D. A. HARRINGTON.

COMBINATION MANHOLE FRAME AND COVER.

APPLICATION FILED MAR. 12, 1906.

922,892. **Patented May 25, 1909.**

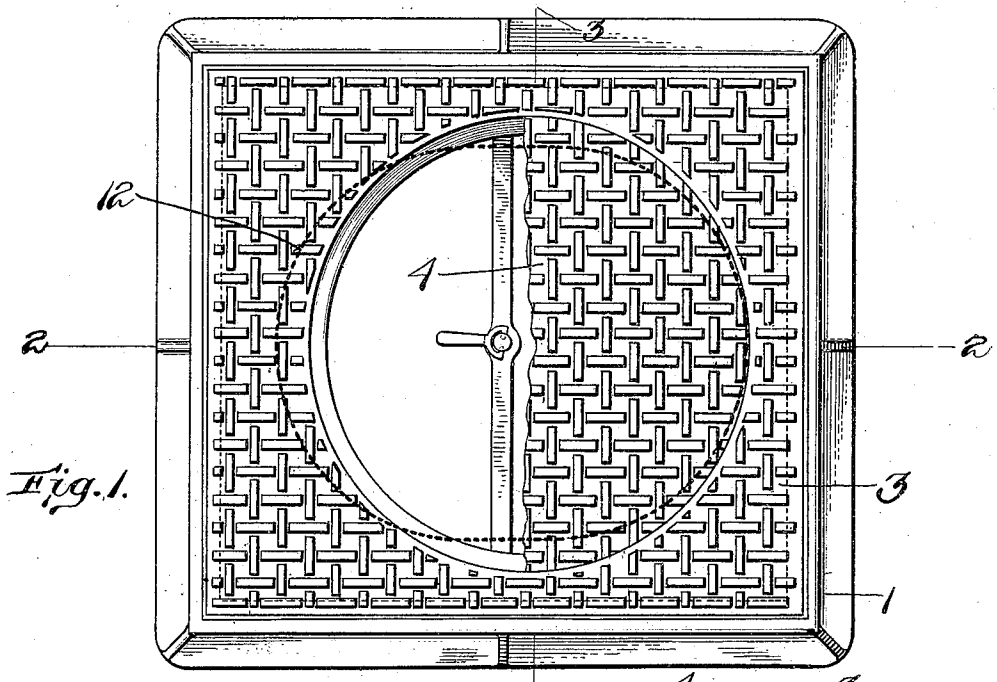

Fig. 1.

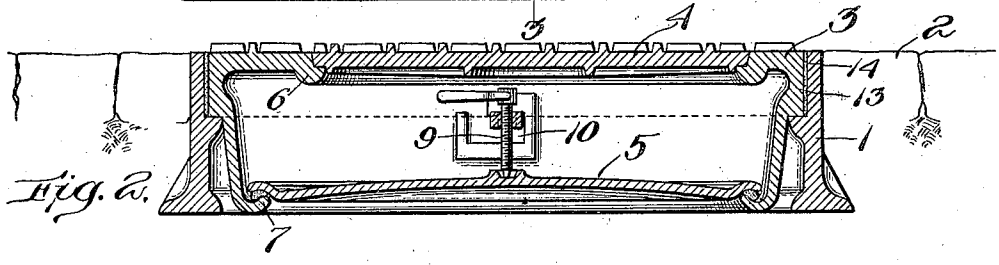

Fig. 2.

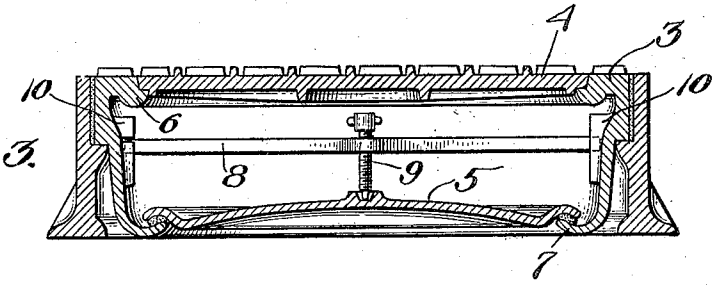

Fig. 3.

Witnesses:

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COMBINATION MANHOLE FRAME AND COVER.

No. 922,892. Specification of Letters Patent. Patented May 25, 1909.

Application filed March 12, 1906. Serial No. 305,468.

To all whom it may concern:

Be it known that I, DAVID A. HARRINGTON, a citizen of the United States, residing at Newton Center, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Combination Manhole Frames and Covers, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

While my invention is capable of a wide variety of uses, it is especially intended for manholes for electric purposes. In this kind of a manhole, emergencies frequently arise which require quick access, and also it is frequently desirable to be able to have a large opening for the insertion and removal of apparatus, and yet for ordinary purposes a small cover of the ordinary size is ample, although provision is desirable for enabling the entire top to come off or be readily removable, as for instance in the case of an explosion. If the entire top were not removable, under such circumstances the manhole itself would be shattered or destroyed.

Accordingly, my present invention consists of providing a large cover co-extensive with the top opening of the manhole and containing a small cover and also an inner cover. Thus, in case of an explosion or in case a large piece of apparatus is to be installed or removed, the large cover may be taken off, the inner cover being held by the large cover and removed simultaneously therewith, thereby leaving a large, unobstructed opening. On the other hand, if the apparatus is simply to be inspected or operated, it is not necessary to remove the heavy, cumbersome cover, but simply to remove the small, light and convenient top cover and then unfasten the inner cover, the latter being preferably elongated, for rendering it more convenient and providing extra safety in entering and leaving the manhole.

The small top cover is round, so that it cannot drop into the manhole on the wires, etc., and the large outer cover is square, for the purpose of admitting apparatus, most of which is usually square in shape. Also the preferred embodiment of my invention renders it readily capable of being packed or calked around the broad flange of the large or outside cover, so that it may be maintained water-tight without excessive danger in case of gas explosion, or the like.

Further advantages and the constructional details of my invention will be pointed out in the course of the following description, reference being had to the accompanying drawings, in which I have illustrated one embodiment of my invention.

In the drawings, Figure 1 is a top plan view thereof; Figs. 2 and 3 being vertical cross-sectional views taken on the line 2—2 and 3—3 respectively, Fig. 1.

In a suitable frame or casing 1, adapted to be set flush into the street paving 2, I mount the main or large cover 3, preferably rectangular in shape, as shown. This large outer cover contains a small outer cover 4, of a size and shape for hand removal, and a small inner cover 5. The outer cover 4 sets on a flange 6 formed in the top side of the large cover 3, and the inner cover 5 on a flange 7 formed in the lower side of the outer cover 3, suitable packing being interposed if desired. Said inner cover is preferably retained by a usual lock bar 8 and screw 9 coöperating with bayonet-joint locking slots 10, formed in the inner wall of the large cover 3.

While I prefer the particular form and arrangement of the three coöperating covers as I have shown them, it will be understood that they will be varied in shape and arrangement to suit the various requirements and preferred constructions of particular contracts or locations.

For certain uses, as, for example, in connection with electric manholes, I place the small cover 4 slightly at one side of the center of the large or holding cover 3, as is clearly shown in Figs. 1 and 2, where it will be seen that it is nearer to the right-hand side of the cover 3; and I make the inner cover 5 and its opening elongated, as clearly shown in dotted lines at 12, Fig. 1, so that the extreme left-hand end of the opening 12 coöperates with the right-hand end of the small cover opening in providing an enlarged space for permitting the ready entrance and exit of a workman on an inclined ladder. The outer large cover 3 has a broad, vertical flange 13, which aids in making the joint water-tight, the joint being readily calked if desired as indicated at 14. This large outer cover is seldom removed, because of the presence of the small hand cover, and hence it is practicable to pack this joint between the frame

and the large separating cover, which is not practicable for the small cover, which is being taken out frequently. This arrangement permits a water-tight closure of the manhole without excessive danger in case of gas explosion.

In the ordinary construction, if the manhole is closed water-tight, the entire frame and paving would blow out in case of an explosion, and because of this fact it has been considered unsafe to make the closure waterproof, and for this reason the authorities have condemned the practice and frequently the electric companies are forbidden to use an inside cover (the inside cover having heretofore been secured in and to the frame). By my invention the inside cover is secured to the outside cover, and hence it is perfectly practicable to lock it in place and pack it water-tight, as shown.

By reason of my invention the large cover 3 may be removed when it is desired to install large apparatus, and is always in yielding position in case of explosion, whereupon the large or holding cover (and the two smaller covers supported thereby) will be lifted out, instead of wrecking the frame or entire manhole. The small outer cover, being round, cannot drop into the manhole on the wires, etc., and yet I am enabled to have the supporting cover large and square, as best adapted to admit apparatus, etc. The elongated inside cover is more convenient for entering and leaving the manhole, and, on this account, adds an element of safety. This gives the same advantage without the weight, as if the cover were large and circular.

Other advantages of my invention will occur to those practical in the art, as, for example, the cost of installation, repair, maintenance, etc.

Having described my invention, what I claim as new and desire to secure by Letters Patent is,

1. A manhole, comprising a casing adapted to be permanently held in the pavement, a large cover seated in the opening of said casing and vertically removable therefrom, said cover having a peripheral flange depending from its top side, an outer opening in the top of said cover, a removable cover for said outer opening, and a removable inner cover beneath and separate from said outer cover, said inner cover being supported by the lower edge of said peripheral flange, said large cover and its supported outer cover and inner cover being bodily removable together from said casing.

2. In an apparatus of the kind described, the combination with a casing, of a manhole cover removably closing said casing, provided with a small outer opening, a small cover therefor, a depending peripheral flange terminating in an inner opening, an inner cover for said inner opening, and means carried by said manhole cover for locking said inner cover.

3. In an apparatus of the kind described, a manhole cover, provided with an inner opening and an outer opening, out of alinement with each other at one edge, and separate covers for said two openings.

4. In an apparatus of the kind described, a manhole cover, having an outer opening, a small cover therefor, and an inner opening and its cover elongated in shape, for permitting free entrance and exit.

5. In an apparatus of the kind described, a manhole cover, having an eccentrically located small circular opening in its top side, a cover therefor, and having an inner elongated opening and cover therefor.

6. A manhole, having at its top an outer small opening and cover, and an inner opening and cover, said two openings being out of alinement with each other, and the inner opening being elongated in shape, for permitting free entrance and exit.

7. A manhole, comprising an outer peripheral casing, having at its inner top edge a deep vertical wall terminating in an inwardly projecting supporting ledge, a large cover vertically removable from said casing and having a deep peripheral vertical wall shouldered at its lower end to seat firmly on said ledge, said two vertical walls being normally spaced slightly apart, watertight packing filling the vertical annular space between the vertical wall of said casing and the vertical wall of said cover, whereby the two are sealed together against separation except for extraordinary purposes, said large cover having a small opening through its top, and a small cover removably fitting said opening carried by said large cover for permitting free access to the manhole for ordinary purposes of inspection, etc., said large cover also having a peripheral flange depending from said lower end of its vertical wall terminating in an inner opening, an inner cover for said inner opening, and locking means for said inner cover.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

DAVID A. HARRINGTON.

Witnesses:

GEO. H. MAXWELL,

M. A. JONES.