March 1, 1966 J. H. McPHEETERS ETAL 3,237,538

MANHOLE ELEVATION MEANS

Filed Oct. 7, 1963

Fig. 1

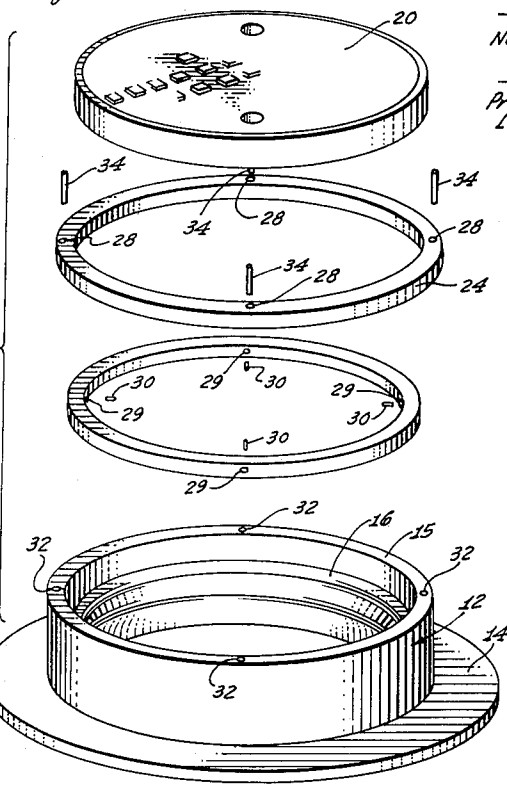


Fig. 3

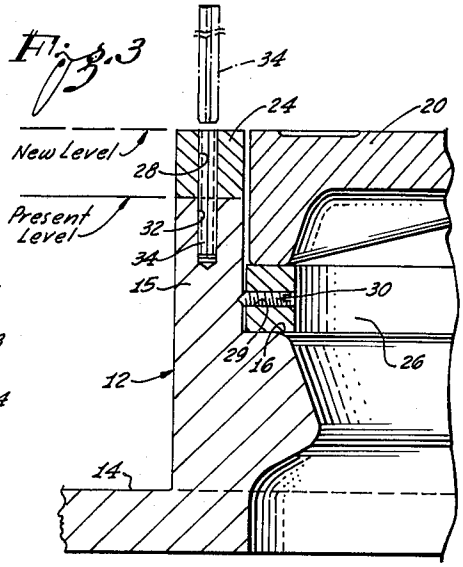


Fig. 4 (Prior Art)

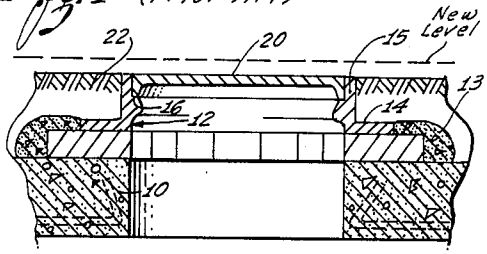


Fig. 5 (Prior Art)

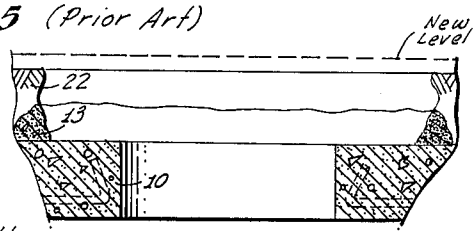


Fig. 2

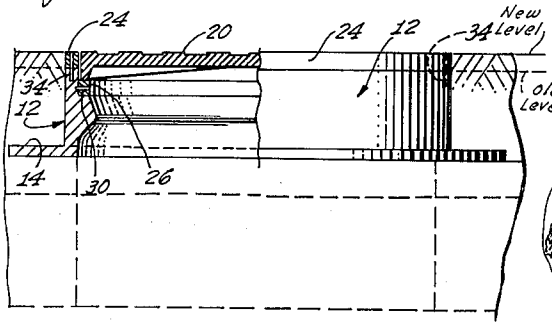
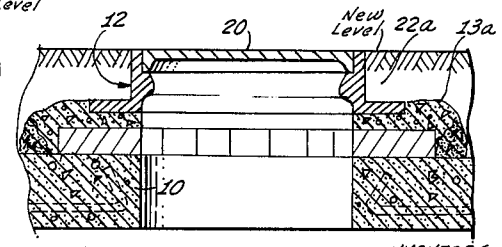


Fig. 6 (Prior Art)



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MANHOLE ELEVATION MEANS

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3 Claims. (Cl. 94—34)

This invention relates to a manhole structure in a street and is directed to the problem of raising the rim of the manhole when the street surface is raised by a recapping operation. More specifically, the invention is directed to a method of raising the level of the manhole structure and is further directed to a kit to be sold to municipalities for carrying out the method.

A typical manhole structure includes a generally cylindrical wall constructed largely of concrete. At the upper end of the wall, a manhole rim member is set in concrete to support a manhole cover substantially flush with the street surface. The annular rim member has a bottom radial flange, by means of which it is mounted in concrete, and has a cylindrical upwardly extending rim flange with an upwardly facing inner circumferential shoulder below the top level of the rim flange. The manhole cover is dimensioned to rest on the inner circumferential shoulder of the manhole rim member with the upper surface of the cover flush with the upper edge of the rim flange.

It is a widespread practice to resurface city streets that have become worn and rough from many years of service. The procedure of recapping the street surface includes firing to soften the original asphalt layer, scarifying to remove the asphalt, and the final recapping step which consists in adding a new layer of surface material. A difficulty arises in that the operation raises the street level, the distance of the new level from the older level being usually on the order of 1 inch. It would be intolerable to leave the manhole cover approximately 1 inch below the street level, and therefore it becomes mandatory to bring the manhole cover up to the new level.

For a number of years, the prevailing practice in municipalities all over the United States has been to remove the old manhole rim member from the concrete in which it is imbedded and then to add concrete to the old manhole wall structure to permit the manhole rim member to be installed and supported at the new level. This procedure is costly and time consuming, since it requires two days' work by at least two men to use air-driven jackhammers to dislodge the old manhole rim member and to replace the manhole member in new concrete at the new level.

The present invention meets this problem by a new fabrication procedure which eliminates the necessity for altering the old manhole structure. The new method consists essentially of two steps. The first step is to extend the circular rim flange of the rim member upward by permanently mounting an auxiliary ring on the rim flange. The second step is to place a spacer ring on the inner circumferential shoulder of the rim member to support the manhole cover at the new level that is established by the auxiliary ring.

In the presently preferred practice of the invention, the auxiliary ring, which may have the same inside and outside diameters as the rim flange, is provided with circumferentially spaced bores that are parallel with its axis. The anchoring of the auxiliary ring to the existing rim flange is carried out by first drilling vertical bores in the existing rim flange at locations to register with the bores in the auxiliary ring and then simply to drive metal

dowels through the bores of the auxiliary ring into the bores of the existing rim flange.

The presently preferred practice of the invention is further characterized by the concept of employing set screws to anchor the inner spacer ring to the surrounding rim flange. For this purpose, the spacer ring may be provided with tapped radial bores with radial set screws in the bores. The anchoring of the spacer ring is accomplished simply by tightening the set screws radially outward against the inner circumferential surface of the existing rim flange.

Instead of requiring two days' labor on the part of at least two men, the new procedure may be carried out in twenty minutes and may be carried out by a single worker. The auxiliary ring and the spacer ring are installed before the final step of recapping the street surface, and the manhole cover is seated at its higher level with the upper surface of the manhole cover coated with a parting agent. The final recapping step which consists of adding the final layer of surfacing material results in some of the surfacing material adhering to the upper surface of the manhole cover. The pretreatment of the manhole cover by the parting agent, however, makes it a simple matter to remove the surfacing material from the manhole cover.

The new procedure not only saves money and time, but also minimizes inconvenience to the public. No barricades or warning lights are required for the usual two-day period. No disturbance to the street whatsoever is required after the final recapping step.

The features and advantages of the invention may be understood from the following detailed description and the accompanying drawing.

In the drawing, which is to be regarded as merely illustrative:

FIG. 1 is an exploded perspective view showing the relationship of the auxiliary ring and the spacer ring to the manhole cover and to the annular rim member of the manhole structure;

FIGURE 2 is a view partly in section and partly in side elevation of the annular rim member of the manhole structure equipped with the auxiliary ring and the spacer ring, the view showing the manhole cover resting on the spacer ring inside the auxiliary ring;

FIG. 3 is a greatly enlarged portion of the section shown in FIG. 2;

FIG. 4 is a sectional view showing how the annular rim member of a typical manhole structure is surrounded with concrete;

FIG. 5 is a similar view showing the extent to which the concrete must be broken away for removal of the manhole rim member in the prior art procedure; and

FIG. 6 illustrates the final step of replacing the manhole rim member in concrete at the new level in the prior art procedure.

The prior art procedure may be understood by referring to FIGS. 4 to 6. As shown in FIG. 4, a typical manhole has a concrete wall **10**, and at the upper end of the concrete wall an annular rim member **12** is set in a mass of concrete **13**. The annular rim member is formed with a radial base flange **14**, an upwardly extending cylindrical rim flange **15**, and an upwardly facing inner circumferential shoulder **16** that is spaced below the level of the upper edge of the rim flange. The usual manhole cover **20** rests on the inner circumferential shoulder **16**. As may be seen in FIG. 4, the surfacing material **22** of the street is substantially flush with the upper edge of the rim flange **15**, and the upper surface of the manhole cover **20** is also substantially flush with the rim flange.

FIG. 5 indicates the extent to which the concrete **13** as well as the street surfacing material **22** must be removed

for the purpose of dislodging the annular rim member **12**.

FIG. 6 shows how new concrete **13***a* is employed to raise the rim member **12** to the new level and further shows how new street surfacing material **22***a* must be added to replace the removed street surfacing material.

As best shown in FIG. 3, a kit for carrying out the presently preferred practice of the invention consists simply of an auxiliary ring **24** and an inner spacer ring **26**. The auxiliary ring **24** may be of substantially the same inside diameter and outside diameter as the rim flange **15**. The auxiliary ring **24** is provided with a series of circumferentially spaced bores **28** therethrough, the bores being parallel with the axis of the ring. As shown in FIG. 1, there may be four such bores **28**. The spacer ring **26** may be provided with a series of circumferentially spaced radial bores **29** which are tapped to receive corresponding set screws **30** (FIG. 3). As shown in FIG. 1, there may be four such bores and set screws.

The first step in carrying out the method is simply to drill blind bores **32** in the rim flange **15** of the rim member **12** to register with the bores **28** in the auxiliary ring **24**. The auxiliary ring itself may be employed as a templet for locating the blind bores **32**. The next step is to place the auxiliary ring **24** in position and then to drive suitable metal dowels **34** into the bores **28** of the auxiliary ring and the blind bores **32** of the rim flange **15**, thereby securely anchoring the auxiliary ring to the rim flange to serve, in effect, as an upward extension of the rim flange.

The next step is to drop the spacer ring **26** onto the inner circumferential shoulder **16** with the set screws **30** suitably retracted to avoid interference. The set screws **30** are then tightened radially outward against the inner circumferential surface of the rim flange **15**.

Our description in specific detail of the selected embodiment of the invention will suggest various changes, substitutions, and other departures from our disclosure within the spirit and scope of the appended claims.

We claim:

1. A kit for raising the level of a manhole structure a given distance as required by the raising of a street level by a given distance by recapping of the street surface, wherein the manhole structure includes an annular rim member with an upright circular rim flange presenting a substantially flat annular surface and with an inner circumferential upwardly facing shoulder spaced below the flat annular surface of the rim flange, and further includes a manhole cover which rests on the inner circumferential shoulder inside the rim flange substantially flush with the substantially flat annular surface of the rim flange, the thickness of the manhole cover around its periphery being substantially greater than the given distance, the kit comprising:

an auxiliary ring of substantially the same inside diameter as the rim flange for positioning on the substantially flat annular surface of the rim flange to serve as an upward extension thereof,

said auxiliary ring being of uniform substantially rectangular configuration in radial cross section and of a width substantially equal to the width of said rim flange and having a plurality of circumferentially spaced bores extending substantially parallel to the axis thereof;

a corresponding plurality of fastening elements dimensioned to extend through said bores and adapted to engage the rim flange to anchor the auxiliary ring to the manhole structure; and

a spacer ring having an outside diameter substantially equal to the inside diameter of the rim flange to rest on the circumferential shoulder of the annular rim member.

2. A kit as set forth in claim **1** in which the fastening elements of said plurality of fastening elements are dowels.

3. A kit as set forth in claim **1** in which said spacer ring has a series of circumferentially spaced bores therethrough; and

which includes a corresponding series of fastening elements dimensioned to extend through the bores of the spacer ring to anchor the spacer ring to the manhole structure.

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