

H. A. MUGLER & G. D. McNAUGHTON.
COVER FOR COAL HOLES, MANHOLES, VAULTS, TRENCHES, &c.
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1,035,722.

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Fig. 1.

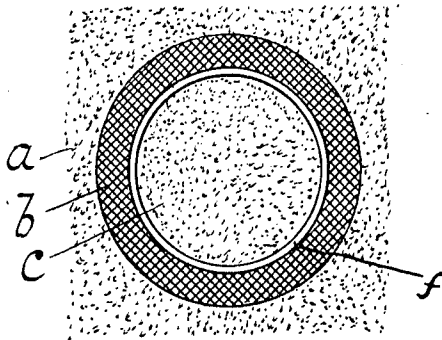


Fig. 5.

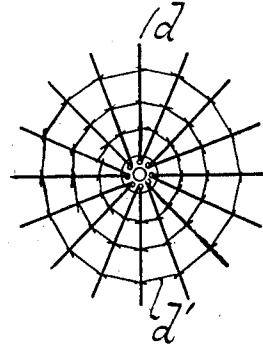


Fig. 2.

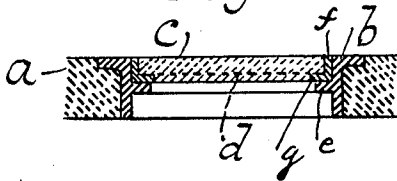


Fig. 3.

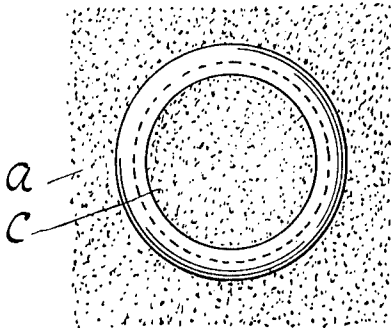


Fig. 6.

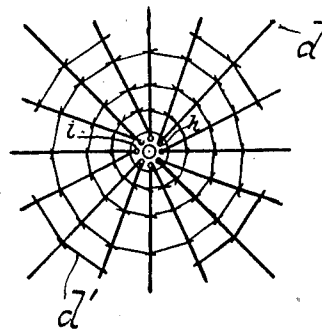
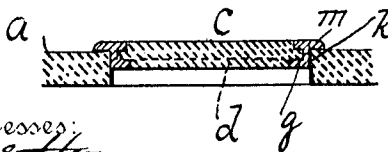


Fig. 4.



Witnesses:
Henry S. Herman
Jessie A. Brany

Herman August Mugler
George D. McNaughton
Inventors

UNITED STATES PATENT OFFICE.

HERMAN AUGUST MUGLER, OF NEW YORK, N. Y., AND GEORGE D. McNAUGHTON, OF EAST ORANGE, NEW JERSEY.

COVER FOR COAL-HOLES, MANHOLES, VAULTS, TRENCHES, &c.

1,035,722.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, HERMAN AUGUST MUGLER, residing in the borough of Manhattan, city, county, and State of New York, and GEORGE D. McNAUGHTON, residing at East Orange, county of Essex, State of New Jersey, both citizens of the United States, have discovered and invented certain new and useful Improvements in Covers for Coal-Holes, Manholes, Vaults, Trenches, and Similar Purposes.

The object of the invention is a cover for the uses indicated, which is strong and durable, of simple and inexpensive construction, convenient in its application, and which possesses certain other important advantages over prior constructions for like uses.

Briefly, the cover of the present invention comprises a hollow, metal, frame of the shape and size of the opening to be closed. This frame is without top or bottom but supports within the same, a net work which serves as a reinforcement or support for a filling of concrete or other agglomeration of sand, cinders, gravel, slag and the like, or which may be of any composition adapted to the use for which the cover is intended. The net work consists of rods which radiate to the frame from a point within the same (preferably from the axis of the frame), and of strands of metal which cross the rods, and encircle or embrace the axis of the frame. These latter strands are spaced from each other; and, in order that the strength of the reinforcement may be greater at the center of the cover than elsewhere, the spacing of the strands is preferably progressively closer as the center of the cover is approached. The filling forms the body of the cover, and may if desired have its surfaces crowned, or be otherwise made thicker at the center of the cover to more effectually withstand the strain of traffic.

This cover when set in sidewalks or streets, offers greater safety to the traveling public than the cast iron and steel covers now almost universally used. It will wear gritty and offer a safe foot-hold for man or beast when in a wet or icy condition; whereas, the iron covers commonly used become smooth and polished after their original surface has been worn away by traffic. Its

wearing surface is similar in texture and wearing qualities to the surrounding walk, pavement, or other adjoining surface.

The covers of the present invention are and will be less unsightly than other covers by reason of the fact that it can be made similar in color and appearance to the surrounding material.

The above and other features of the invention will more clearly appear from the accompanying drawings, in which—

Figure 1 is a plan showing the cover in position when used in connection with a frame in which the cover as a whole is set. Fig. 2 is a vertical transverse section of the cover supported as in Fig. 1. Fig. 3 is a plan view of a modified form of the cover in position, the supporting frame of Fig. 1 being absent, or rather, being constructed as a part of the cover, permitting the removal in its entirety of the cover and frame. Fig. 4 is a vertical transverse section of the cover of Fig. 3, showing the same in place. Figs. 5 and 6 show the arrangement of the reinforcing material for a circular and for a square cover respectively.

In Figs. 1, 2, 3 and 4 the street or other surface is indicated at *a*. In Figs. 1 and 2, there is more or less permanently set into the surface *a*, a frame *b* having a flange *e* on which the cover rests. The frame *f* which forms part of the cover is preferably of angle iron cross section to have a flange *g* on which the rods *d* forming part of the reinforcement may rest. The reinforcement as shown in Figs. 5 and 6 comprises a metal ring *h* having eyelets *i* for engagement with the rods *d* at the center of the cover. The rods *d* radiate from the ring *h* to the frame *f*, as described. Strands of wire *d'*, forming circles of increasing diameter, are interwoven with the rods *d*, and extend concentrically around the center or axis of the cover. The strands *d'* are set closer together near the center of the cover for the purpose hereinbefore set forth. The filling *c* is shown as set into the cover frame *f* in such manner as to be interlocked with the reinforcement.

The construction of Figs. 3 and 4 differs from that of Figs. 1 and 2 in that the frame *b* of Figs. 1 and 2 is missing in Figs. 3 and

4. The cover frame $\frac{1}{2}$ of Figs. 3 and 4 is supported directly on the street or other surface by means of a flange *m*.

It is evident from an examination of Figs. 5 and 6, that if the cover be cut in circles, described around the center of the cover, each cut in turn, as the center is approached will have a higher percentage of metal reinforcement than the preceding one, so that the strength of the entire plate increases as the center is approached, and if properly worked out the reinforcement, can be so arranged that the strength will increase at approximately the same rate that the strain increases toward the center. If desired, the amount of concrete may also be increased toward the center; this can be done by increasing the thickness of the plate as the center is approached, making the cover lenticular in cross section by rounding off top or bottom, or both. The amount and spacing of the reinforcing material will, of

course, depend on the size of the cover and the loads to be sustained.

What we claim is:

A cover for manholes and the like, comprising a metal frame open at top and bottom, a plurality of rods radiating to said frame from a point within the same and supported on the frame at their outer extremities, strands of wire crossing one after another of said rods to encircle the point from which the latter radiate, the strands being spaced one from the other between the frame and the point of radiation of the rods, with the spaces more reduced as the axis of the frame is approached, and a concrete filling within the frame for which filling the rods and strands form a reinforcement.

HERMAN AUGUST MUGLER.

GEORGE D. McNAUGHTON.

Witnesses:

HARRY E. HERMAN,

JEANETTE A. BRARY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."