

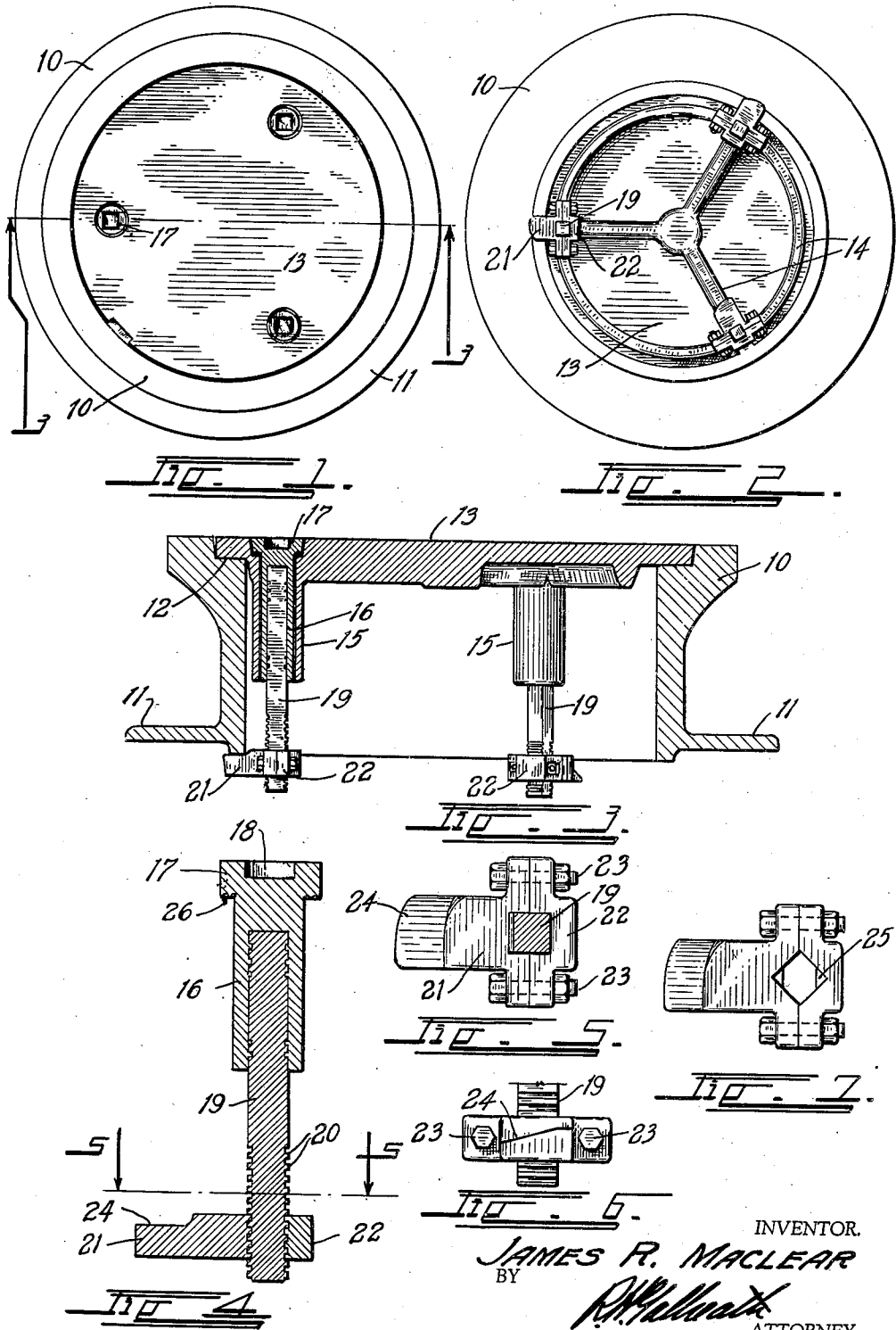
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MANHOLE COVER

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MANHOLE COVER

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2 Claims. (Cl. 94—35)

This invention relates to the type of manhole cover usually employed in streets and alleyways for allowing access to sewers, telephone lines, and other underground equipment.

5 The principal object of the invention is to provide a simple and efficient mechanism for locking the manhole cover against its supporting ring, so that it will not rattle under the passage of vehicles; so that it can not be accidentally displaced; and so that it will not be blown from place by explosions, internal pressures, etc.

10 Another object of the invention is to so construct the locking mechanism that it will not be affected by the rust and corrosion to which all underground equipment is subjected.

15 A further object is to provide a locking mechanism on a manhole cover which will require no change in the usual manhole ring and which will accommodate manhole rings of various depths or thicknesses so that it can be installed in place of the present covers, without change in the supporting rings.

20 Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

25 In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

30 Fig. 1 is a plan view of a manhole ring with the improved cover in place therein.

Fig. 2 is a bottom view thereof looking upwardly.

Fig. 3 is an enlarged cross section taken on the line 3—3, Fig. 1.

40 Fig. 4 is an enlarged vertical section through the locking member.

Fig. 5 is a cross section through the locking member, taken on the line 5—5, Fig. 4.

Fig. 6 is a detail face view of the locking cam.

45 Fig. 7 illustrates an alternate arrangement of the locking cam.

50 A typical manhole ring of a variety most commonly used is indicated at 10. Such rings have a depth or thickness equal to the pavement in which they are set. The ring is provided at its bottom with a retaining flange 11 and at its top with a lid groove 12.

The improved manhole cover is designed to set in any of the usual manhole rings 10. The cover comprises a circular cast lid 13 provided

on its bottom with suitable strengthening ribs 14. In applying the new invention to the cover, a series of bearing bosses 15 are extended downwardly from the bottom thereof adjacent the periphery. Each of these bosses is drilled to receive a rotatable plug member 16 having an enlarged head 17 which rests in a counterbore in the top of the plate 13. A suitable wrench socket 18 is formed in the head 17. The tops of the heads 17 are flush with the top of the cover 13.

5 A shaft 19 projects from the plug 16. The shaft 19 is preferably cast into the plug 16 at the time of casting the latter. It is preferred to form the shaft 19 of square cross section, whereas the plug 16 has a cylindrical cross section. A series of clamping notches 20 are formed in the opposite faces of the shaft 19 throughout its length. These notches are for holding a cam arm 21 in any desired vertical position along the shaft 19.

20 The cam arm 21 is clamped to the shaft 19 by means of a suitable clamping cap 22 and clamping bolts 23. The cam arm terminates in an inclined cam surface 24.

25 In fitting the improved cover to the ring 10, the lid is placed in the ring groove 12 and the cam arms 24 are brought to a position slightly higher than the bottom edge of the ring. They are then permanently clamped in this position by means of the clamp bolts 23. Both the cam arm and the clamping cap are notched to fit the notches 20 in the shaft 19 so that after they are drawn into position, they cannot move along the shaft.

30 To clamp the cover in place it is only necessary to rotate the heads 17 so as to bring the inclined cam surfaces 24 against the bottom of the ring 10. The wedging action of these surfaces draws downwardly on the shafts 19 firmly clamping the lid 13 in place. The angle of the inclined surface 24 is such that the cam arms will not back out or rotate from the usual vibration to which the lid is subjected. They must be manually rotated by a suitable wrench to disengage them from the ring 10.

35 In Figs. 4 and 6, the notches 20 are formed in opposite faces of the shaft 19. They could however be formed in opposite corners of this shaft in which case a clamping arm and cap such as shown in Fig. 7 would be employed with lugs 25 in the corners of their sockets to enter the corner notches.

40 While a wrench socket has been illustrated on the drawing in the head 17, this head could be

formed so as to have external nut faces for reception of a socket wrench if desired.

It has been found that if a series of concentric labyrinth grooves 26 are cut beneath the head 17, they will prevent dust, dirt, and moisture from reaching the plugs 16. They also act to hold a lubricant in place therein to maintain the bearing surfaces lubricated and prevent corrosion thereof. The notches 20 also serve to lock the shafts into the metal of the cast plugs 16.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A manhole cover plate for attachment to a supporting ring, said plate having a tubular bearing boss projecting downwardly from its under surface, the upper surface having a depressed

area in its upper surface, surrounding the opening in the boss; a shaft journaled in the bearing, the upper end of the shaft having a head, positioned in the depressed area, and accessible for rotating the shaft, the outer surface of the shaft, below the bearing, having spaced notches, a two part cam arm for attachment to the shaft; means on the cam arm for engaging the notches on the bolt; and means for effecting a clamping engagement between the cam arm and the bolt.

2. A manhole cover plate for attachment to the top of a supporting ring, said plate having a tubular bearing boss projecting downwardly from its under surface, the upper surface of the cover having a depressed area surrounding the upper end of the opening in the bearing boss; a headed cylindrical plug journaled in the bearing with its head in the depressed area; a shaft having its upper end attached to the plug; a two part cam arm; and means for clamping the cam arm to the shaft.

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