July 6, 1926. 1,591,759

L. G. HAASE

MOLD FOR CONCRETE MANHOLE SEATS

Filed July 25, 1924

Fig. 1.

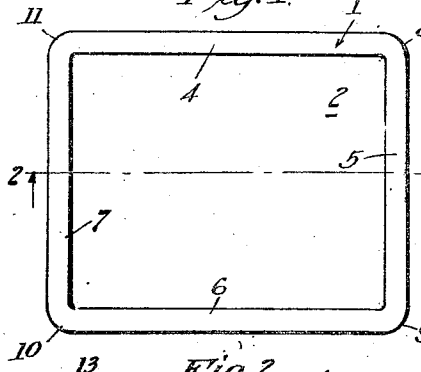


Fig. 3.

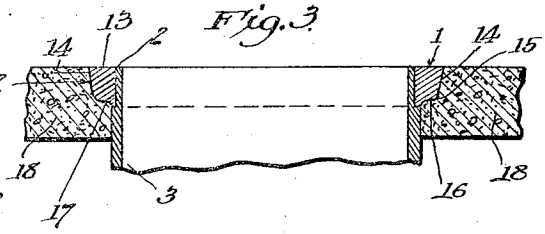


Fig. 4.

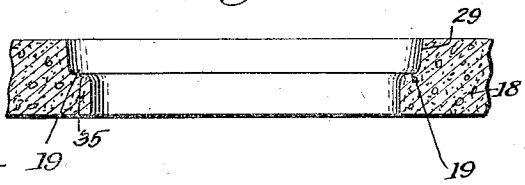


Fig. 2.

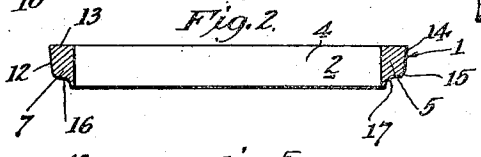


Fig. 5.

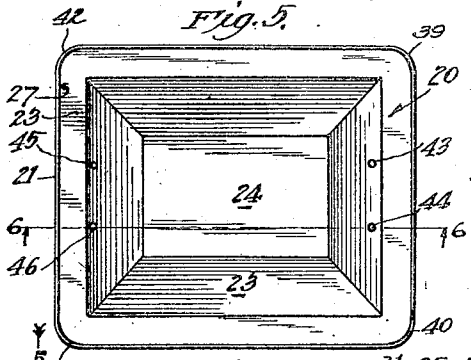


Fig. 11.

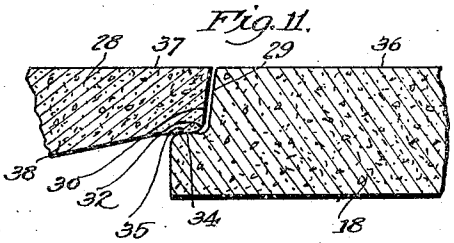


Fig. 6.

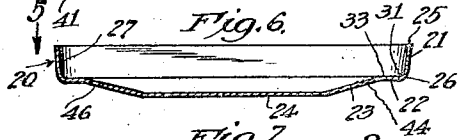


Fig. 10.

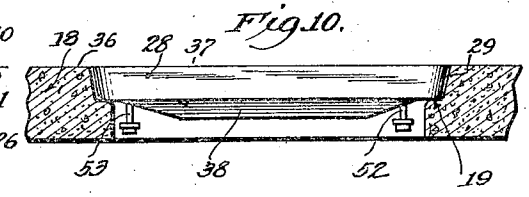


Fig. 7.

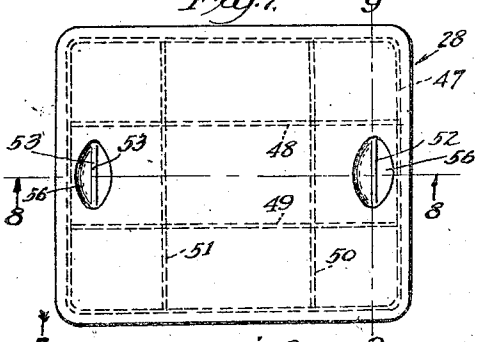


Fig. 9.

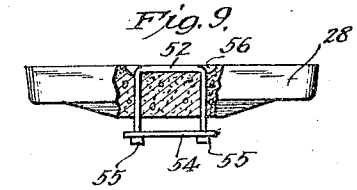
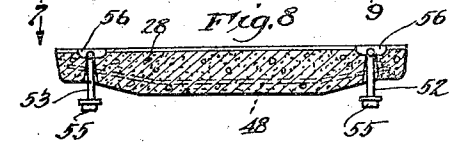


Fig. 8



Inventor:
Leo G. Haase,
by Hazard and Miller
Attorneys.

Patented July 6, 1926. 1,591,759

UNITED STATES PATENT OFFICE.

LEO G. HAASE, OF PASADENA, CALIFORNIA.

MOLD FOR CONCRETE MANHOLE SEATS.

Application filed July 25, 1924. Serial No. 728,136.

This invention is a mold for forming manhole constructions in concrete sidewalks so that the manhole covers will fit and not wobble, and the invention consists of the novel features herein shown, described and claimed.

An object is to produce true manhole cover seats and to produce manhole covers which will accurately fit the seats and fill the seat space so that the upper face of a cover will be level with the upper face of the surrounding sidewalk.

This apparatus is especially adapted to sections of the United States where the storm water is kept separate from the sewerage carrying water, as practised in California.

It may be stated where a sewer system carries also the storm water the principal manhole covers are located in center of street subject to vehicular traffic, and must necessarily be of cast iron. However, in California the storm water is not allowed to mix with the sewerage, because they must be kept separate on account of sewerage disposal.

Here the storm water conduits often are under the sidewalk altogether, or at least they, the storm drains, run under the sidewalks at street corners or a special branch runs from main storm drain line to a boxlike affair under the side at one or more corners, sometimes all four corners.

Previously these manhole covers had been made of cast iron and provided with a cast iron rim, and were quite heavy and expensive, and the only weight they would ever be called upon to carry was one person or at most two persons, so they were really much too strong for their work. During the war where every pound of cast iron was to be saved in California, I conceived the idea of making both cover and rim of concrete, but found there was not much of a saving in so doing. Later, I then conceived that by using a correctly designed forming ring in the sidewalk directly over the opening intended for a man to enter a great saving would result. A very special cover was designed, rounded edges at all angles and a drop or trussed construction for strength, all very neatly molded in accurate cast iron molds.

However, it was found that no matter how good a foundry made the former rings and the pan like shaped molds, the plates cast in same (manhole covers) would generally wobble.

I then conceived that instead of fitting each manhole cover to its seat, to use a milling machine or planer on both the former rings and on each mold, thus getting accurately lined up seats all around and then have a cover that was both cheap, attractive in appearance, and that would not wobble but seat correctly at all times.

Other objects and advantages will appear from the drawings and specification.

The drawings illustrate the method and a manhole construction embodying the principles of my invention.

Figure 1 is a plan of a manhole seat mold or former as seen looking in the direction indicated by the arrow 1 in Fig. 2.

Fig. 2 is a vertical cross section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary vertical cross section showing the manhole seat mold in use in forming a concrete sidewalk and making a manhole and manhole seat.

Fig. 4 is a view analogous to Fig. 3 and showing the completed manhole and manhole seat with the mold removed.

Fig. 5 is a top plan view of a manhole cover mold, the view being taken looking in the direction indicated by the arrow 5 in Fig. 6.

Fig. 6 is a vertical cross section on the line 6—6 of Fig. 5.

Fig. 7 is a top plan view of a manhole cover formed in the mold shown in Figs. 5 and 6, the view being taken looking in the direction indicated by the arrow 7 in Fig. 8.

Fig. 8 is a vertical cross section on the line 8—8 of Fig. 7.

Fig. 9 is a fragmentary sectional detail on the line 9—9 of Fig. 7.

Fig. 10 is a view analogous to Fig. 4 and showing the manhole cover in position as when the work is finished.

Fig. 11 is an enlarged fragmentary sectional detail showing how the manhole cover fits the seat in the sidewalk and how the upper face of the manhole cover is on a level with the upper face of the sidewalk.

The method and details of construction shown in the drawings are as follows:

The manhole seat mold 1 is preferably formed of cast iron and has a central opening 2 to receive the upper end of the manhole core 3. The mold has side bars 4, 5, 6 and 7, preferably formed integral with

rounded outer corners 8, 9, 10 and 11. In cross section the mold 1 has a uniform outer face 12 all the way around and a uniform upper face 13 all the way around, said faces 12 and 13 being accurately machined. The outer face 12 consists of the inclined portion 14 extending downwardly and slightly inwardly from the face 13, the rounded portion 15 at the bottom of the portion 14, the portion 16 extending from the rounded portion 15 inwardly and slightly downwardly, and the reversely rounded portion 17 extending inwardly and downwardly from the portion 16. It is important that the distance between the portion 16 and the face 13 shall be the same all the way around. The opening 2 need not be machined, it only being necessary that the opening shall approximately fit the manhole core 3.

In preparing to make the sidewalk, the manhole core 3 may be set with its upper face level with the proposed upper face of the sidewalk and the mold 1 placed around the manhole core and located at the proper level. The opening 2 in the mold 1 may be slightly smaller than a proposed manhole opening and the core 3 may be made the size of the proposed manhole with the upper end of the core reduced to form a shoulder for supporting the mold 1 so that when the core 3 has been set the mold 1 may be inserted and the sidewalk constructed to the level of the face 13. Then the concrete 18 may be poured and tamped against the core 3 and against the outer face 12 of the mold and leveled and finished to match the upper face 13 of the mold. After the concrete has set, the mold 1 and the core 3 may be removed and a manhole cover seat 19 is complete.

The manhole cover mold 20 is preferably formed of cast iron and consists of a rim 21 and a bottom having a portion 22 extending inwardly from the lower part of the rim 21, a portion 23 extending inwardly and downwardly from the portion 22, and a central portion 24 surrounded by the portion 23. The upper edge 25 is machined to a level all the way around. The portion 21 is connected to the portion 22 by a rounded portion 26 and the inner face 27 of the rim 21 is accurately machined. The inner face of the portion 26 and the upper face of the portion 22 are accurately machined so that the manhole cover 28 cast in the mold 20 will accurately fit the manhole seat 19 and be slightly smaller on a horizontal plane. The manhole seat 19 has a nearly vertical face 29 formed by the face 14 of the mold 1 and the manhole cover 28 has a face 30 formed by the inner face 27 of the rim, said faces 29 and 30 being parallel and a loose fit as shown in Fig. 11. The inner face 31 of the portion 26 forms the rounded corner 32 upon the manhole cover and the inner upper face 33 forms the bearing face 34 of the manhole cover, and this face 34 rests upon the face 35 of the seat 19 formed by the portion 16 of the mold 1, and in machining the mold 20 the distance from the face 33 to the finished edge 25 must be considered in connection with the distance from the face of the portion 16 to the face 13 of the mold 1, so that when the manhole cover has been placed in position upon the seat 9 the upper face 36 of the sidewalk 18 will be level with the upper face 37 of the manhole cover 28.

The depressed portions 23 and 24 of the mold 20 need not be machined as they serve to form the trust portion 38 of the manhole cover, and this trust portion does not need to fit or engage anything. The mold 20 has rounded corners 39, 40, 41 and 42 to match the rounded corners 8, 9, 10 and 11 of the mold 1 and has bolt holes 43, 44, 45 and 46 through the portions 23.

In preparing to make the manhole cover 28, a reinforcing rod 47 is formed into a rectangular frame and cross rods 48 and 49 are connected to the rod 47 in parallel positions equally spaced from corresponding sides of the rod 47, and second cross rods 50 and 51 are placed crosswise of the rods 48 and 49 and spaced from the sides and from each other, and the rods are all welded together to make a substantial reinforcing frame for the cover. Pins are inserted through the bolt holes 43, 44, 45 and 46 to form holes through the cover, and after the cover is cast U-bolts 52 and 53 are inserted downwardly through the holes and plates 54 placed upon the lower ends of the U-bolts and spaced from the lower face of the cover and held in place by nuts 55, there being slight clearance spaces 56 in the upper face of the cover around the cross bars of the U-bolts so that the U-bolts may be pulled upwardly until the bars 54 engage the bottom of the cover and the U-bolts serve as handles for manipulating the cover, and when their use is not desired the U-bolts will drop down below the level of the top of the cover.

The manhole covers may be made in quantities at a factory at a distance from the sidewalk work and the manhole seats may be made as the sidewalk work proceeds, and there will be no question about the covers fitting the manholes.

The principles of the invention may be applied not only to sidewalks, but to any work where manholes and manhole covers are required.

Various changes may be made without departing from the spirit of the invention as claimed.

I claim:

A mold for a concrete manhole seat comprising in combination a manhole core hav-

ing substantially vertical sides with an annular peripheral recess on its outer surface and having a shoulder at the base thereof, a ring mold having an inner surface to conform to the shape of the upper surface of the core, with an annular lower edge seated on the said shoulder and having the outer surface to correspond with the finished seat, the upper surface of the ring and the upper edge of the core conforming substantially to the surface of the pavement to be molded around the core and the ring.

In testimony whereof I have signed my name to this specification.

LEO G. HAASE.