

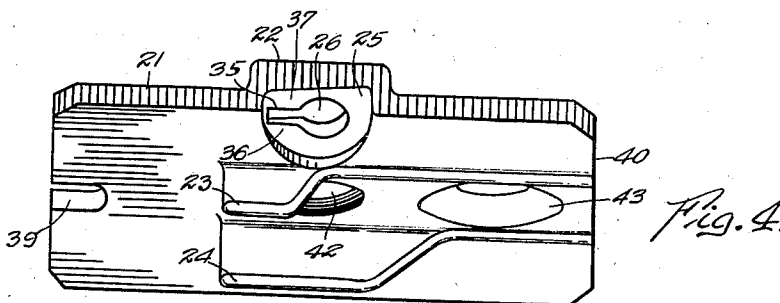
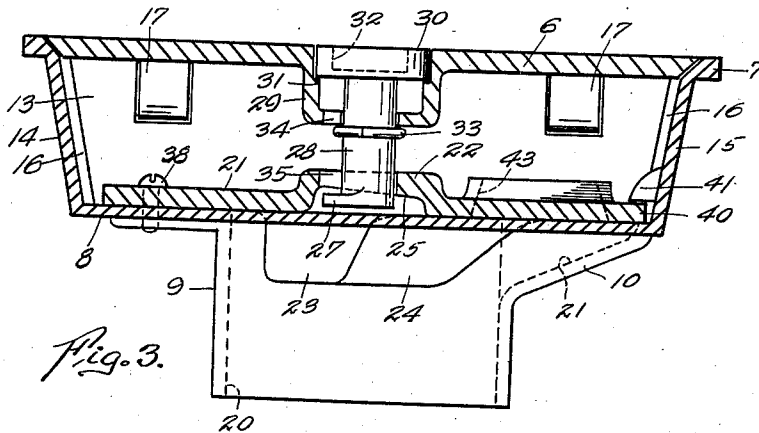
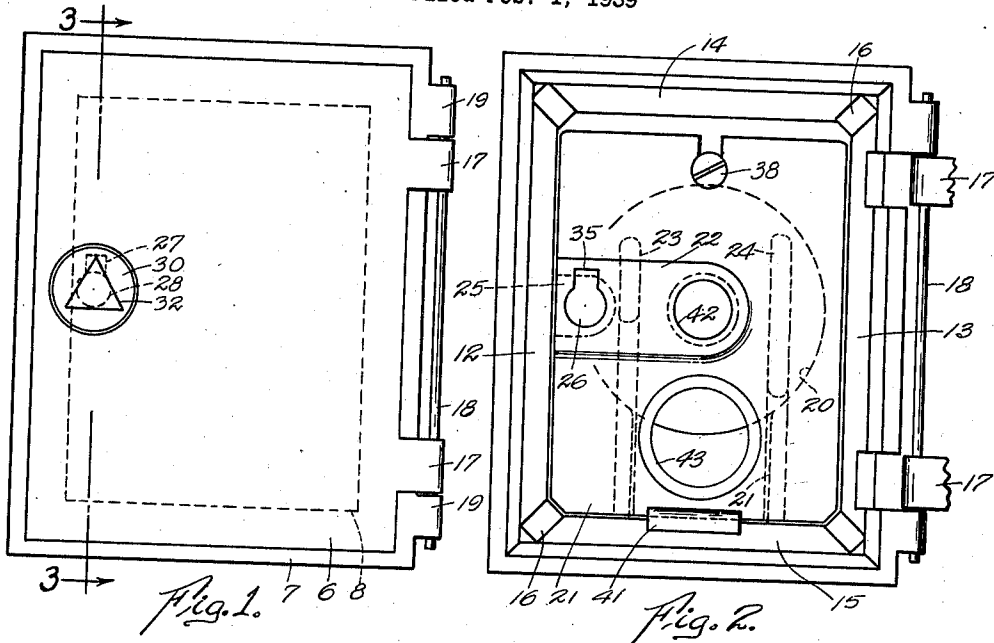
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WATER BOX CONSTRUCTION

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WATER BOX CONSTRUCTION

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This invention relates to a water box construction, and constitutes an improvement upon the construction disclosed in the pending patent application of John Wait and Arthur Ruhstaller, Serial No. 248,454, filed December 30, 1938.

An object of the invention is to provide an improved water box construction which facilitates the conversion of thousands of existing standard water boxes into the lock-lid type of box, without requiring that the standard boxes in service be dug up from the earth or broken away from their concrete or other permanent bases, for alteration or bodily replacement to effect the desired conversion.

Another object of the invention is to provide a water service box which is compact, yet easily accessible for normal or routine repairs and adjustments.

Another object is to provide means in a water service box whereby breakage due to forcing the lid lock, or from other common causes, may be rectified by merely replacing an inexpensive interior plate rather than by dismantling the entire structure and disturbing the pipe and valve connections of the box, or possibly digging up the entire structure and substituting a new one, at a great expense and a waste of time and labor.

A further object of the invention is to provide an improved lid-locking arrangement in devices of the character referred to, whereby the locking range of the parts is materially extended, and the effective life of those parts increased accordingly with a resultant service and replacement cost reduction.

Another object is to improve generally the locking mechanism for the lid of a water service box, with a view to increasing its security and durability, and enhancing the smooth operation and coordination of the parts.

The foregoing and other objects are attained by the means described herein and disclosed in the accompanying drawing, in which:

Fig. 1 is a plan view of the water service box with the lid thereof in closed position.

Fig. 2 is a plan view showing the interior of the box, the lid being swung to the open position.

Fig. 3 is a slightly enlarged cross-sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a perspective view showing the bottom construction of an insert or intermediate plate constituting part of the invention.

A standard or common water service box or street flusher in broad usage comprises essentially a lid 6 and a body or box portion 7 having an apertured bottom 8 from which extends down-

wardly a hollow tube or case 9 through which the necessary pipes, valves, and the like are extended into the box from a source of underground water supply. The tube or case may be integral with the box body 7, and it ordinarily includes an offset portion 10 providing a passageway disposed near one end of the box. The box has inclined side walls 12 and 13, and end walls 14 and 15, which flare outwardly and upwardly from the bottom 8, as is most clearly shown in Fig. 3. Where the side walls and end walls intersect, the corners may be filleted, as indicated by the characters 16. By preference, the lid includes hinge eyes 17 cooperating with a hinge pin 18 and a pair of apertured lugs 19 on the body of the box, for hingedly mounting the lid thereon. The aperture in the bottom of the box is indicated at 20, and the passageway provided by the offset portion 10 is indicated at 21.

For many years, boxes of the character generally described above were installed with and without locking means for the lids, and in those devices which included locking means it was customary to cast a lug on the interior of one of the side walls of the box, to act as a keeper for a bolt that was manipulatable exteriorly of the lid to engage and disengage such keeper or lug. The indicated arrangement was not entirely satisfactory, due to the fact that breakage of the lid locking means ordinarily was caused by fracture of the integral lug, so that it was necessary to make the necessary repair by digging up the entire box structure from the earth, or from a concrete base or foundation, and then replacing the entire box structure with a new one. The labor required for making the replacement was considerable, due to the fact that the boxes invariably were installed with the lid level with the surface of the earth, or of a thoroughfare or the like.

To overcome the difficulties above mentioned, it was proposed to furnish a separate locking plate which was inserted within the box proper, and which plate was easily replaceable in the event that the keeper portion, then carried by the plate rather than by the box itself, became broken or fractured by reason of excessive strain applied in the manipulation of the locking bolt. Such construction is disclosed in the Wait and Ruhstaller application herein mentioned.

The provision of a replaceable plate in accordance with the Wait and Ruhstaller teaching, while constituting a step forward in the art, presented the further difficulty of application thereof to the multitude of existing devices already in service. It was found that the insertion of a

plate, and the application of the lid locking means thereto, required changes in the box portion of the device, due to the increased compactness resulting from insertion of the plate, and the changes mentioned required removal of a part of the metal constituting the box, so that it appeared preferable to replace the entire structure initially, when converting existing plain boxes into lid locking boxes. Of course, once the change was made, the inserted plates could thereafter be replaced or substituted with each, but there was the objection to the labor and expense of making the initial change to properly adapt the box for satisfactory installation of the first locking plate. The various objections above mentioned have been obviated by means of the present invention about to be described.

In accordance with this invention, the insert or replaceable plate 21 is made with a locking portion 22 that is elevated above the bottom of the box, so that there is gained sufficient space within the box, to enable application of the lid locking means without interference with the box bottom and with the depending ribs or guides 23 and 24 that must necessarily be provided at a definite predetermined spacing to accommodate certain actuating mechanism for the water supply valve, not shown. The elevating of the locking area 22, together with the fact that the available space within the box increases in the direction of the top thereof, due to the flared walls, has made it possible to gain sufficient room for providing a substantial locking means incapable of interfering with the flared walls, the bottom of the box, or the depending ribs or guides 23 and 24. Moreover, the construction has enabled the provision of an extended locking area on the lower face 25 of the elevated keeper, so that the locking range of the parts is materially extended, and the effective life of those parts increased accordingly with a resultant service and replacement cost reduction.

It should be noted that the elevated keeper portion is provided with an aperture 26 for the reception of the locking lug 27, which lug is part of a rotatable shank or shaft 28 that extends through an apertured boss 29 of the lid. The upper end of the shaft or shank may be provided with a circular head 30 adapted to bear upon an annular seat 31 of the boss and the head may be rotated by means of a special tool inserted into the recess 32 provided exteriorly of the head and the lid. While the recess may be of any desired shape, it is disclosed herein as a triangular recess of enlarged proportions such that the ordinary screw driver or other common tool could not be employed for rotating the locking member. A split ring 33 or other suitable retaining element may be furnished, to prevent separation of the locking member from its position upon the lid. The offset aperture or slot 34 may be provided in the hollow boss 29, as indicated, to permit replacement of the rotatable locking member upon removal of the retaining element 33. A similar slot or notch 35, offset from the aperture 26, enables disposition of the locking lug 27 beneath the elevated portion of the plate, when the locking lug is in a position of registration with said offset notch.

It should be observed that the underface 25 of the elevated keeper portion of plate 21 is not a level face but is rather a progressive incline upon which the locking lug 27 may sweep until the lug so tightly abuts said progressively inclining face, that further rotation of the locking

member of the lid becomes impossible. In other words, the face 25 may be considered a helical surface, as will be noted by the fact that the metal is thin at the point 36 (Fig. 4), and progressively becomes thicker about the aperture 26, to the region of greatest thickness indicated at 37. That the provision of the extended inclined keeper face is a point of decided advantage, becomes apparent upon consideration of the wear factor resulting from repeated actuation of the locking member in sweeping the lug 27 forcefully over such inclined area of the plate. A further advantage should be evident in the provision of an opening such as 26—35, which is substantially the shape of the lower end of the lid locking member, whereby a bearing is provided in the plate 21 for effectively embracing the shaft or shank 28 as it is rotated to move the lug 27 to and from the locking position. This precludes the liability of the shank to twist out of line, and to thereby dispose the head of the locking element to a cocked position with respect to its bearing surface 31. Accordingly, the head 30 will be found to remain flush with the upper surface of the lid, regardless of how tightly the locking member lug engages the inclined face 25 of the keeper portion on plate 21.

From the foregoing, it should be evident that the lug 27 may be made sufficiently sturdy and large, as well as sufficiently long, to provide a very substantial locking means, without having the lug to interfere in its rotational movements with either the depending guides 23 and 24, or the side or bottom portions of the box proper. Due to the changes of construction herein disclosed, existing boxes not previously equipped to accept a separate locking plate may be furnished with a lid locking means including such a plate, without requiring any changes whatever in the box portion, so that the conversion is effective by merely substituting for the original lid, the type of lid herein disclosed, together with a separate locking plate such as 21. The conversion is accomplished in a few moments, whereas in other constructions it was necessary to dig up the box, disconnect all pipes and valves leading therefrom, and either file away or grind parts of the box to make it accommodate the lid locking means, or to alternatively furnish a complete new box structure.

Because of the manner in which the elevated keeper member is formed in offset relationship to the plate 21, its point of greatest weakness is at the offset, and the thickness of the metal is so gauged that the indicated area of the plate will fracture before any excessive rotational force applied to the rotatable locking member 28, could damage the locking member. Accordingly breakage of the locking means will invariably be remedied by merely substituting a new plate 21. The plate is easily renewed, as it is held against the bottom of the box by a single screw, bolt, or other fastening means 38 that extends through an open-ended slot 39 of the plate at one end thereof. The opposite end of the plate, at 40, may be held against the bottom of the box by means of the lug 41 formed on the end wall 15 of the box.

The openings 42 and 43 (Fig. 4) are of little concern in connection with the present invention, as they are provided for the purpose of disposing certain parts of the valve actuating mechanism to an accessible position within the box.

What is claimed is:

1. In a service fixture of the class described, the combination which comprises a box having an

apertured bottom and upwardly and outwardly flared walls extending therefrom whereby the top portion of the box is rendered progressively more spacious than the bottom portion thereof, a replaceable lock plate removably fixed within and flatwise upon the bottom of the box in the region of the less spacious bottom portion thereof, guide means on the plate and extending through and beyond the aperture of the box bottom, a movable lid for closing the top of the box, and including a locking lug manipulatable from a location exteriorly of the box, said lug depending into the box a limited distance only, so as to be disposed in the more spacious region above the box bottom, and an elevated hollow boss on the plate apertured to receive the depending locking lug of the lid, said hollow boss having an under surface progressively inclined about the plate aperture, at a distance above the box bottom, for engagement with the lid locking lug when the lid is closed upon the box.

2. In a service fixture of the class described, the combination which comprises a box having a bottom and upwardly and outwardly flared walls extending therefrom whereby the top portion of the box is rendered progressively more spacious than the bottom portion thereof, a replaceable lock plate removably fixed within the box substantially flatly upon the bottom of the box, a movable lid having an edge hinged to the box for closing the top of the box, and locking means for the lid disposed adjacent to an opposed edge of the lid and including a rotatable shank extending transversely through the lid, and a head and a laterally extending locking lug on opposite ends of the shank, the head and the lug being disposed at opposite sides of the plane of the lid with the lug extending into the box adjacent to one flared wall but above the bottom thereof when the lid is closed, an elevated hollow boss on the plate near one edge thereof, including an aperture and a lower inclined face to be swept by the locking

lug when the lug is inserted through the aperture and rotated upon closing of the lid upon the box, said inclined face being spaced from the box bottom by reason of the elevated location of the hollow boss of the plate, thereby disposing the complementary parts of the locking mechanism to a region of the box where manipulation thereof is free and unobstructed.

3. In a service fixture of the class described, the combination which comprises a box having a bottom and upwardly and outwardly flared walls extending therefrom whereby the top portion of the box is rendered progressively more spacious than the bottom portion thereof, a replaceable lock plate removably fixed within the box in the region of the less spacious portion thereof at and upon the bottom of the box, a movable lid having an edge hinged to the box for closing the top of the box, and locking means for the lid disposed adjacent to an opposed edge of the lid and including a rotatable shank extending transversely through the lid, and a head and a laterally extending locking lug on opposite ends of the shank, the head and the lug being disposed at opposite sides of the plane of the lid, with the lug extending into the box but above the bottom thereof when the lid is closed, an elevated hollow boss on the plate near one edge thereof to align with the locking shank when the lid is closed upon the box, said boss being apertured in keyhole fashion to receive therein the shank and the lug of the locking means, the shank-receiving portion of said aperture being sized to provide a bearing located off to one side of the plate for supporting the shank when rotated therein, the interior of the hollow boss having an elevated progressively inclined face to be swept by the locking lug as said lug is moved with the rotatable shank of the locking means after having been inserted through the boss aperture incident to closing of the lid upon the box.

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