

[54] **INSTALLATION OF CURB BOXES**  
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 [73] Assignee: **Ametek, Inc.**, Sheboygan, Wis.  
 [22] Filed: **June 9, 1971**  
 [21] Appl. No.: **151,398**

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 3,536,794 10/1970 Stevenson..... 264/24

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*Attorney*—Andrus, Scales, Starke & Sawall

[52] **U.S. Cl.**..... 137/364, 264/24, 264/108,  
 138/177  
 [51] **Int. Cl.**..... **F16I 9/00**  
 [58] **Field of Search** ..... 137/364-372;  
 138/177; 264/24, 108

[57] **ABSTRACT**

A non-metallic curb box is formed to provide detectable metallic means distributed longitudinally along at least a major part of the upper portion thereof. The metallic means may be either magnetic or non-magnetic, depending upon the type of detector to be used. It may also be continuous or discontinuous. The box is then installed in the ground in valve protecting position, and is positioned vertically so that if an upper portion of the box is sheared off or otherwise accidentally removed, the remaining box portion will be detectable because of the presence of a portion of the detectable metallic means thereon.

[56] **References Cited**  
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**13 Claims, 8 Drawing Figures**

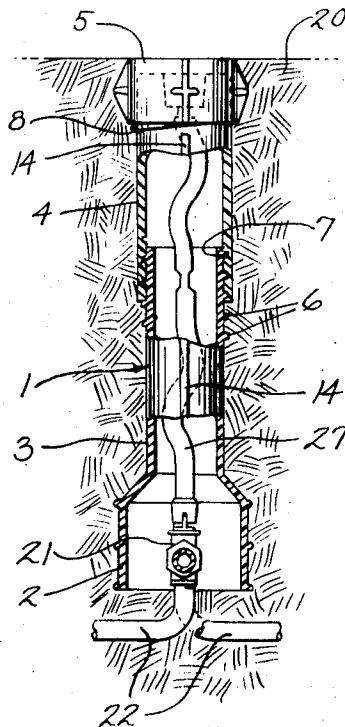


Fig. 1

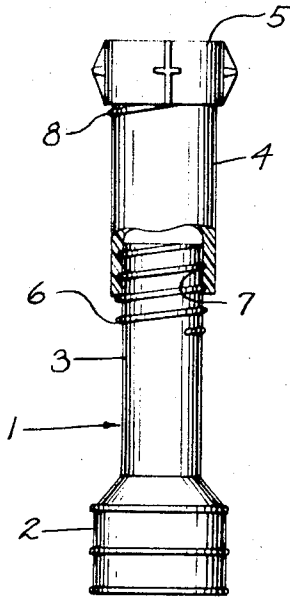


Fig. 2

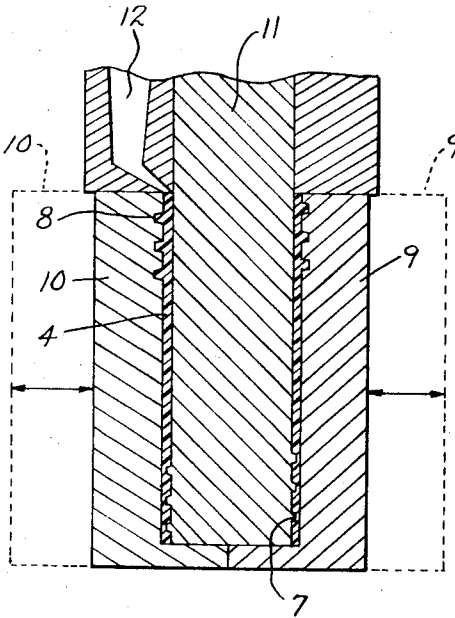


Fig. 3

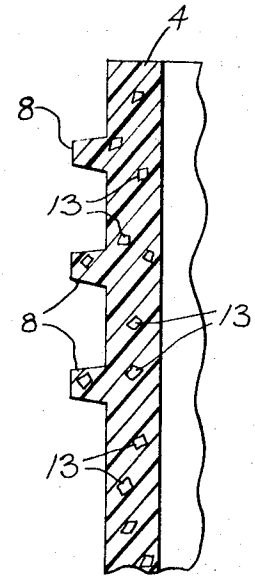


Fig. 7

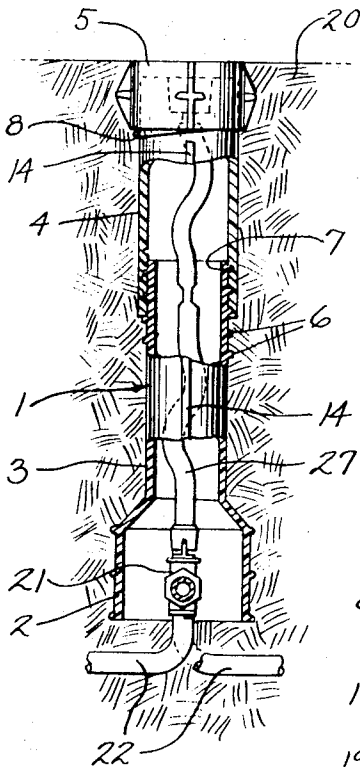


Fig. 4

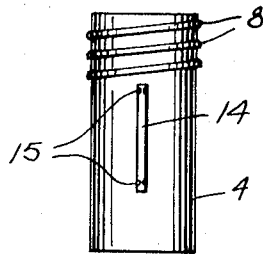


Fig. 5

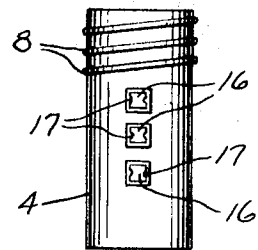


Fig. 6

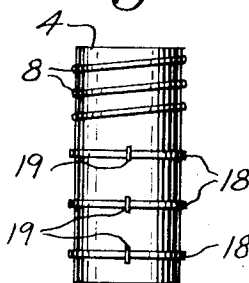
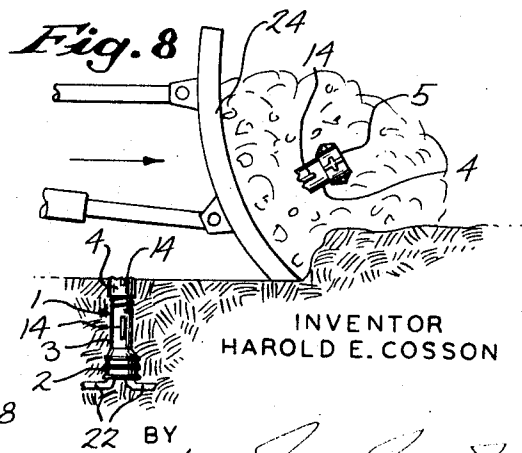


Fig. 8



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## INSTALLATION OF CURB BOXES

### BACKGROUND OF THE INVENTION

This invention relates to the installation of curb boxes which are buried underground and which provide protection for and access to underground valves for controlling the flow of fluids such as gas, water and the like.

A curb box of the general type involved in the present invention is disclosed in U.S. Handley Patent No. 2,931,383, issued Apr. 5, 1960 and entitled "Curb Box Having Locating Magnet Therein". In that patent a telescoping curb box of non-magnetic material is provided with a magnet proximate the upper end thereof so that a dip needle or compass can be used to locate the box, should it become completely buried.

Curb boxes of the Handley type are often installed in new building developments prior to final grading of the land. It has been discovered that grading bulldozers will occasionally shear off the upper portion of such curb boxes. These upper box portions will often be thrown a substantial distance from the remainder of the box by the force of impact of the bulldozer blade. The remaining box portion will be covered and no longer locatable, since the magnet has been severed therefrom.

To the knowledge of the inventor, no way has heretofore been known to prevent the loss of detectability when a portion of such a curb box has been sheared off.

### SUMMARY OF THE INVENTION

The present invention is based on the discovery of a solution to the aforementioned problem wherein the remaining buried curb box portion will still be detectable after the upper portion is removed.

Broadly, in accordance with the invention, a non-metallic curb box is formed to provide detectable metallic means distributed longitudinally along at least a major part of the upper portion thereof. The metallic means may be either magnetic or non-magnetic, depending upon the type of detector to be used. It may also be continuous or discontinuous. The box is then installed in the ground in valve protecting position, and is positioned vertically so that if an upper portion of the box is sheared off or otherwise accidentally removed, the remaining box portion will be detectable because of the presence of a portion of the detectable metallic means thereon.

### DESCRIPTION OF THE DRAWING

The accompanying drawing illustrates the best mode presently contemplated by the inventor for carrying out the invention.

In the drawing:

FIG. 1 is a side elevation of a curb box of the general type utilized in connection with the concept of the invention;

FIG. 2 is a schematic view showing the molding of one portion of the curb box;

FIG. 3 is an enlarged fragmentary section of the upper curb box wall, showing one embodiment of detectable magnetic means;

FIG. 4 is a side elevation of the upper curb box portion and showing a second embodiment of detectable magnetic means;

FIG. 5 is a side elevation of the upper curb box portion and showing a third embodiment of detectable magnetic means;

FIG. 6 is a side elevation of the upper curb box portion and showing a fourth embodiment of detectable magnetic means;

FIG. 7 is a vertical sectional view of the complete curb box of FIG. 4 installed in the ground; and

FIG. 8 is a schematic view showing the upper box portion of FIG. 7 being sheared off by a bulldozer blade.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIG. 1 of the drawings, the concept of the invention is utilized in connection with a curb box 1 which normally comprises a tubular valve cover or bell 2, an elongated intermediate cylindrical tubular portion 3, and an elongated upper cylindrical tubular portion 4. An access cover 5 is also provided. Bell 2 and tube 3 may be separate, or integral as shown. Tubes 3 and 4 are adapted to telescope and may be adjustably secured together in any suitable way, as by outer threads 6 on the upper end of tube 3 and complementing inner threads 7 on the lower end of tube 4. The upper end of tube 4 may also be threaded, as at 8, to receive cover 5.

The invention contemplates that bell 2 and tubes 3 and 4 are manufactured from a suitable non-metallic, non-magnetic material such as polyethylene with suitable fillers, if desired. Cover 5 is preferably of the same material, but might be metallic under certain conditions without departing from the spirit of the invention.

Curb box 1 is formed in any suitable well-known manner. In FIG. 2, upper tube portion 4 is shown as being formed in a mold which includes dies 9, 10, core 11 and hopper 12 for the raw plastic. It is contemplated that bell 2 and tube 3 would be formed in a similar way.

In accordance with the invention, curb box 1 is formed so that detectable metallic means is distributed longitudinally along at least a major portion of the upper end section of curb box 1. The drawings illustrate numerous embodiments.

In FIGS. 3 and 4, the distribution is substantially continuous. In FIG. 3, metallic particles 13 are mixed with the raw plastic and molded therewith into the completed upper tube 4. In FIG. 4, an elongated longitudinal strip 14 of metal (or which includes suitable metallic material) is disposed along the outer wall of tube 4 and secured thereto as by retainer members 15 formed in the tube.

In FIGS. 5 and 6, the detectable means are shown as discontinuous. In FIG. 5, a plurality of longitudinally spaced metallic blocks 16 are secured to tube 4, as by retaining members 17. FIG. 6 shows a plurality of longitudinally spaced metallic rings 18 encircling tube 4 and suitably secured as by members 19.

The detectable means of FIGS 3-6 could be imbedded in the walls of tube 4, rather than mounted on the exterior or interior surfaces thereof, without departing from the spirit of the invention.

After suitable manufacture of the desired form of curb box, the box is buried vertically in the ground 20, as shown in FIG. 7. Cover 5 is also applied and is preferably at ground level. Box 1 protects and provides access to an underground service valve 21 or the like, with the usual pipe connections 22 and control rod 23. The construction provides detectable metallic means which extends progressively vertically downwardly

from adjacent the ground surface for a substantial distance along curb box 1.

Sometimes cover 5 becomes covered with grass, soil or the like and is not easily visible. The detectable metallic means may be unmagnetized iron or other non-magnetic metallic material, in which case the presence of the box can be detected by well-known metallic detectors such as those used for locating land mines. The inventive concept also contemplates that the detectable metallic means may be magnetic in nature, such as magnetized iron, in which case the box can be found by use of a compass or the well-known dip needle.

In the event an upper portion of curb box 1 is sheared off as by a bulldozer blade 24 (FIG. 8), cover 5 and a portion of the box may be thrown a great distance and the remaining portion buried. Because the detectable metallic means extends downwardly a substantial distance along box 1, the remaining installed lower curb box portion will still be provided with such means and will be locatable as will the sheared off portion.

The length of upper tube portion 4 is such that bulldozing will not normally penetrate below it. However, if tube portion 4 is short or bulldozing operations are expected to be deep, similar detectable metallic means can be provided on lower tube 3 and even bell 2 without departing from the spirit of the invention. See FIG. 8.

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. In an installation for protecting and providing access to an underground service valve:
  - a. a vertically disposed non-metallic curb box buried in the ground and comprising:
    - 1. a bell covering the said valve,
    - 2. an elongated intermediate tube extending upwardly from said bell,
    - 3. and an elongated upper tube telescopingly mounted at its lower end to the upper end of said intermediate tube, said upper tube extending upwardly to adjacent the ground surface,
  - b. means to close the upper end of said upper tube,
  - c. and detectable metallic means on the tubular portion of said curb box and extending downwardly from near the upper end thereof at least to adjacent the lower end of said upper tube to provide for detection of said curb box in the event an upper portion thereof including a portion of said detectable means becomes accidentally sheared off and removed.
- 2. The installation of claim 1 in which said detectable metallic means is continuous.
- 3. The installation of claim 2 wherein said continuous detectable metallic means comprises metallic particles distributed throughout the wall of at least said upper

tube.

4. The installation of claim 2 wherein said continuous detectable metallic means comprises an elongated metallic strip extending longitudinally along at least said upper tube.

5. The installation of claim 1 in which said detectable metallic means is discontinuous.

6. The installation of claim 5 wherein said discontinuous detectable metallic means comprises a plurality of metallic blocks spaced longitudinally along at least said upper tube.

7. The installation of claim 5 wherein said discontinuous detectable metallic means comprises a plurality of metallic rings encircling at least said upper tube and spaced longitudinally therealong.

8. For use in an underground installation for protecting and providing access to a buried service valve, the combination comprising:

- a. a non-metallic curb box adapted to be buried vertically in the ground and comprising:
  - 1. a bell adapted to cover the valve,
  - 2. an elongated intermediate tube extending upwardly from said bell,
  - 3. and an elongated upper tube telescopingly mounted at its lower end to the upper end of said intermediate tube, said upper tube adapted to extend upwardly to adjacent the ground surface,
- c. and detectable metallic means on both of said tubes to provide for detection of said curb box in the event the upper tube becomes accidentally sheared off and removed.

9. The combination of claim 8 in which said detectable metallic means is continuous.

10. The combination of claim 8 in which said detectable metallic means is discontinuous.

11. The method of installing a curb box assembly which is detectable when disposed in the ground, comprising the steps of:

- a. forming a tubular non-metallic curb box having detectable metallic means disposed at progressively different levels from adjacent the upper end thereof to adjacent the valve housing therefor,
- b. applying a cover to said box,
- c. and burying said curb box with said detectable metallic means extending progressively downwardly in the ground a substantial distance from the surface thereof so that at least a portion of said detectable means will remain with the installed curb box if an upper section thereof is sheared off.

12. The method of claim 11 wherein said curb box is formed with a continuously extending detectable metallic means.

13. The method of claim 11 wherein said curb box is formed with a discontinuously extending detectable metallic means.

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UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3,746,034 Dated July 17, 1973

Inventor(s) HAROLD E. COSSON

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 27, In claim 8, (b) has been omitted and should be inserted and reads as follows:

---(b) means to close the upper end of said upper tube,---

Column 4, line 34, In claim 10, delete "-etecta-" and substitute therefor ---detecta- ---

Signed and sealed this 27th day of November 1973.

(SEAL)  
Attest:

EDWARD M. FLETCHER, JR.  
Attesting Officer

RENE D. TEGEMEYR  
Acting Commissioner of Patents