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R. H. WEST

1,799,489

MANHOLE COVER

Filed May 27, 1929

Fig. 1.

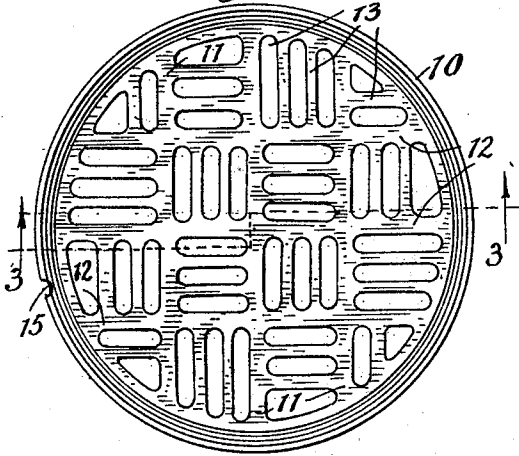


Fig. 2.

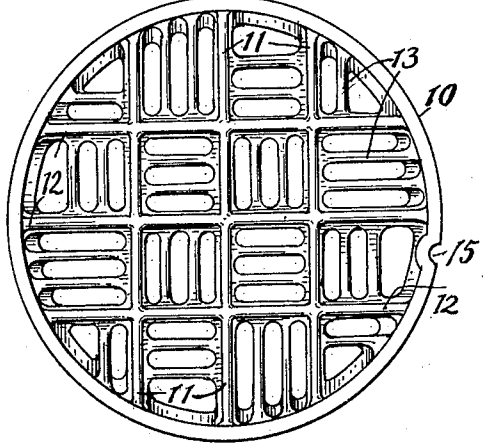


Fig. 3.

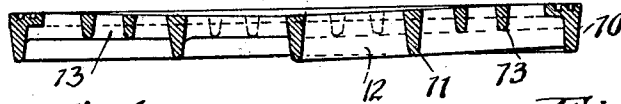


Fig. 4.

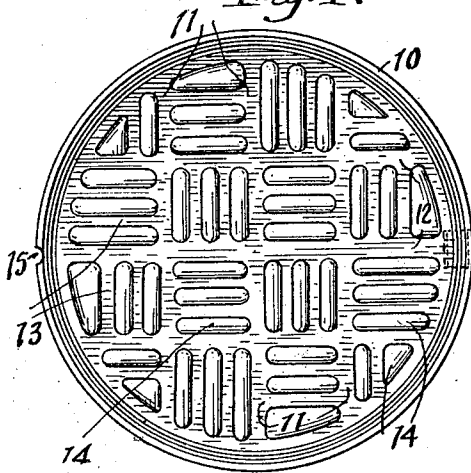


Fig. 5.

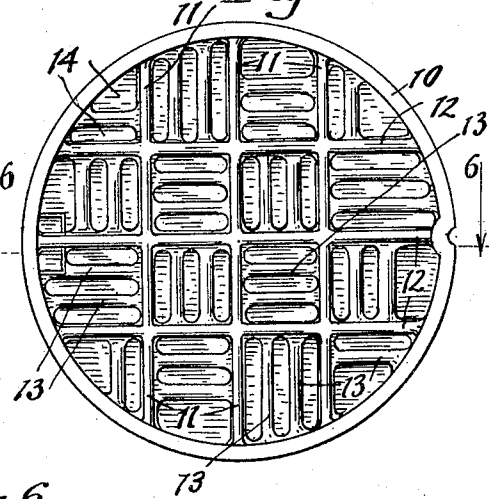
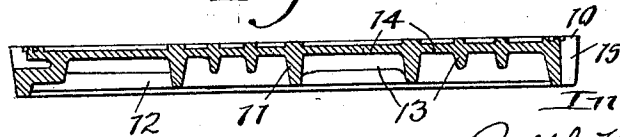


Fig. 6.



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## UNITED STATES PATENT OFFICE

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## MANHOLE COVER

Application filed May 27, 1929. Serial No. 366,163.

This invention relates to manhole covers, and more particularly to the type of manhole cover which is retained in place by gravity, such as is commonly used in openings leading to sewers, conduit tunnels, and the like.

An object of this invention is to provide an improved form of manhole cover.

Other objects and advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a top plan view of one form of manhole cover constructed according to my invention;

Fig. 2 is a bottom plan view thereof;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a top plan view of another form of the cover of my invention;

Fig. 5 is a bottom plan view thereof; and

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5.

My invention, as shown in the drawings, embraces two types of manhole covers though I do not limit my invention to these particular types. The form shown in Figs. 1, 2 and 3 is commonly termed the open type cover since it is constructed with openings therein which permit the passage of light, air and water. The form shown in Figs. 4, 5 and 6 is constructed without openings and is known as the solid type of cover.

For obvious reasons, manhole covers are usually made of cast metal, and in making my covers, I prefer to use cast steel because of its high tensile strength, though any suitable material may be used.

As shown in the drawings, the rib pattern is substantially the same for both the open and closed types of cover. In each case a rim 10 forms the perimeter of the cover and encloses a space which is divided into sections by heavy main ribs 11 and 12. The ribs 11 form one group of spaced apart parallel ribs, and the ribs 12 form another such group. Each of these groups of main ribs divides the space enclosed by rim 10 into sections, and the two groups of ribs intersect at right angles so that the ribs of one group

divide each of the sections formed by the other group into a series of blocks. The space enclosed by each block so formed is spanned by a group of short secondary ribs 13 which are of smaller cross-sectional area than the main ribs. These secondary ribs extend between two adjacent parallel main ribs, or between one of the main ribs and the rim 10. As the drawings clearly show, in each series of groups of secondary ribs, groups of secondary ribs which are parallel with the main ribs 11 alternate with groups of secondary ribs which are parallel with main ribs 12.

In the open type of cover, shown in Figs. 1, 2 and 3, the top surface of the cover is sloped gently toward the center, and where this cover is used for drainage purposes, this slope causes debris carried by the water to collect at the center, leaving the marginal openings clear for the passage of water.

In the closed type of cover shown in Figs. 4, 5 and 6, webs 14 are cast integral with the ribs and close the space between adjacent ribs. These webs are so placed that their upper surface is depressed slightly below the top surface of the ribs and of the rim 10. This construction gives the closed type of cover substantially the same rib pattern or configuration that the open type cover has.

To facilitate the removal of the covers from manhole rings, a depression 15 may be provided in the peripheral surface of rim 10 for the insertion of a tool.

The arrangement of ribs which I have shown and described produces a strong and rugged cover from a minimum weight of metal. The intersecting main ribs reinforce each other and distribute loads on the cover so that breakage is not likely to occur. Furthermore, the intersecting main ribs and the alternate groups of secondary ribs present a broken surface upon which vehicle wheels will have good traction, thereby lessening the danger of skidding on pavements or floors in which these covers are used.

In providing the intersecting heavy main ribs 11 and 12, the secondary ribs 13 will be very short and consequently can be of much smaller cross-sectional area. In the open

type of cover, this construction has particular merit because the large area represented by the openings permits the free passage of light, air and water. Furthermore, as all of the openings are short, long, slender pieces of debris will not pass through these openings as they frequently do through covers having openings in the form of continuous slots.

While I have shown manhole covers which are circular in form, it is obvious that the covers of my invention may be made of any desired shape or contour such as square or oblong, and likewise it is not essential to my invention that the secondary ribs be of less cross-sectional area than the main ribs. Therefore, I do not limit myself to the precise details disclosed but regard my invention as including such modifications as come within the spirit of the invention and the scope of the appended claims.

Having thus described my invention, I claim:

1. A manhole cover comprising a rim, intersecting main ribs attached to said rim and dividing the area of said cover into series of blocks, and a group of secondary ribs extending across each of said blocks, the ribs of alternate blocks of each series being at right angles to the ribs of intermediate blocks of that series.

2. A manhole cover comprising a rim, a set of parallel main ribs dividing the space enclosed by said rim into sections, a second set of parallel main ribs intersecting the first mentioned set of main ribs and dividing said sections into blocks, and a plurality of secondary ribs extending across each of said blocks and supported at their ends by adjacent main ribs, the secondary ribs of one series of blocks being supported by the first mentioned set of main ribs and the secondary ribs of another series of blocks being supported by the second mentioned set of main ribs.

3. A manhole cover comprising a rim, a set of main ribs dividing the space enclosed by said rim into sections, a second set of parallel main ribs intersecting the first mentioned set of main ribs and dividing said sections into substantially square blocks, and a plurality of short secondary ribs extending across each of said blocks and supported at their ends by adjacent main ribs, the secondary ribs of alternate blocks of each of said sections being at right angles to the first mentioned main ribs and the secondary ribs of the intermediate blocks of that section being at right angles to the second mentioned set of main ribs.

In testimony whereof, I hereunto affix my signature.

RALPH H. WEST.