No. 643,108. Patented Feb. 13, 1900.

# C. H. CAMPBELL.

## STREET BOX FOR UNDERGROUND MAINS.

(Application filed May 25, 1899.)

(No Model.) 2 Sheets—Sheet 1.

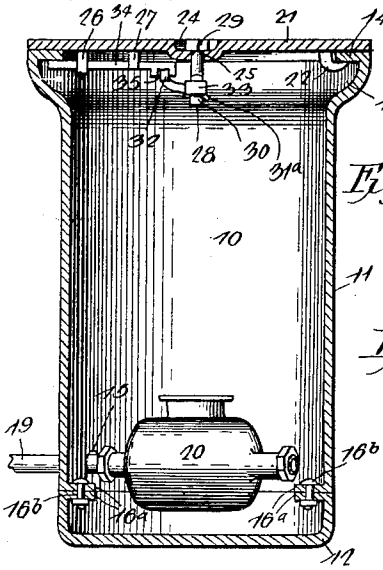


Fig. 1.

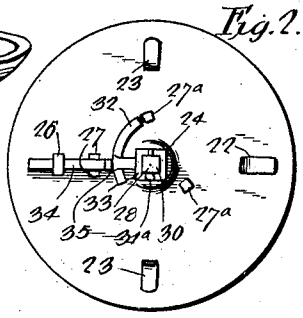


Fig. 2.

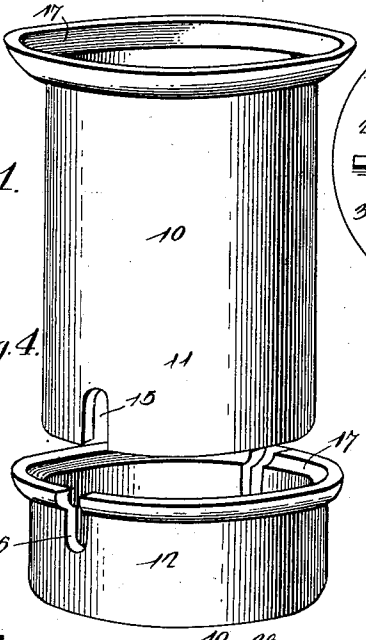


Fig. 4.

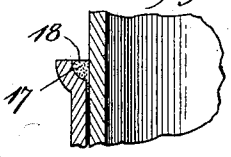


Fig. 5.

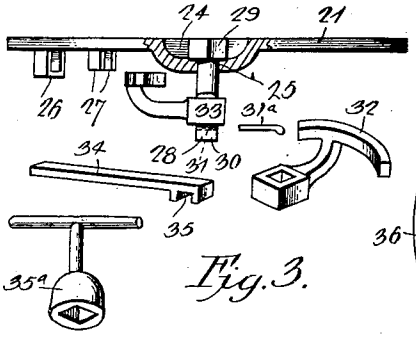


Fig. 3.

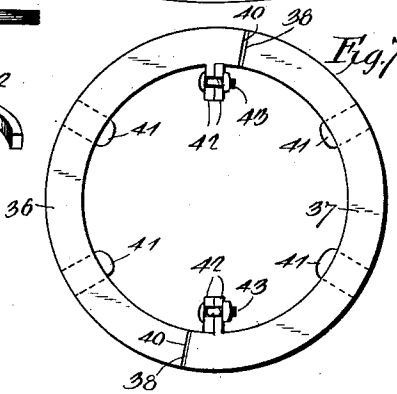


Fig. 7.

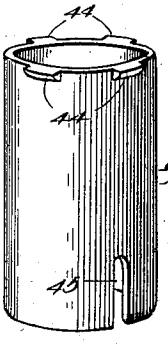


Fig. 9.

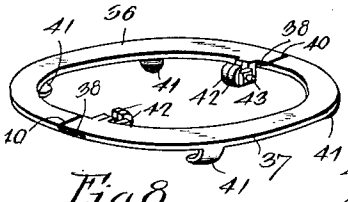


Fig. 8.

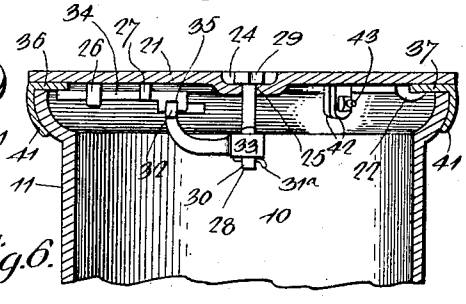


Fig. 6.

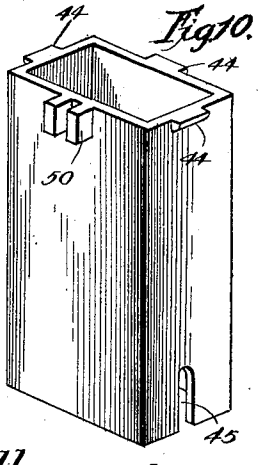


Fig. 10.

Witnesses

J. Frank Culverwell.

W. J. Beuchop

C. H. Campbell, Inventor.

By his Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 643,108. Patented Feb. 13, 1900.

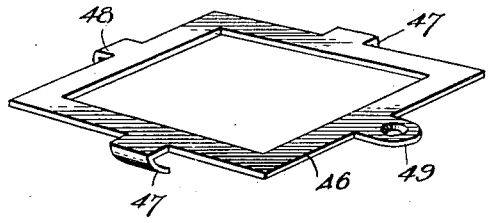
C. H. CAMPBELL.

STREET BOX FOR UNDERGROUND MAINS.

(Application filed May 25, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 11.



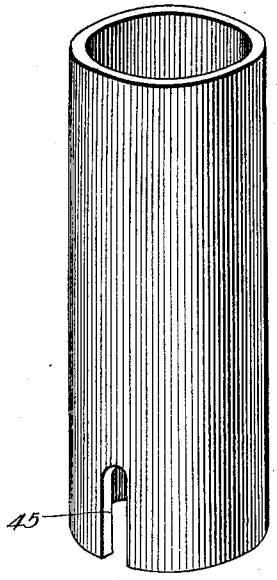




Fig. 14.

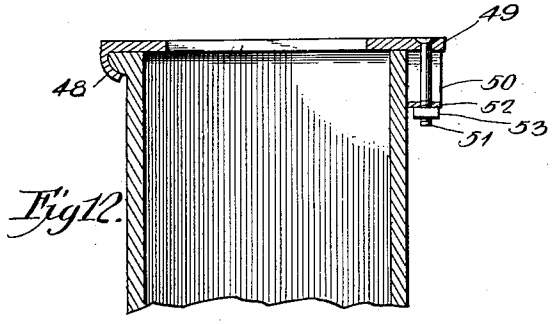



Fig. 12.

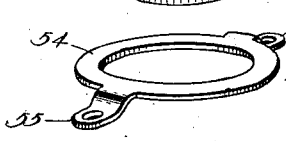



Fig. 15.

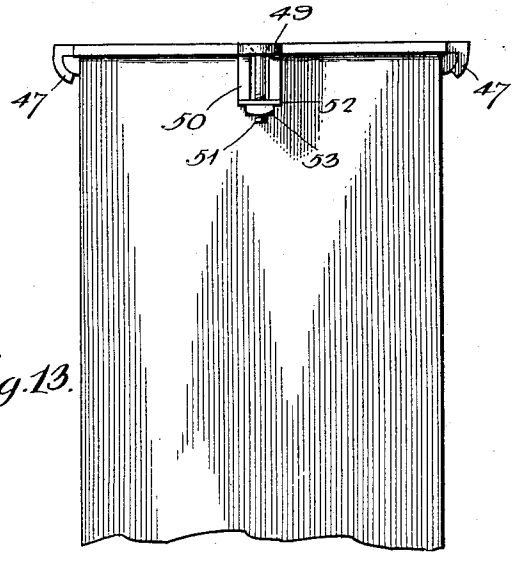



Fig. 13.

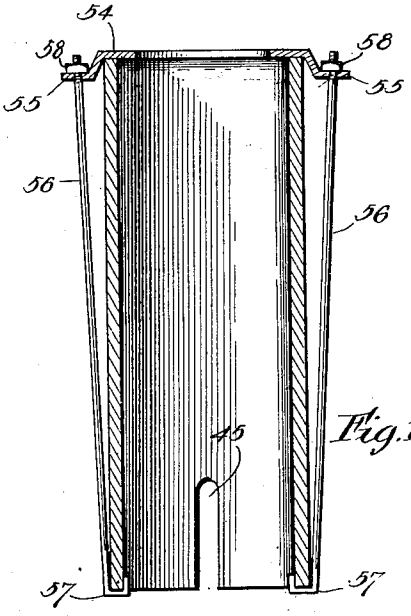



Fig. 16.

Witnesses
J. Frank Cadwell.
H. F. Berthold

C. H. Campbell, Inventor.
By his Attorneys,
C. A. Snow & Co.

# UNITED STATES PATENT OFFICE.

CHARLES HENRY CAMPBELL, OF CHARLOTTE, NORTH CAROLINA.

## STREET-BOX FOR UNDERGROUND MAINS.

SPECIFICATION forming part of Letters Patent No. 643,108, dated February 13, 1900.

Application filed May 25, 1899. Serial No. 718,144. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES HENRY CAMPBELL, a citizen of the United States, residing at Charlotte, in the county of Mecklenburg and State of North Carolina, have invented a new and useful Street-Box for Underground Mains, of which the following is a specification.

My invention relates to improvements in street-boxes for underground service-mains employed for conveying fluids, such as water-mains; and the primary object is to provide a means for protecting water-meters or stop-cocks against the depredations of malicious persons and also to protect the meter against bad weather conditions, seepage of water, or the influence of rain.

A further object is to provide an improved locking device for the box-cover which will securely fasten said cover in place and which will be easily operated by authorized persons to obtain access to the box.

A further object is to improve the construction of the box with a view to facilitating its expeditious application to the underground main.

A further object is to provide a construction admitting of the use of terra-cotta in the manufacture of the street-box and which construction affords means for the application and locking of the cover to the box, the employment of the terra-cotta material being desirable because of economy in manufacture and of its freedom from corrosive tendencies.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a sectional elevation of a cast-metal sectional street-box constructed in accordance with my invention. Fig. 2 is an inverted plan view showing the under side of the cover. Fig. 3 is a detail view of the parts comprising the improved locking contrivance. Fig. 4 is a perspective view of the two parts of a terra-cotta box. Fig. 5 is a vertical sectional view of the terra-cotta box, illustrating the joint between the meeting ends of the box-sections. Fig. 6 is a detail section of the upper part of the terra-cotta box, showing the cover fastened to a divided metallic clamp. Fig. 7 is a plan view of the box with the clamp fitted thereto and showing the cover removed. Fig. 8 is a detail perspective view of the two parts of the metallic cover-clamp. Fig. 9 is a detail perspective view of a terra-cotta street-box, illustrating a cylindrical construction thereof provided with integral lugs at its upper edge adapted for engagement with the cover-retaining clamp. Fig. 10 is a similar view of another embodiment of the terra-cotta street-box embodying the features of the construction shown by Fig. 9, but illustrating a generally rectangular or oblong shape of the street-box. Fig. 11 is a detail perspective view of a solid clamping-plate for the terra-cotta box of Fig. 10. Fig. 12 is a vertical section through the terra-cotta box with the plate applied. Fig. 13 is a side elevation of Fig. 12. Fig. 14 is a perspective of a cylindrical straight terra-cotta box. Fig. 15 is a detail of the clamping-plate. Fig. 16 is a vertical section of the box and plate shown by Figs. 14 and 15.

The same reference-numerals denote like and corresponding parts in each of the several figures of the drawings.

The street-box 10 consists, essentially, of two sections, (indicated by the numerals 11 and 12,) although the number of sections may be increased, according to the depth of the service-main below the street-surface. In the embodiment of the invention represented by Fig. 1 the box has each section thereof cast in a single piece of metal, and the upper box-section 11 is formed with a bell-shaped mouth 13, having an integral flange 14, which extends inwardly within the mouth. The lower end of the upper box-section 11 is provided at diametrically opposite points with vertical recesses 15, adapted to fit the service main or pipe. The lower box-section 12 is closed at its bottom. As shown by Fig. 1, the lower box-section 12 is not provided with recesses in its upper edge; but in the terra-cotta box shown by Fig. 4 this lower closed box-section has recesses 16, arranged similar to the recesses 15 of the upper box-section. It is evident that the lower section 12 of the metallic box in Fig. 1 may be constructed in a

similar way to the corresponding section of the box in Fig. 4. The two metallic box-sections are provided near their contiguous ends with the lugs $16^a$, which are adapted to receive the clamping-bolts $16^b$, which tend to unite the two box-sections together and clamp the same firmly around the service main or pipe 19. This main or pipe is equipped with a water-meter 20, which is disposed within the street-box and is protected thereby against bad weather conditions or the accumulation of water; but in lieu of this meter or in conjunction therewith I may employ a stop-cock designed to cut off the flow of water to the dwelling or through the service-main. The described construction of the metallic box provides for its ready application to the underground main, because the lower section 12 may be fitted below the main or pipe 19 for the latter to enter the recesses 16, and said lower box-section may then be lifted or slipped into place. The upper box-section may be fitted in like manner to the upper side of the pipe for the latter to enter the recesses 15 in the foot of the box-section, and the two sections 11 12 may then be drawn closely together by the bolts which pass through the lugs $16^a$.

My invention also contemplates the use of the material known as "terra-cotta" in the manufacture of the street-box for economy and because this material is free from corrosive tendencies, and to adapt the invention to material of this character I find it desirable to somewhat modify the construction of the metallic box hereinbefore described. The terra-cotta street-box is designed to be made in two or more sections, and the sections which lie contiguous to the service-main are provided with the main-receiving recesses 15 16 in their contiguous ends. The lower section of the terra-cotta box, however, is of a diameter exceeding the upper section, in order that the two sections may fit telescopically together, and the lower box-section is provided with an internal annular recess or groove 17, adapted to surround the upper box-section and also designed to receive a suitable filling medium, such as cement, (indicated at 18.) The cement filling provides a joint between the meeting ends of the box-section that thoroughly excludes seepage of water into the box around the meter or stop-cock.

In my present invention I have provided a novel closure and locking contrivance for the upper end of the street-box, and said construction of the cover and its locking device is available in either the cast-metal construction or the terra-cotta construction of the street-box, except that in the latter instance it is desirable to provide a metallic clamp which affords a protection to the terra-cotta box and a means for engagement firmly with the locking contrivance of the cover. The cover 21 is cast in a single piece of metal to rest upon the upper edge or face of the bell-shaped mouth 13 of the street-box, and said cover has a series of curved lugs 22 23, which are adapted to engage with the inwardly-projecting flange 14 of the cast-metal street-box. The cover is also provided with a central boss or cavity 24, which is pierced by a vertical aperture 25, and on the lower or under surface of the cover is formed the keeper or loop 26, the guide-lugs 27, and the stop-lugs $27^a$. The keeper or loop 26 lies near one edge of the cover, and the guide-lugs occupy positions on the cover between the keeper and the central aperture 25, said lugs being spaced to slidably confine the locking-bolt between themselves, as will hereinafter appear. A vertical spindle 28 is fitted loosely in the central aperture of the cover for its head 29 to lie within the cavity 24 of said cover, and the lower part of this spindle is squared or made of polygonal form, as at 30, and is furthermore provided with a transverse aperture 31. A curved or eccentric-shaped arm 32 is cast in a single piece with a head 33, a squared or polygonal opening in which receives the angular part 30 of the vertical operating-spindle, and this curved arm is held in position on the spindle by means of a pin or key $31^a$, which is thrust through the aperture 31 of said spindle. The curved arm is thus connected detachably to the spindle in order to turn therewith, and the axial movement of the spindle and the curved arm therewith is limited by the stop-lugs $27^a$, which are provided on the under side of the cover in the path of the arm and are spaced at a proper distance from one another to permit said curved arm to have a sufficient travel for the operation of the locking-bolt 34. This locking-bolt is fitted loosely in the keeper 26 and between the guide-lugs 27, so as to have endwise or slidable movement, and said locking-bolt thus occupies a radial position between the vertical spindle and the edge of the cover. The inner end of the locking-bolt is formed with a pair of spaced lugs forming the jaw 35, which is fitted loosely to the curved arm 32 on the operating-spindle, and said jaw rests upon the curved arm to make the latter support the inner end of the locking-bolt. The jaw embraces the curved arm, so as to loosely connect the bolt to the arm, and when the arm moves with the spindle the jaw actuates the locking-bolt to project or retract the latter. After the cover is fitted to the mouth of the street-box for its lugs to engage with the flange the spindle may be turned in one direction to move the eccentric arm 32 a distance permitted by one of the stop-lugs $27^a$, and this movement of the arm with the spindle actuates the locking-bolt to project the latter beyond the edge of the cover and into engagement with the flange 14, thus confining the cover securely in place on the street-box. A reverse operation of the spindle moves the curved arm in an opposite direction for

a distance permitted by the other stop-lug 27ª, and said arm thereupon retracts the locking-bolt from engagement with the flanged mouth of the street-box, thus releasing the cover and enabling it to be readily removed for the attendant to obtain access to the interior of the box.

A key 35ª is provided for the operation of the spindle in order to adjust the locking-bolt, and this key is furnished with a socket adapted to fit the polygonal head 29 of the operating-spindle.

It will be understood that the construction of the cover and locking device hereinbefore described may be employed in connection with a terra-cotta construction of the street-box; but as it is not desirable to provide the bell-shaped mouth of the terra-cotta box with an inwardly-projecting flange, because of the liability of the flange to become broken, I resort to the employment of a metallic clamp, which affords a protection to the exposed upper end of the street-box and as a means for the engagement of the locking-bolt. This metallic clamp may consist of members (indicated at 36 37) which conform to the shape and dimensions of the box and are adapted to be fitted into snug relation thereto. The two-part clamp has its members provided with recessed ends, forming lapped joints 38, adapted to receive a filling of cement or paint, as at 40. Said metallic clamp is provided with curved arms 41, which are arranged to fit the bell-shaped mouth of the terra-cotta construction of street-box in order to hold the clamp firmly in place; but in case the clamp is used in connection with the flanged street-box the arms 41 of the clamp should be positioned and curved to engage with the flange. The two members of the divided clamp are provided at their contiguous ends with lugs 42, adapted to receive the bolts 43, which serve to draw the members of the clamp together and to confine said clamp into firm engagement with the upper end of the box.

I would have it understood that my invention is not restricted to any particular shape and dimensions of the street-box. As hereinbefore indicated, I prefer to make the street-box of terra-cotta, because this material is not liable to corrode when buried in the ground for a long time, and it can be manufactured very economically. In Figs. 9 and 10 of the drawings I have represented different forms of terra-cotta constructions adapted for use as street-boxes in connection with service-mains which may be buried at variable distances below the surface of the ground, and in Fig. 9 a cylindrical construction of the street-box is represented, while in Fig. 10 a generally rectangular or oblong street-box is shown. The different shapes are illustrated to indicate that the contour of the street-box is not important, and it is therefore to be understood that any suitable shape and dimensions may be adopted without departing from the spirit of the invention. The terra-cotta construction of street-box represented by Figs. 9 and 10 overcomes the employment of the bell-shaped mouth at the upper end of the box, and to provide for the retention of the cover-holding clamp I provide a street-box with lugs 44, which are arranged at suitable intervals on the outside of the box and at the upper end thereof in positions for the upper faces of said lugs to lie substantially flush with the upper edge of the box. These lugs are made integral, and it is evident that the clamp may be applied around the street-box in order to engage with the lugs, which will serve to hold the clamp against displacement.

It is well known to those familiar with this art that the service-mains are buried different distances below the surface of the street, and in the terra-cotta construction of street-box shown by Figs. 9 and 10 I provide the lower end of the box with vertical slots 45, which correspond to the slots in the two-part construction of street-box shown by Figs. 4 and 5. It will be understood that the street-box shown by Fig. 9 or by Fig. 10 consists in a single piece, thus dispensing with the lower or bottom section, and as the slots 45 open through the lower edge of the one-piece box it is evident that said box may be fitted to pipes which are buried at different distances in the ground, the elongated slots compensating for variations in the depths of the service-pipes and permitting the street-box to be adjusted for the upper end thereof to lie flush with the surface of the street or ground.

The metallic clamp shown by Fig. 8 may readily be fitted to the street-box shown by Figs. 9 or 10, and this clamp provides a flange or ledge within which the cover may be fitted. For conveniently applying the metallic cover-retaining clamp to the terra-cotta box heretofore described I have found it desirable to make this clamp in two pieces, so that the lugs thereon may be engaged with the bell-mouth or lugs of a terra-cotta box; but this sectional construction of the clamp is not strictly necessary, because the clamp may be made or cast in a single piece of metal, as represented by Figs. 11, 12, and 13. The solid clamping plate shown by Fig. 11 is provided on two of its sides with inwardly-curved lugs 47. On one of the remaining sides of said plate is an inwardly-curved lug 48, and on the remaining side is a perforated lug 49. The lugs 48 49 are on opposite sides of the plate, and the perforated lug 49 extends straight out from one edge of the plate, so that a bolt may be passed therethrough.

In the construction of the terra-cotta box shown by Figs. 10, 12, and 13 the lug 50 on one side is slotted, and in assembling the solid clamp 46 to the terra-cotta box of Figs. 10, 12, and 13 the clamp is fitted on the top edge of the box for its lugs 47 to lie at one side of the lugs 44. The clamp-plate is now moved edgewise to make the lug 48 and the lugs 47 approach the lugs 44, so that they will

engage therewith to hold the clamp-plate against any lifting tendency, and in this adjustment of the plate 46 the perforated lug 49 thereof is made to register with the slotted lug 50 on the box. A vertical bolt 51 may now be passed through the perforated lug 49 of the clamp and the slotted lug 50 of the box, and to the lower end of this bolt is fitted a washer 52, which bears against the bottom edge of the slotted lug 50. A nut 53 is now screwed on the bolt to draw the clamp into firm engagement with the box, and the clamp is thus secured detachably on the box in a position to protect the upper edge of the box and to receive the cover and the locking-bolt thereof.

In the construction of the terra-cotta box shown by Figs. 14 to 16, inclusive, the box consists of a straight cylindrical length of terra-cotta, with slots in the lower edge thereof, and this box is devoid of the bell-shaped upper end or the lugs. The solid clamp 54 conforms in contour to the cross-section of the box; but its diameter exceeds that of the box in order that the annular clamp may bear upon the upper edge of the circular box. This annular clamp 54 is cast in a single piece with lugs 55, that project from opposite edges thereof. Fastening-rods 56 are arranged alongside of the box, and the lower ends of said rods are provided with hooks 57, which are adapted to take or fit around the edge at the lower open end of the box. The upper threaded ends of these fastening-rods are passed through the lugs 55 of the annular clamp, and nuts 58 are screwed on said upper ends of the rods in order to draw the hooks thereof into engagement with the box and to confine the annular clamp firmly in place on the upper edge thereof.

It will of course be understood that the shape of the clamp 54 may be varied to conform to the straight rectangular box shown by Fig. 10, when the lugs 44 50 are omitted and the rods 56 are used to fasten the clamp upon the rectangular box. I would therefore have it understood that I reserve the right to use either solid or divided clamps in adapting my invention to terra-cotta boxes which may be either circular or rectangular in form, and in either construction of the clamp or the terra-cotta box I may employ the short bolt 51 or the elongated rods 56. The divided or solid clamp affords a substantial protection to the upper edge of the terra-cotta box to prevent the same from chipping or breaking, and said clamp or clamps are adapted to receive the cover, which may rest thereon in a position for the slidable bolt of said cover to project into engagement with the lower face of the clamp, said bolt being operated by means of the spindle and key, so that it may be projected or retracted to fasten or release the cover, as may be desired.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what I claim is—

1. A street-box for underground mains comprising complemental box-sections fitted telescopically together, the lower section of said box provided at its upper open end with an enlarged mouth, and the upper box-section having at its lower end the alined recesses, and a filling adapted to occupy the enlarged portion of the lower box-section, substantially as described.

2. A street-box for service-mains provided with a flange at its upper end, a cover provided with guides, a locking-bolt slidably fitted to said guides, an operating-spindle journaled in said cover, and a curved arm fast with said spindle and engaging with the slidable bolt for retracting or projecting the latter into or from engagement with the flange of the street-box, substantially as described.

3. In a street-box for underground mains, a cover provided with bolt-guides, a spindle journaled in the cover, a curved arm fast with the spindle to turn therewith, and a slidable bolt supported at its outer end by guides and at its inner end by engagement with the curved arm, substantially as described.

4. In a street-box for underground mains, a cover provided with bolt-guides, an operating-spindle journaled on the cover and carrying a curved arm, stops fast with the cover lying in the path of the curved arm to limit the travel thereof, and a bolt fitted to the guides and connected to the arm, substantially as described.

5. In a street-box for underground mains, a cover provided with bolt-guides, a spindle mounted in the cover to turn therein, a slidable bolt confined in the guides and connected operatively with the spindle, and stops for limiting the turning movement of the spindle in the cover, substantially as described.

6. The combination of a street-box, a metallic clamp secured thereto, and a cover fitted to said clamp and provided with a locking device which is adapted to engage with the clamp, substantially as described.

7. The combination of an earthenware box, a two-part metallic clamp embracing said box and having its members separably joined together, a cover fitted to said clamp, and a locking contrivance supported by the cover and arranged to engage with the clamp, substantially as described.

8. The combination of a street-box, a two-part clamp having its members fitted together at their contiguous ends by overlapping joints and sealed by a suitable filling, means for separably connecting the members of said clamp together and to the street-box, a cover, and a locking contrivance carried by the cover and engaging with the flange afforded by the clamp, substantially as described.

9. A terra-cotta street-box of uniform width or diameter throughout its length and pro-

vided at its upper end with the exterior lugs arranged in series on the outside of said box, for the purpose described, substantially as set forth.

10. The combination of a street-box, a metallic clamp fitted to the upper end thereof, means for fastening said clamp removably to said box, and a cover seated on the clamp and having a bolt adapted to be projected into engagement therewith, substantially as described.

11. The combination with a street-box provided with a series of lugs, one of which is slotted, a clamp seated on the box and having lugs which engage with the lugs of the box, one of the lugs on the clamp adapted to register with the slotted lug of the box, and the bolt passing through said lug of the cover and the slotted lug to removably confine the clamp in place, substantially as described.

12. The combination of a street-box, a clamp fitted thereto, lugs on one of said parts, fastenings engaging with the other part and with said lugs, and a cover seated on the clamp and provided with a locking device adapted to engage with said clamp, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES HENRY CAMPBELL.

Witnesses:

D. H. ANDERSON,

FRED NASH, Jr.