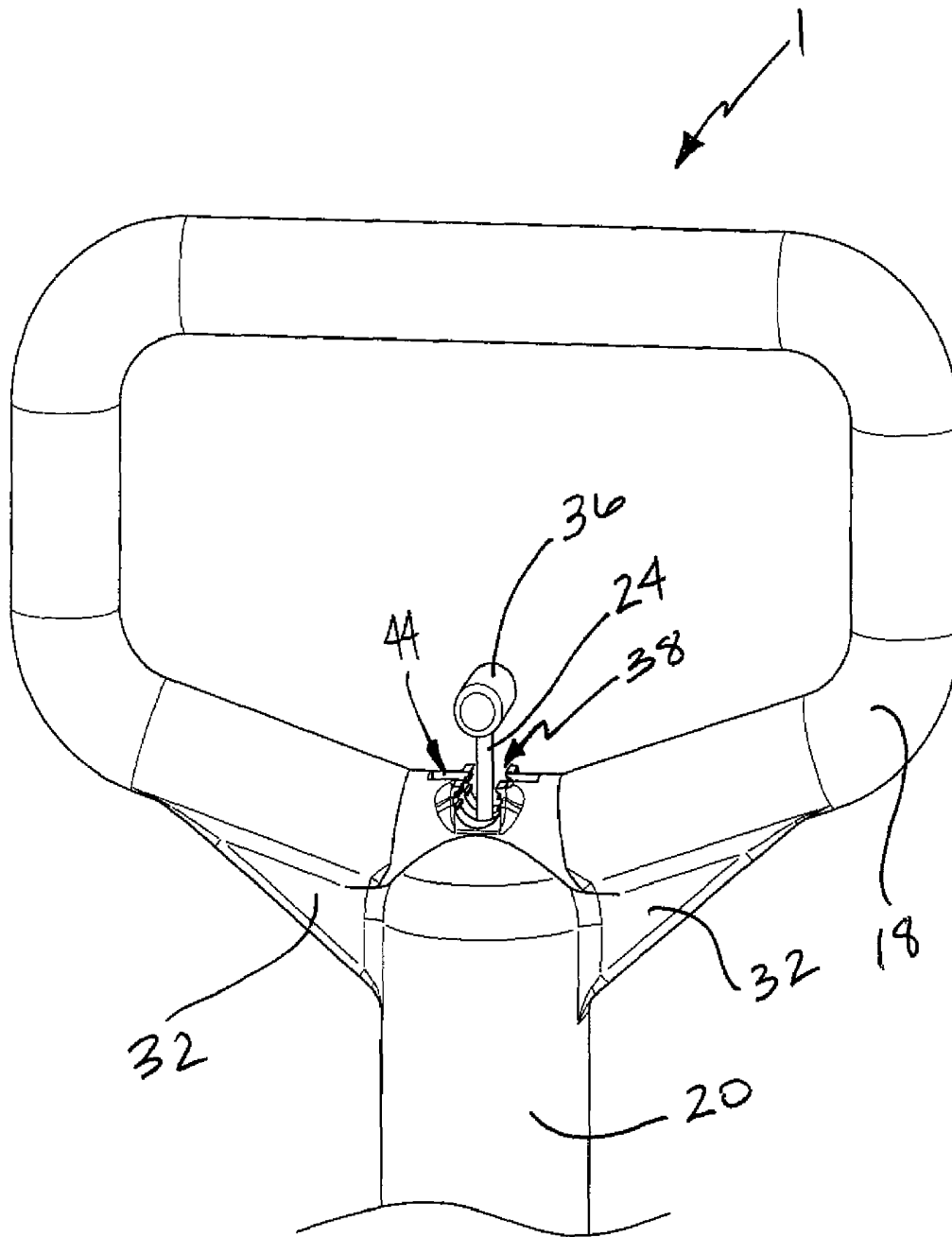


FIG. 11

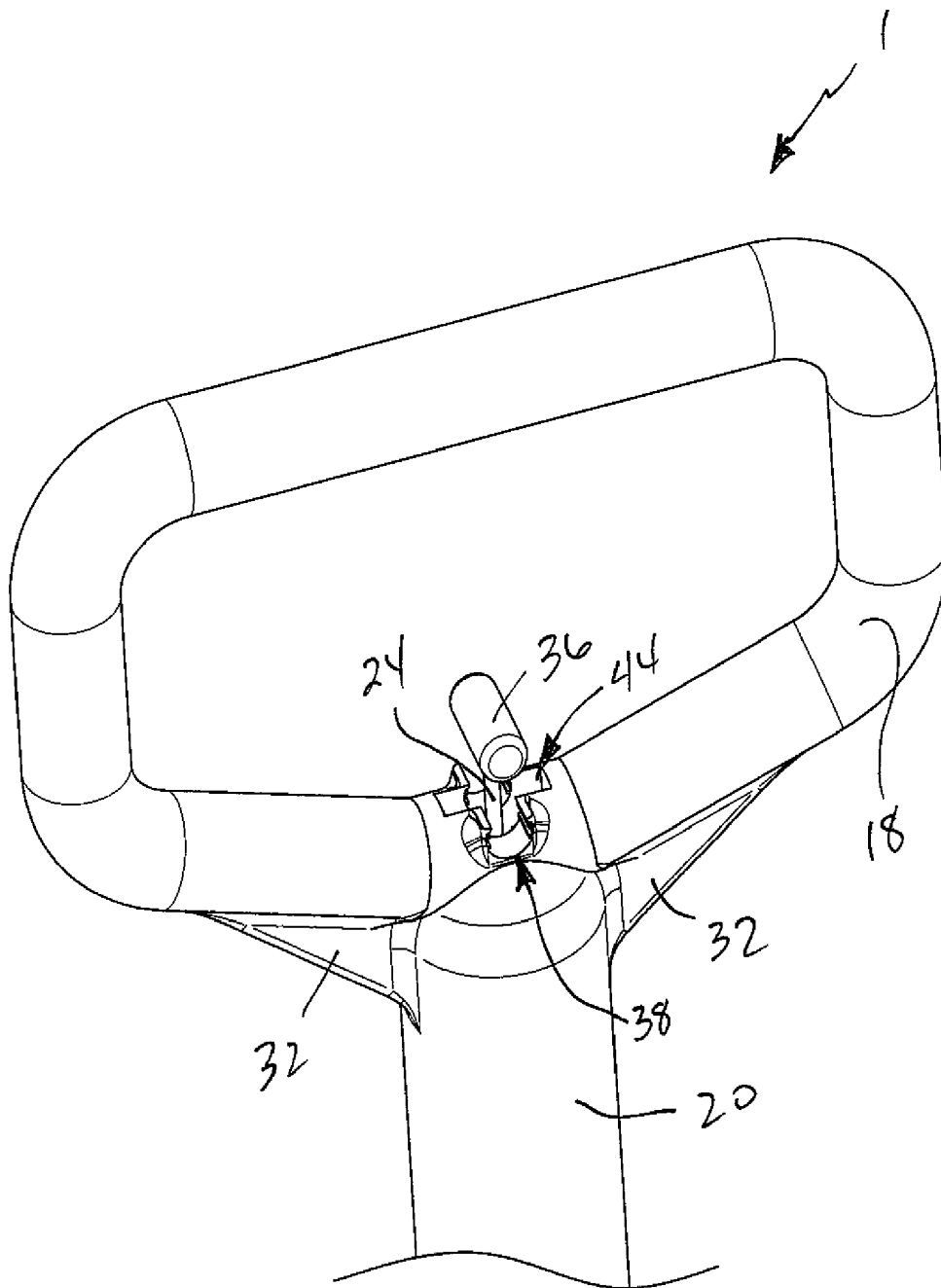


FIG. 12

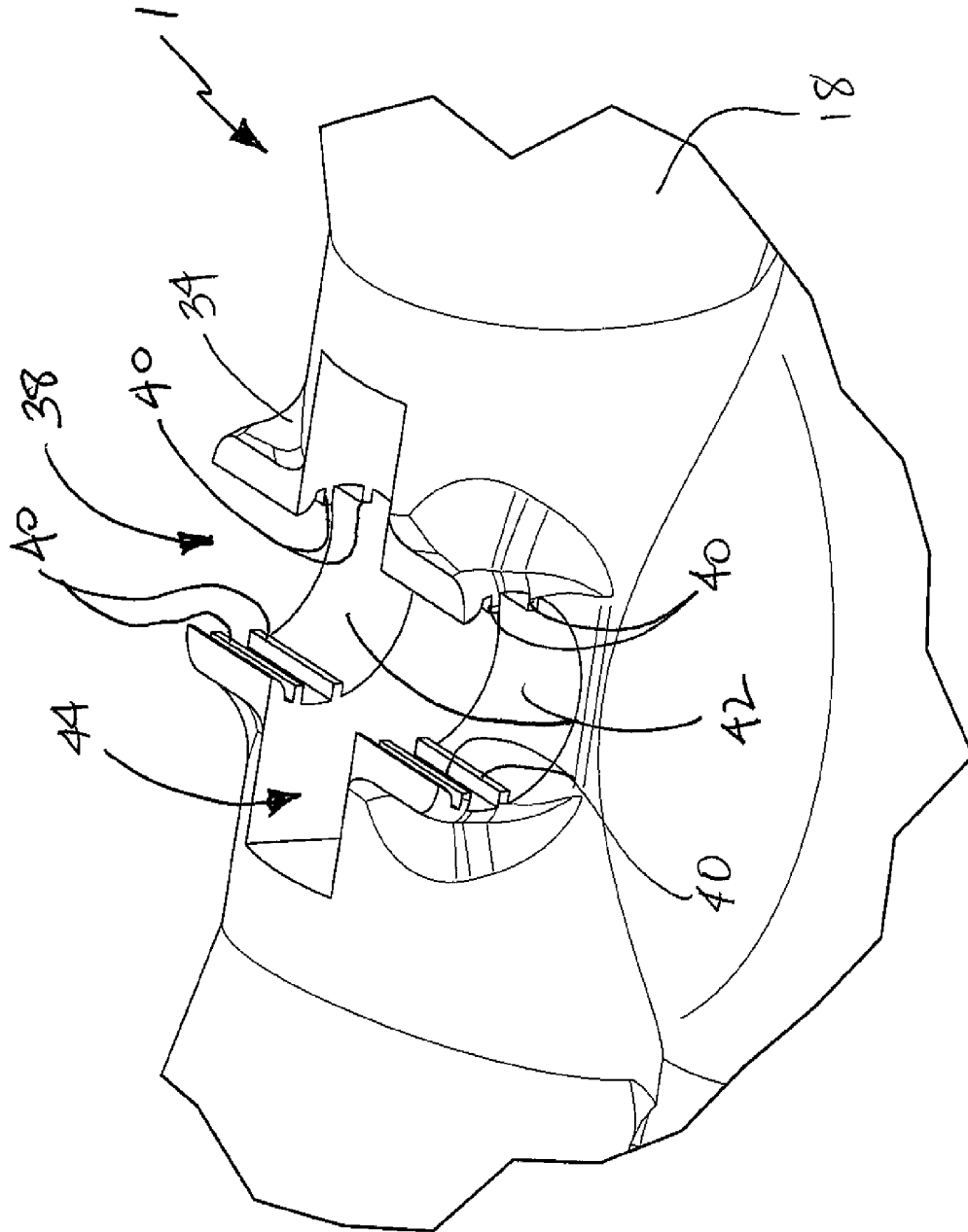


FIG. 13

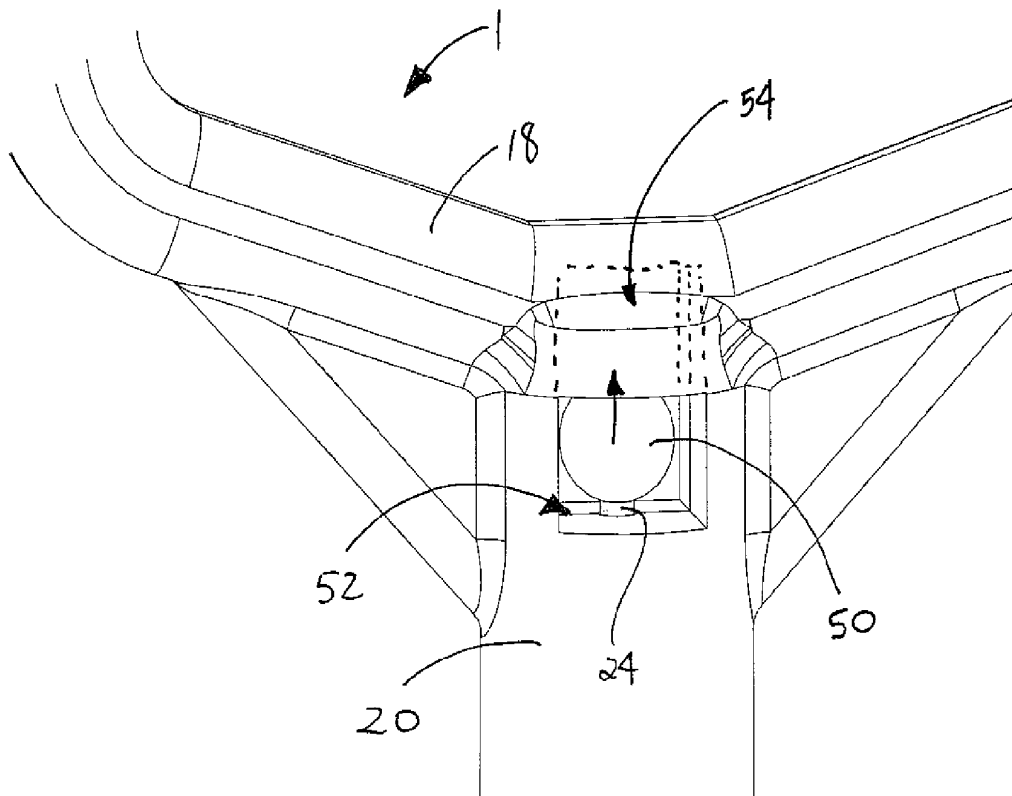
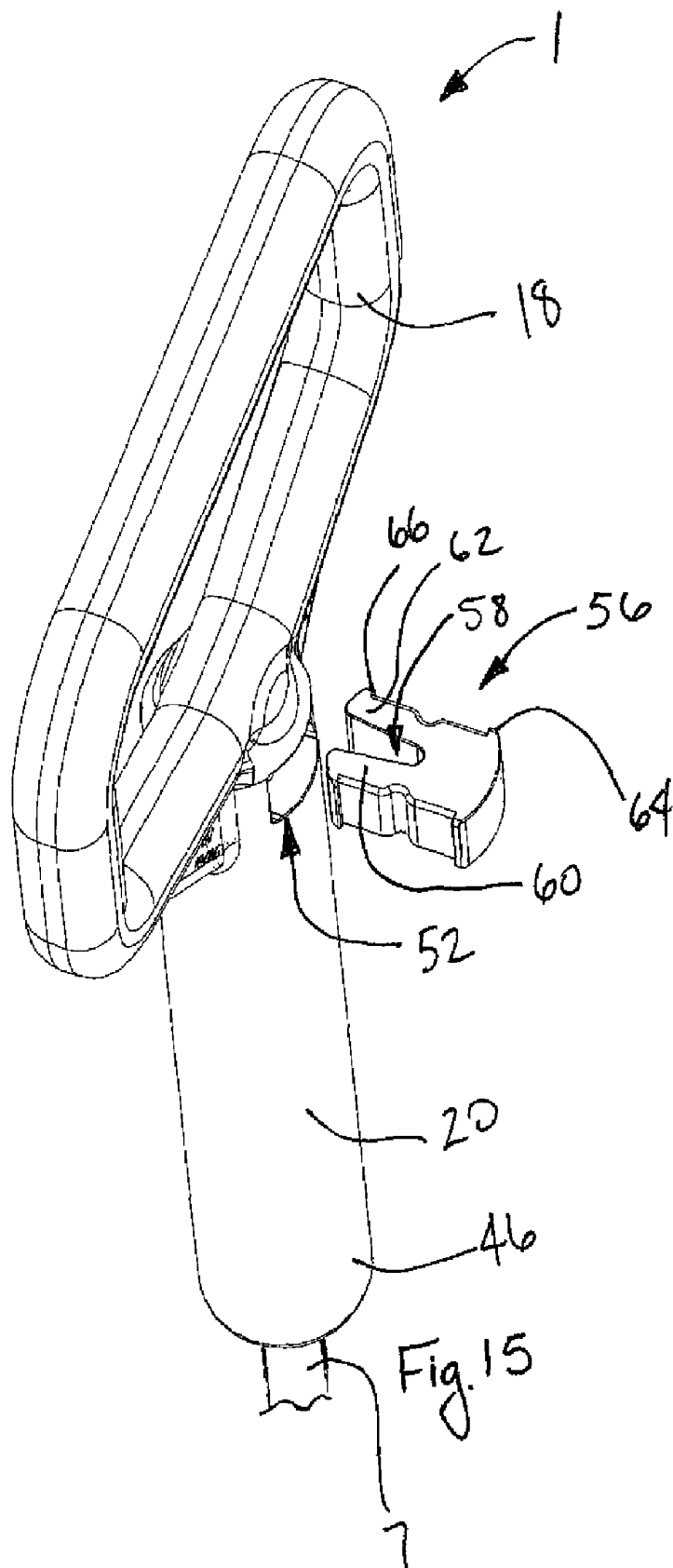


Fig. 14





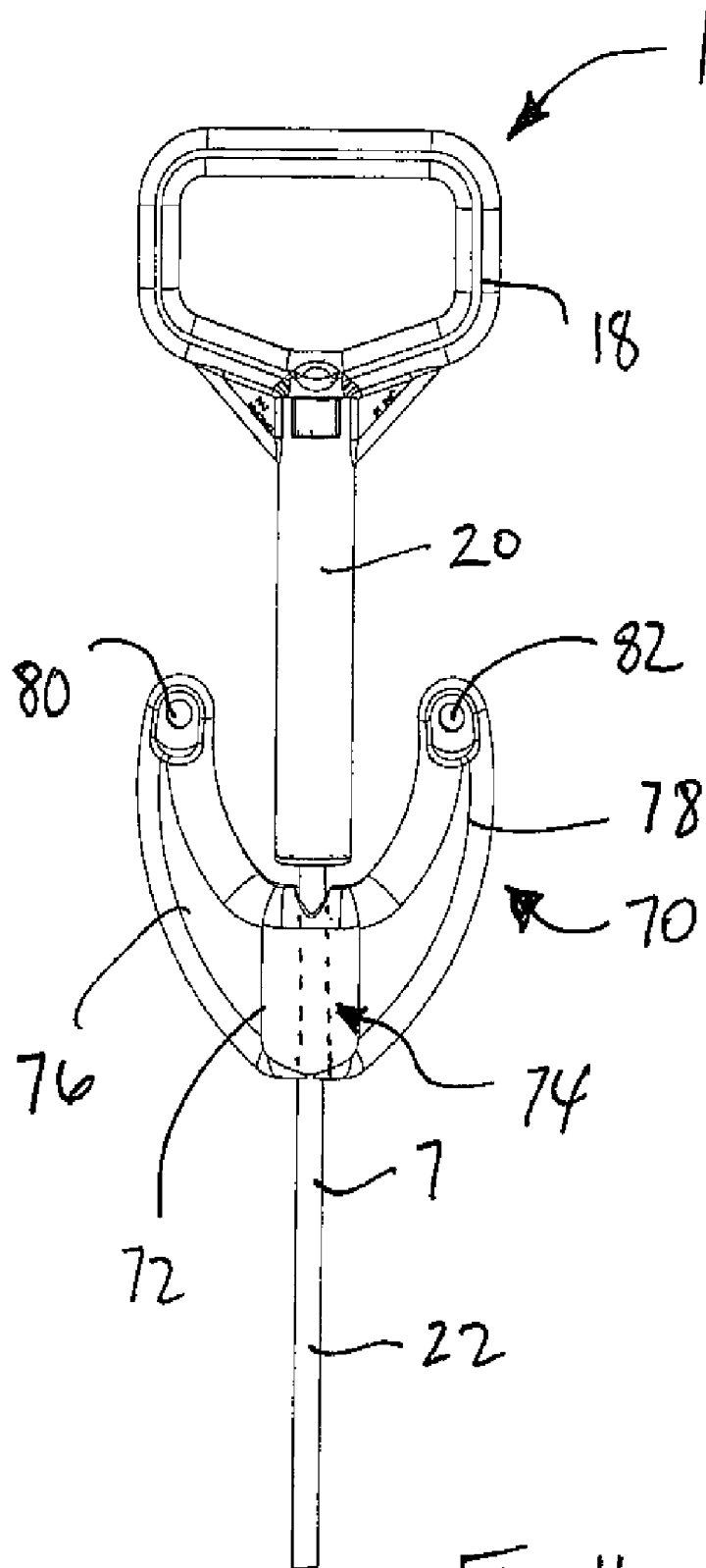


Fig. 16

1

## HANDLE FOR MOTION ACTIVATED FURNITURE

The present application claims priority to U.S. Provisional Patent Application Ser. No. 61/094,649 filed on Sep. 5, 2008, which is herein incorporated by reference.

### BACKGROUND

The present disclosure relates to furniture, and particularly to motion activated furniture. More particularly, the present disclosure relates to a release handle that is used to activate a portion of the motion activated furniture, such as an extendable footrest. Current handle designs that are positioned between the armrest and the seat cushion of the chair are coupled to a cable that transmits the upward movement of the release handle to either release a foot rest, recline the chair or both. Often times, due to consumer movement of the release handle while watching TV the cable can become frayed and break.

### SUMMARY

According to the present disclosure, a release handle is adapted to activate a portion of a chair or sofa, such as a foot rest or a recline mechanism. The handle allows a user to selectively control the movement of functions of the chair.

In illustrative embodiments, the handle is coupled to a cable, which is used to release a mechanism on the chair, such as the footrest. The handle includes a D-shaped ring that is coupled to an annular tube at one end. The annular tube is adapted to be positioned over sheath of the pull cable. The annular tube protects the cable within the sheath to prevent wear to the cable to prevent breakage. The handle also includes a retention slot positioned at the top of the annular tube, at the junction of the tube and the D-ring. The retention slot is adapted to allow an end fitting of the cable to be snapped into the handle to secure its position. The handle also includes a pass through slot that is adapted to allow the barrel end of the cable to pass through the annular tube to allow the barrel end to be rotate 90 degrees and snapped into the retention slot.

Additional features of the disclosure will become apparent to those skilled in the art upon consideration of the following detailed description of illustrative embodiments exemplifying the best mode of carrying out the disclosure as presently perceived.

### BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description particularly refers to the accompanying figures in which:

FIG. 1 is a perspective view of a chair having a release handle positioned between the armrest and seat cushion of the chair;

FIG. 2 is a perspective view of the chair showing the release handle after the handle has been pulled by a user sitting in the chair;

FIG. 3 is a perspective view of the release handle prior to pulling the handle to release the chair mechanism and showing the handle ring coupled to the annular tube and showing cable sheath extending into the annular tube of the handle;

FIG. 4 is another perspective view of the release handle as it is being pulled showing the spacing between the annular tube and the cable bracket increasing as the handle is being pulled;

2

FIG. 5 is yet another perspective view of the release handle showing the handle fully extended with respect to the cable;

FIG. 6 is a perspective view of the handle with portions cut away showing the cable sheath and cable end fitting extending up into the annular tube of the handle to protect the cable that extends above the cable sheath from breakage and also showing the barrel end of the cable being positioned in the retention slot of the handle;

FIG. 7 is a perspective view of the handle;

FIG. 8 is a perspective view similar to FIG. 6 showing the cable sheath and cable positioned within the annular tube of the handle and showing the barrel end fitting of the cable being inserted through the annular tube toward the pass through slot formed in the handle;

FIG. 9 is a sectional view similar to FIG. 8 showing the barrel end fitting of the cable positioned in the retention slot of the handle positioned near an upper end of the annular tube;

FIG. 10 is a perspective view of the handle showing the barrel end fitting of the cable passing through the pass through slot of the handle 90 degrees from the retention slot;

FIG. 11 shows the rotation of the barrel end fitting of the cable so that it is aligned to be snapped into the retention slot formed in the handle;

FIG. 12 is a perspective view of the handle showing the details of the pass through slot and the retention slot formed in the handle;

FIG. 13 is close up perspective view of the pass through slot and retention slot formed in the handle, the retention slot including a series of retention flanges to lock the barrel end fitting of the cable into the retention slot;

FIG. 14 is a perspective view of the handle using a ball end fitting on the end of the cable that is inserted into the elongated tube of the handle and into a cavity formed within the handle and wherein a clip, shown in FIG. 15 is used to retain the ball end fitting and cable within the handle;

FIG. 15 is a perspective view of the handle showing the clip being inserted into a window formed in the elongated tube of the handle to retain the ball end fitting to secure the cable to the handle; and

FIG. 16 is a perspective view of the handle showing a bracket used to secure the cable to the chair.

### DETAILED DESCRIPTION

While the present disclosure may be susceptible to embodiment in different forms, there are shown in the drawings, and herein will be described in detail, embodiments with the understanding that the present description is to be considered an exemplification of the principles of the disclosure and is not intended to limit the disclosure to the details of construction and the arrangements of components set forth in the following description or illustrated in the drawings.

Motion furniture requires a device to activate the mechanism to cause a footrest 12 to extend or portions of the chair 10 to recline, as shown in FIGS. 1 and 2. One way to accomplish this action is by using a cable 7 and handle pull 1, as shown in FIGS. 2-6. Excessive wear and breakage to the cable can be caused by incorrect assembly or when the chair occupant excessively wiggles the handle, causing the cable to flex. Excessive movement of the handle puts undue strain on the area of the cable where the handle 1 attaches to the cable 7. Handle 1 is positioned between armrest 14 and seat cushion 16, as shown in FIGS. 1 and 2.

Handle 1 is coupled to cable 7 as shown in FIG. 3. Handle 1 includes a D-shaped grip ring 18 that is coupled to an elongated annular tube 20. Annular tube 20 of handle 1 is designed to extend over cable sheath 22 to act as a strain relief

to keep the cable wire 24 that extends from the sheath 22 from flexing and ultimately failing. The elongated annular tube 20 of handle 1 also assists the cable wire 24 in being pulled in the line of draw (i.e. the pull direction of the handle) in a linear fashion. As shown in the drawings, elongated annular tube 20 of handle 1 telescopes over cable sheath 22 and cable end attachment 26 to prevent cable wire 24 from flexing (bend back and forth) with respect to cable end attachment 26, as shown in FIG. 6. Since cable wire 24 can not flex with respect to cable end attachment 26, the failure rate of the cable is significantly reduced.

Cable sheath 22 of cable 7 is secured to the furniture by use of bracket 28. Bracket 28 includes apertures 30 that are configured to accept screws (not shown) to secure the cable 7 to the chair 10. Handle 1 is preferably a molded one piece structure with grip ring 18 molded with elongated annular tube 20. Handle 1 also includes webs 32 to reinforce grip ring 18 to elongated annular tube 20. Handle 1 also include a cable retainer 34 that secures cable end 36 to handle 1.

The handle 1 includes cable retainer 34 that is configured to include a snap-in feature in the form of a retention slot 38 for attaching the cable 7 to the handle 1, as shown in FIGS. 10-12, for example. Normally the connection of the cable to the handle is accomplished by over molding the handle onto the cable. This method permanently combines the cable and handle and if the cable breaks, both the handle and cable need to be discarded.

By incorporating retention slot 38 into the handle 1, cables 7 can be changed out if broken without changing the complete handle assembly. Retention slot 38 incorporates retention tabs 40 that are deformable projections 40 to prevent the cable end 36 from shifting or separating from handle 1. While a barrel-shaped end fitting is shown secured to the end of the cable 7, it is contemplated that other types of cable end fittings could also be used. The retention slot could also use a clip or other fastener means to fasten the cable to the handle.

Retention slot 38 of handle 1 is defined by curved walls 42 that engage barrel shaped end fitting 36 of cable 7. Walls 42 include retention tabs 40 that retain cable end fitting 36. Cable retainer 34 also includes pass through slot 44. Pass through slot 44 is perpendicular from retention slot 38 and is configured to allow cable end fitting 36 to pass through handle 1. This allows the cable 7 to be inserted from bottom end 46 of elongated annular tube 20, passed through pass through slot 44 and out handle 1. Once cable end fitting 36 exits pass through slot 44, end fitting 36 can be rotated 90 degrees and snapped into retention slot 38. Other retainers could also be used such as crimp on cable fittings that would retain the cable to the handle without the use of the retention slot 38.

Cable 7 passes through handle 1, as shown, for example, in FIG. 6. Elongated annular tube 20 of handle 1 includes a central bore 47 that extends the length of elongated tube 20. Cable sheath 22 and cable wire 24 are positioned within central bore 47. Cable end attachment 26 that is coupled to cable sheath is configured to have an outer diameter that is smaller than the diameter of central bore 46. This arrangement allows cable end attachment 26 to slide within central bore 47 of elongated annular tube 20 when handle 1 is pulled by a consumer to release a foot rest or recline chair 10.

As handle 1 is pulled upward, handle pulls on cable end fitting 36, which, in turn, pulls cable wire 24 from cable sheath 22 and cable end attachment 26. Movement of cable wire 24 within cable sheath 22 cause activation of the mechanism that releases the foot rest 12 of the chair 10. Damage to the cable wire 24 is minimized because the movement between the cable end attachment 26 and the cable wire 24 is

generally linear with very little pivoting motion or side to side motion of the handle with respect to the cable sheath.

FIGS. 14 and 15 illustrate the use of a cable 7 having a ball end fitting 50. Handle 1, when using ball end fitting 50 includes a square window 52 formed in the side wall of the handle 1. Handle 1 is also formed to include a cavity 54. Cavity 54 is configured to accept ball end fitting 50 when cable 7 is inserted into elongated annular tube 20.

Window 52 of handle 1 is configured to accept retention clip 56, as shown, for example, in FIG. 15. Retention clip 56 is inserted into window 52 when ball end fitting 50 is positioned within cavity 54. Retention clip 56 connects the cable 7 to the handle 1 by trapping the ball end fitting 50 within cavity 54. Retention clip 56 includes a slot 58 defined by a pair of forks 60, 62. Slot 58 is configured to accept cable wire 24 of cable 7, which is attached to ball end fitting 50. Retention clip 56 also includes retention clips 64, 66, which retain retention clip 56 within the window 52 of handle 1.

Handle 1 may also be used with bracket 70, as shown in FIG. 16. Bracket 70 is a c-shaped member that allows cable 7 to be coupled to the chair 10 closer to the handle 1. Bracket 70 includes a base portion 72 formed to include a channel 74. Channel 74 is configured to accept cable sheath 22 of cable 7. Bracket 70 also includes a pair of upswept wings 76, 78. Wings 76, 78 are formed to include apertures 80, 82 that are configured to accept fasteners (not shown) to secure bracket 70 to the chair 10.

In use, a user inserts the cable end fitting 36, cable end attachment 26 and a portion of the cable sheath 22 into the central bore 47 of the elongated annular tube 20 of handle 1. Cable end fitting 36 is moved through central bore 47 through pass through slot 44. Once cable end fitting 36 passes through pass through slot 44, the cable end fitting 36 is rotated ninety degrees and snapped into retention slot 38 of handle 1. With cable end fitting 36 positioned in retention slot 38, linear movement of the handle 1 away from the cable sheath 22 and cable end attachment 26 causes cable wire 24 to extend from cable sheath 22 to cause the release of the footrest 12 of the chair 10.

The pull handle 1 can be various shapes and materials such as plastic, metal or wood and be elliptical, round, square or D-shaped for example. The pull handle 1 or attachment can employ holes or slots to facilitate ease of manufacture.

While embodiments have been illustrated and described in the drawings and foregoing description, such illustrations and descriptions are considered to be exemplary and not restrictive in character, it being understood that only illustrative embodiments have been shown and described and that all changes and modifications that come within the spirit of the invention are desired to be protected. The applicants have provided description and figures which are intended as illustrations of embodiments of the disclosure, and are not intended to be construed as containing or implying limitation of the disclosure to those embodiments. There are a plurality of advantages of the present disclosure arising from various features set forth in the description. It will be noted that alternative embodiments of the disclosure may not include all of the features described yet still benefit from at least some of the advantages of such features. Those of ordinary skill in the art may readily devise their own implementations of the disclosure and associated methods, without undue experimentation, that incorporate one or more of the features of the disclosure and fall within the spirit and scope of the present disclosure and the appended claims.

The invention claimed is:

1. A handle for motion activated furniture for use with a cable having a cable sheath and a cable wire movable within

5

the cable sheath, and wherein the handle and cable are used to activate a function of the furniture, the handle comprising:

a hand grip adapted to be engaged and gripped by a user's hand the handle having a first at rest position and a second position that activates the function of the furniture;

an elongated annular tube coupled to the hand grip, the elongated annular tube having a central bore configured to allow a portion of the cable sheath and cable wire to be positioned within the central bore and further configured to allow the cable sheath to slide within the central bore during movement of the handle from the first position to the second position wherein the portion of the cable sheath remains within the central bore when the handle is in either the first or the second position; and a retainer for retaining the cable wire to the handle such that movement of the handle in a linear fashion causes the cable wire to extend from the cable sheath.

2. The handle of claim 1, wherein the hand grip is ring shaped.

3. The handle of claim 2, wherein the retainer is positioned at the end of the elongated tube and is configured to engage and retain an end of the cable wire.

4. The handle of claim 3, wherein the retainer includes a curved retention slot having a retention tab to retain the cable wire to the handle.

5. The handle of claim 4, wherein the retainer includes a pass through slot to allow an end of the cable wire to extend from the end of the annular tube.

6. The handle of claim 5, wherein the pass through slot is perpendicularly oriented to the retention slot.

7. A handle for motion activated furniture for use with a cable having a cable sheath and a cable wire movable within the cable sheath, and wherein the handle and cable are used to activate a function of the furniture, the handle comprising:

a ring shaped hand grip adapted to be engaged and gripped by a user's hand;

an elongated annular tube coupled to the hand grip, the elongated annular tube having a central bore extending the length of the elongated annular tube and configured to allow a portion of the cable sheath and cable wire to be positioned within the central bore to allow the portion cable sheath to slide and remain within the central bore during movement of the handle to activate the function of the furniture; and

a retainer for retaining the cable wire to the handle such that movement of the handle in a generally linear fashion causes the cable wire to extend from the cable sheath.

8. The handle of claim 7, wherein the retainer is in the form of a retention slot is positioned at the end of the elongated tube and is configured to engage and retain the end of the cable wire.

9. The handle of claim 8, wherein the retention slot includes a retention tab used to retain the cable wire to the handle.

6

10. The handle of claim 9, further including a pass through slot configured to allow an end of the cable wire to extend from the end of the annular tube.

11. The handle of claim 10, wherein the pass through slot is perpendicularly oriented to the retention slot.

12. A piece of furniture comprising:

a seat portion a back portion and a movable foot rest;

a cable positioned within the chair, the cable including a cable sheath and a cable wire movable within the cable sheath;

a handle comprising a hand grip adapted to be engaged and gripped by a user's hands; the handle having a first at rest position and a second position that causes activation of the foot rest;

an elongated annular tube coupled to the hand grip, the elongated annular tube having a central bore configured to allow a portion of the cable sheath and cable wire to be positioned within the central bore and further configured to allow the cable sheath to slide within the central bore during movement of the handle with respect to the cable wherein the portion of the cable sheath remains with the central bore when the handle is in either the first or second positions; and a retainer for retaining the cable wire to the handle such that movement of the handle in a generally linear fashion causes the cable wire to extend from the cable sheath.

13. The piece of furniture of claim 12, wherein the hand grip is ring shaped.

14. The piece of furniture of claim 12, wherein the retainer is positioned at the end of the elongated tube and is configured to engage and retain an end of the cable wire.

15. The piece of furniture of claim 14, wherein the retainer includes a curved retention slot having a retention tab to retain the cable wire to the handle.

16. The piece of furniture of claim 15, wherein the retainer includes a pass through slot to allow an end of the cable wire to extend from the end of the annular tube.

17. The piece of furniture of claim 16, wherein the pass through slot is perpendicularly oriented to the retention slot.

18. The piece of furniture of claim 12, further including a bracket having a base portion formed to include a channel configured to accept a cable and an arm extending away from the base portion in proximity to the handle.

19. The piece of furniture of claim 12, wherein the handle includes an opening and a recess, the recess is configured to accept an end fitting on a cable.

20. The piece of furniture of claim 19, further including a retention clip configured to fit within the opening of the handle to retain the cable to the handle.

21. The piece of furniture of claim 20, wherein the retention clip includes flanges to retain the retention clip to the handle.

22. The piece of furniture of claim 21, wherein the retention clip includes a slot configured to accept the cable.

\* \* \* \* \*