No. 652,605. Patented June 26, 1900.

E. A. FALLER.

MANHOLE COVER.

(Application filed Dec. 21, 1899.)

(No Model.)

Fig. 1.

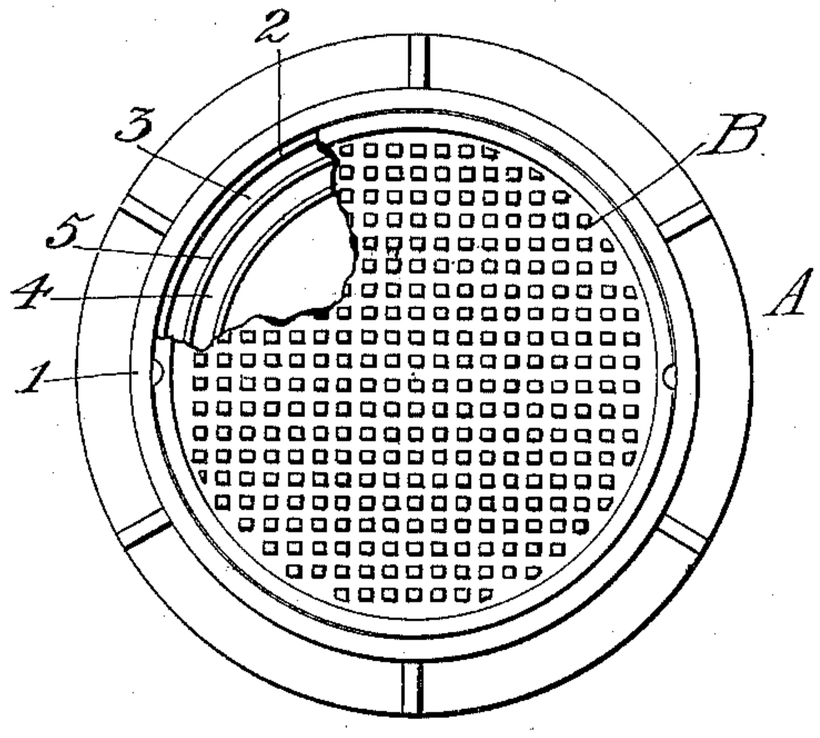


Fig. 2.

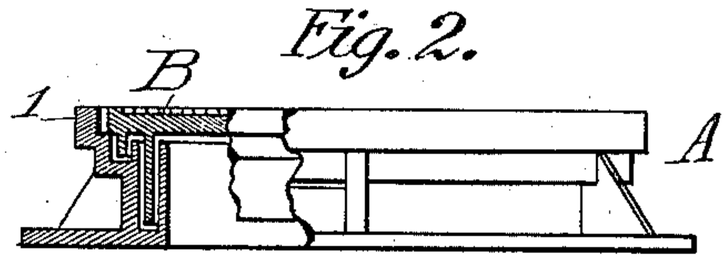
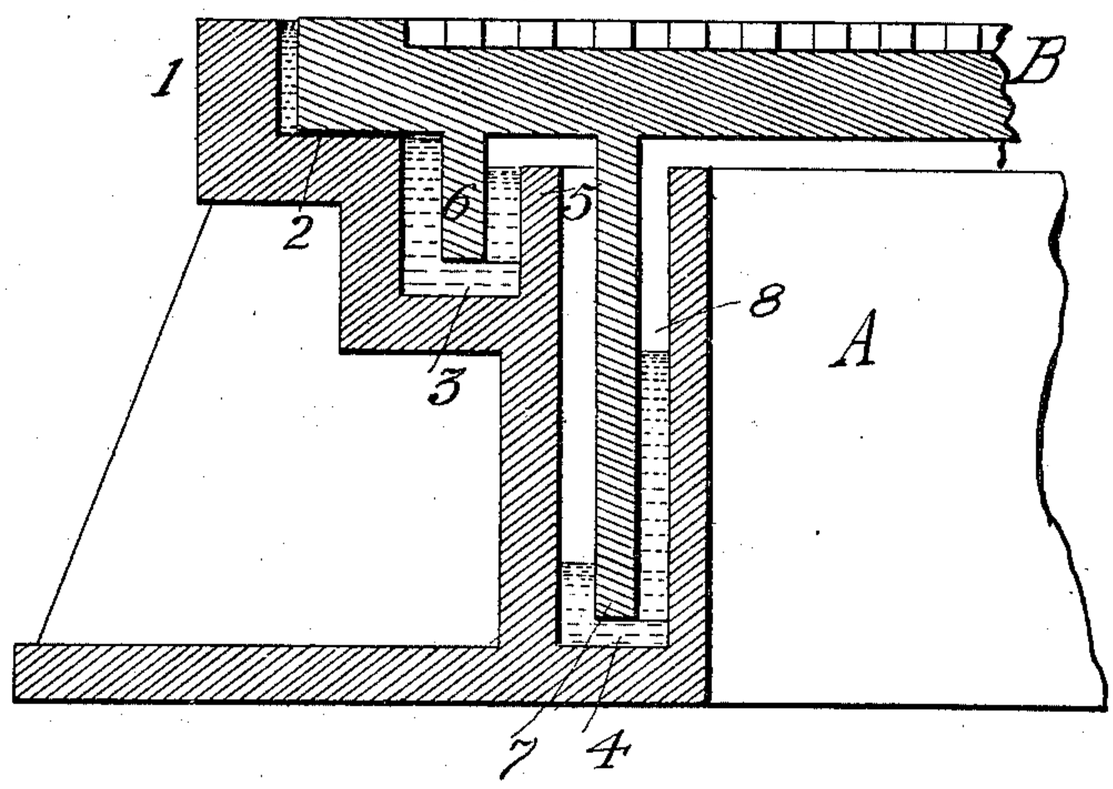


Fig. 3.



WITNESSES:
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UNITED STATES PATENT OFFICE.

ERNEST A. FALLER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF TWO-THIRDS TO OSCAR T. WEBER AND HERMANN HERBSTRITT, OF SAME PLACE.

MANHOLE-COVER.

SPECIFICATION forming part of Letters Patent No. 652,605, dated June 26, 1900.

Application filed December 21, 1899. Serial No. 741,181. (No model.)

To all whom it may concern:

Be it known that I, ERNEST A. FALLER, a citizen of Germany, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Manhole-Covers, of which the following is a specification.

My invention relates to manholes for affording access to underground receptacles, conduits, tunnels, &c., and to the covers for such manholes.

The object of my invention is to prevent water from entering the manhole from above. I accomplish this object by a construction which forms a double water seal, between which a body of air is confined.

In the accompanying drawings, Figure 1 is a plan view of the manhole casing and cover, with the latter partly broken away. Fig. 2 is an elevation of the casing, partly broken away to show the cover in position. Fig. 3 is an enlarged vertical section through the joint between casing and cover, showing the upper and lower water seals and the intermediate air-space.

A represents the manhole-casing, which is shown as circular in plan view, but which may be of any desired shape. This casing is fitted at the mouth of the manhole and there secured in place. The casing is formed with a rim or flange 1, which surrounds the seat 2, upon which the cover B rests. The top of the cover is flush with the upper edge of the rim 1, which may be assumed to be the ground or street level. The casing is further provided with two channels 3 and 4. I prefer to make the channel 3 comparatively shallow, while the channel 4 is relatively deep, as shown; but this is not essential, although desirable as simplifying the construction. These channels are separated by a wall 5, which is practically an upward continuation of the main wall of the casing. This wall rises to nearly the level of the seat 2, leaving a space below the cover, which is a communication between the channels.

The cover B is of such size and shape as to loosely fit the rim 1 and to rest upon the seat 2 and is provided on the lower face with continuous flanges 6 and 7. When the cover is in place, these flanges enter the channels 3 and 4, respectively, forming in each two spaces, as shown. The flanges are of about the same relative depths as the said channels. Each of the channels forms a receptacle for water, and the flanges dipping into such water form inner and outer air-tight seals. Necessarily the air confined in the space between the two bodies of water is compressed, raising the water in the inner space 8 of channel 4 to a certain height only, which is dependent upon the height of water in the other seal plus any water standing outside—as in the street, for instance. It will thus be readily seen that while the outer channel may be shallow the inner channel must be deep enough to give a margin of safety in case water should be standing in the street above the manhole. While there is no attempt made to produce a water-tight joint between the cover and casing and while a certain quantity of water can enter freely until the channel 3 is filled, the air compressed between the two bodies of water affords a complete resistance to the further passage of water from channel 3 to channel 4. In the operation of the device, and assuming that both channels are dry, water can enter between the cover and casing until the channel 3 is filled. The water can then flow over the top of wall 5 and into the inner channel, rising therein until the water seal has been established and the escape of air in channel 4 cut off. As more water enters the joint at the ground-level the confined air is compressed and the water in the inner seal rises in space 8 to such a height as will by its weight counterbalance the column of water in communication with the street. The equilibrium being thus established, the entrance of more water is rendered impossible.

The advantages of my device as to simplicity and efficiency are apparent and need no detailed recital. It is adapted to all situations in which unsheltered manholes are used as means of communication with lower receptacles, tunnels, conduits, &c.

Where it is desired to prevent the escape of gases from the manhole, the inner channel may be primed with water in the first instance, but in other cases this is unnecessary, as has been demonstrated in practice.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a manhole-casing having concentric channels and a cover having concentric flanges or ribs depending therefrom of less thickness than the width of the channels with water-passages between the bottoms of the flanges and channels, and between the bottoms of the cover and tops of the walls of the flanges, substantially as described.

2. In combination, a manhole-casing having concentric channels and a cover having flanges depending into said channels of less thickness than the width of the channels and means for holding said cover above the tops of the channels and with the bottoms of the flanges above the bottoms of the channels, substantially as described.

3. In combination, a manhole-casing having a platform or seat and interior concentric channels, a cover having its edge supported upon said platform, and having concentric flanges depending into said channels, said flanges being of less thickness than the width of the channels, and water-passages between the bottoms of the flanges and bottoms of the channels and also between the tops of the channels and the bottoms of the cover, substantially as described.

4. The combination with a manhole-casing having a seat or platform and a surrounding rim, and inner concentric channels of increasing depth, of a cover resting on said seat and having concentric flanges depending within said channels and of less thickness than the width of said channels, said flanges terminating above the bottoms of the channels and the tops of the channels short of the bottom of the cover, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 15th day of December, 1899.

ERNEST A. FALLER.

Witnesses:
L. W. SEELY,
OSCAR T. WEBER.