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(54) Title: A SYSTEM FOR RECOVERING A LIVING BEING FROM A BOREWELL

(57) Abstract: According to embodiments of the invention, a system (100) with an arrangement for recovering a living being from vertical bore is disclosed. The arrangement which it enables a shell cap (102) with a plurality of arms (104) comprising first and second ends and a pair of knuckles (106) located at the first end, the arms are separated by a pair of slots (108) in the shell cap (102). The pair of slots (108) extends from the body of the shell cap (102), the plurality of arms (104) are pivotally arranged to the body of shell cap (102) the plurality of arms (104) comprising one or more extending walls (110) arranged telescopically which it protrudes from the second end of the plurality of arms (106). The actuator mechanism (118) is provided to trigger the retraction movement of the extending walls (110) by the time of recovering the living being form the borewell.

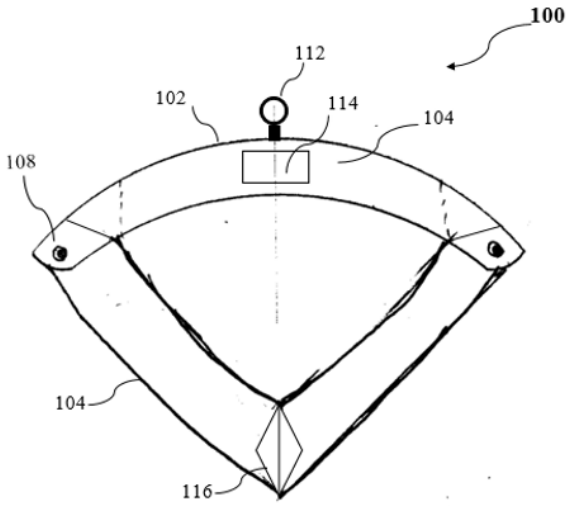

Figure 1

FORM 2

THE PATENTS ACT 1970
(39 OF 1970)
&
The Patent Rules, 2003
Complete Specification
(See Section 10 and Rule 13)

1. TITLE OF THE INVENTION

A SYSTEM FOR RECOVERING A LIVING BEING FROM A BOREWELL

2. APPLICANT(S)

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3. PREAMBLE TO THE DESCRIPTION

COMPLETE

The following specification particularly describes the invention and the manner in which it is performed.

DESCRIPTION

Technical Field

[001] This disclosure generally relates to a system that which helps in recovering from the borewell, and more particularly to recovering living being trapped from the abandoned borewell.

BACKGROUND

[001] Fore mostly, borewells are left abandoned or uncovered which it is dug for resourcing water from the ground. Due to same condition the unmaintained borewell leads chances to living being to get coined and trapped into it. In order to recover, methods like parallel drilling or fishing techniques are engaged by the Disaster Response Force to recover back safely with minimum damages. Even though these methods may become failure due to soil erosion in borewell and other unexpected conditions. At many cases, living being can be victim, which it to be recovered. The recovery measures, may hurt the living being or may be recovered as dead. To succeed from the conventional methods of recovery, the present invention provides a novel system to which it recovers the trapped living being with least reparations.

SUMMARY OF THE INVENTION

[002] According to embodiments of the invention, a system (100) with an arrangement for recovering a living being from borewell is disclosed. The arrangement which it enables a shell cap (102) with a plurality of arms (104) comprising first and second ends and a pair of knuckles (106) located at the first end, the arms are separated by a pair of slots (108) in the shell cap (102). The pair of slots (108) extends from the body of the shell cap (102), the plurality of arms (104) are pivotally arranged to the body of shell cap (102) the plurality of arms (104) comprising one or more extending walls (110) arranged telescopically which it protrudes from the second end of the plurality of arms (106).

BRIEF DESCRIPTION OF THE DRAWINGS

[003] The accompanying drawings, which are incorporated in and constitute a part of this disclosure, illustrate exemplary embodiments and, together with the description, serve to explain the disclosed principles.

[004] **Figure 1** illustrates a cross sectional view of a system with an integral arrangement to undergo within the borewell, in accordance with an embodiment of the present disclosure; and

[005] **Figure 2** illustrates a deployed view of the system with an integral arrangement for recovering the living being from the borewell, in accordance with an embodiment of the present disclosure.

[006] **Figure 3** illustrates a view of stationary position of plurality of arms in the system with an integral arrangement for recovering the living being from the borewell, in accordance with an embodiment of the present disclosure.

[007] **Figure 3A** illustrates a view of retracted position of plurality of arms in the system with an integral arrangement for recovering the living being from the borewell, in accordance with an embodiment of the present disclosure.

[008] **Figure 4** illustrates a flowchart of a deployment in an integral arrangement for recovering the living being from the borewell.

DETAILED DESCRIPTION OF THE INVENTION

[009] Exemplary embodiments are described with reference to the accompanying drawings. Wherever convenient, the same reference numbers are used throughout the drawings to refer to the same or like parts. While examples and features of disclosed principles are described herein, modifications, adaptations, and other implementations are possible without departing from the spirit and scope of the disclosed embodiments. It is intended that the following detailed description be considered as exemplary only, with the true scope and spirit being indicated by the following claims. Additional illustrative embodiments are listed below.

[010] **Figure 1** illustrates a cross sectional view of a system (100) with an arrangement for recovering a living being from the borewell to a ground surface, in accordance with an embodiment of the present disclosure. According to an exemplary embodiment, the system (100) may be a tool to provide a closed structure to recover the living being. According to another embodiment, the arrangement for recovering by use of the system (100) in a vertical orientation.

[011] According to an embodiment, the shell cap (102) may further include a hollow inner structure where it accommodates control system (114) such as but not limited to video camera, oxygen monitor, light source, baby pacifier etc.

[012] According to another embodiment of the invention, the plurality of arms (104) having the pair of knuckles (106) which are assembled with the pair of slots (108) present in the shell cap (102) to form a hinged motion by means of engaging hinge pin (not shown).

[013] According to an embodiment of the invention, the plurality of arms (104), may further includes one or more extending walls (110) which are substantially configured within the plurality of arms (104). According to yet another embodiment, the one or more extending walls (110) may be in a shape such as but not limited to curve, spline, arc, contour etc. The plurality of one or more extending walls (110) may be operable in extraction or retraction direction from the plurality of arms (104).

[014] **Figure 2** illustrates a deployed view of the system (100) with an arrangement to recover the living being from the borewell, in accordance with an embodiment of the present disclosure. As illustrated, one or more extending walls (110) may be detachable connected to the second end of the plurality of arms (104), which it deploys to form a closed structure. According to an embodiment of the invention, lock mechanism (116) which is located at the end of the one or more extending walls (110) is operable by means of such as but not limited to magnetic, snap-fit, interlock etc. According to an embodiment, the one or more extending walls (110) and the plurality of arms (104) in combination with shell cap (102) forms a closed structure such as but not limited to pod, diving bell, clamshell, protective closure etc., to protect the living being from the debris present in the borewell.

[015] According to an embodiment, the one or more extending walls (110) and the plurality of arms (104) in combination with shell cap (102) include an actuator mechanism

(118) such as but not limited to flexible shaft, metal cable, rod etc., to actuate the retraction mechanism once the trigger signal is produced from the control system (114) According to another embodiment, the actuator mechanism (118) includes a power source such as but not limited to electromechanical system, pneumatic systems, hydraulic systems, torque systems etc.,

[016] According to another embodiment, the system (100) includes a coupling means (112) such as but not limited to eyebolt, hoist rings, shackles to operate the entire system within the borewell. The coupling means (112) may further include a lifting means (not shown) such as but not limited to rope, cable, chains etc. The lifting means be configured to the coupling means (112) at the top center position of the shell cap to operate the system (100) back and forth to the borewell by use of a gantry setup (not shown) form the ground level.

[017] According to embodiments of the invention a user may operate the system (100) from the ground surface by means of control system which it enables retraction of the plurality of arms (104) to deploy one or more extending walls (110) creating a closure over the living being, that in turn provides a structure of shell to protect the living being by positioning within the closed structure which is deployed. According to another embodiment, the locking mechanism (116) positioned at the end of the one or more extending walls (110) from the plurality of arms (104) get connected with all the plurality of arms (104) to keep them engaged as a closed structure to protect the living being.

[018] **Figure 3** illustrates a view of stationary position of plurality of arms in the system with an integral arrangement for recovering the living being from the borewell, in accordance with an embodiment of the present disclosure. As illustrated, one or more extending walls (110) may be detachable connected to the second end of the plurality of arms (104), which it deploys to form a closed structure. According to an embodiment of the invention, lock mechanism (116) which is located at the end of the one or more extending walls (110) is operable by means of such as but not limited to magnetic, snap-fit, interlock etc. According to an embodiment, the one or more extending walls (110) and the plurality of arms (104) in combination with shell cap (102) forms a closed structure such as but not limited to pod, diving bell, clamshell etc., to protect the living being from the debris present in the area.

[019] **Figure 3A** illustrates a view of retracted position of plurality of arms in the system with an integral arrangement for recovering the living being from the borewell, in accordance with an embodiment of the present disclosure. As illustrated, one or more extending walls (110) may be detachable connected to the second end of the plurality of arms (104), which it deploys to form a closed structure. According to an embodiment of the invention, lock mechanism (116) which is located at the end of the one or more extending walls (110) is operable by means of such as but not limited to magnetic, snap-fit, interlock etc. According to an embodiment, the one or more extending walls (110) and the plurality of arms (104) in combination with shell cap (102) forms a closed structure such as but not limited to pod, diving bell, clamshell etc., to protect the living being from the debris present in the area.

[020] **Figure 4**, illustrates a flowchart of a method 1000 deployment of the recovery device to a borewell, in accordance with an embodiment. At step 1002, the system (100) is inserted inside borewell using a gantry arrangement (now shown) to recover the stuck living being. As mentioned earlier, the system (100) may include the shell cap (102) having the plurality of arms (104) in stationary position. It should be noted that the system (100) may be configured to recover the living being from the stuck borewell.

[021] At step 1004, the extending walls (110) may be triggered to move from the retracted position to the extended position and coordinate with the plurality of arms (104) pivotally arranged with the shell cap (102) to form the protective closure of the system (100). As mentioned above, the extending walls (110) may be triggered to move from the retracted position to the extended position by means of actuator mechanism (116) governed by the control system (114), that may be positioned inside the shell cap (102). Further, control system (114) may be coupled to the extending walls (110), configured to move the extending walls (110) between the retracted position and the extended position. In some embodiments, the control system (114) may include the mechanism such as but not limited to electromechanical system, pneumatic systems, hydraulic systems, torque systems etc., The actuator mechanism (116) may be configurable between the shell cap (102) and an expanded state of the extending walls (110) by movement of the actuator mechanism (116).

[022] Additionally, at step 1006A, the plurality of arms (104) may be caused to lock with one of the extending walls (110). As a result, a continuous and smooth surface along the full

length of the plurality of arms (104) is obtained, when the extending walls (110) are in extended position.

[023] Simultaneously, at step 1006B, the extending walls (110) may be caused to lock with one another extending walls (110) from the plurality of arms (104) positioned in the shell cap (102). As a result, the wall creates a closed structure to protect the living being gets abraded by the rough surface and debris in the inner side of the borewell while recovering.

[024] The present disclosure discloses a recovering system of a living being stuck inside the borewell. This integrally arranged system includes a shell cap, plurality of arms, extending walls, a control system, locking mechanism, and actuating mechanism. The control system may be coupled with the extending walls of the system to cause the retractable portion to slide between a retracted position and an extended position. The above-mentioned system provides an effective solution for recovering the living being from the borewell without any damage, thereby the transportation and installation processes are more convenient. Further, the above-mentioned system provides for reduction in recovery complications, and ensures the safety to the living being stuck. Moreover, risks of damage to the integrity of the living being are minimized.

[025] It is intended that the disclosure and examples be considered as exemplary only, with a true scope and spirit of disclosed embodiments being indicated by the following claims.

We Claim:

1. A system (100), comprising:

a shell cap (102);

a plurality of arms (104) comprising first and second ends and a pair of knuckles (106) located at the first end, the arms are separated by a pair of slots (108) in the shell cap (102);

the slots (108) extends from the body of the shell cap (102), the plurality of arms (104) are pivotally arranged to the body of shell cap (102); and

wherein the plurality of arms (104) comprising one or more extending walls (110) arranged telescopically within it which protrudes from the second end of the plurality of arms (104).

2. The system (100) as claimed in claim 1, wherein the shell cap (102) has at least a coupling means (112) at the middle of the outer structure for vertical approach to the system (100).

3. The system (100) as claimed in claim 1, wherein the shell cap (102) has a hollow structure to accommodate a control system (114) for operating the plurality of arms (104).

4. The system (100) as claimed in claim 1, wherein the one or more extending walls (112) with at least a lock mechanism (116) to engage a closed structure.

5. The system (100) as claimed in claim 1, wherein the arms (104) on extending forms a closed structure, such that closed structure is hold in position by the lock mechanism (116).

6. The system (100) as claimed in claim 1, further comprising an actuator mechanism (118) positioned inside the extending walls (110) and plurality of arms (104).

7. The system (100) as claimed in claim 6, wherein the actuator mechanism (118) actuated by the control system (114).

Dated this 24th Day of March 2021

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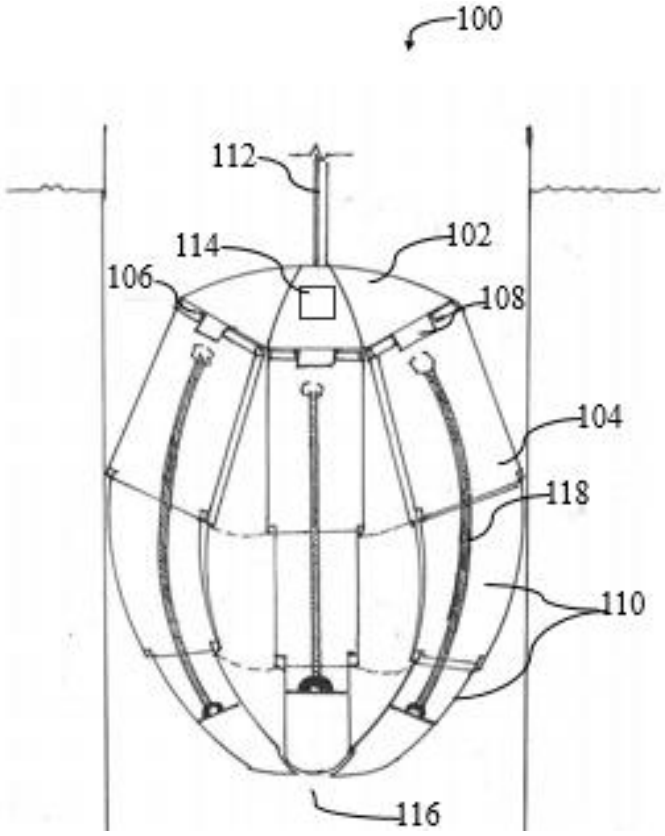
ABSTRACT

A SYSTEM FOR RECOVERING A LIVING BEING FROM A BOREWELL

According to embodiments of the invention, a system (100) with an arrangement for recovering a living being from vertical bore is disclosed. The arrangement which it enables a shell cap (102) with a plurality of arms (104) comprising first and second ends and a pair of knuckles (106) located at the first end, the arms are separated by a pair of slots (108) in the shell cap (102). The pair of slots (108) extends from the body of the shell cap (102), the plurality of arms (104) are pivotally arranged to the body of shell cap (102) the plurality of arms (104) comprising one or more extending walls (110) arranged telescopically which it protrudes from the second end of the plurality of arms (106). The actuator mechanism (118) is provided to trigger the retraction movement of the extending walls (110) by the time of recovering the living being form the borewell.



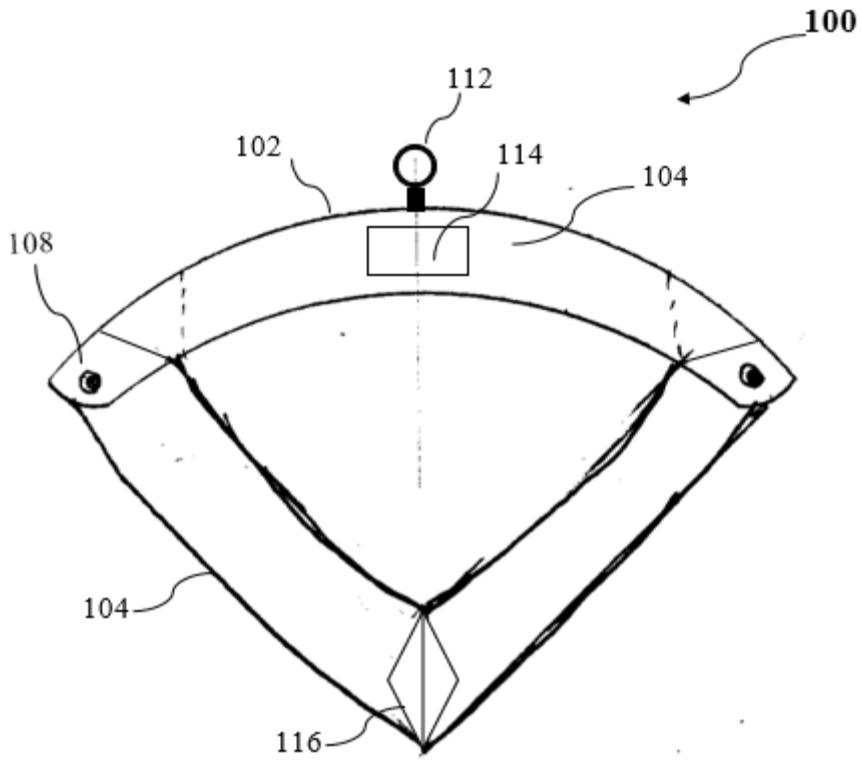


Figure 1

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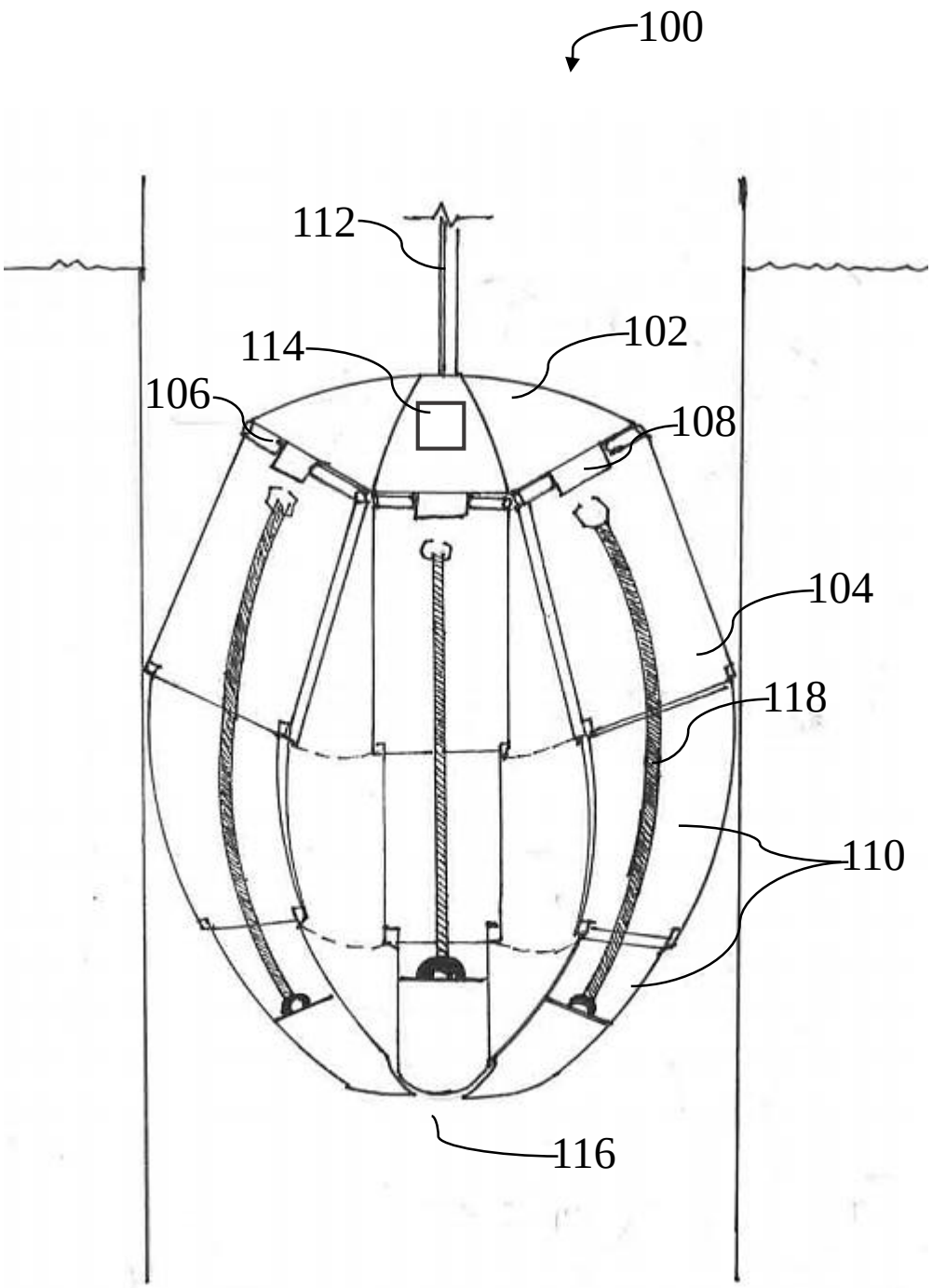

Figure 2

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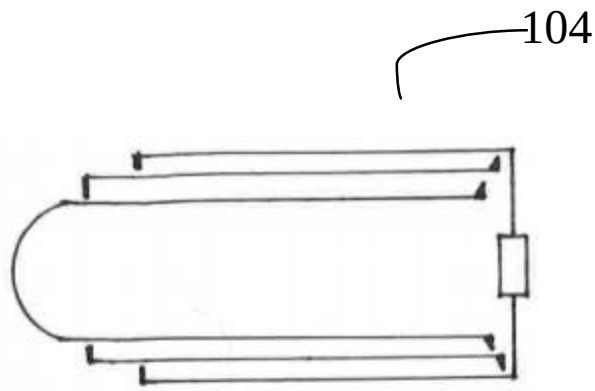

Figure 3

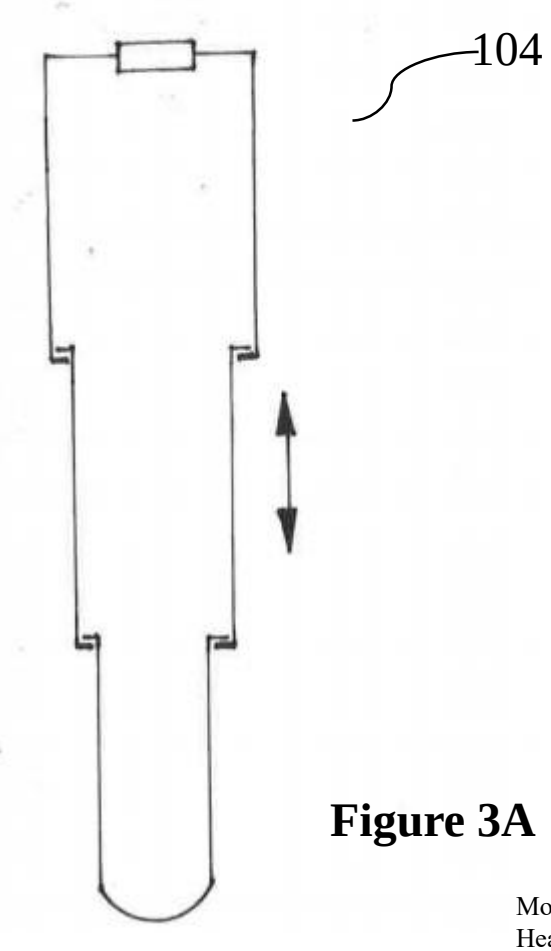

Figure 3A

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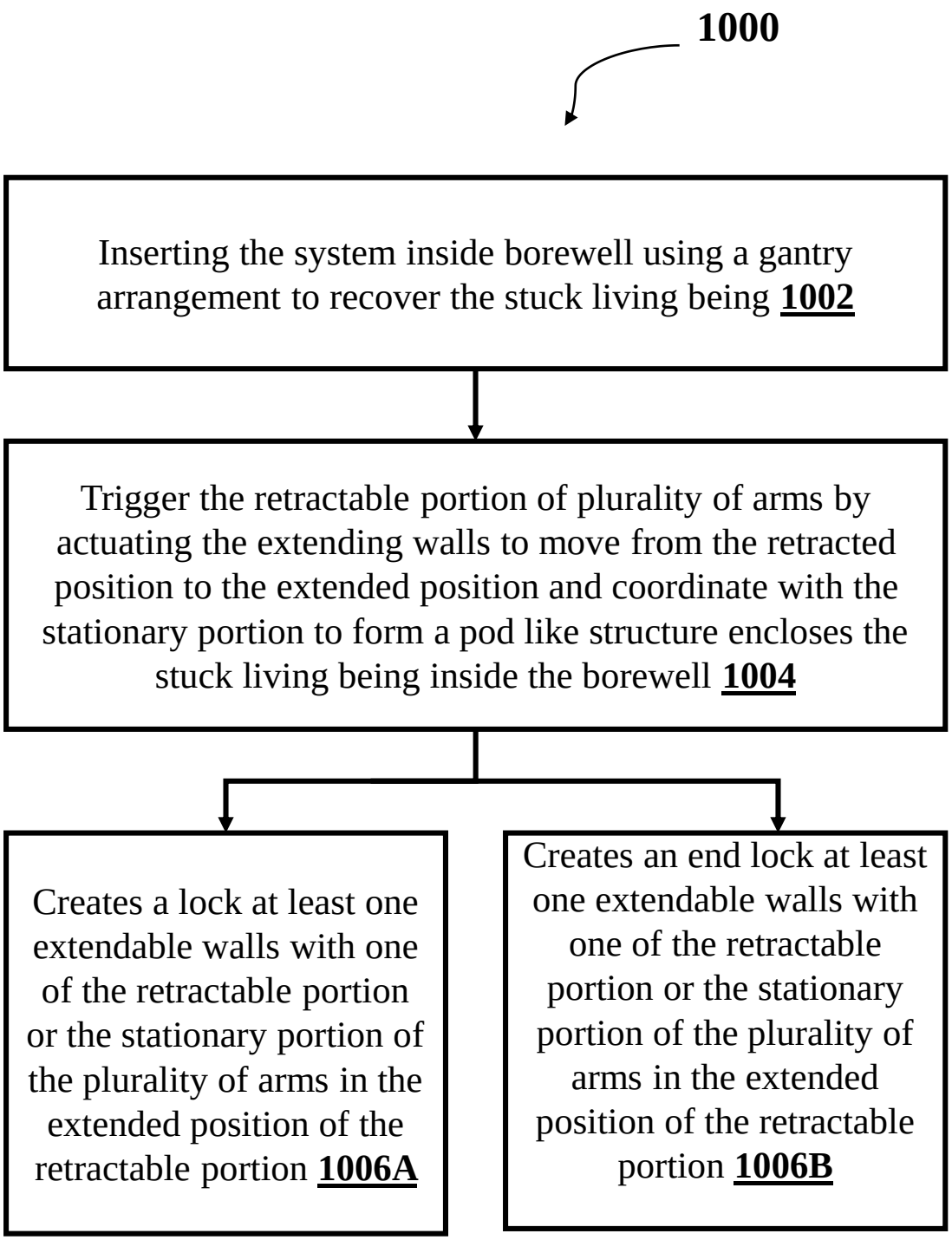

Figure 4

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