H. W. CLARK.

METER BOX.

APPLICATION FILED JAN. 15, 1915.

1,265,053.

Patented May 7, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

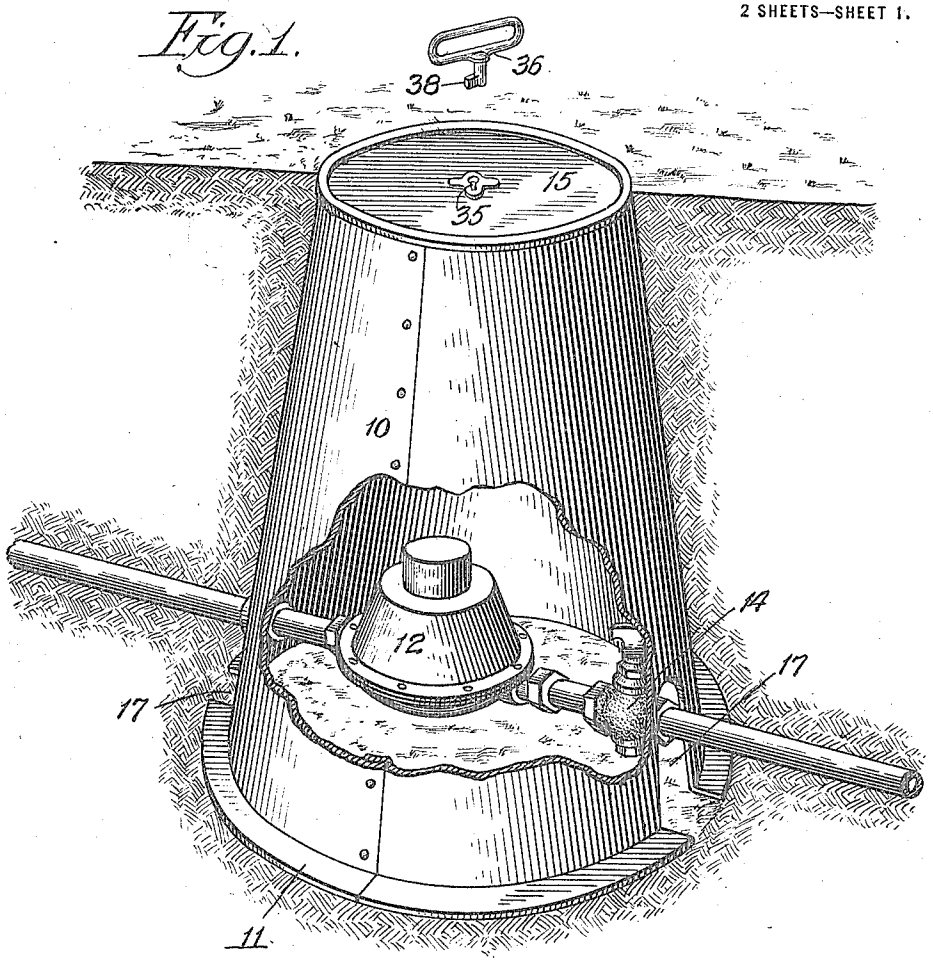
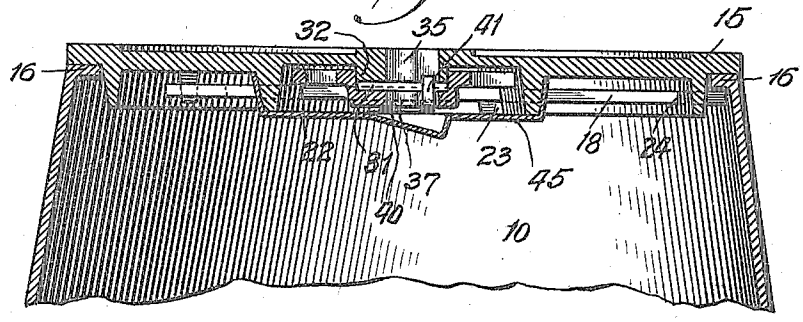


Fig. 2.



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Inventor:
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his Attys.

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2 SHEETS—SHEET 2.

Fig. 3.

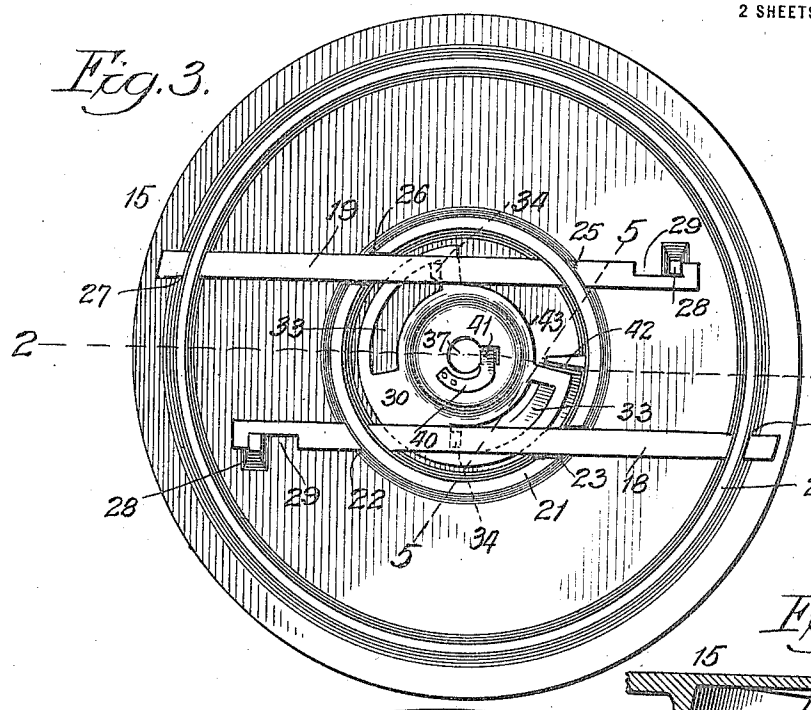
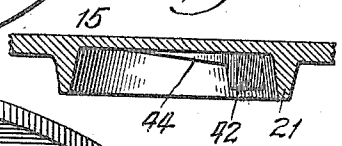


Fig. 5.



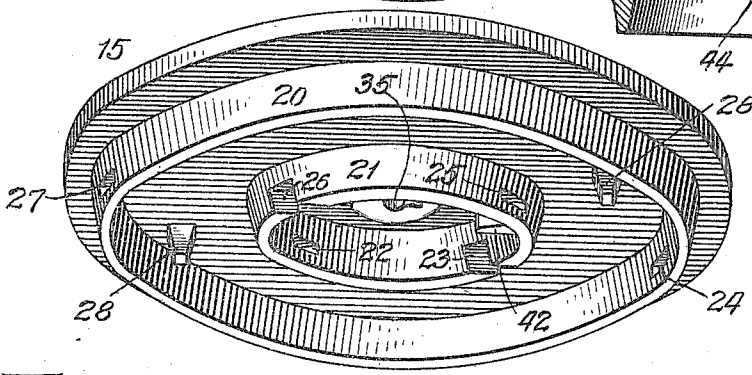
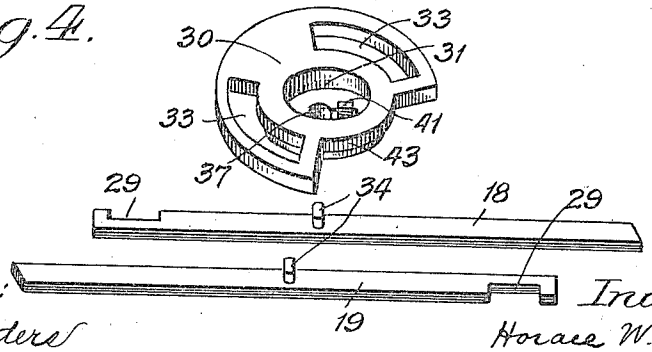


Fig. 4.



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UNITED STATES PATENT OFFICE.

HORACE W. CLARK, OF MATTOON, ILLINOIS, ASSIGNOR TO H. W. CLARK CO., OF MATTOON, ILLINOIS, A CORPORATION OF ILLINOIS.

METER-BOX.

1,265,053. Specification of Letters Patent. Patented May 7, 1918.

Application filed January 15, 1915. Serial No. 2,340.

To all whom it may concern:

Be it known that I, HORACE W. CLARK, a resident of Mattoon, in the county of Coles and State of Illinois, have invented certain new and useful Improvements in Meter-Boxes, of which the following is a full, clear, and exact description.

The invention relates to meter boxes.

It has been customary to construct meter boxes with an enlarged cylindrical lower portion to provide sufficient room for and access to the meter and in some cases to a shut-off cock and other fittings, and an upper cylindrical portion of considerably less diameter connected to the lower portion by a horizontal wall was usually covered with earth or filling to lessen the exposed area of the top of the box. These boxes are made of such depth that they will extend considerably below the frost line to prevent freezing and of sufficient diameter to provide the requisite radiation area for the warm earth at the bottom of the box. As a result of forming these boxes of sufficient size to perform their intended purpose, of sufficient strength to resist the stresses exerted around them by the ground or filling around the box and upon the horizontal wall adjacent the top, these boxes have been heavy and cumbersome, so that the transportation charges in shipment from the factory to the place of use were high and considerable labor was necessary in setting them in place.

One object of the invention is to provide an improved box which can be formed of comparatively thin metal or sheet metal if desired, and which, in practice, will possess the necessary strength to resist the stresses to which it is subjected when it is embedded in the ground and to provide a construction which makes it possible to lessen the weight and bulk of the boxes in transportation.

This object is attained by forming the surrounding wall of the box conoidal or tapering from the base upwardly. By thus forming the box with a large portion at the bottom, the space necessary for radiation area, for the meter and the shut-off cock or other appliances and for wrench-room in installing or setting the appliances, will be provided and the reduced upper end is of the proper size to leave an opening of sufficient size for easy access to the meter. Furthermore, such form gives the box sufficient strength to effectively resist the stresses to which it is subjected from the filling around the outside with walls of minimum thickness. In shipping these boxes, it is also possible to nest them so that a large number of them will occupy but little more space than one, which could not be done with the boxes heretofore used to my knowledge.

A further object of the invention is to provide an improved locking device for securing the cover to the body of the box.

Other objects of the invention will be apparent from the specification hereinafter set forth.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Figure 1 is a perspective of a box embodying the invention. Fig. 2 is a vertical section taken on line 2—2 of Fig. 3. Fig. 3 is an inverted plan of the cover with the locking mechanism thereon. Fig. 4 is a perspective of the cover, the locking-bolts and the key-operated bolt shifter disassembled. Fig. 5 is a detail section of the cover taken on line 5—5 of Fig. 3.

The body 10 of the improved box is conoidal in form from substantially the bottom to the top thereof, with its large end at the bottom and its small end at the top, so that its sides will be upwardly convergent. This body, by reason of its conoidal or upwardly tapering form, gives exceptional strength thereto, so that the necessity of forming the wall of unusual thickness to give it the requisite strength is avoided. In practice, it has been found that a box of this form, when formed of sheet metal, as shown in Fig. 1 of the drawings, will be of sufficient strength so that when it is embedded in the ground, it will not yield to the pressure of the surrounding ground. If the box is formed of a casting, the wall may be comparatively thin without impairing the efficiency of the box. The taper of the box is sufficient to provide the necessary radiation area in the lower portion of the box and around the pipes and appliances therein, and to leave an opening at the top of sufficient area for access to and examination of the meter and appliances. By providing the large portion of the conoidal box at the bottom, the necessary space for the meter 12,

shut-off cock 14 or additional appliances if desired and for the manipulation of tools on the appliances is provided. An outwardly extending flange 11 is formed at the lower end of the box to support the box. The smaller end of the conoidal body is disposed at the top and is adapted to receive a cover 15. An internal flanges 16 is formed on the upper end of body 10 to form a support for the marginal portion of the cover. The box 10 and flange 11 are cut away at opposite points, as at 17, to permit the box to be set in place by dropping it over the pipe connections to the appliances in the box.

In practice, the cover of the box is usually exposed so it will be accessible for removal when a reading of the meter is to be taken, and it is advantageous to avoid the use of a large cover or particularly one as large as the base-portion to reduce the unprotected area of the box. By employing a conoidal box with its small end uppermost, the cover will be considerably smaller in diameter than the base-portion to lessen the exposed area of the box, without the necessity of having a horizontal wall or shoulders extending inwardly from the side of the box-body.

The covers for meter boxes are locked to prevent unauthorized persons from having access to the appliances therein. The present invention designs to provide an improved lock for securing the cover to the box-body. This locking device comprises a pair of locking bars 18 and 19 which are slidably mounted in an outer flange 20 and an inner flange 21, both of which flanges are integrally formed with and on the bottom of the cover 15. The outer ends of these bars are adapted to slide under the flange 16 on the upper end of the box-body.

Bar 18 is guided in a slot 22 and a notch 23 in the inner flange 21 and in a slot 24 in the outer flange 20. The locking-bar 19 is similarly guided in a slot 25 and notch 26 in flange 21 and in a slot 27 in the outer flange 20. The longitudinal movement of each of these bars is limited by lugs 28 on the bottom of and integral with the cover 15. Each of these lugs is extended into a notch 29 in one of the locking bars, the ends of which are adapted to strike the lugs to limit the sliding movement of the bars. These locking bars are adapted to be shifted in opposite directions to lock the cover at substantially diametrically opposite points and to be conjointly retracted by a rotatable key-operated shifter-plate 30, which is held adjacent the bottom of the cover by the locking-bars. This plate is recessed, as at 31, to fit around a boss 32 on the underside of the cover, and is journaled on said boss. This plate is formed with oppositely disposed arcuate slots 33 into which lugs or studs 34 on the locking bars respectively, are extended so that these bars will be shifted by the end-walls of these arcuate slots. The cover is formed with a key-slot 35 through which a suitable key 36 with an offset lug 38 is adapted to be extended. Plate 30 is formed with a correspondingly shaped slot 37, which is adapted to receive the key. The lug 38 on the key when in slot 37 is adapted to rotate the plate. Slots 37 and 35 are in registration when the cover is locked and when the cover is unlocked they are out of registration, so that the lug 38 will engage the underside of boss 32, and therefore the key will serve as a lifter, or handle for the cover.

In operation, assuming the locking bars to be retracted, and the cover to be unlocked and in position upon the box-body, the inserted key may be rotated to turn plate 30 which will cause studs 34 on the locking bars to be forced outwardly to bring their outer terminals under the flange 16 of the body 10, to lock the cover in place. Reverse rotation of the key and plate 30 will effect the withdrawal of the bolts. The key-slot 35 in cover 15 is of substantially the same form as the slot 37 in plate 30 and when the plate has been turned to position to withdraw the bolts, the lug 38 will prevent the key from being withdrawn until the locking-bars have been shifted to their locking position. As a result, the key may be utilized as a lifter for the cover. A spring-clip 40 is secured to shifter-plate 30 and is extended at 41 into that portion of the key-slot 35 through which the key-lug 38 passes to lock the plate 30 against rotation relatively to the cover and to force the key out of slot 37 when the slots in the cover and the plate are in registration. This extension 41 will be pushed downwardly by the lug 38 on the key when the key is inserted to release the locking-plate.

The rotation of plate 30 is limited by a lug 42, which is disposed in a segmental cut-away portion 43 of the plate. An inclined or wedge cam 44 is formed on the bottom of the cover inwardly of flange 21. This cam or wedge is adapted to engage the marginal portion of plate 30 to cause the shifter-plate to be jammed between the locking-bars and the bottom of the cover to hold the plate against rotation.

A flanged cap 45 is held on the flange 21 to prevent material from falling through the key-slots into the box, and also serves to prevent the passage of cold air into the box.

The invention thus exemplifies a meter-box which has great strength with a minimum amount of weight which results in a low cost of manufacture. The enlarged portion provides sufficient room for the appliances therein and room for turning the wrench in changing or operating the appli-

ances and also gives the requisite radiation area for warm earth at the bottom of the box to insure moderate temperature in the box and resultant protection from freezing. The tapered construction makes it possible to nest the boxes in shipment, and together with their lightness, materially reduces the transportation charges and lessens the cost of installation. The improved cover-locking mechanism is simple in construction, can be produced at a low cost and is efficient in operation.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a meter box, the combination of a body having an open top, a removable cover for the top, a locking-bar slidably connected to the underside of the cover, a key-operated rotatable shifter-plate for said bar and a lost-motion connection between said plate and said bar.

2. In a meter box, the combination of a body, having an open top, a removable cover for the top, a plurality of locking-bars slidably mounted at the underside of the cover, a rotatable key-operated plate for shifting said bars in opposite directions and a lost-motion connection between said plate and said bars.

3. In a meter box, the combination of a body, having an open top, a removable cover for the top, a locking bar slidably mounted at the underside of the cover, a rotatable key-operated plate, and a stud-and-slot connection between the bar and said plate.

4. In a meter box, the combination of a body having an open top, a removable cover for the top, a plurality of locking bars slidably mounted on the underside of the cover, a rotatable key-operated plate and stud-and-slot connections between the bars and said plate for shifting the bars in opposite directions.

5. In a meter box, the combination of a body, having an open top, a cover for closing said top, flanges on the underside of the cover having a slot and a notch therein and a locking bar slidably mounted in said slots and notch.

6. In a meter-box, the combination of a body, having an open top, a removable cover for closing said top, flanges on said cover having slots and notches therein, locking bars slidably mounted in said slots and notches and key-controlled means for shifting the bars in opposite directions.

7. In a meter-box, the combination of a body having an open top, a removable cover for closing said top, a key-operated rotatable plate, a locking-bar operated by said plate, and a cam for holding the plate in locked position.

8. In a meter box, the combination of a body having an open top, a cover for closing said top, a key-operated rotatable plate, locking bars operated in opposite directions by said plate and a cam on the cover for holding the plate in locked position.

9. In a meter box, the combination of a body having an open top, a removable cover for closing said top, a key-operated rotatable plate, and a spring for locking said plate, said cover having a key-hole therein into which the spring is extended so that it will be engaged by the key.

10. In a meter-box, the combination of a body having an open top, a removable cover for closing said top, a key-operated rotatable plate, a locking-bar slidable on the cover and operated by said plate, and a spring for locking said plate, said cover and plate having a key-hole therein into which the spring is extended so that it will be engaged by the key.

11. In a meter box, the combination of a body having an open top, a cover for closing said top, the latter having a key-hole therein, a key-operable locking device, and a removable cap beneath the cover.

12. In a meter box, the combination of a body, having an open top, a removable cover for closing said top, a flange on the underside of the cover, the latter having a key-hole therein, a key-operable locking device, and a removable cap on said flange and beneath the key-opening.

HORACE W. CLARK.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."