

Dec. 2, 1924.

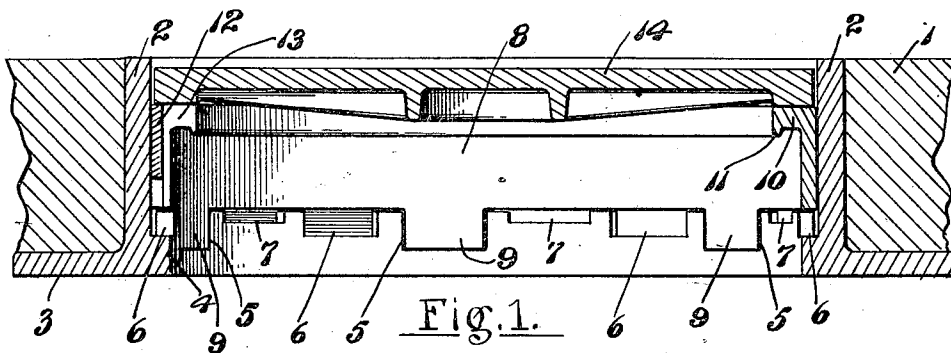
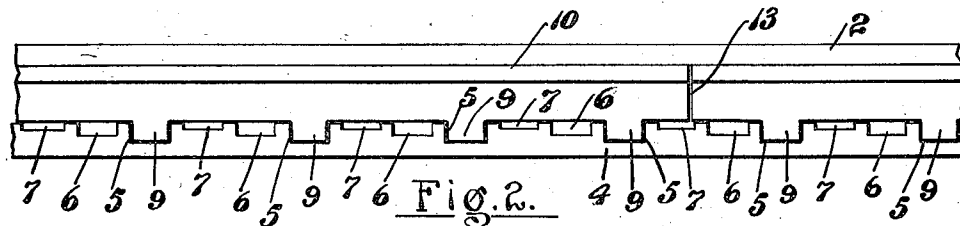
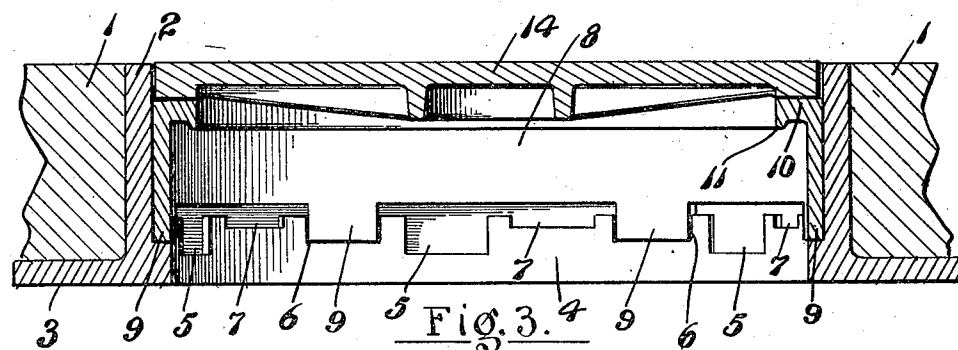
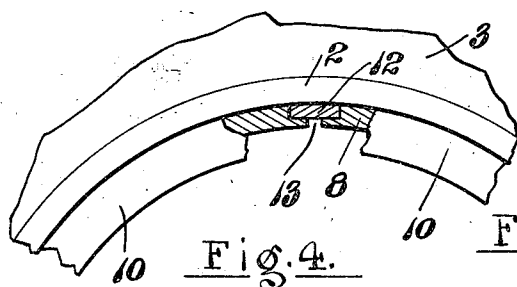
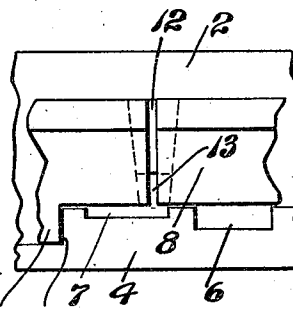
1,517,871

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MANHOLE CONSTRUCTION

Filed Oct. 13, 1921

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

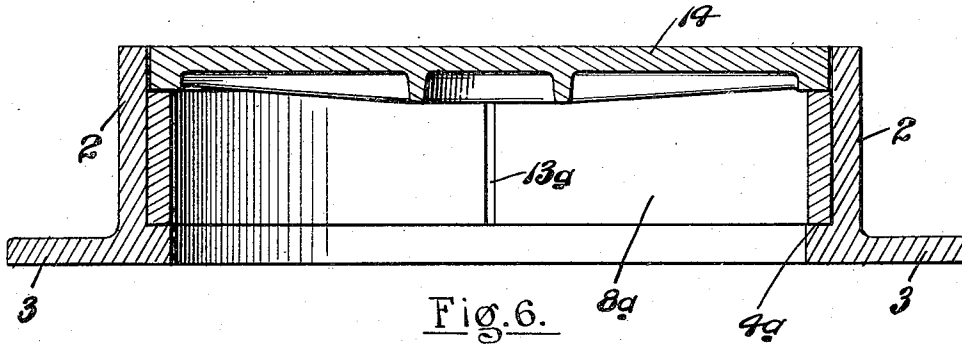


Fig. 6.

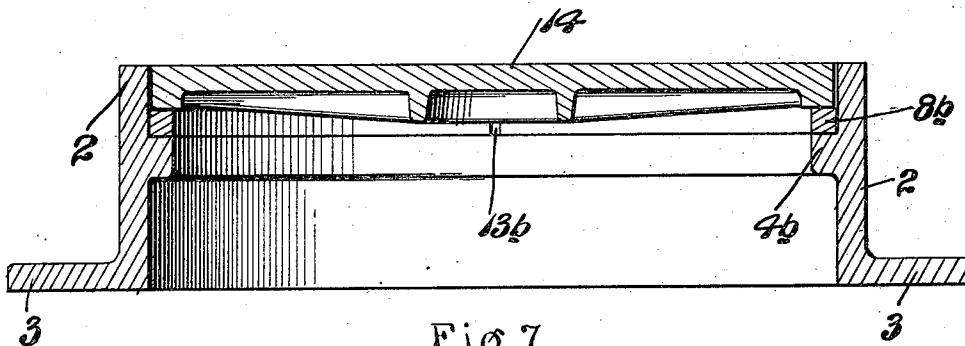


Fig. 7.

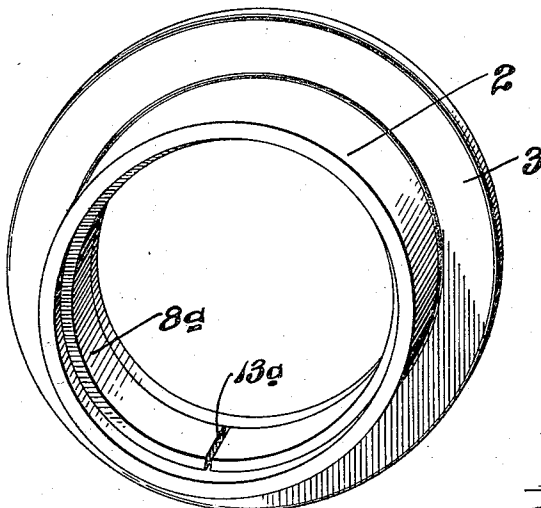


Fig. 8.

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UNITED STATES PATENT OFFICE.

ALEXANDER M. THOMPSON, OF MUSKEGON, MICHIGAN.

MANHOLE CONSTRUCTION.

Application filed October 13, 1921. Serial No. 507,532.

To all whom it may concern:

Be it known that I, ALEXANDER M. THOMPSON, a citizen of the United States of America, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Manhole Constructions; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a manhole construction. Manholes are made at intervals in the lengths of drains, sewers, tunnels and the like in cities and are covered ordinarily with a cast metal cover which rests on a curb member set in the pavement. Traffic passing over the cover, under modern conditions of traffic with heavy trucks and other motor vehicles travelling at high speed, causes the cover to be slightly lifted and more or less turned so that a wearing and grinding action takes place between the cover and curb which, in a relatively short time, wears the metal of the curb and cover away so that both have to be replaced as the cover drops below the level of the pavement making the same rough and uneven. The replacement necessitates the removal of the curb and a considerable breaking and tearing up of the pavement, and is a source of expense while the pavement is not readily repaired so as to be as good as before.

With my invention, I provide a construction for manholes in which not only may the curb fixed in the pavement never be disturbed after once in place, as none of the wear comes thereon, but I also provide in one form of my invention a means for carrying the cover which may be adjusted readily to a higher position when the wear thereon and the cover makes such adjustment desirable. In all cases, the worn part may be very easily and readily removed and replaced by another when necessary without touching the pavement encasing the curb, and such replacement is effected in a very short time. It is a primary object and purpose of my invention to construct a manhole construction having the above described qualities and effecting the ends stated, and this at a relatively low cost of manufacture. Many other objects and purposes than those stated will appear as understanding of the invention is had from the following descrip-

tion, taken in connection with the accompanying drawings, in which,

Fig. 1 is a central vertical section taken through the manhole construction, showing the same worn to a position which would ordinarily require replacement.

Fig. 2 is a fragmentary interior side elevation development of the curb and cover supporting ring of the construction shown in Fig. 1.

Fig. 3 is a view similar to that shown in Fig. 1, but with the supporting ring adjusted to the next higher position to thereby elevate the cover.

Fig. 4 is a fragmentary plan view of the curb and supporting ring, a part being shown in section to disclose the means for fixing the ring in place.

Fig. 5 is a fragmentary inner elevation of the construction shown in Fig. 4.

Fig. 6 is a central vertical section through a modified form of manhole construction.

Fig. 7 is a like view of a still further modification, and

Fig. 8 is a perspective view of the construction shown in Fig. 6.

Like reference characters refer to like parts in the different figures of the drawings.

The curb is set in the pavement 1, said curb comprising a vertical cylindrical wall 2 from the lower end of which an annular outwardly extending flange 3 over which the pavement passes. On the inner side of the wall 2 and near its lower end, an inwardly projecting integral continuous rib 4 is formed in which, at its upper edge a series of relatively wide recesses are formed, being of different depths, as indicated at 5, 6 and 7. The recesses 5 are of the greatest depth, recesses 7 of the least depth and recesses 6 are of a depth less than recesses 5 and greater than recesses 7, as shown. The recesses are of equal widths and are in consecutive series of three around the rib 4, a recess 7, then a recess 6 and then a recess 5 being in succession, the next series of three being in the same order and beginning with the shallow recess 7 next after the recess 5.

A ring 8 is located within the walls 2 of the curb from which at equally spaced intervals feet 9 project downwardly. These feet 9 are of a width to freely enter any of the recesses 5, 6 and 7, and are spaced apart a distance equal to that between any recess 5 or 6 or 7 and the next succeeding

recess of the same kind. The upper edge of the ring comes below the upper edge of the wall 2 and is widened to make an annular ledge 10 at the inner under corner of which is a downwardly projecting annular lip 11. The ring is of a size to freely enter within the wall 2 of the curb and the feet, in the first instance are placed in the deepest recesses at 5, as shown in Fig. 1.

The ring is split vertically at one side, as indicated at 13 and on the outer side of the ring each side of the split, recesses are formed for the reception of a wedge 12 which may be driven in place to partly spread the ring and securely bind the same against movement in the curb. This wedge is to be placed within the recess and driven so that its upper end at least is flush with the upper side of the ledge 10, or below the same so that the cover 14 placed on the ledge shall have a smooth upper surface on which to lie.

The wear of the cover against the ledge 10 in time grinds the same off, and this also occurs on the under side of the cover, thereby causing the upper side of the cover to come below the upper side of the pavement and upper edge of the wall 2 of the curb. This is shown in Fig. 1. When this takes place, the cover is removed, wedge 12 also removed and the ring 8 lifted and turned so that its feet 9 come to and enter the recesses 6, as shown in Fig. 3, this elevating the ring and cover a short distance equal to the difference in depth of the recesses 5 and 6. The upper side of the cover 14 is thereby raised to again come substantially flush with the upper surface of the pavement. When the wear again has become sufficient to lower the cover, the ring is again turned so that its feet come to and enter the shallow recesses 7. When this elevation of the cover has been again reduced, it will be necessary to replace the ring 8 with a new unworn ring and the feet 9 thereof may be placed in the deepest recesses 5. In all probability, the cover will have to be replaced also. In any case, it is evident that the replacement is very easily effected, the curb not being disturbed at all but being left for as many new succeeding rings 8 as may be needed. It is to be understood that the life of a ring 8 will be many years in any event and that the replacement does not have to take place frequently, particularly with the three stage adjustment which may be made during its useful life.

The ring is easily handled and removed or changed in position, the lip 11 being easily engaged with proper implements for lifting the ring. The wedge 12 may be as easily removed by engaging under it through the cut or split in the ring at 13.

A modified form of the construction is

shown in Figs. 6 and 8, the rib 4^a having a smooth and unbroken upper surface against which the supporting ring 8^a bears, the feet 9 being eliminated therefrom, as shown. This ring is split at 13^a for the same reason that the ring 8 is split at 13. This ring has to be replaced at the end of the first wearing as it cannot be adjusted to a higher position. The same is true of the construction shown in Fig. 7, wherein the rib 4^b is placed at a considerable higher elevation on the inner sides of the wall 2 and the ring 8^b is of considerably less height. Ring 8^b is likewise split at one side, at 13^b, for the same reason. But with all of the forms, the supporting rings are very quickly and easily replaced when worn to the point necessary for replacement, this without in any way requiring a disturbance of the curb or pavement in which the curb is set.

The advantages of the invention are obvious. The curb when once set is set for all time, or at least until the curb rusts out which will be at an indefinite time in the future. The cover can be held at the proper level, and at any time it comes below the right level through wear, can be almost immediately placed again at its right level. The construction shown in Figs. 1 to 5, inclusive, has a longer life of usefulness though somewhat harder to construct, but in all the essential advantage of ready replacement of the supporting ring when needed without disturbing the curb or tearing up the pavement is present. This makes the invention one of great value.

The material used, preferably is cast iron, which may be chilled at wearing surfaces, if desired for longer life thereof. Of course, any other suitable material may be used without departing from or changing the invention. The appended claims define the invention and I consider myself entitled to all forms of structure coming within their scope.

I claim:

1. A manhole construction, comprising a curb member having a vertical wall and a rib projecting inwardly from the wall, an open split supporting ring carried on the rib at the upper side thereof and bearing against the inner sides of the wall, and a cover bearing on the upper edge of the supporting ring, said ring being readily detachable from the curb member, substantially as described.

2. A manhole construction, comprising a curb member having a cylindrical vertical wall around a vertical opening therethrough, an open split supporting ring located within the wall and in close position thereto, detachable means associated with the ring to secure it against the wall means projecting from the wall below the ring on

which the ring rests at its lower edge, and a cover bearing on the upper edge of the ring, said ring being detachable from the curb member, substantially as described.

5 3. A manhole construction, comprising a curb member having a cylindrical vertical wall surrounding a vertical opening through the curb member, a supporting ring split vertically at one side located within the wall and in close proximity thereto, means for supporting the ring from the wall, a cover bearing at its outer edges and on its under side against the upper edge of the ring, and detachable means for spreading the ring at 15 the vertical split therein to bind it against the inner sides of the wall.

4. A manhole construction, comprising a curb member including a vertical cylindrical wall, a rib projecting from the wall inwardly into the opening surrounded by the wall, a ring split vertically at one side bearing against the upper side of the rib, a wedge detachably inserted between the ends of the ring at the split therein, and a cover bearing at its outer edges and under side against the upper edges of the ring, said ring on 25 detaching the wedge being readily removable from the curb member, substantially as described.

30 5. A manhole construction comprising a cylindrical vertical wall formed at its lower

portion with an inwardly projecting rib, said rib being provided with a consecutive series of recesses in its upper side, the recesses of each series being of different 35 depths, an open ring having downwardly projecting feet at its lower portion located within the wall, said feet being spaced apart a distance equal to the distance between like recesses in any two consecutive series of re- 40 cesses and adapted to enter the recesses, being spaced so as to enter the same recesses in each series of recesses whereby the upper side of the rib is located in a horizontal plane, and a cover carried on the upper edge 45 of the ring, substantially as described.

6. A manhole construction, comprising a curb member having a vertical wall surrounding a vertical opening through the curb member, a detachable supporting member lying against the inner sides of said wall, means for detachably clamping said member against said inner sides of the wall, means for carrying said supporting member, including means for elevating said support- 55 ing member and holding the same at different levels, and a cover carried on the upper edges of said ring within the wall of the curb member, substantially as described.

In testimony whereof I affix my signature.

ALEXANDER M. THOMPSON.