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(54) **TAPE MEASURE**

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(57) **ABSTRACT**

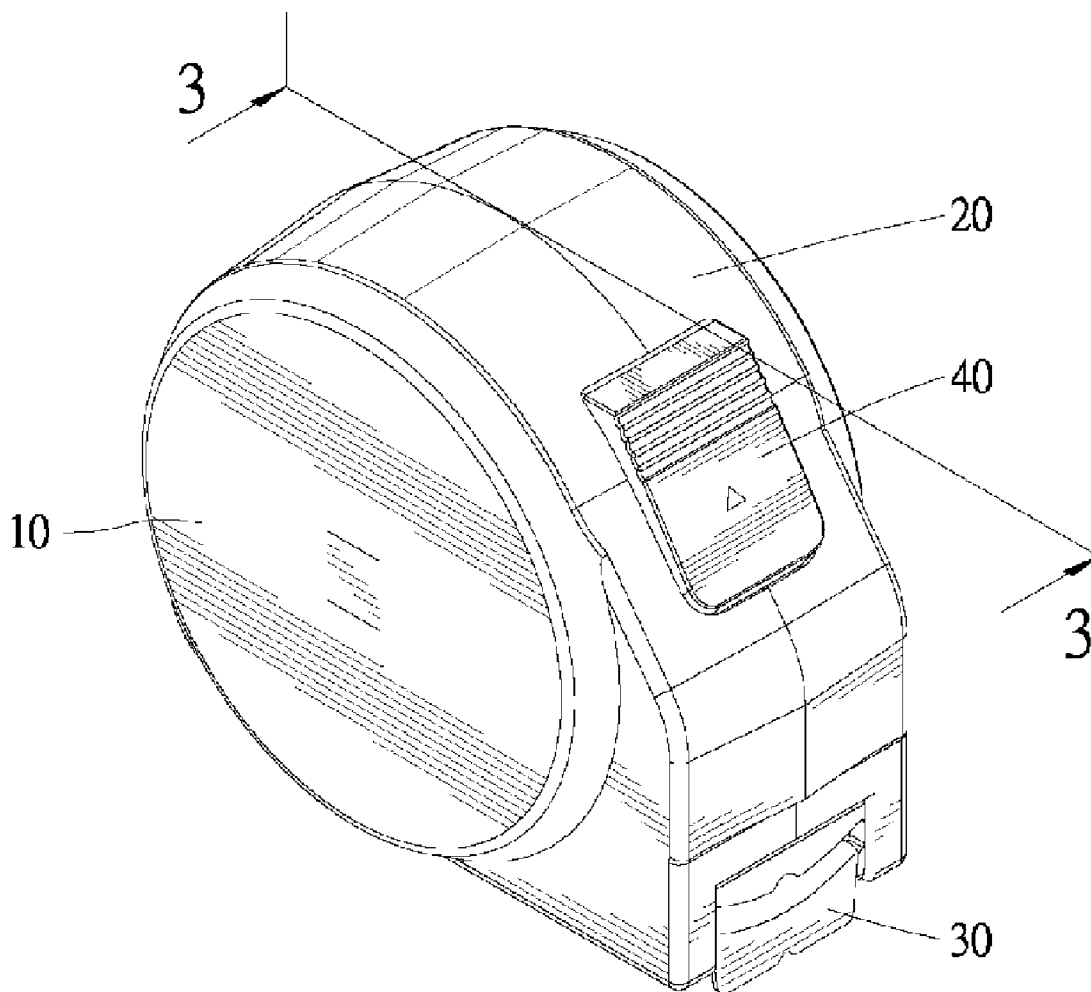
A tape measure includes a shell, a tape and a restraining device. The shell includes a slit defined therein and an opening defined therein. The tape can automatically be reeled in after it is pulled from the shell through the slit and released. The restraining device is installed in the shell for restraining the tape when a desired length of the tape is pulled from the shell and released. The restraining device includes a trigger exposed from the opening so that the trigger is operable in order to set the tape free.

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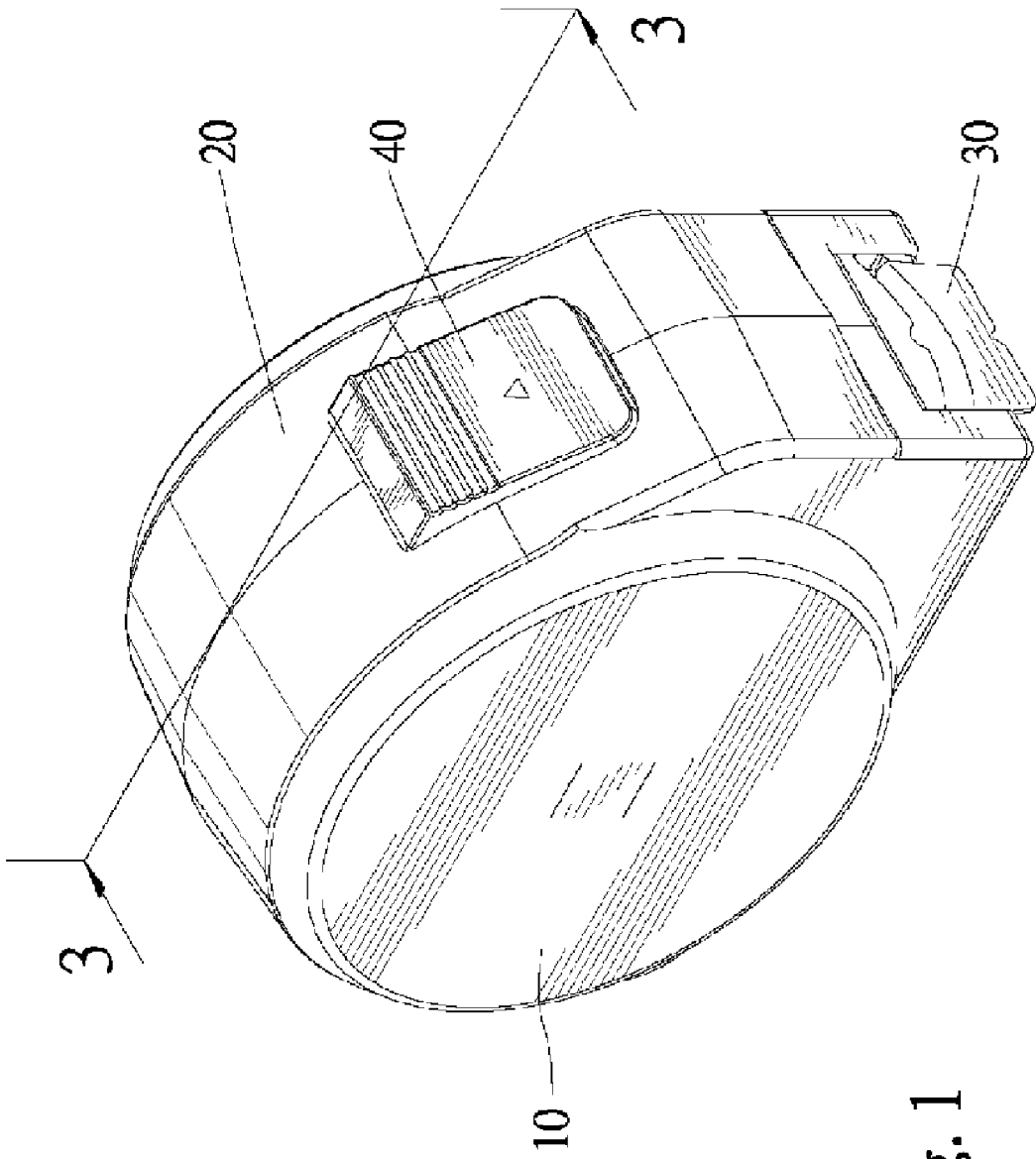


Fig. 1

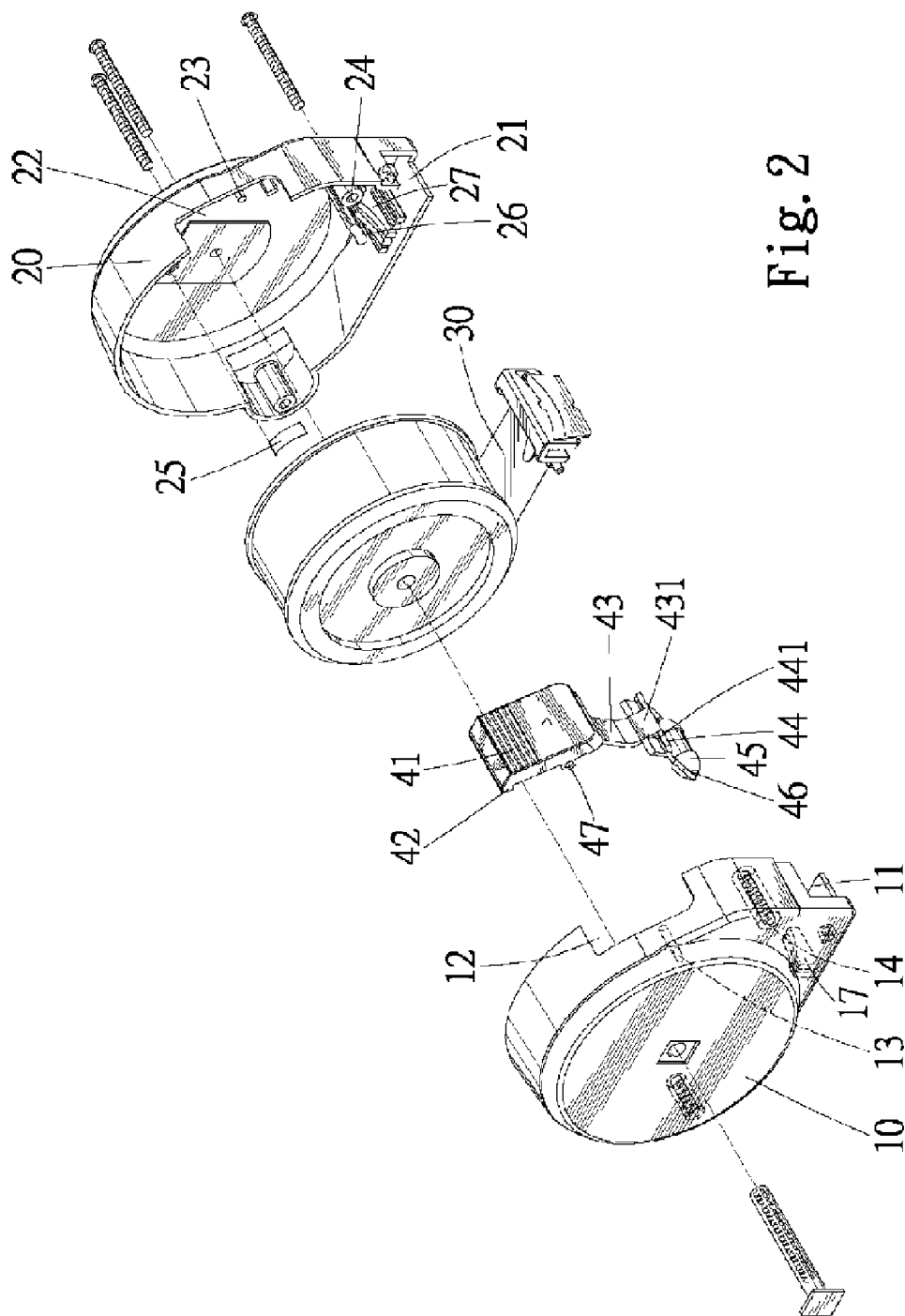


Fig. 2

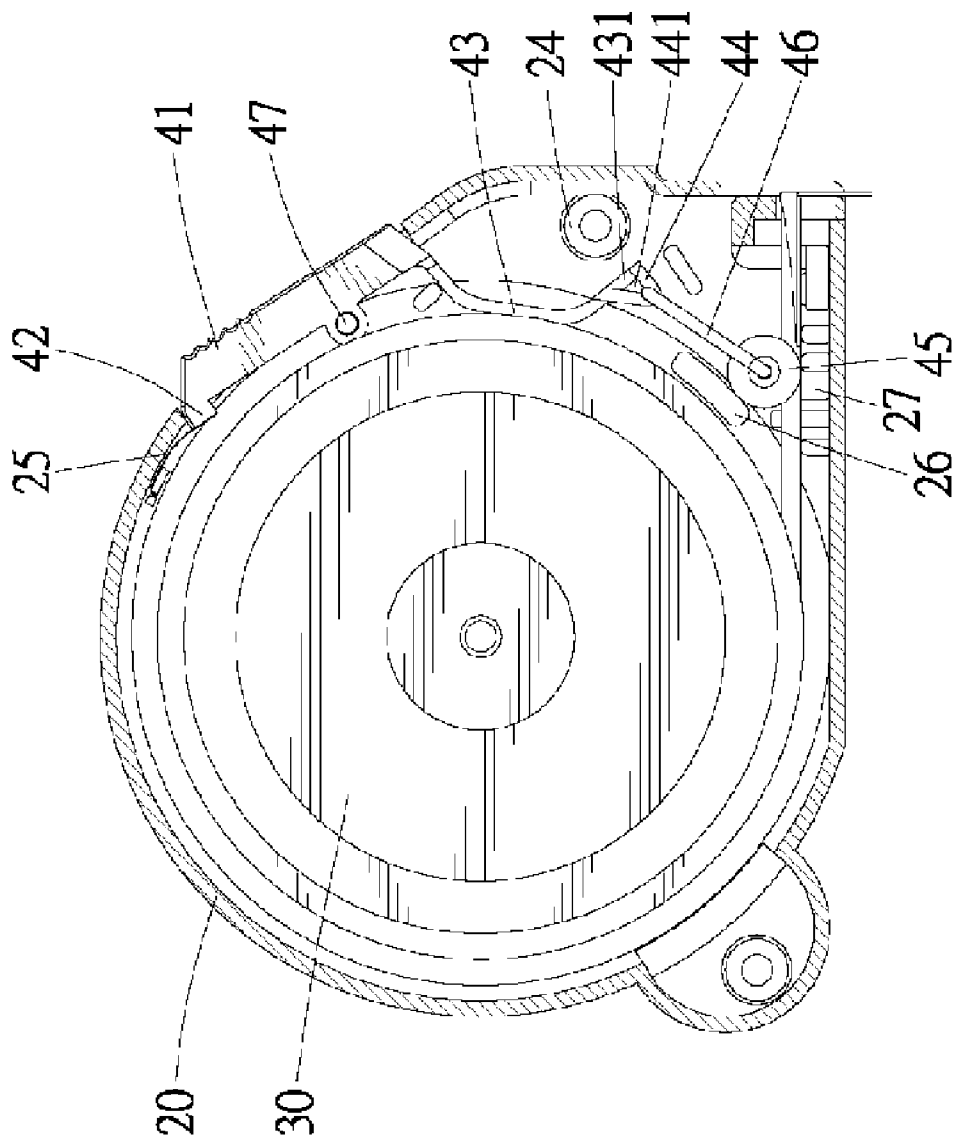


Fig. 3

Fig. 4

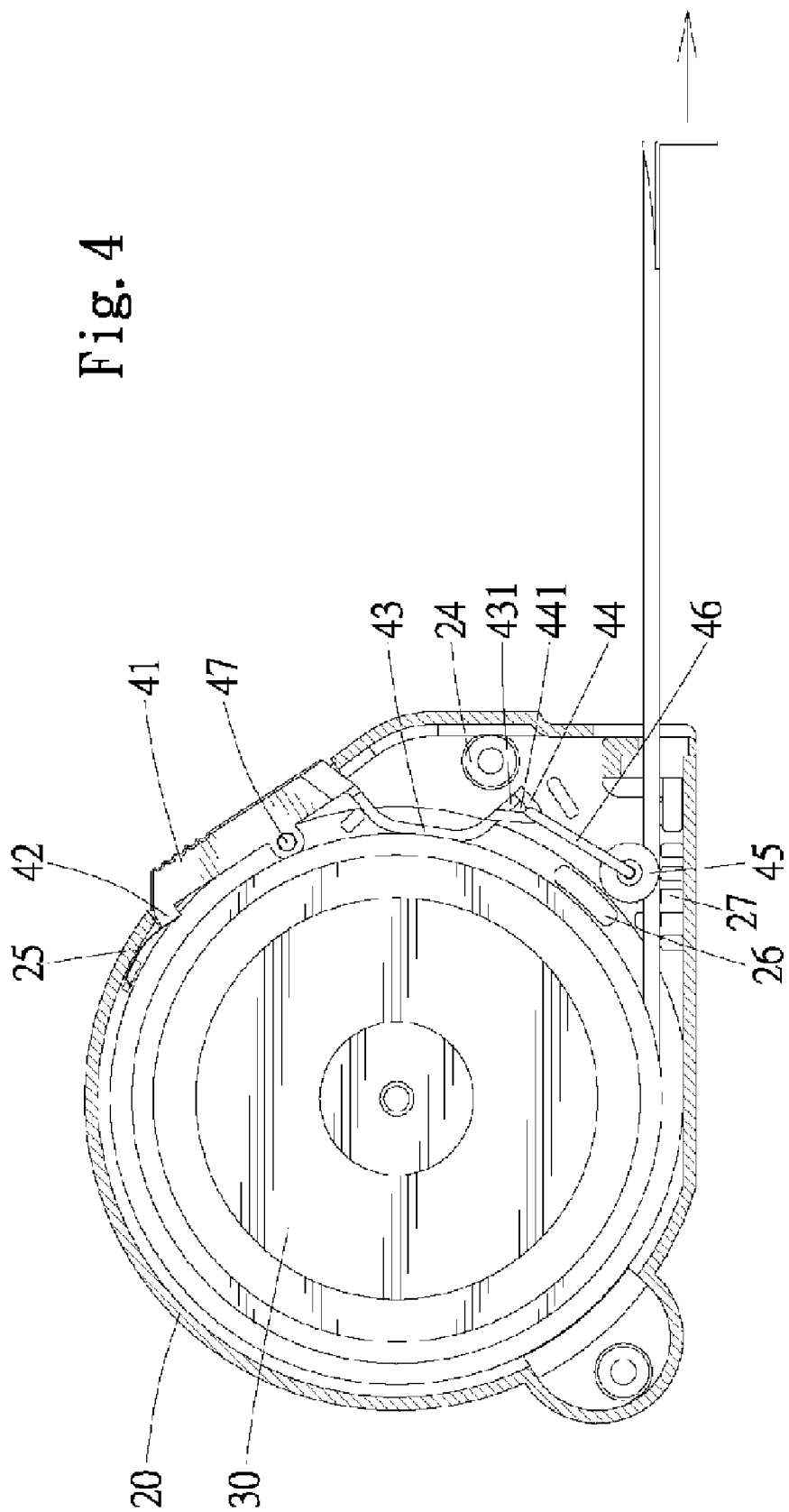


Fig. 5

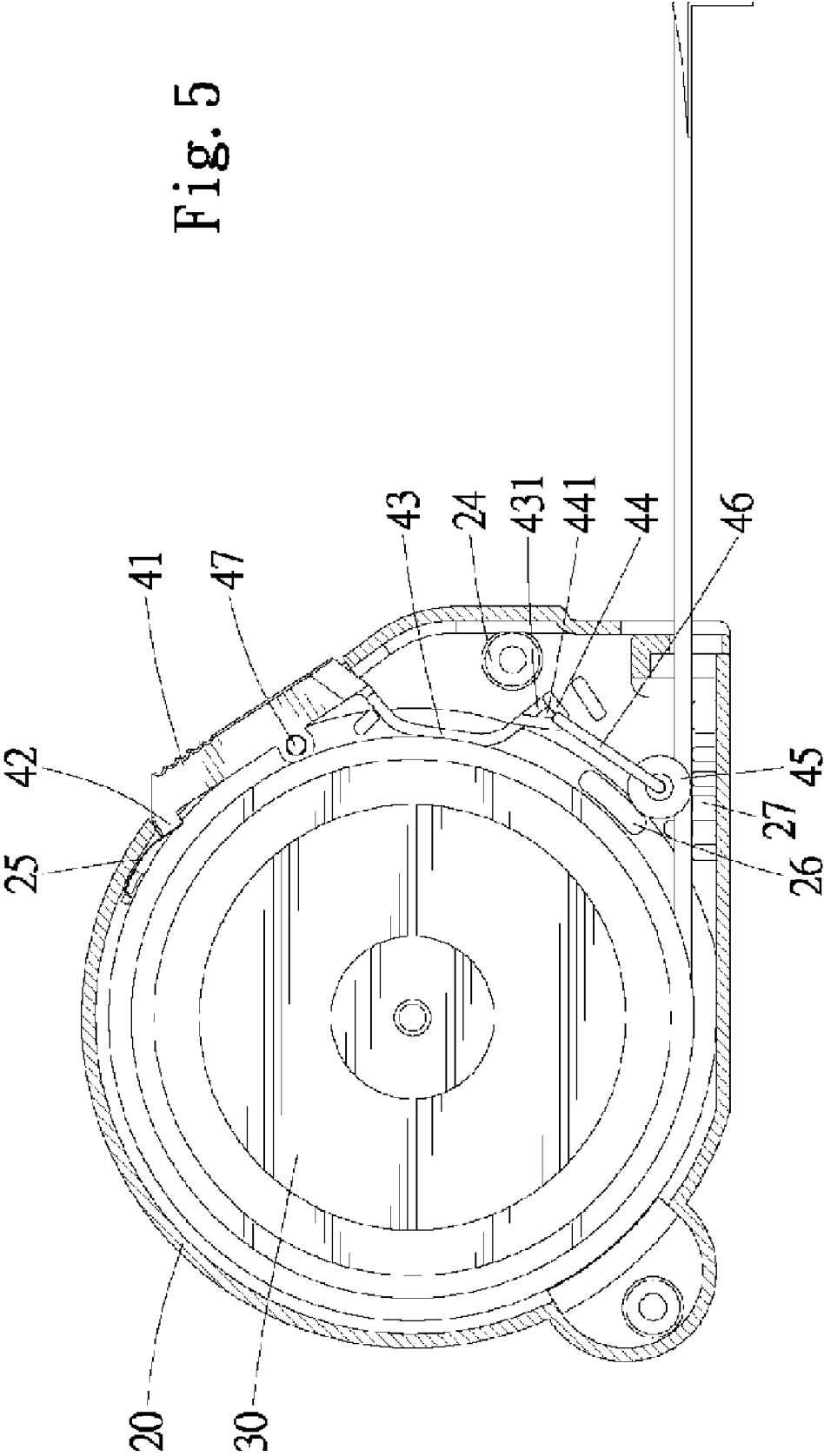
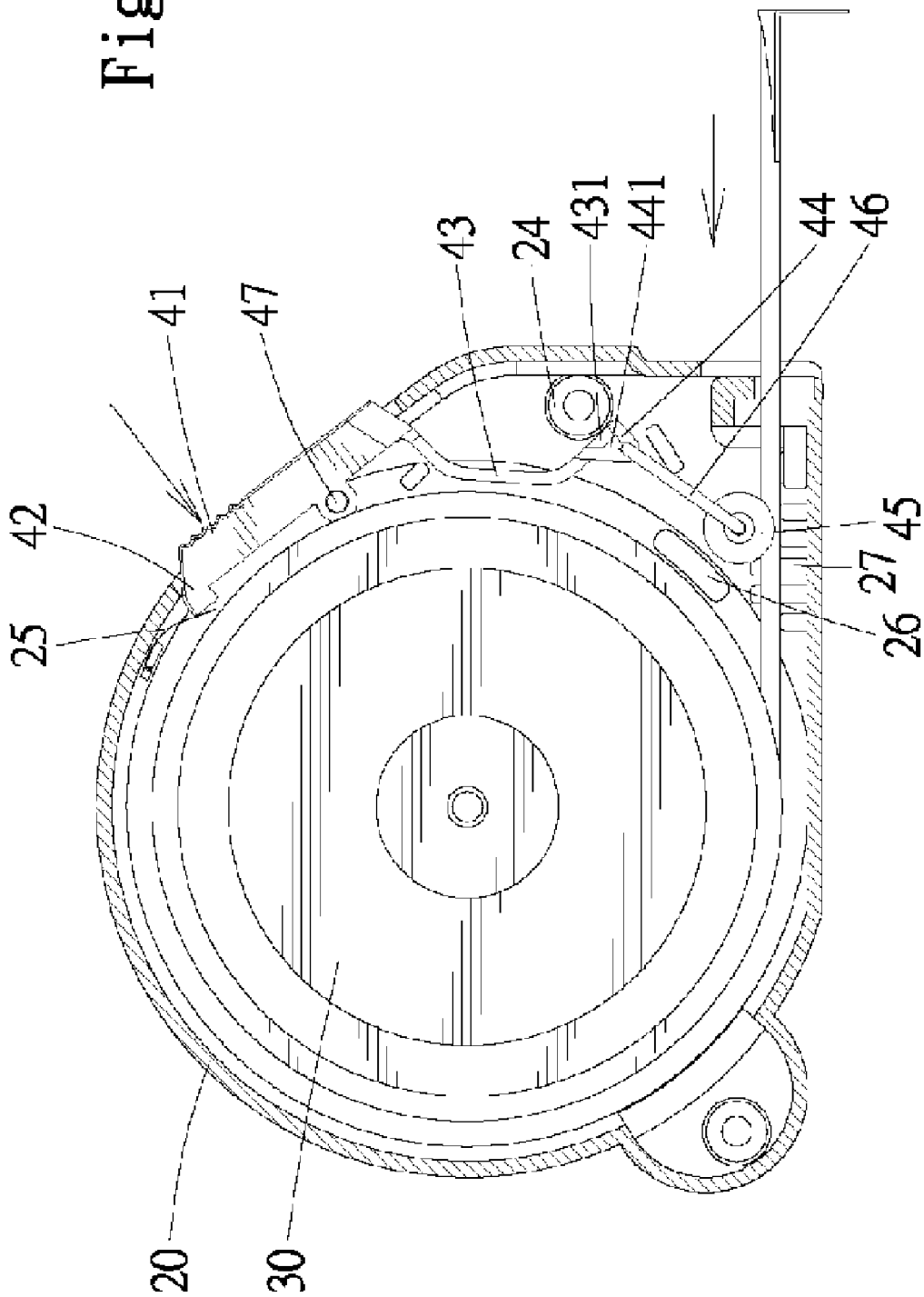


Fig. 6



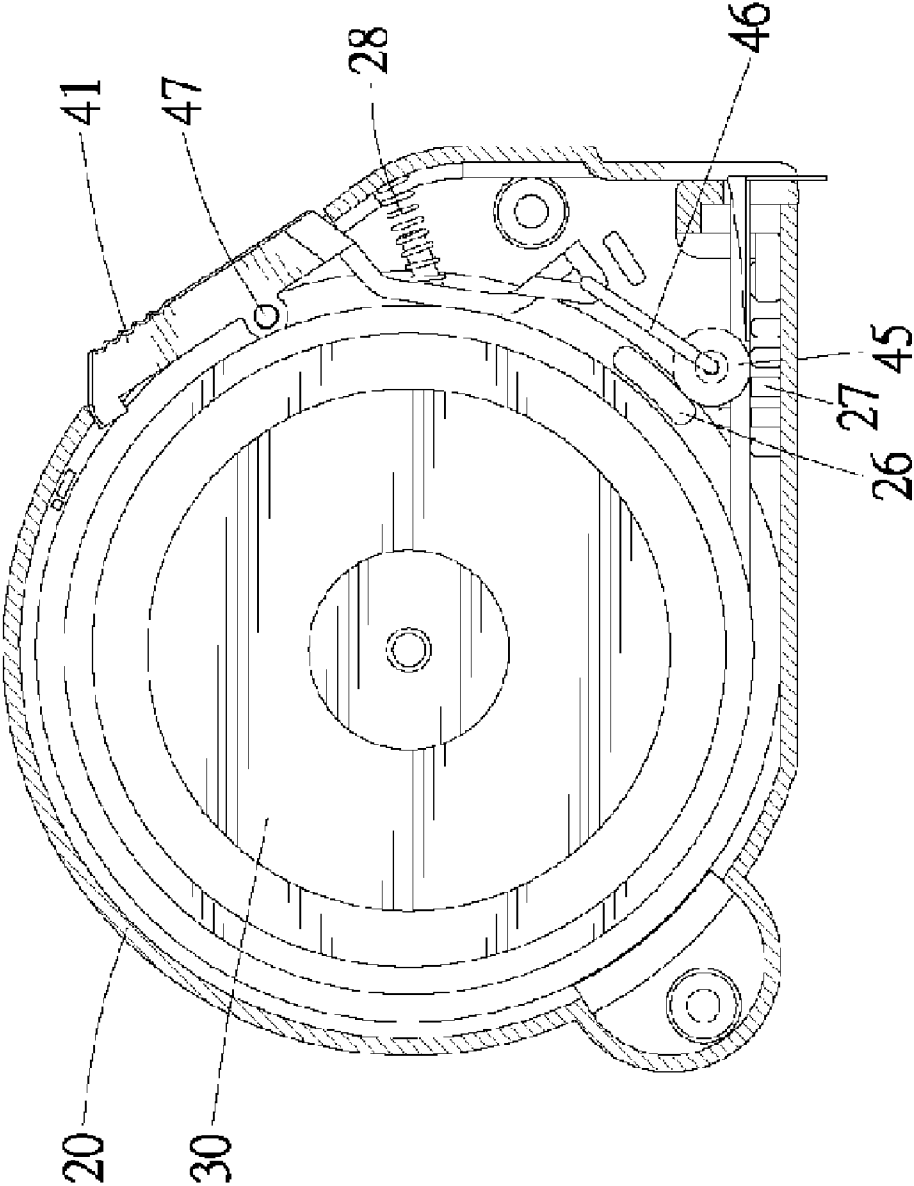


Fig. 7

TAPE MEASURE

BACKGROUND OF INVENTION

[0001] 1. Field of Invention

[0002] The present invention relates to a tape measure and, more particularly, to a tape measure capable of automatic braking.

[0003] 2. Related Prior Art

[0004] Disclosed in Taiwanese Patent M271150 is a restraining device for a tape measure. The tape measure includes a shell defining a slit. A tape is installed in the shell. An end of the tape is inserted from the slit. A switch is installed on the shell corresponding to the slit of the shell. The switch includes a pivotal portion formed at an end near the slit. An abutment element is movably installed on the shell near the slit and connected to the pivotal portion of the switch. The switch is movable on the shell between a restraining position where the abutment element abuts the tape and a releasing position where the abutment element releases.

[0005] In use, the tape is pulled from the shell when the switch is located in the releasing position. When a desired length of the tape is pulled from the shell, the switch is moved to the restraining position. The switch is frequently moved between the restraining and releasing positions, and this is inconvenient.

[0006] The present invention is therefore intended to obviate or at least alleviate the problems encountered in prior art.

SUMMARY OF INVENTION

[0007] According to the present invention, a tape measure includes a shell, a tape and a restraining device. The shell defines a slit and an opening. The tape can automatically be reeled in after it is pulled from the shell through the slit and released. The restraining device is installed in the shell for restraining the tape when a desired length of the tape is pulled from the shell and released. The restraining device includes a trigger exposed from the opening so that the trigger is operable in order to set the tape free.

[0008] The primary advantage of the tape measure according to the present invention is the convenience in automatically retaining the tape at any desired length because of the use of the restraining device.

[0009] Other advantages and features of the present invention will become apparent from the following description referring to the drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0010] The present invention will be described through detailed illustration of two embodiments referring to the drawings.

[0011] FIG. 1 is a perspective view of a tape measure according to the first embodiment of the present invention.

[0012] FIG. 2 is an exploded view of the tape measure shown in FIG. 1.

[0013] FIG. 3 is a cross-sectional view of the tape measure taken along a line 3-3 in FIG. 1.

[0014] FIG. 4 is a cross-sectional view of the tape measure taken in another position than shown in FIG. 3.

[0015] FIG. 5 is a cross-sectional view of the tape measure taken in another position than shown in FIG. 4.

[0016] FIG. 6 is a cross-sectional view of the tape measure taken in another position than shown in FIG. 5.

[0017] FIG. 7 is a cross-sectional view of a tape measure according to a second embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0018] Referring to FIG. 1, there is shown a tape measure according to a first embodiment of the present invention. The tape measure includes a shell consisting of a first half 10 and a second half 20, a tape reeled in the shell and a restraining device 40 for automatically allowing the tape 30 to be pulled from the shell and for automatically restraining the tape when the tape is released.

[0019] Referring to FIG. 2, the first half 10 includes a cutout 11 defined therein, a cutout 12 defined therein, a rod 13 formed on a side, a tube 14 formed on the side and two ribs 17 formed on the side. The tube 14 includes a thread formed on an internal side.

[0020] Similarly, the second half 20 includes a cutout 21 defined therein, a cutout 22 defined therein, a rod 23 formed on a side, a tube 24 formed on the side and two ribs 27 formed on the side. Unlike the first half 10, the second half 20 includes a restraint 26 formed on the side. An elastic element 25 is installed on the side of the first half 10. The elastic element 25 is preferably a leaf spring.

[0021] The first half 10 is joined to the second half 20. The cutouts 11 and 21 together become a slit for the tape 30. The cutouts 12 and 22 together become an opening for the restraining device 40. The rods 13 and 23 together become a shaft for the restraining device 40. The tubes 14 and 24 together become a cylinder for receiving a fastener for fastening the first half 10 to the second half 20. The fastener is in the form of a threaded bolt for engagement with the thread formed on the internal side of the tube 14. The ribs 17 and 27 together become two anvils. The restraint 26 and the anvils together define a channel that gets smaller in a direction away from the slit (see FIGS. 3 through 6).

[0022] The restraining device 40 includes a trigger 41 exposed from the opening, a tunnel 47 defined in the trigger 41 for receiving the shaft, a ridge 42 formed on a side, an extensive portion 43 extended from an end of the trigger 41 and a connective portion 44 formed at an end of the extensive portion 43. There is a frame 46 made of a metal rod. The frame 46 includes a section inserted in a tunnel 441 defined in the connective portion 44 and an opposite section for supporting a roller 45. The roller 45 is made of a frictional material so that there can be adequate friction it and the tape 30. The trigger 41 includes a skid-proof surface for contact with a user's finger.

[0023] Referring to FIG. 3, the restraining device 40 can be pivoted on the shaft. The ridge 42 is located against the elastic element 25 so that the restraining device 40 is biased by the elastic element 25. The roller 45 is pressed against the restraint 26 so that the rotation of the former is prevented by the latter. The roller 45 is pushed towards the anvils so that the tape 30 is pinched by and between the roller 45 and the anvils.

[0024] Referring to FIG. 4, the tape 30 is pulled from the shell so that the roller 45 is moved from the restraint 26 by the tape 30. The roller 45 is free to rotate in order to allow further pulling of the tape 30. The elastic element 25 is loaded.

[0025] Referring to FIG. 5, the tape 30 is released since a desired length thereof has been pulled from the shell. The tape 30 is automatically reeled in. However, as soon as the automatic reeling in of the tape 30 begins, the roller 45 is moved back to the restraint 26 by the elastic element 25. The rotation of the roller 45 is prevented by the restraint 26. The tape 30 is pinched between the roller 45 and the anvils so that further reeling in of the tape 30 is prevented.

[0026] Referring to FIG. 6, the trigger 41 is operated in order to move the roller 45 from the restraint 26 and the anvil. The rotation of the roller 45 is allowed so that the reeling in of the tape 30 is allowed.

[0027] Referring to FIG. 7, there is shown a tape measure according to a second embodiment of the present invention like the first embodiment except including a helical spring 28 compressed the shell and the extensive portion instead of the leaf spring 25 provided between the shell and the ridge 42.

[0028] An advantage of the tape measure is the convenience in automatically retaining the tape at any desired length for using the restraining device. Another advantage is ease and a low cost in its fabrication.

[0029] The present invention has been described via the illustration of the embodiments. Those skilled in the art can derive variations from the embodiments without departing from the scope of the present invention. Hence, the embodiments shall not limit the scope of the present invention defined in the claims.

What is claimed is:

- 1. A tape measure comprising:
  - a shell comprising a slit defined therein and an opening defined therein;
  - a tape that can automatically be reeled in after it is pulled from the shell through the slit and released; and

a restraining device installed in the shell for automatically restraining the tape when a desired length of the tape is pulled from the shell and released so as to retain the desired length of the tape outside the shell, the restraining device comprising a trigger exposed from the opening so that the trigger is operable in order to set the tape free.

2. The tape measure according to claim 1 wherein the restraining device comprises:

- at least one anvil installed in the shell;
- a restraint installed in the shell so that the anvil and the restraint together define a channel that gets smaller in a direction away from the slit;
- a roller connected to the trigger so that the roller is moved from the restraint for allowing the reeling in of the tape when the trigger is operated; and

an elastic element installed in the shell for biasing the trigger so as to press the roller against the restraint and press the tape against the anvil, wherein when the tape is pulled from the shell, the roller is moved from the restraint and set free to rotate to allow further pulling of the tape from the shell.

3. The tape measure according to claim 2 wherein the restraining device comprises a frame provided between the trigger and the roller.

4. The tape measure according to claim 3 wherein the restraining device comprises an extensive portion extended from the trigger and connected to the frame.

5. The tape measure according to claim 2 wherein the elastic element is a leaf spring.

6. The tape measure according to claim 2 wherein the elastic element is a helical spring.

7. The tape measure according to claim 1 wherein the restraining device comprises a shaft installed in the shell for supporting the trigger.

8. The tape measure according to claim 5 wherein the trigger defines a tunnel for receiving the shaft.

9. The tape measure according to claim 1 wherein the shell comprises two halves joined together.

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