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A detailed cross-sectional diagram of a medical device, likely a catheter or probe, showing its internal and external components. The device consists of a main body (10) with a central lumen (21) and an outer sheath (22). A handle (30) is attached to the top, featuring a grip (35) and a control mechanism (36). The handle is connected to the main body via a shaft (31) and a control rod (33). A base (11) is located at the bottom of the main body, and a connector (12) is at the very bottom. Various other components are labeled with numbers 13, 20, 32, 40, and 42.

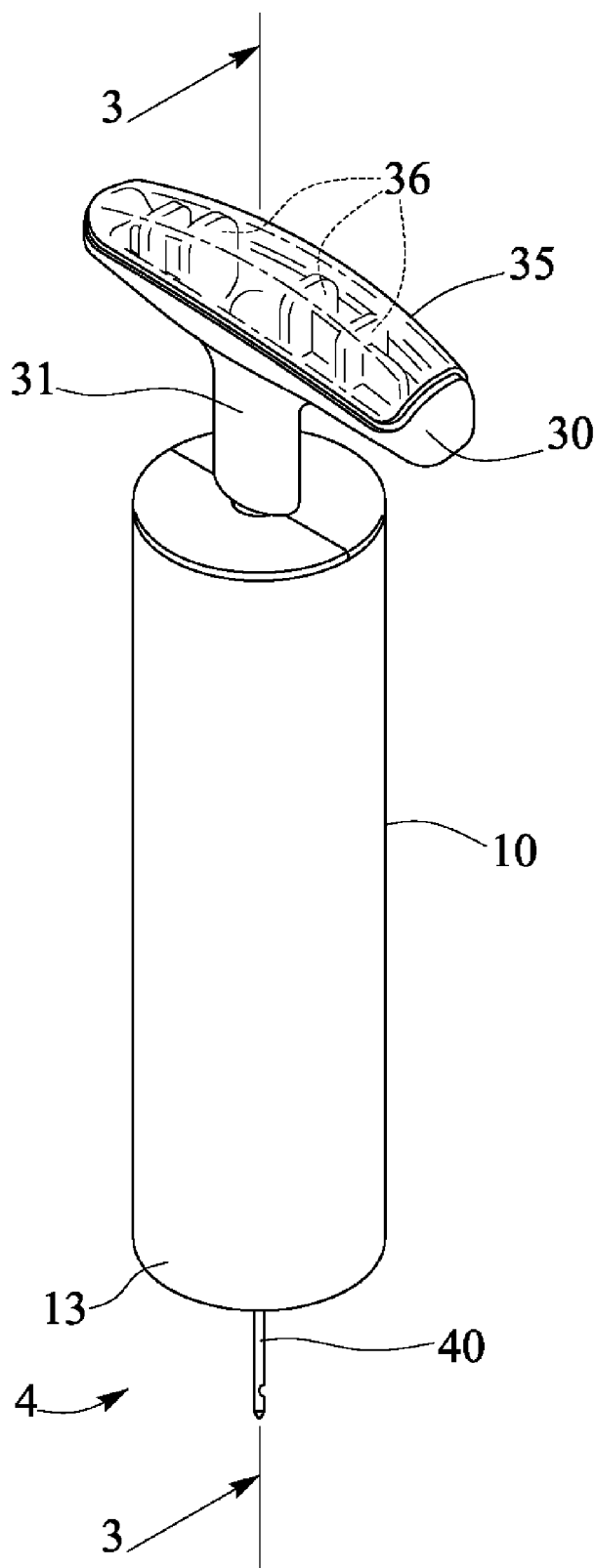


FIG. 1

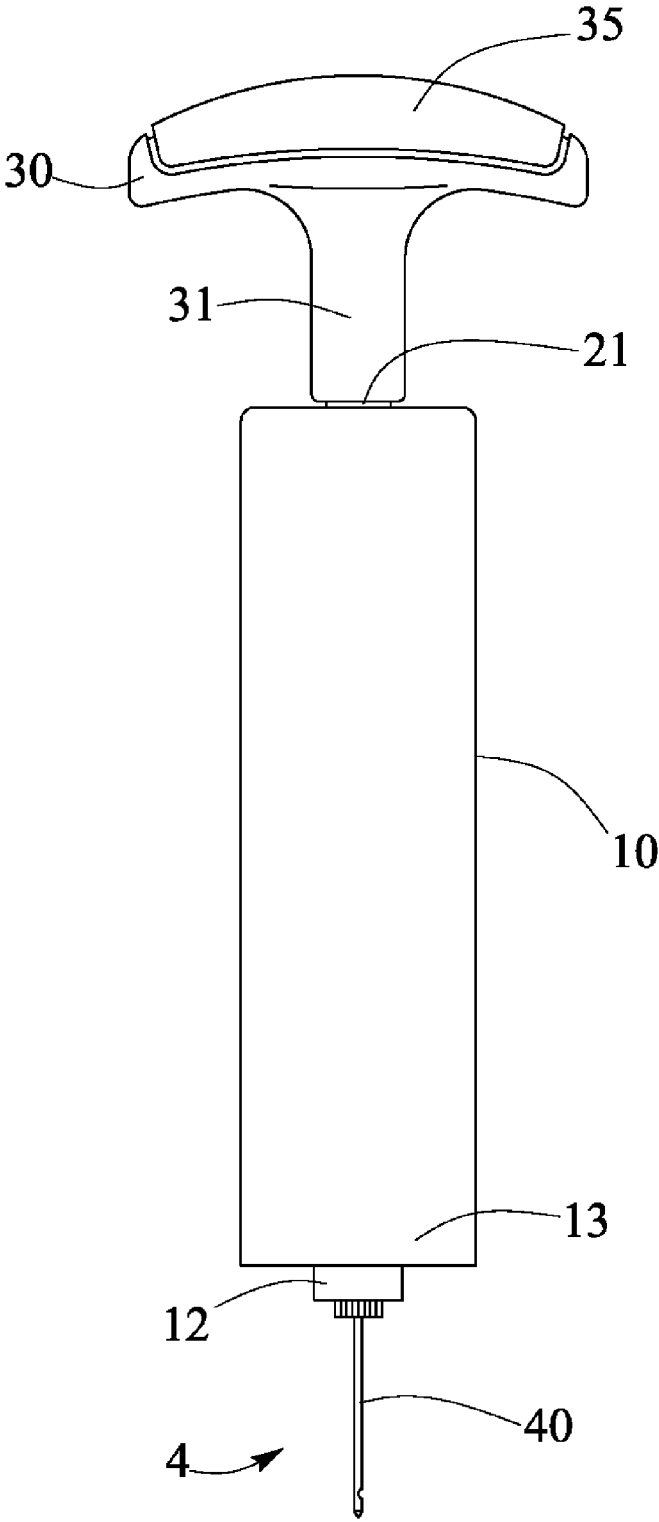


FIG. 2

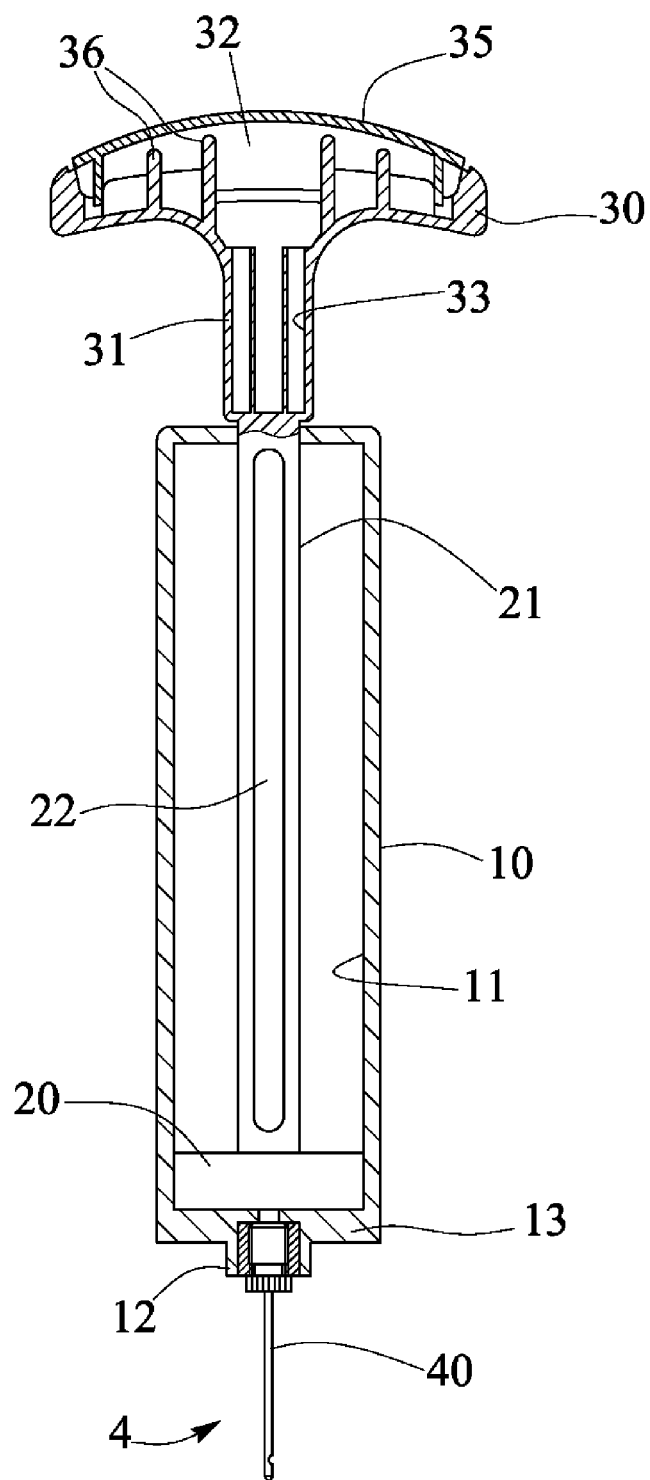


FIG. 3

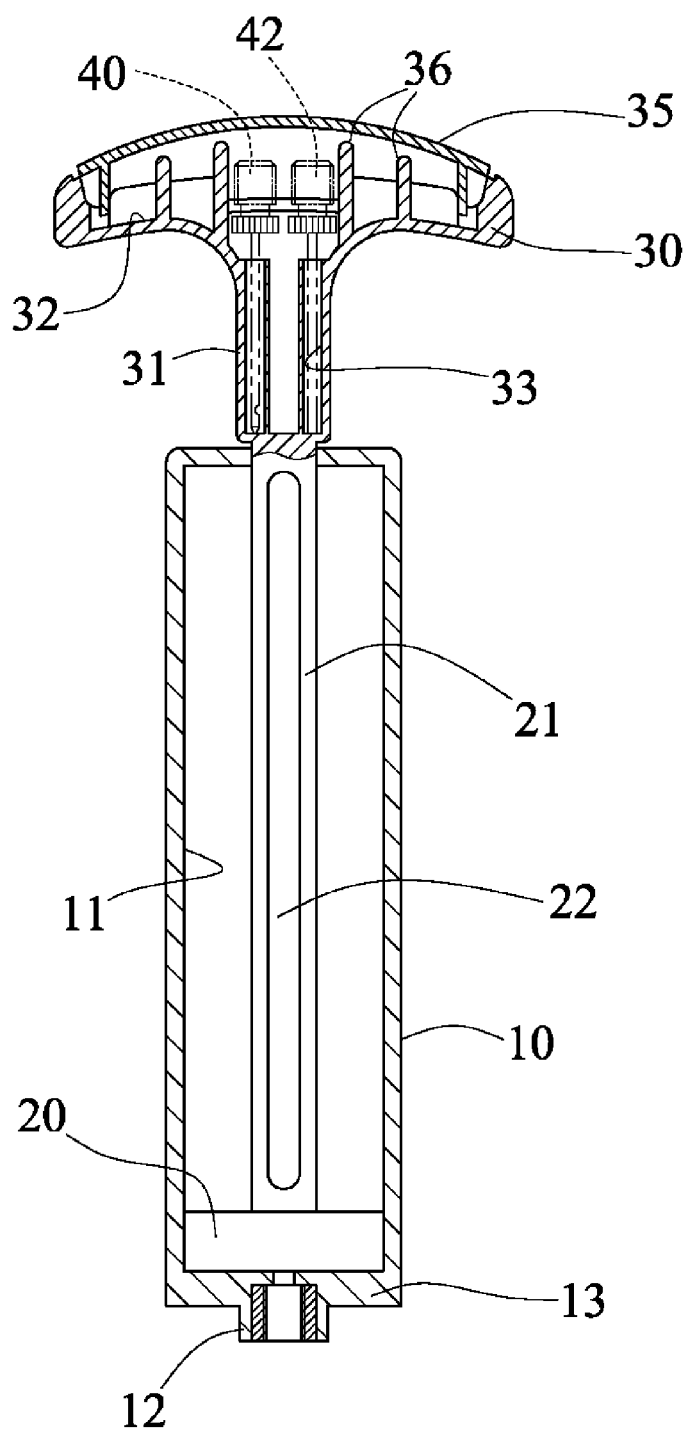


FIG. 4

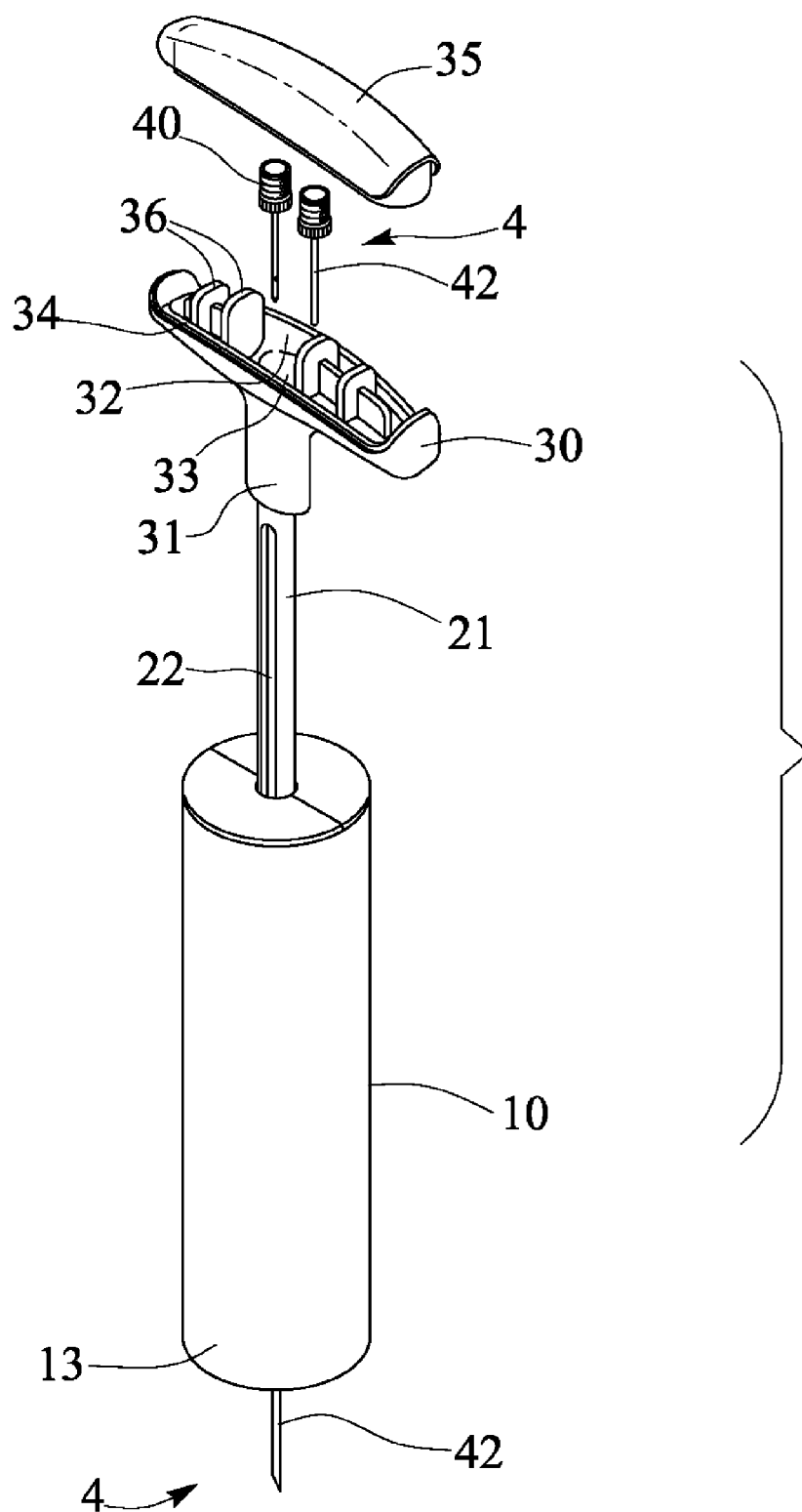


FIG. 5

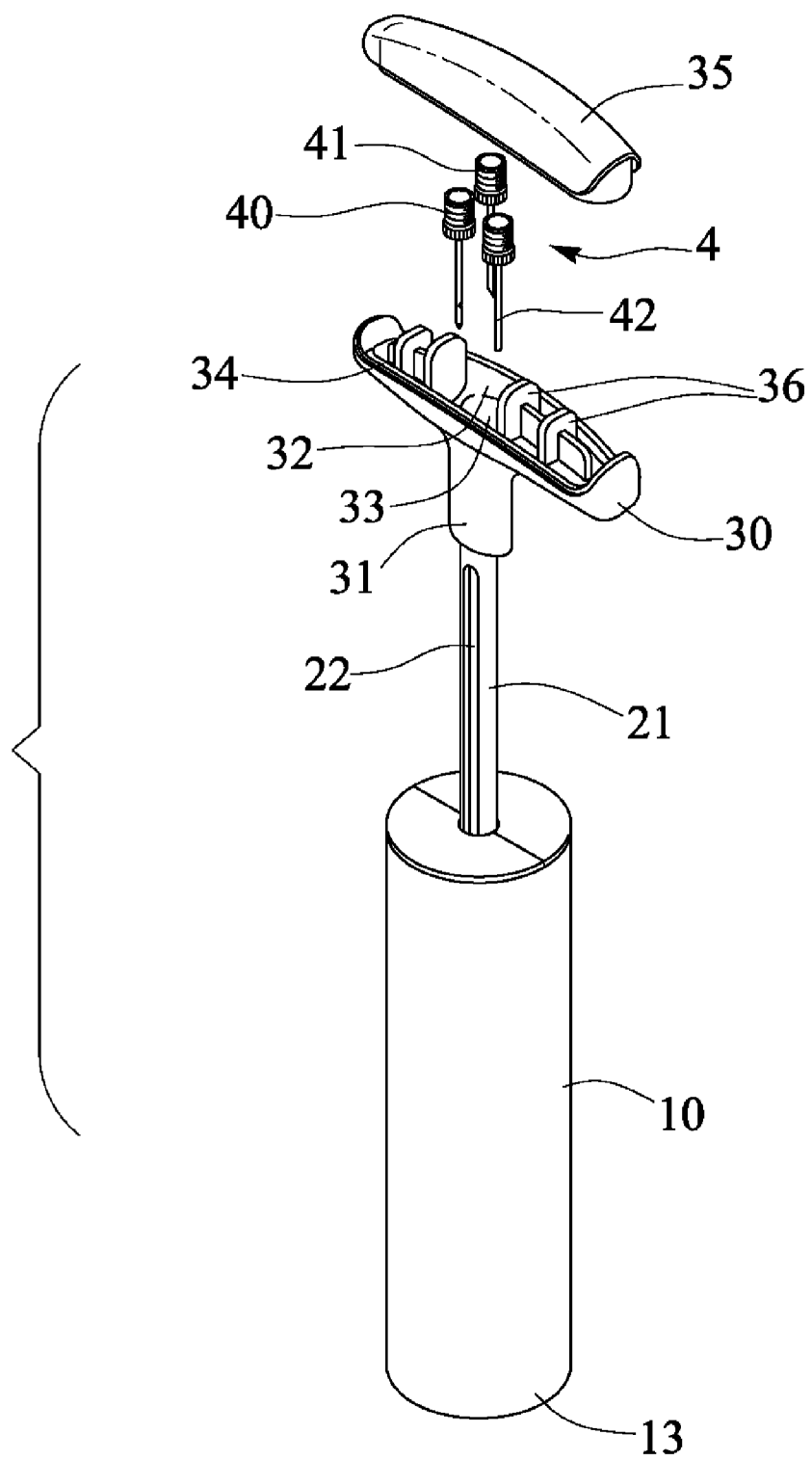


FIG. 6

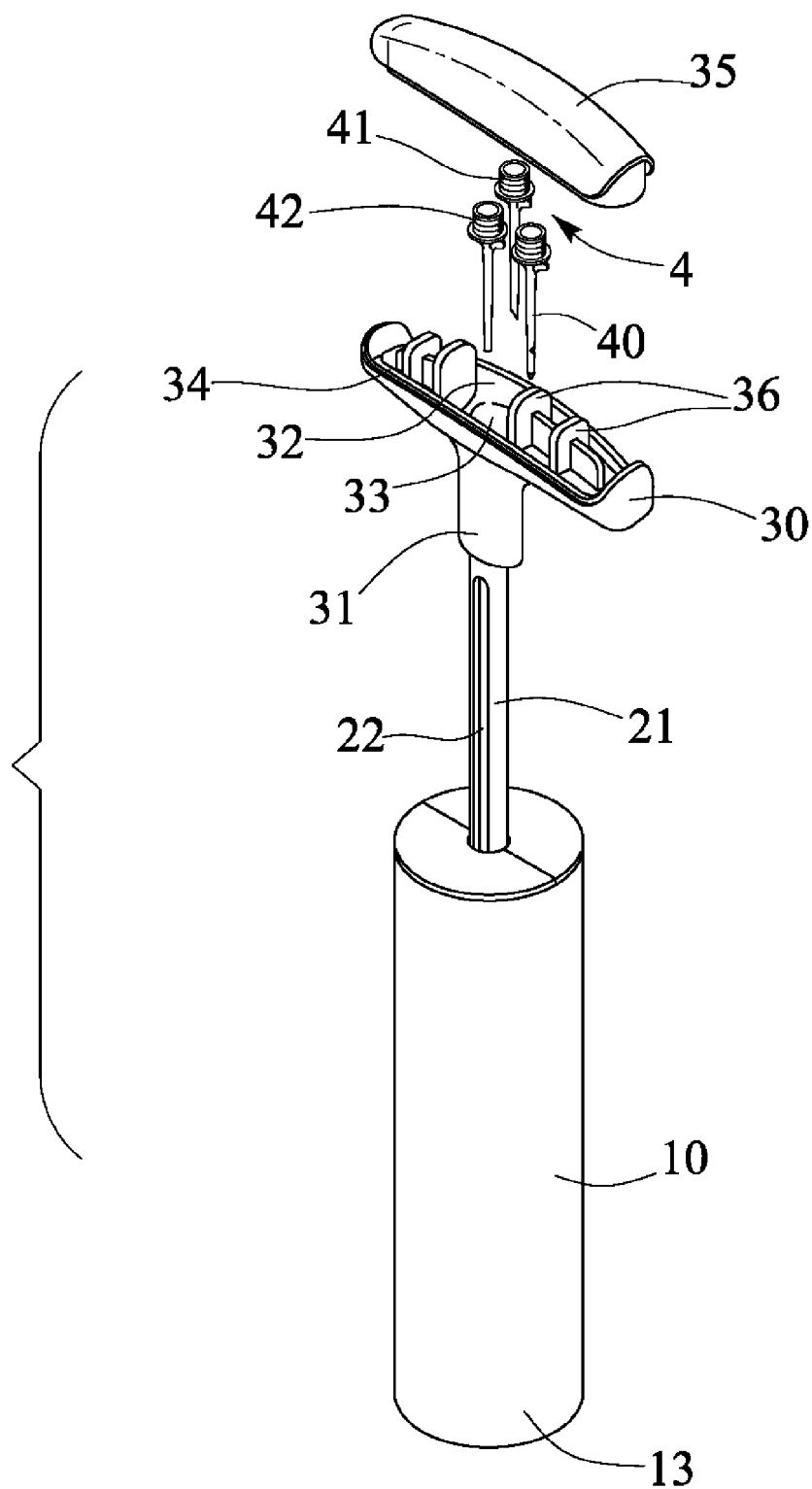


FIG. 7

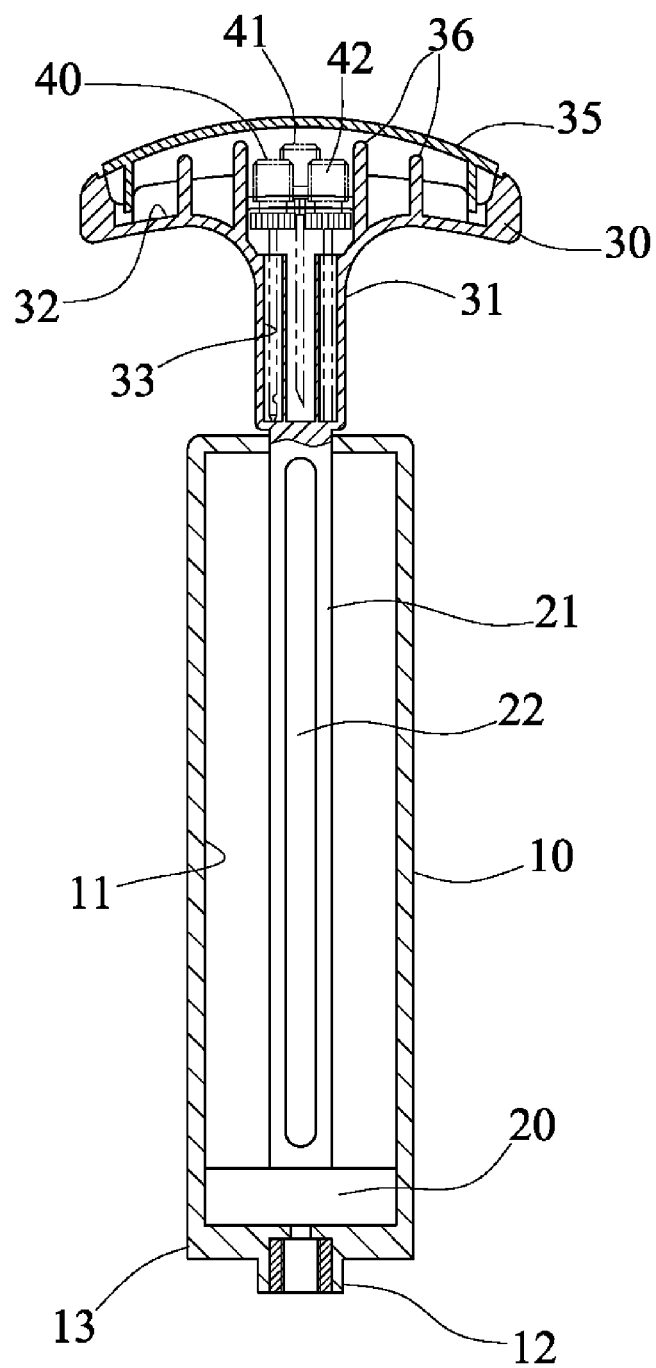


FIG. 8

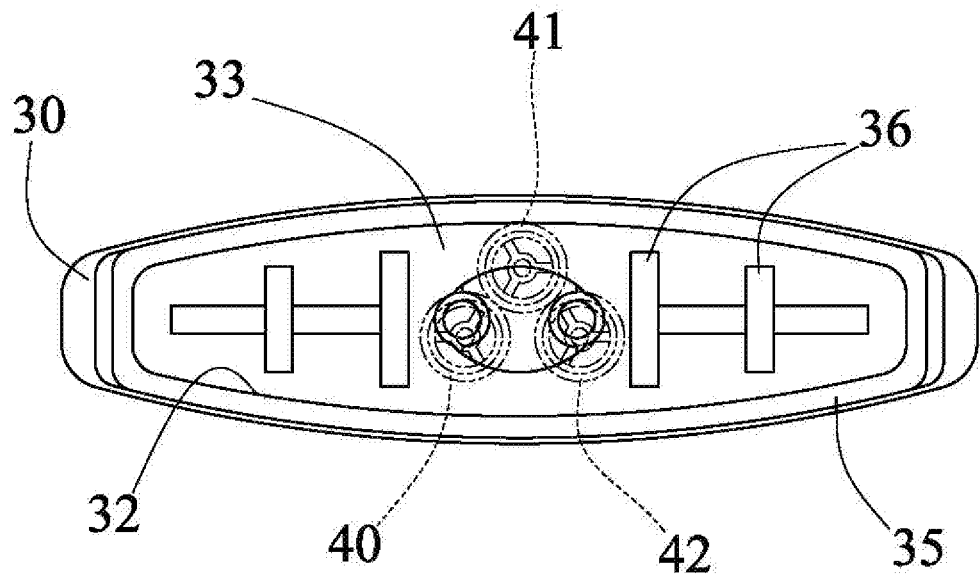


FIG. 9

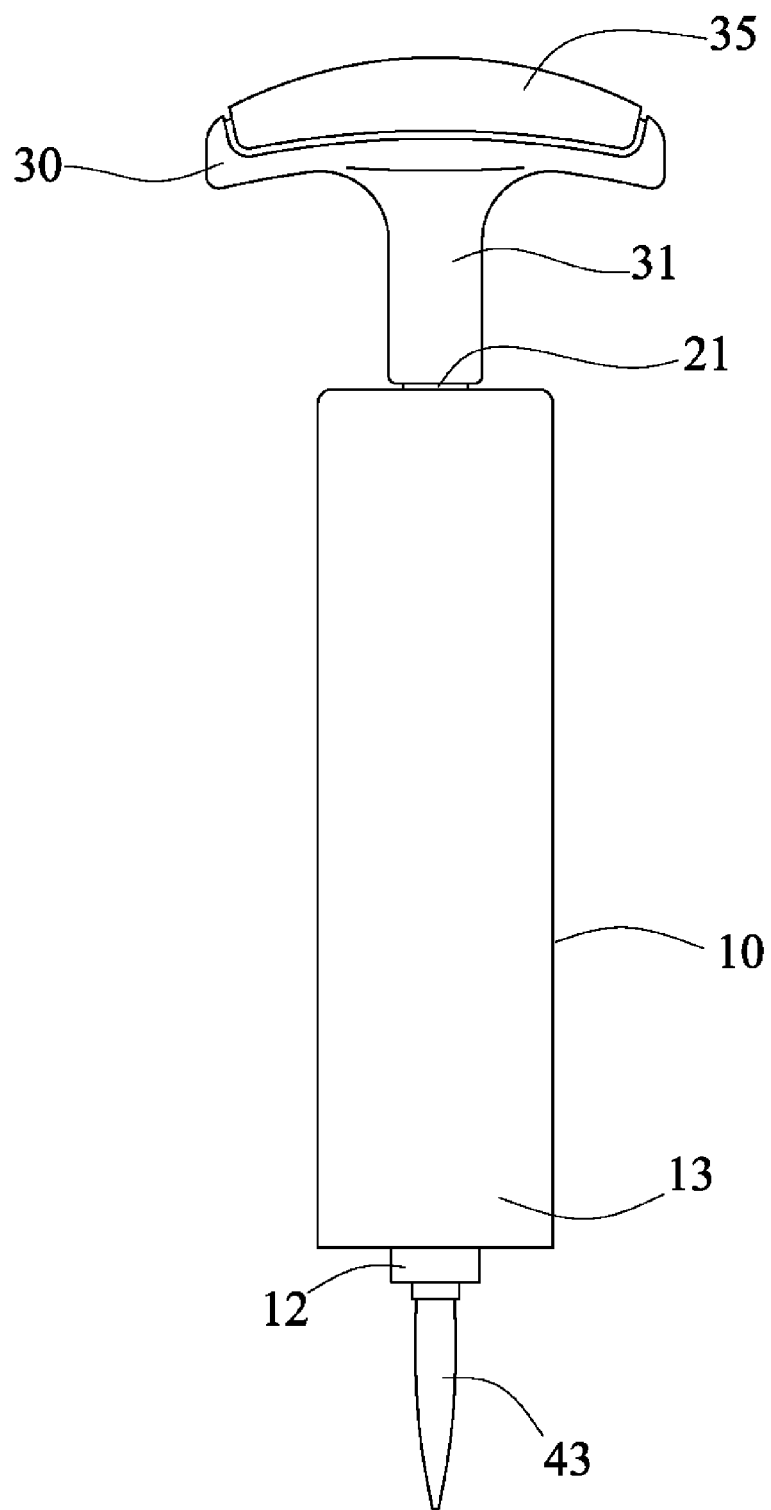


FIG. 10

HAND PUMP HAVING NEEDLE STORING STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a hand pump or air pump, and more particularly to a hand pump including a needle storing structure or mechanism for receiving and storing various kinds of needles and for easily and quickly and readily inflating various kinds of inflatable objects, such as game balls, balloons, life buoys, tires, etc.

2. Description of the Prior Art

[0002] Various kinds of typical hand pumps or air pumps have been developed and provided for inflating various kinds of inflatable objects, such as game balls, blades, balloons, life buoys, tires, etc., and normally comprise a piston slidably received or engaged in an outer receptacle and actuatable or movable relative to the outer receptacle for generating or providing a pressurized air to inflate the inflatable objects.

[0003] For example, U.S. Pat. No. 4,334,839 to Flagg, U.S. Pat. No. 5,964,577 to Chuang, U.S. Pat. No. 6,485,264 to Wu, and U.S. Pat. No. 7,331,768 to Wu disclose several of the typical hand pumps or air pumps each also comprising a piston slidably received or engaged in an outer receptacle and actuatable or movable relative to the outer receptacle for generating or providing a pressurized air to inflate the inflatable objects, and a needle attached or coupled to a nozzle for engaging into the inflatable objects selectively.

[0004] However, the needles are normally separated or spaced from the typical hand pumps or air pumps, i.e., the users have to prepare the needles by themselves in order to inflate the inflatable objects, and the typical hand pumps or air pumps do not provide the needle storing structures or mechanisms for receiving and storing the needles.

[0005] The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional hand pumps or air pumps.

SUMMARY OF THE INVENTION

[0006] The primary objective of the present invention is to provide a hand pump including a needle storing structure or mechanism for receiving and storing various kinds of needles and for easily and quickly and readily inflating various kinds of inflatable objects, such as game balls, balloons, life buoys, tires, etc.

[0007] In accordance with one aspect of the invention, there is provided a hand pump comprising a receptacle including a chamber formed therein, and including a mouth, a piston slidably engaged in the chamber of the receptacle and movable relative to the receptacle for generating a pressurized air and for supplying the pressurized air out through the mouth, a piston rod attached to the piston for moving the piston relative to the chamber of the receptacle, a hand grip attached to the piston rod for moving the piston relative to the receptacle, the hand grip includes a compartment formed in the hand grip, and a needle device received and engaged in the compartment of the hand grip. The needle device may be selected from a game ball needle, a tire needle, a life buoy needle, a balloon needle, or the like.

[0008] The hand grip includes an extension extended therefrom and attached to the piston rod, and the hand grip includes a space formed in the extension of the hand grip and communicating with the compartment of the hand grip for receiving and engaging with the needle device.

[0009] The hand grip includes a cover attached to the hand grip for enclosing the compartment of the hand grip and for shielding and protecting the needle device. The cover may be made with a transparent or semi-transparent material for allowing the needle device to be seen through the cover. The hand grip includes at least one reinforcing fin extended into the compartment of the hand grip for reinforcing the hand grip.

[0010] Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of a hand pump in accordance with the present invention;

[0012] FIG. 2 is a front plan schematic view of the hand pump;

[0013] FIG. 3 is a cross sectional view of the hand pump taken along lines 3-3 of FIG. 1;

[0014] FIG. 4 is another cross sectional view similar to FIG. 3, illustrating the operation of the hand pump;

[0015] FIG. 5 is a partial exploded view of the hand pump, illustrating the operation of the hand pump;

[0016] FIGS. 6, 7 are partial exploded views similar to FIG. 5, illustrating the operation of the hand pump;

[0017] FIG. 8 is a cross sectional view of the hand pump as shown in FIG. 8;

[0018] FIG. 9 is a top plan schematic view of the hand pump as shown in FIGS. 7 and 8; and

[0019] FIG. 10 is a front plan schematic view similar to FIG. 2, illustrating the operation of the hand pump.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] Referring to the drawings, and initially to FIGS. 1-5, a hand pump in accordance with the present invention comprises an outer receptacle 10 including a compartment or chamber 11 formed therein, and including an outlet or mouth 12 formed or provided on one or first end portion 13 thereof for engaging with a needle device 4, such as a game ball needle 40 (FIGS. 1-9), a tire needle 41 (FIGS. 6-9), a life buoy needle 42 (FIGS. 4-9), a balloon needle 43 (FIG. 10), etc., and for suitably inflating various kinds of inflatable objects (not illustrated), such as game balls, blades, balloons, life buoys, tires, etc.

[0021] A piston 20 is slidably received or engaged in the chamber 11 of the outer receptacle 10 and actuatable or movable relative to the outer receptacle 10 for generating or providing a pressurized air to inflate the inflatable objects (not illustrated), a piston rod 21 is attached to or extended from the piston 20, and a knob or hand grip 30 attached or coupled to the piston rod 21 for moving the piston 20 relative to the outer receptacle 10 and for generating or providing the pressurized air. The piston rod 21 may include a recess or cavity 22 formed therein for weight reducing purposes.

[0022] The hand grip 30 includes a stud or extension 31 extended downwardly therefrom and attached or coupled to the piston rod 21, and includes a chamber or compartment 32 formed in the hand grip 30, and/or a space 33 formed in the extension 31 of the hand grip 30 and communicating with the compartment 32 of the hand grip 30 for receiving or engaging with or for storing the game ball needle 40 (FIGS. 1-9), the tire needle 41 (FIGS. 6-9), the life buoy needle 42 (FIGS. 4-9), or the balloon needle 43 (FIG. 10) of the needle device 4.

[0023] The hand grip 30 further includes a peripheral flange or shoulder or engaging member 34 formed or provided thereon for selectively engaging with a cover 35 and for allowing the cover 35 to be detachably or removably attached or mounted to the hand grip 30, and includes one or more reinforcing flanges or ribs or fins 36 extended into the compartment 32 of the hand grip 30 for reinforcing the hand grip 30 and/or for engaging with the cover 35. The cover 35 may be provided for enclosing the compartment 32 of the hand grip 30 and for shielding and protecting the needles 40-43 of the needle device 4.

[0024] It is preferable, but not necessary that the cover 35 is made or manufactured with a transparent or semi-transparent material or the like for allowing the needle device 4 to be seen through the cover 35. It is to be noted that either of the game ball needle 40, the tire needle 41, the life buoy needle 42, or the balloon needle 43 of the needle device 4 may be selectively used by the user and engaged with the mouth 12 at the one or first end portion 13 of the receptacle 10 for suitably inflating various kinds of inflatable objects.

[0025] Accordingly, the hand pump in accordance with the present invention includes a needle storing structure or mechanism for receiving and storing various kinds of needles and for easily and quickly and readily inflating various kinds of inflatable objects, such as game balls, balloons, life buoys, tires, etc.

[0026] Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim:

1. A hand pump comprising:
 - a receptacle including a chamber formed therein, and including a mouth,
 - a piston slidably engaged in said chamber of said receptacle and movable relative to said receptacle for generating a pressurized air,
 - a piston rod attached to said piston,
 - a hand grip attached to said piston rod for moving said piston relative to said receptacle, said hand grip including a compartment formed in said hand grip, and
 - a needle device received and engaged in said compartment of said hand grip.
2. The hand pump as claimed in claim 1, wherein said hand grip includes an extension extended therefrom and attached to said piston rod.
3. The hand pump as claimed in claim 2, wherein said hand grip includes a space formed in said extension of said hand grip and communicating with said compartment of said hand grip for receiving and engaging with said needle device.
4. The hand pump as claimed in claim 1, wherein said hand grip includes a cover attached to said hand grip for enclosing said compartment of said hand grip and for shielding and protecting said needle device.
5. The hand pump as claimed in claim 1, wherein said hand grip includes at least one reinforcing fin extended into said compartment of said hand grip for reinforcing said hand grip.

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