United States Patent [19]

Tellen

[11] **3,858,755**

[45] **Jan. 7, 1975**

[54] **METER BOX WITH COVER HAVING BIASED SNAP-LOCK**

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[22] Filed: **Apr. 2, 1973**

[21] Appl. No.: **346,788**

[52] **U.S. Cl.**..... **220/284,** 137/371, 220/315, 220/337

[51] **Int. Cl.**..... **H02g 9/02,** B65d 45/08, B65d 45/20

[58] **Field of Search**.... 220/55 R, 55 E, 55 G, 55 H, 220/55 K, 59, 60 R, 60 A, 30, 30.5, 30.6; 137/371

[56] **References Cited**

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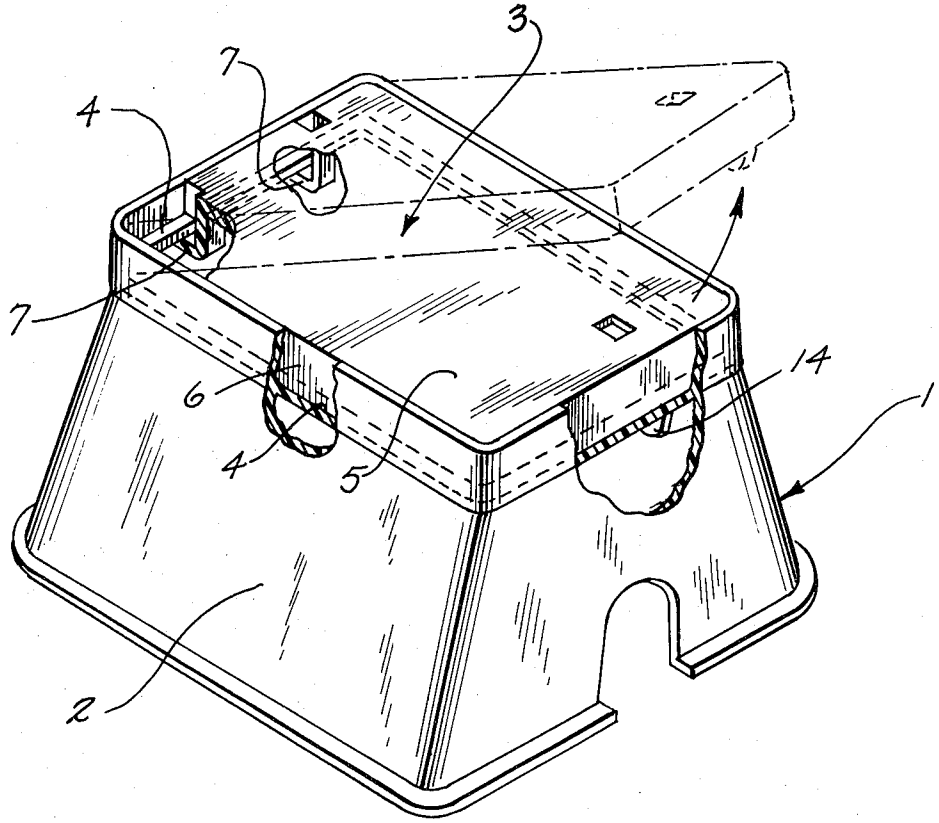
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[57] **ABSTRACT**

A meter box having a body portion adapted to be buried in the ground, with a cover adapted to be at surface level. In the embodiments shown, the cover is rectangular, and is hinged at one end to the said body portion of the box. A locking member is secured to the under side of the cover, and is pivotally mounted on either a horizontal or vertical axis. The locking member includes a cammed latch for engaging a flange on the box body. In accordance with the invention, the locking member includes a slightly flexible spring portion which is confined against a rigid strengthening rib formed on the under side of the cover. The locking member also includes a surface portion engageable by a tool inserted through the top cover wall. Pivoting of the tool will cause the locking member to pivot on its axis, thereby bending the spring against the said rigid rib so that the latch will be released.

6 Claims, 5 Drawing Figures



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SHEET 1 OF 2

Fig. 1

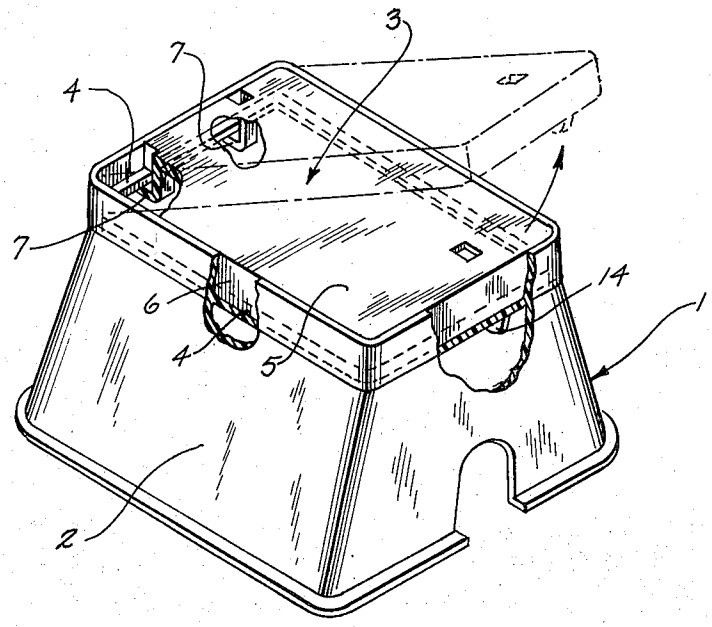
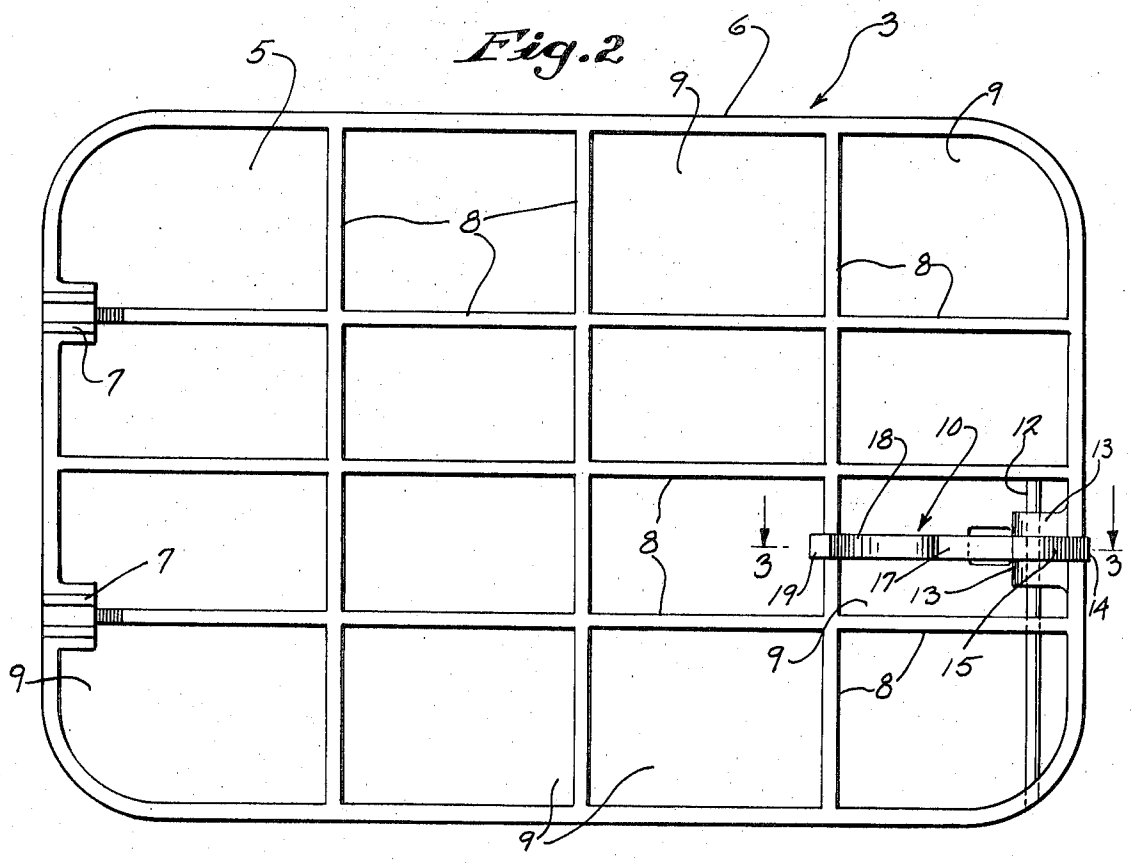


Fig. 2



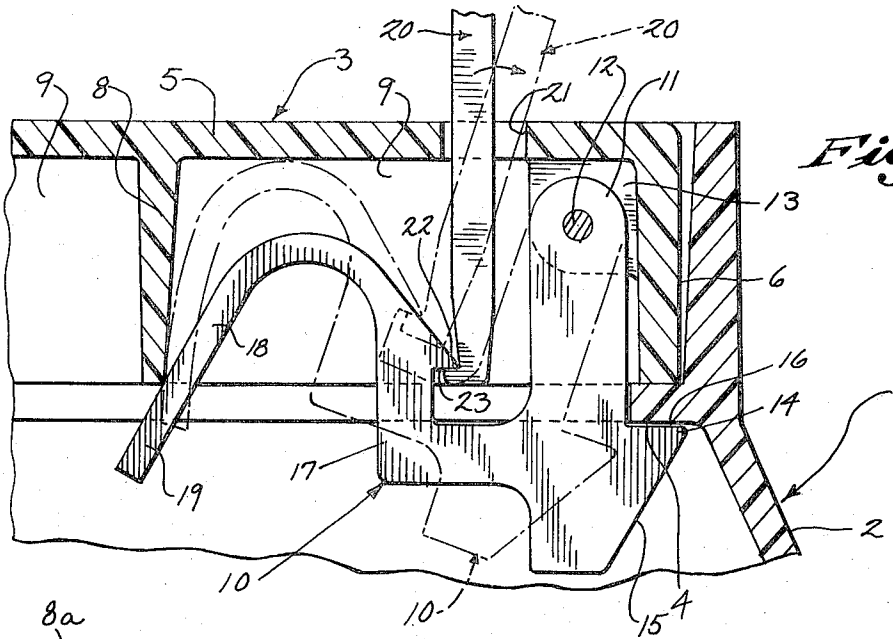


Fig. 3

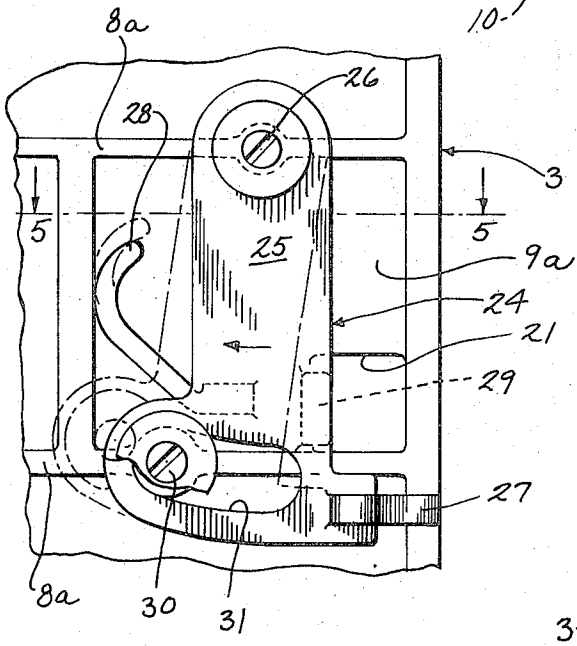


Fig. 4

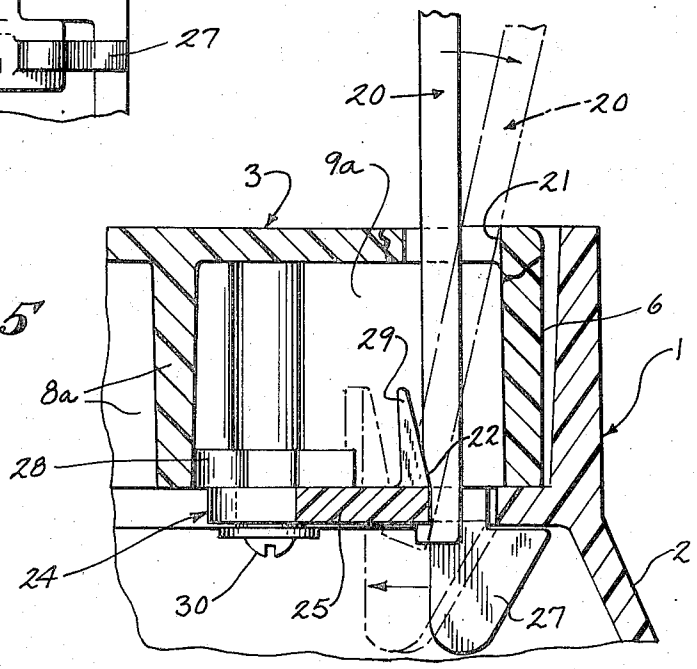


Fig. 5

METER BOX WITH COVER HAVING BIASED SNAP-LOCK

BACKGROUND OF THE INVENTION

This invention relates to a meter box with a cover having a biased snap-lock.

Meter boxes, sometimes referred to as curb or valve boxes are designed to be buried in the ground to protect valves, meters and the like; while providing access to the interior when necessary. Such boxes include a cover which is removable, or at least openable, with the cover usually being at surface level.

Some meter boxes are provided with covers which are hinged at one side to the box body, and which include locking or latching means on the other side to secure the cover to the box in a closed position.

Numerous devices have previously been used to lock the cover to the box body. Many of these devices are subject to the disadvantage of being easily tampered with from the outside, and will not automatically lock when the cover is hinged downwardly. Other such devices require a special tool to permit unlocking, and also provide automatic locking. Examples of these other devices are disclosed in the following U.S. Pat. Nos.: Lowrie 317,153; Cunningham 1,209,562; Holmgreen 1,505,026; and Brooks 2,217,097.

The devices disclosed in the above mentioned patents are also subject to certain disadvantages. In some, the latching mechanism is only weight responsive which, it has been found, is not completely reliable. In others, a spring biases the latch to outward position, but the structures require complex brackets, lug securements or the like.

Many modern day meter box covers are provided with integral waffle ribs or the like on their interior surfaces for strengthening purposes. To the knowledge of the inventor, no one has previously used this rib construction to assist in providing a biased latching device.

SUMMARY OF THE INVENTION

The present invention makes use of the cover rib construction, with a resultant substantial simplification of the latch.

The structure of the device of the invention includes a meter box having a body portion adapted to be buried in the ground, with a cover adapted to be at surface level. In the embodiments shown, the cover is rectangular, and is hinged at one end to the said body portion of the box. A locking member is secured to the under side of the cover, and is pivotally mounted on either a horizontal or vertical axis. The locking member includes a cammed latch for engaging a flange on the box body. In accordance with the invention, the locking member includes a slightly flexible spring portion which is confined against a rigid strengthening rib formed on the under side of the cover. The locking member also includes a surface portion engageable by a tool inserted through the top cover wall. Pivoting of the tool will cause the locking member to pivot on its axis, thereby bending the spring against the said rigid rib so that the latch will be released.

DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate the best mode presently contemplated by the inventor for carrying out the invention.

In the drawings:

FIG. 1 is a perspective view of a meter box constructed in accordance with the invention, with parts broken away, and showing the cover in open and closed position;

FIG. 2 is a bottom plan view of the box cover and showing one embodiment of latching snap-lock;

FIG. 3 is an enlarged section taken on line 3—3 of FIG. 2, with a portion of the box body added and showing the mechanism in locked and unlocked position;

FIG. 4 is a fragmentary bottom plan view of the box cover and showing another embodiment of latching snap-lock; and

FIG. 5 is a view similar to FIG. 3 and taken on line 5—5 of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings, the concept of the invention is embodied in a meter box 1 of relatively rigid light-weight molded resin-like plastic of any suitable type well known in the art. As shown, box 1 is rectangular, but the shape may be changed to circular or the like without departing from the spirit of the invention. Box 1 comprises a body portion 2 adapted to be buried in the ground to protect a service meter or the like, not shown; as well as a cover 3 adapted to nest within body 2 and rest upon an inwardly extending horizontal peripheral flange 4 disposed downwardly from the top of the body side wall.

Cover 3 is of inverted pan shape and comprises a top wall 5 having a downwardly extending peripheral side wall 6 adapted to rest on flange 4 when the cover is closed. A pair of downwardly extending dogs or feet 7 are disposed at one end of cover 3 and lock under flange 4 to provide an easily disengageable hinge means to permit raising and lowering the cover.

In addition, cover 3 includes strengthening means integral with top and side walls 5 and 6 so that the cover can withstand downward pressures of high magnitude, such as when a truck rolls over the box. For this purpose a plurality of ribs 8 extend across the underside of the cover. In the embodiments shown, ribs 8 are formed in a criss-cross intersecting waffle pattern, creating a plurality of compartments or chambers 9 with each other and/or with cover side wall 6.

The structure provides means to automatically latch cover 3 to box body 1 when the cover is lowered, said latching means being spring biased outwardly by engagement with the strengthening means, namely ribs 8. For this purpose, and as shown in the embodiment of FIGS. 2 and 3, a unitary locking member 10 is disposed in a cover chamber 9 at the end remote from hinge feet 7. Member 10 is preferably of a suitable plastic material, such as an acetal resin sold by DuPont under the trademark "Delrin". Member 10 includes an upwardly extending tongue 11 disposed adjacent side wall 6; and a horizontal pivot pin 12 extends through tongue 11 and several of ribs 8 to permit pivoting of member 10 about the pin axis. If desired, additional lug type bearing means 13 can be provided for pin 12. The lower portion of tongue 11 merges into a latching member 14 which has an outwardly facing cam surface 15 adapted to ride over flange 4 when the cover is lowered and a shoulder 16 for latching beneath the flange. A generally L-shaped arm 17 extends inwardly from latching member 14 and merges into a vertical spring 18 of inverted generally U-shape. Although locking member

10 is designed to be relatively rigid, the inner leg 19 of spring 18 is adapted to flex, as will be described.

Further in accordance with the invention, leg 19 has a slight inward inclination and is adapted to engage a transverse strengthening rib 8, thus normally holding or biasing member 10 in latched position.

In order to unlatch member 10, a separate rod-like tool 20 is required, and which is inserted vertically downwardly through an opening 21 in cover top wall 5. The lower end of tool 20 is provided with a notch 22 which engages an undercut 23 on member 10 adjacent the juncture of arm 17 and spring 18. As best shown in FIG. 3, tool 20 is used as a lever and is pivoted about the edge of opening 21, which acts as a fulcrum, thereby causing member 10 to pivot inwardly on pin 12 to release member 14 from flange 4. This action is accomplished against the outward biasing force created by flexing of spring 18 against rib 8. Tool 20 is then lifted while it is still in engagement with undercut 23, thus lifting the end of cover 3 upwardly.

As soon as the cover is in its open position, tool 20 is removed and member 10 will spring back to its normal outward position. When the cover is again manually closed, cam surface 15 will ride over flange 4 and member 10 will pivot inwardly against the spring biasing force.

In the event spring 18 is only in slight touching engagement with rib 8, or even very slightly removed therefrom in the normal position of member 10, the member will hang loosely downwardly as shown in FIG. 3. However, if spring 18 is installed so that it is in tight biasing engagement with rib 8 at all times, cover side wall 6 will act as a stop for tongue 11 to limit outward pivoting of member 10 beyond its normal position.

FIGS. 4 and 5 show a second embodiment wherein the locking member 24 is disposed in a chamber 9*a* and includes a horizontal tongue 25 mounted for pivoting about a vertical pivot pin 26 secured to one of the ribs 8. The other end of tongue 25 includes a downwardly extending latching member 27, similar to member 14. A curved slightly flexible arm-like spring 28 extends horizontally inwardly from the end of member 24 remote from pin 26 and is adapted to engage a strengthening rib 8*a* in a manner similar to spring 18. In this embodiment, a lug 29 extends upwardly toward cover opening 21 from the outer edge of tongue 25, for manipulation by tool 20. As shown, lug 29 has no undercut, but in this instance the tool notch 22 may fit under tongue 25 for lifting purposes.

As in the first embodiment, means are provided to limit outward biasing of member 24 beyond its normal position. For this purpose, a vertical pin 30 is mounted in a rib 8*a* and extends downwardly through a motion limiting slot 31 in member 24 adjacent member 27 and spring 28.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A meter box comprising, in combination:
   a. a box body adapted to be buried in the ground to protect a meter or the like, said box body including inwardly extending flange means disposed on the interior thereof,
   b. a cover for said body and adapted to be positioned at the ground surface,
   c. strengthening rib means on the under side of said cover,
   d. hinge means securing one side of said cover to said body for opening and closing the cover,
   e. locking means on the under side of said cover remote from said hinge means for cooperating with said box body to releasably lock said cover in lowered position, said locking means including a latch mounted for pivotal movement beneath said cover and adapted to ride over said flange means when said cover is lowered onto said box body,
   f. and spring means connected between said locking means and said cover strengthening means for biasing said locking means toward a locked position, said spring means comprising a spring member connected to said latch and extending into flexing engaging relationship with said rib means.

2. The meter box of claim 1 which includes stop means on said cover to limit biasing of said locking means beyond its normal locking position.

3. The meter box of claim 1 wherein said spring member is flexingly forceable inwardly against said cover strengthening rib means to pivotally release said latch from said flange.

4. The meter box of claim 3:
   a. in which said locking means includes a tongue pivotally mounted on a horizontal axis,
   b. and which includes stop means on said cover to limit biasing of said locking means outwardly beyond its normal locking position, said stop means comprising a downwardly extending side wall on said cover and engageable by said tongue.

5. The meter box of claim 3:
   a. in which said locking means includes a tongue pivotally mounted on a vertical axis,
   b. and which includes a stop means on said cover to limit biasing of said locking means outwardly beyond its normal locking position, said stop means comprising:
      1. a vertical pin mounted in said cover,
      2. and a motion limiting slot disposed in said tongue and receiving said pin.

6. The meter box of claim 3:
   a. in which said cover strengthening rib means comprises a plurality of intersecting ribs forming a plurality of chambers,
   b. and wherein said locking means is mounted in one of said chambers.

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