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PULLER FOR MANHOLE COVERS
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FIG. 1

FIG. 2

FIG. 3

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This invention pertains to removing manhole covers and more particularly, manhole covers which have become stuck in place due to rust or application of paving materials over them.

In water sewer and other utility work, a problem exists in removing manhole covers. Often these covers are located in streets and alleys. After they have been in place for a long period of time, a great deal of rust forms between the manhole cover and the metal ring on which it rests. In addition to this, often seal coats are applied to the paving where the manhole is located. The asphalt and gravel in these seal coats wedge between the cover and the ring to make removal even more difficult.

The present invention overcomes the problem by being provided with a puller which is easily adapted to the manhole cover.

Another object of this invention is to provide a hook especially adapted to enter the holes in manhole covers and be securely attached therein.

A further object of this invention is to provide a manhole cover having a removable puller and a rod and beam assembly for removing the cover.

Still further objects are to achieve the above with a device that is sturdy, compact, simple, and reliable, yet inexpensive and easy to manufacture.

The specific nature of the invention as well as other objects, uses, and advantages thereof will clearly appear from the following description and from the accompanying drawings, in which:

FIGURE 1 is a perspective view of a device according to this invention in place over a manhole cover.

FIGURE 2 is a sectional view of the device and cover.

FIGURE 3 is a sectional view taken on line 3--3 of FIGURE 2.

As seen in the accompanying drawings, the device is for the purpose of pulling a manhole cover such as 10 which is set within a metal ring 12. Customarily the metal ring is set by concrete 14 into the surface of a street.

The puller itself includes a L-shaped frame member 16. The shorter leg 18 of this L-shaped member rests, when in use, upon the manhole cover 12. The longer leg 20 of the L-shaped frame member is vertically aligned with the manhole cover 12. This leg has been elongated slot 32 from top to bottom therethrough. The slot extends from an adjacent leg 18 to a position about half way the length of this long beam. Vertically aligned rod 34 extends through this slot. The rod also passes through spacer 36 which rests upon top of the beam or longer leg. The spacer has a plane upper surface with a hole through it parallel to the plane upper surface. The lower surface of the spacer is convex, having the segment of a cylinder as its shape. The axis of the cylindrical lower portion is at right angles to the beam, therefore the rod may swing in a direction of the beam without binding.

The upper portion of the rod is threaded thereon nut 38. The nut has two radial handles 40. In this manner means inner-connecting the rod and beam are provided for forcing the rod upward relative to the beam. The bottom of the rod has hook 42 which enters opening 44 in the cover to exert vertical upward force upon the cover.

This hook resembles a crochet hook. That is, the rod is constricted in a cross sectional area as the lower end is approached and has knob 46 at the extreme lower end. The knob of course is smaller in diameter than the opening normally found in the manhole cover.

Wedge 48 prevents the hook or knob from becoming disengaged with the cover. This wedge has the thick upper end which tapers to a point for forcing the rod upward. With the hook in place and the wedge driven downward, the wedge contacts the hook and the edge of the opening in the cover so as to hold the hook securely within the opening in vertical force exerting position. Ring 50 attached to the thick upper end of the wedge maintains the wedge on the rod while not in use. The axis of the ring is generally parallel to the longitudinal axis of the wedge and coincides with the axis of the rod 34. The ring encircles the rod.

In use the puller is placed over the manhole cover. Preferably the legs are adjusted so that the distance between the legs is such that each rests on the ring surrounding the cover. It is not essential that leg 22 rests upon the ring. Because it is further from the rod 34, it may rest upon the cover 10 itself. The hook or knob 46 is passed through the opening 44 in the cover. The rod is moved upward either manually or by the aid of the nut 38 until the hook engages the lower surface of the cover. The wedge 48 is then driven downward until the hook is firmly secured to the cover. Then the nut 38 is rotated by the use of the handles 40 so that the cover is broken loose from the ring despite how badly it may have been rusted in place, or wedged in place by asphalt and gravel.

Thus it may be seen that I have provided the device for quickly and easily removing manhole covers despite how badly they may have been stuck in place.

It will be apparent that the embodiment shown is only exemplary and that various modifications can be made in construction, materials, and arrangement within the scope of the invention as defined in the appended claims.

I claim as my invention:

1. A device for removing manhole covers comprising: a frame having a horizontal beam, a plurality of legs depending from said beam and adapted to contact a ring surrounding the manhole cover to be removed, thus supporting the beam over the cover, a vertical rod, means interconnecting the rod and beam upward relative to the beam, a hook attached to the lower end of said rod, the hook adapted to enter an opening in said cover and exert vertical force upward on said cover, a wedge contacting said hook and the edges of said opening in the cover so as to hold the hook securely within the opening and in vertical force exerting position while the rod is forced upward relative to the beam.

2. The invention as defined in claim 1 wherein said hook is constructed by constricting the cross-sectional area of the rod as the lower end is approached with a knob at the extreme lower end.

3. The invention as defined in claim 2 wherein said
2,988,330

wedge has a ring attached at the thick upper end thereof, the axis of said ring generally parallel to the longitudinal extent of the wedge, and said ring encircles said rod.

5. A device for removing manhole covers comprising: an L-shaped frame member; the shorter leg of said member being vertically aligned and adapted to stand on a ring surrounding the cover; the longer leg of said member having an elongated slot from top to bottom therethrough; another vertically aligned leg attached near the end of said longer leg adapted to stand on the ring, thus supporting said longer slotted leg as a beam over the cover; a vertically aligned rod extending through said slot; a spacer resting on the slotted leg, the spacer having a hole through which extends said rod, the spacer having a convex lower surface which contacts said slotted leg; the upper end of the rod being threaded; a nut threaded on said rod, the nut having handles extending radially therefrom; a hook on the lower end of the rod; and a wedge contacting the hook so that when the hook is passed through an opening in the cover, the hook may be securely wedged into place.

5. The invention as defined in claim 4 wherein said second mentioned vertically aligned leg has a bifurcated upper portion with holes therethrough which extends on either side of the slotted leg, the slotted leg having a plurality of horizontal holes therethrough, and a pin through the holes in the bifurcated portion and one of the holes in the slotted leg, thereby selectively adjusting the width between the vertically aligned legs so that the device may be used for different size manholes.

6. The invention so defined in claim 4 wherein said hook is constructed by constricting the cross-sectional area of the rod as the lower end is approached with a knob at the extreme lower end.

7. The invention as defined in claim 6 wherein said wedge has a ring attached at the thick upper end thereof, the axis of said ring generally parallel to the longitudinal extent of the wedge, and said ring encircles said rod.

8. A device for removing covers comprising: a frame, a vertical rod depending from the frame, means including the frame for forcing the rod vertically upward, a hook attached to the lower end of said rod, the hook adapted to enter an opening in said cover and exert vertical force upward on said cover, a wedge contacting said hook and the edges of said opening so as to hold the hook securely within the opening and in vertical force exerting position while the rod is forced upward.

9. The invention as defined in claim 8 wherein said hook is constructed by constricting the cross-sectional area of the rod as the lower end is approached with a knob at the extreme lower end.

10. The invention as defined in claim 9 wherein said wedge has a ring attached at the thick upper end thereof, the axis of said ring generally parallel to the longitudinal extent of the wedge, and said ring encircles said rod.

11. In a device for removing an object having an opening in it, the device having a frame, a rod extending from the frame, means interconnecting the frame and the rod for forcing the rod toward the frame, a hook attached to the extreme end of the rod away from the frame, the hook adapted to enter the opening in the object and exert force on the object toward the frame, the improvement comprising: a wedge contacting said hook and the edges of said opening in said object so as to hold the hook securely within the opening and in force exerting relationship while the rod is forced toward the frame.

12. The invention as defined in claim 11 wherein said wedge has a ring attached to the thick end thereof, said thick end of the wedge being closer to the frame than the other end, the axis of said ring generally parallel to the longitudinal extent of the wedge, and said ring encircles said rod.

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