United States Patent [19]

Gale

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[54] **MANHOLE COVER PULLER AND METHOD**

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[51] **Int. Cl.** **B66f 3/00**

[58] **Field of Search** 254/120, 131, 130, 129; 294/15, 17, 18, 19, 26; 214/370, 384; 7/12

[56] **References Cited**

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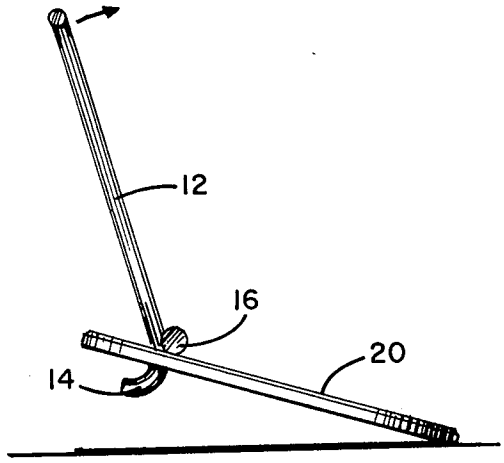
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[57] **ABSTRACT**

A device for pulling a manhole cover comprises an elongated rod having a straight upper portion and an angled lower portion extending normally to the axis of the upper portion and from the lower end thereof, a stop member secured to the upper portion adjacent the lower end and opposite the lower portion, and a handle at the upper end of the upper portion. The device is used by inserting the angled portion into an orifice on the manhole cover and pulling the upper portion upwardly and away from the cover so that the short lower portion acts as a lever and lifts the side of the manhole cover closest to the orifice.

3 Claims, 5 Drawing Figures



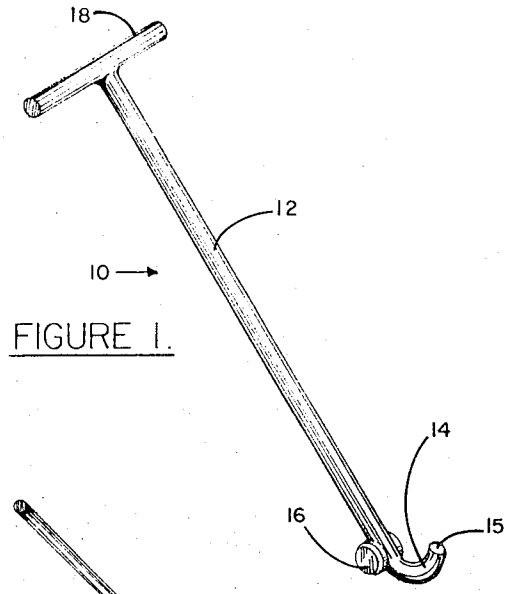


FIGURE 1.

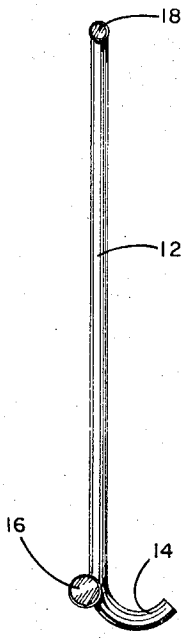


FIGURE 2.

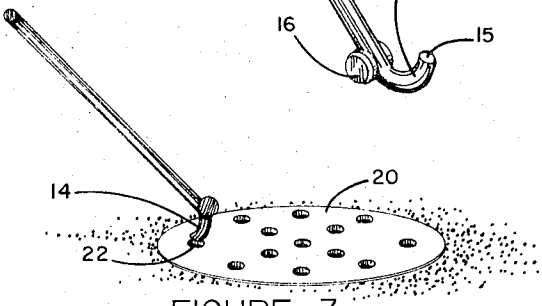


FIGURE 3.

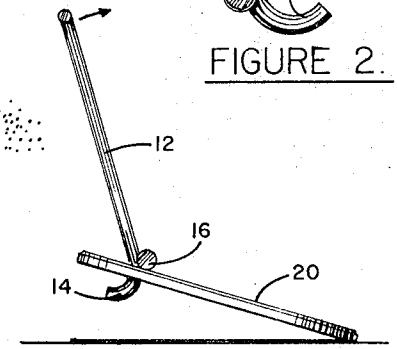


FIGURE 4.

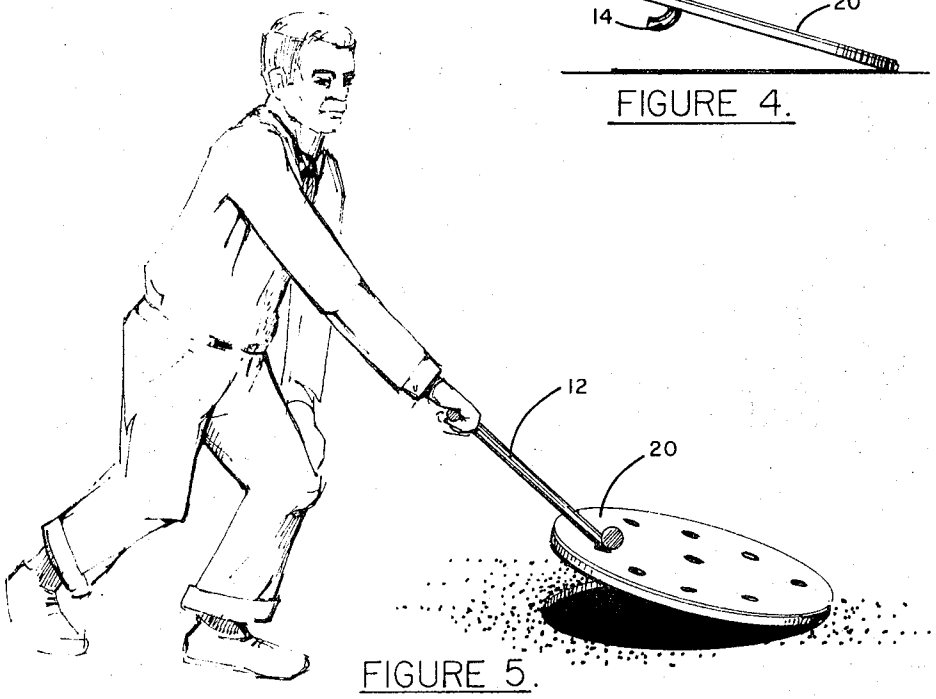


FIGURE 5.

MANHOLE COVER PULLER AND METHOD

BACKGROUND OF THE INVENTION

Manhole covers are used extensively to cover manholes particularly on streets as well as other locations which holes provide ready access to underground cables, pipes, sewers and the like. Normally, the manhole covers are provided with at least one orifice and often more allowing for ambient pressure equalization in the underground facility.

The manhole covers are usually made from cast iron or steel and are quite heavy, often weighing between about 150 and about 180 pounds or more. The covers lie flush or slightly depressed from the roadway surface so that when one wishes to remove the cover, they are quite difficult to handle and remove. For example, a person may grasp the cover with his fingers through the orifice and attempt to pull it up from a stooping position which can easily cause back or abdominal muscle injury. Even from a stooping position one may find considerable difficulty in attempting to pick the cover up because of its weight. Moreover, a person's fingers or hand may become caught under the cover while trying to move it.

SUMMARY OF THE INVENTION

The present invention is directed to a simple, unitary device which can be used by a person to easily move a manhole cover. The device comprises an elongated rod having a straight upper portion and a relatively short lower portion extending at a normal angle to the axis of the upper portion and includes a stop member secured adjacent the point of intersection of the lower and upper portions and opposite the lower portion. The device is easily used by simply inserting the relatively short lower portion into a manhole cover orifice until the stop member prevents further insertion. With the stop member resting on the cover adjacent the orifice, the upper portion is pulled upwardly causing the lower portion to contact the inside cover surface. By continuing to apply pressure to the upper portion, the device acts as a lever and lifts the manhole cover and out of its position in the manhole casing. The dislodged cover can then be easily further displaced or moved. These advantages as well as the other features of the device will be more fully explained in the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the device of the invention;

FIG. **2** is a side elevational view thereof;

FIG. **3** illustrates the device as it is being directed to a manhole cover orifice;

FIG. **4** illustrates the device in place as a manhole cover is being removed; and

FIG. **5** is a view showing illustrating the use of the device to remove a manhole cover according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIGS. **1** and **2**, there is shown the device **10** for pulling or removing a manhole cover which includes a straight upper portion **12** and a relatively short lower portion **14.** The lower portion as shown may actually be merely an extension of a single piece of rod which has been bent to the desired angle

or it may be a separate piece which has been welded or otherwise secured rigidly to the lower end of the upper portion. The lower portion extends approximately perpendicular or normal to the upper portion. The specific angle may be varied between about 20° and 30° in either direction from perpendicular although the perpendicular angle is most preferred. Further, it will be understood that the angle between the lower and upper portions need not be abrupt but may be gradual, for example, where the device is formed by bending a single length of rod.

A stop member **16** is also provided adjacent the lower end of upper portion **12** or approximately opposite the position at which lower portion **14** is secured to or extends from the upper portion. The purpose for stop member **16** is to provide both a stop to limit the extent at which the lower portion can be inserted into a manhole cover orifice as well as acting as a fulcrum for the lever action achieved by the device when used to open a manhole cover. Thus, when the device is used, lower portion **14** is inserted into the cover orifice and the user will then exert pressure on upper portion **12** upwardly while stop member **16** rests on the manhole cover surface. The stop member then becomes a lever fulcrum so that continued upward pressure on the upper member will concomitantly cause the lower portion **14** to raise the near side of the manhole cover.

It is also preferable to provide a handle **18** at the upper end of upper portion **12** to facillitate greater ease in grasping the device and especially during prying a manhole cover. The handle is secured to the upper end of the upper portion by welding or bolting or any other convenient means. The shape of the handle shown is not particularly critical so long as it serves the desired purpose.

It will be noted that lower angled portion **14** is of shorter length as compared to the upper portion **12.** Since the device is to act as a lever with stop member **16** being the fulcrum, the greater the length of the upper portion as compared to the lower portion, the greater will be the force which may be applied at end **15** of the lower portion. Accordingly, it is preferred that the upper portion is at least about four times the length of the lower portion with any specific length being only limited by the convenient total weight of the device desired for carrying and handling by a user. However, the length of the upper portion of the device is preferably about twelve inches and more preferably about 14 to 16 inches with the lower portion having a length of between about 1 and about 4 inches and more preferably about 2 inches.

FIGS. **3–5** illustrate the device as it is to be used and in relation to remove a manhole cover **20.** In FIG. **3,** the device is shown in the proper position so that lower portion **14** is directed into orifice **22** adjacent one side of the cover. In FIG. **4,** the device is in place with lower portion **14** extending through the orifice of cover **20.** Again, the lower portion is simply inserted into orifice **22** until stop member **16** rests on the upper surface of the cover. Thereafter, as shown in FIG. **5,** the operator, standing away from the cover, simply pulls the upper portion upwardly and away from the cover as shown by the arrow in FIG. **4** and concomitantly the lower portion of the device which is now underneath the cover is urged upwardly. As the operator continues to apply force to the upper portion, the cover will become lifted on the side close to the orifice as illustrated in FIGS. **4**

and **5.** Once the cover has been dislodged sufficiently, the operator may then simply pull on the device thereby sliding the cover away from the manhole opening and onto the adjacent street surface. Such an operation may be accomplished by the user in a position shown and since there is little lifting involved, it can be done very conveniently by a single person without undue strain or the likelihood of injury.

The materials from which the device is constructed may be any strong metal such as hardened steel, stainless steel and the like which will not bend or become deformed during use, considering the weight of the cover to be moved. As previously noted, the device may be made substantially of a single rod, with the lower portion being simply bent or turned to achieve the angle as shown in FIGS. **1** and **2.** The lower portion must of course be of a size small enough to allow insertion into a manhole cover orifice but otherwise the size of the cross section of either the upper or lower portion is not particularly critical so long as adequate strength requirements are met. The stop member should be of a size sufficient so as not to gain entry into the cover orifice and so that it will provide the intended stop. It may be made of the same material such as hardened steel or the like so that it will easily withstand the weight and force being applied. Thus, the stop member may, for example, be a short piece of the same rod used for the upper and lower portion and welded at the lower end of the upper portion and opposite the lower portion as shown. It may also be bolted or otherwise secured if added strength is desired. The handle may also comprise the same rod material of which the device is constructed and may be welded, bolted or otherwise secured permanently so that the overall device is rigid and of a substantially unitary construction. Other shapes or features of the device to achieve this same use and function will be appreciated by those skilled in the art and are intended to be within the purview of the invention.

I claim:

1. A device for removing a manhole cover having an orifice therein comprising:

an elongated rod having a substantially uniform cross section along its entire length having a straight upper portion and a relatively short lower portion extending at an angle normal to the upper portion from the lower end thereof, a stop member larger than the opening of said cover orifice secured to said upper portion adjacent its lower end and opposite said lower portion, and a handle at the upper end of said upper portion, said rod cross-section being of smaller dimension than the width of the cover orifice.

2. The device of claim **1** wherein said upper portion is at least about four times the length of said lower portion.

3. The device of claim **1** wherein the length of said upper portion between said stop member and said handle is at least about 12 inches.

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