T. F. O'DAY.

MANHOLE STRUCTURE.

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1,076,386. Patented Oct. 21, 1913.

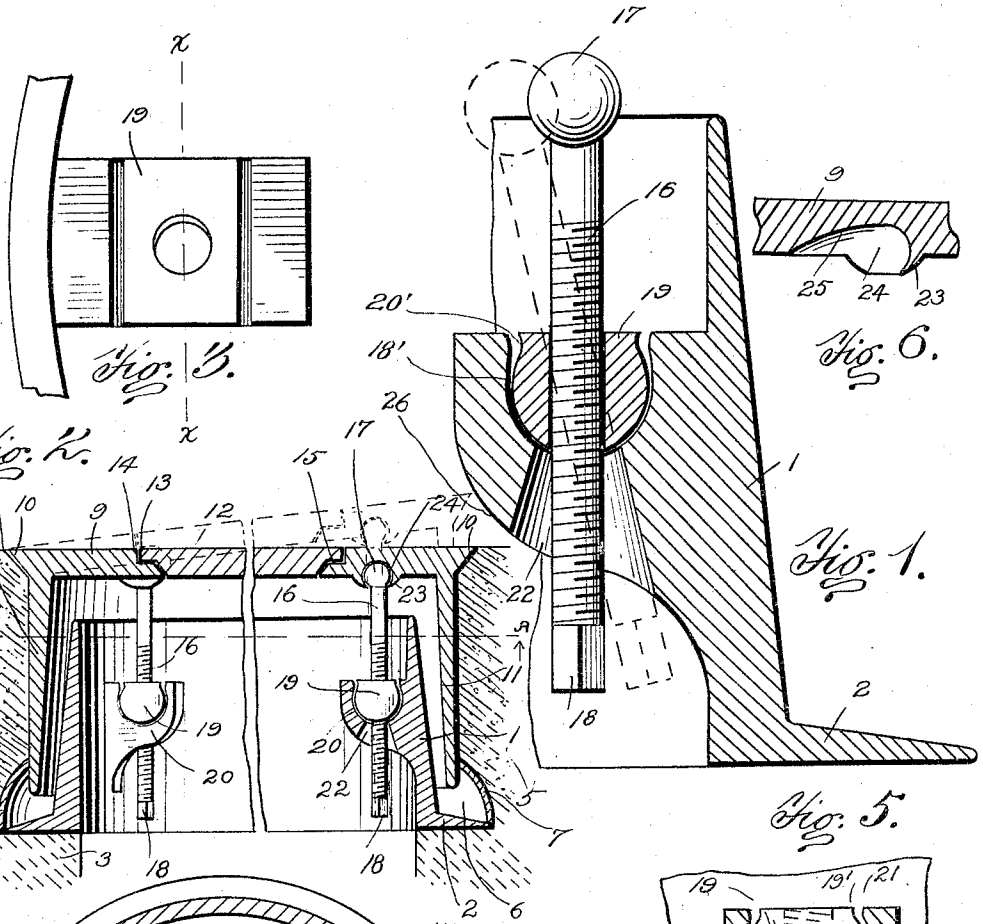


Fig. 1.

Fig. 3.

Fig. 6.

Fig. 2.

Fig. 5.

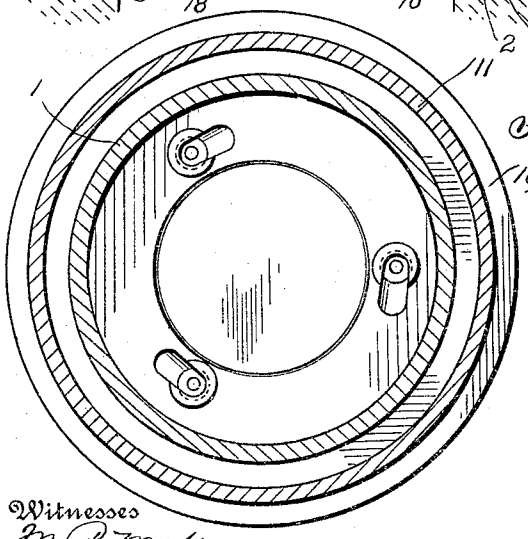
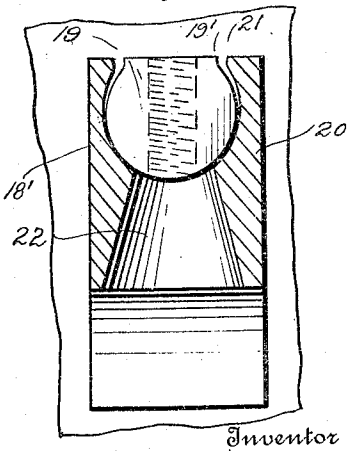


Fig. 4.



Witnesses

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MANHOLE STRUCTURE.

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To all whom it may concern:

Be it known that I, THOMAS F. O'DAY, a citizen of the United States, residing at Somerville, Boston, and State of Massachusetts, have invented certain new and useful Improvements in Manhole Structures, of which the following is a specification.

This invention relates to improvements in manhole structures and more specifically to manhole cover frames. It happens frequently that the surface of the roadway surrounding manholes is worn down, washed away or otherwise reduced in level owing to the exigencies of traffic and to the elements. As a consequence of this erosion it is necessary to render the surface of the roadway affected free from danger and inconvenience to passing vehicles as the manhole frame protrudes and constitutes an obstruction to rapid transportation. It has been difficult without great expense and inconvenience to remedy this defect by maintaining the manhole frame at a uniform level with the roadway.

The object of my invention is to provide a simple, efficient and inexpensive device possessing all the advantages of the manhole structures now in use but being in addition adjustable to various levels to conform to the surrounding surface of the roadway, and it is designed to fit flush with the roadway irrespectively of the inclination thereof and as often as the surface should succumb under heavy traffic and descend to the level below the manhole frame, the latter may readily be depressed so as not to occupy a protruding position.

With the above and other objects in view my invention consists in the arrangement, combination and details of construction clearly shown in the drawings and then more particularly pointed out in the appended claims.

Similar reference characters refer to similar parts throughout the respective views of the drawings wherein—

Figure 1 is a fragmental detail sectional view of a bracket showing the elevating means, in part of the manhole frame, Fig. 2 is a cross sectional view of the manhole cover frame constructed in accordance with my invention, Fig. 3 is a fragmental detail view in top plan of the bracket shown in Fig. 1, Fig. 4 is a detail view partly in section taken on the line A—A of Fig. 2 and showing the interior arrangement of the manhole frame, Fig. 5 is an elevation partly in section of said bracket taken on line X—X of Fig. 3, and Fig. 6 is a fragmental detail view of the manhole frame about to be described.

Referring to the drawings which are merely illustrative of my invention an annular member 1 having a bottom horizontal flange 2 resting on a concrete foundation 3 for the manhole proper is disposed in position so as to fit loosely into the opening 4 formed in the roadway 5, its upper peripheral edge being spaced below the top plane of said opening as shown clearly in Fig. 2.

Said annular member 1 is formed with a plurality of inwardly extending brackets, at least three being needed to serve as a supporting means for the manhole frame. The flange 2 will fit into the relatively larger space 6 formed in the roadbed 5 and disposed around the periphery of said flange is the convex annulus 7 having its upper end bearing against the lower end of the member 8 composed of the body portion 9 formed preferably flaring as at 10 and resting on the roadway, and the depending flange 11 engaging the surface of the roadbed 5, said flange being spaced both from the surface of said annular member 1 and the flange 2 formed thereon so that it may be lowered when vertical adjustment is necessary to cause it to fit flush with the surface of the roadway. A lid 12 formed with a shoulder flange 13 fits into an opening 14 formed upon the member 8, the flange resting upon the ledge 15 formed upon the latter, and the lid will be caused to fit flush with the body portion 9 on the lid support 8.

The lid support 8 is maintained at its proper level by means of jack screws 16 mounted in the brackets formed upon the member 8. Each of the jack screws is composed of a spherical head 17 at one end and a polysided portion 18 at the other end so that a wrench may be applied to said polysided part to turn the screw threads which extend for the greater distance of the shank of each jack screw to allow for the vertical movement of the lid support 8.

The jack-screws 16 work in nuts or sockets 19 the lower part of each of which is semi-cylindrical in contour, and said part merges with an upper part 19′ flaring at its end. The bracket in which each jack-screw is disposed is formed with an upper trans-

verse recess 21 whose bottom part is semi-cylindrical to receive loosely the semi-cylindrical part of the nut 19. The nut 19, as clearly shown in Fig. 3 is preferably of a length equal to the width of the bracket 20 and is arranged to fill the recess 21 in which it is loosely disposed; the upper part of the recess 21 is formed contiguous to the corresponding part of the nut with a surface 20′ which also flares at its end. An annular space 18′ is thus formed between the nut and adjacent surface of the bracket against the latter of which the upper part of the nut may contact when the lower part thereof is caused to swivel laterally of the bracket. The lugs 23 formed dependingly upon the body portion of the lid support are shaped to inclose the spherical heads of the jack screws and are in continuation of the dish-shaped cavities 24 formed in said body portion into which cavities the spherical heads are moved against the inclined surface 25 designed to facilitate their passage. It will be seen that each bracket is composed of the projecting surface 26 gradually narrowing toward its bottom to allow for the play of the jack screws.

In mounting the jack screws upon their supports, the spherical heads of the screws will first be moved into the seats formed by the lugs 23 and will be facilitated in their passage by the inclined surface 25, the heads being inserted laterally, the nuts 19 having been screwed upon the jack screws will be inserted laterally into their recesses or seats 21, said nuts being just enough smaller than their seats to rock slightly backward and forward. In rocking laterally the nuts 19 will have their upper parts brought into engagement with the surface 20′ throughout its full width. The nuts will also be held in contact with the surface 20′ at one side or the other, when it is desired to diagonally adjust the jack-screws for a purpose to be described. It should be noted that a substantially central flaring opening 22 is formed in each bracket 20 to enable the lower projecting end of each jack-screw to be accommodated in its diagonal position. The jack screws will be so adjusted normally as to be effective in holding the lid support 8 flush with the surrounding surface of the road bed 5, as is shown clearly in Fig. 2. The convex annulus 7 is designed to prevent the access of dust and other impediments into the space 6 for should dust accumulate it would prevent the lowering of the lid support 8.

When it is desired to adjust the device all that it will be necessary to do is to turn the jack screws in their nuts in the manner described, so as to lower the lid support 8 until the body portion 9 thereof is in the position desired. On hillsides and other inclined surfaces the manhole frame may be mounted in position by means of the jack screws by diagonally adjusting them in the brackets 20, the nuts 19 being swiveled in said brackets as the projecting shanks of said screws move out of vertical position against the walls of the opening 22; in this event the form of the lid support need not be changed and may be fitted snugly in the roadbed at the desired inclination, the jack screws being disposed at a higher level, which are to support the upraised end of said support as shown clearly in dotted lines in Fig. 2. Further adjustment of the manhole frame is possible until the flange of the support 8 shall come to rest upon the horizontal flange of the member 1.

Numerous modifications may be resorted to in practice without departing in principle from the invention disclosed.

I claim and desire to secure by Letters Patent:

1. A device of the character described comprising a tubular member countersunk in a road bed, a cap supported by said member and fitting flush with the surface of said road bed, a plurality of vertically disposed rods having their upper ends in engagement with the bottom of said member, and means mounted in said tubular member for adjustably supporting said rods.

2. In combination with a tubular member countersunk in a road bed, and having a top part flush with the latter, a lid removably supported on the upper end thereof, a plurality of dish shaped recesses formed at the inner surface of said top part, a plurality of rods having spherical portions disposed in said recesses, and means for adjustably supporting said rods in said tubular member.

3. In combination, a tubular member countersunk in a road bed and having a top part flush with the latter, a closure removably and loosely supported at the upper end thereof and disposed flush with the surface of said road bed, a plurality of dish shaped recesses formed at the inner surface of said top part, a plurality of rods having spherical portions mounted in said recesses, lugs depending from the sides of said recesses surrounding said portions, means for adjustably supporting said rods in operative position, and means for enabling said rods to swivel laterally.

4. A device of the character described comprising a tubular member countersunk in a roadbed and having a top part flush therewith, a closure loosely fitting the upper end thereof and disposed flush with the surface of said road bed, the inner surface of said top part formed with a plurality of dish shaped recesses, a plurality of rods having enlarged heads in said recesses, lugs depending from the sides of said recesses, means for vertically supporting said rods whereby they may be vertically and

diagonally adjusted, and means for holding said rods in adjusted position.

5. In combination with a tubular member countersunk in a road bed and having a top part flush therewith and formed with an exterior upper terminal flange, an inner flange surrounding an opening, a lid mounted loosely on said inner flange and adapted to fit flush with the surface of the road bed, a plurality of upright rods engaging the top of said member, means for supporting said rods mounted in said member, means for vertically adjusting said rods, and means for allowing said rods to swivel laterally.

6. In combination a tubular member countersunk in a road bed and having a top part flush therewith, a lid loosely fitting at the upper end thereof and supported thereon to fit flush with the surface of said road bed, the under surface of said top part formed with a plurality of dish shaped recesses inclosed by depending lugs, a plurality of screw bolts formed with spherical portions mounted in said recesses, an annular member disposed in said tubular member, brackets mounted on the wall of said last named member, a curvilinear socket disposed in each of said brackets, into which each bolt is mounted, means for holding each of said bolts against vertical displacement and means for supporting said annular member.

7. In combination, a tubular member countersunk in a road bed and having a top part flush therewith, a lid loosely fitting on the upper end thereof and supported thereon to fit flush with the surface of said road bed, the inner surface of the top of said member formed with a plurality of dish shaped recesses inclosed by depending lugs, a plurality of screw bolts formed with spherical portions mounted in said recesses, an annular member having a flange supported below said tubular member, brackets mounted on the wall of said last-named member, curvilinear internally screw threaded nuts engaging said screw bolts, each of said brackets formed with a corresponding transverse slot in which a socket is disposed, and poly-sided portions formed at the free end of each of said screw bolts.

8. In combination a tubular member countersunk in a road bed and having a top part flush therewith, a lid loosely fitting at the upper end thereof and supported thereon to fit flush with the surface of said road bed, the inner surface of the top of said member formed with a plurality of dish-shaped recesses inclosed by depending lugs, a plurality of screw bolts formed with portions mounted in said recesses, an annular member projecting into said member and having a flange disposed below the bottom of the latter, a convex annulus bearing against the bottom of said first and free end of said latter member, brackets mounted on the wall of said last named member, a curvilinear nut disposed in each of said brackets, into which each bolt is screw-threaded, means for holding each of said nuts against vertical displacement, spherical nuts in which said screw bolts are secured, said nuts being removably mounted in said brackets to adjustably support said screw bolts, and poly-sided portions formed at the free ends of said screw bolts.

9. In combination a tubular member countersunk in a road bed, and having a top flush therewith, a lid loosely fitting at the upper end thereof and supported thereon to fit flush with the surface of said road bed, the inner surface of the top of said member formed with a plurality of dish shaped recesses having inclined surfaces inclosed by depending lugs, a plurality of screw bolts formed with spherical portions mounted in said recesses, an annular member fitting into and spaced below said first named member, brackets mounted on the wall of said last named member, a curvilinear socket disposed in each of said brackets, each of said brackets formed with a transverse corresponding recess in which the lower portion of each socket is removably supported, a flaring vertical opening formed upon each bracket communicating with its curvilinear recess, through which opening the screw bolt projects, the top and bottom planes of each of said recesses being of lesser width than the diameter of the socket, and poly-sided portions formed at the free end of each of said screw bolts.

10. A device as described consisting of a manhole, a top supporting member thereover, adjustable supports carried thereby, and balls screwed to said supports and brackets having sockets for said balls forming said carrying means.

11. In a manhole closure a frame, a lid, and means whereof said frame may be angularly, vertically, and horizontally adjusted.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS F. O'DAY.

Witnesses:
WILLIAM H. STEVENS,
FRANK J. DILLON.

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