No. 770,959. PATENTED SEPT. 27, 1904.

D. L. DAVIS.

MANHOLE VENTILATOR.

APPLICATION FILED FEB. 6, 1904.

NO MODEL.

Fig. 1.

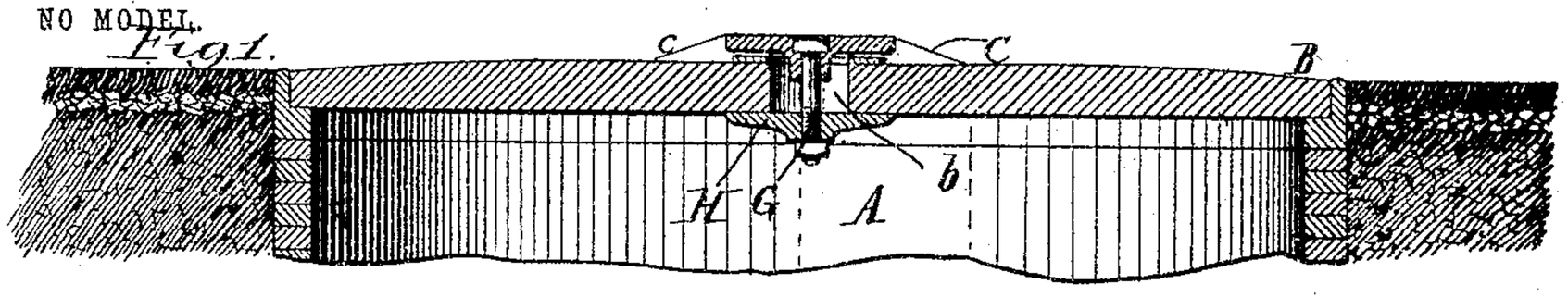


Fig. 2.

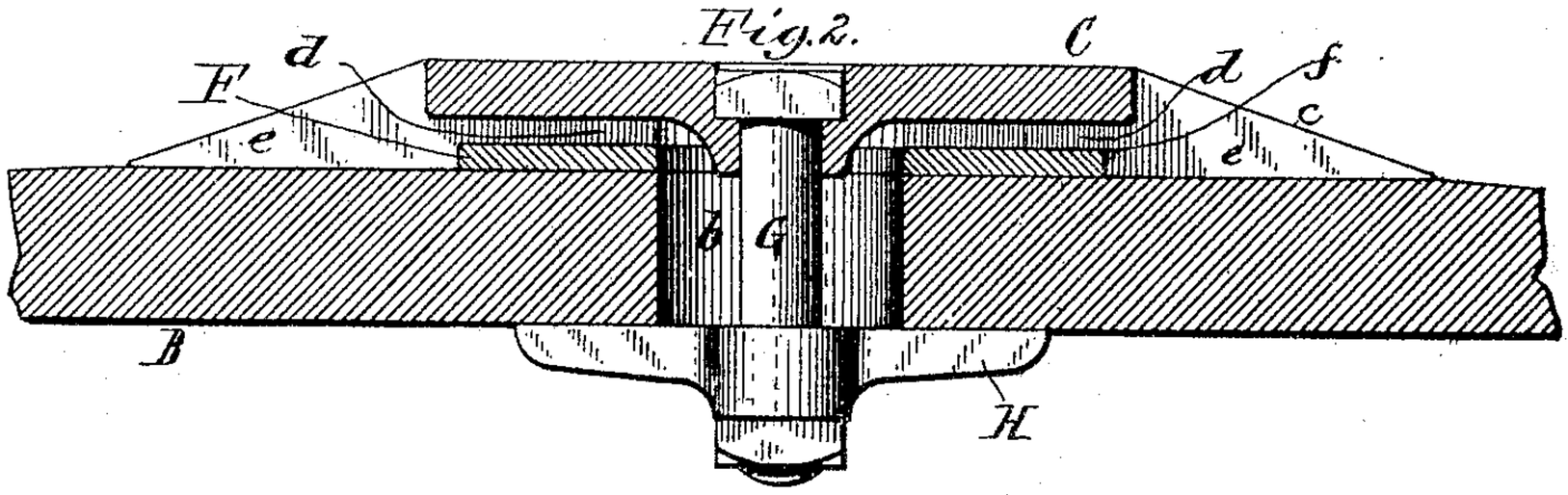


Fig. 3.

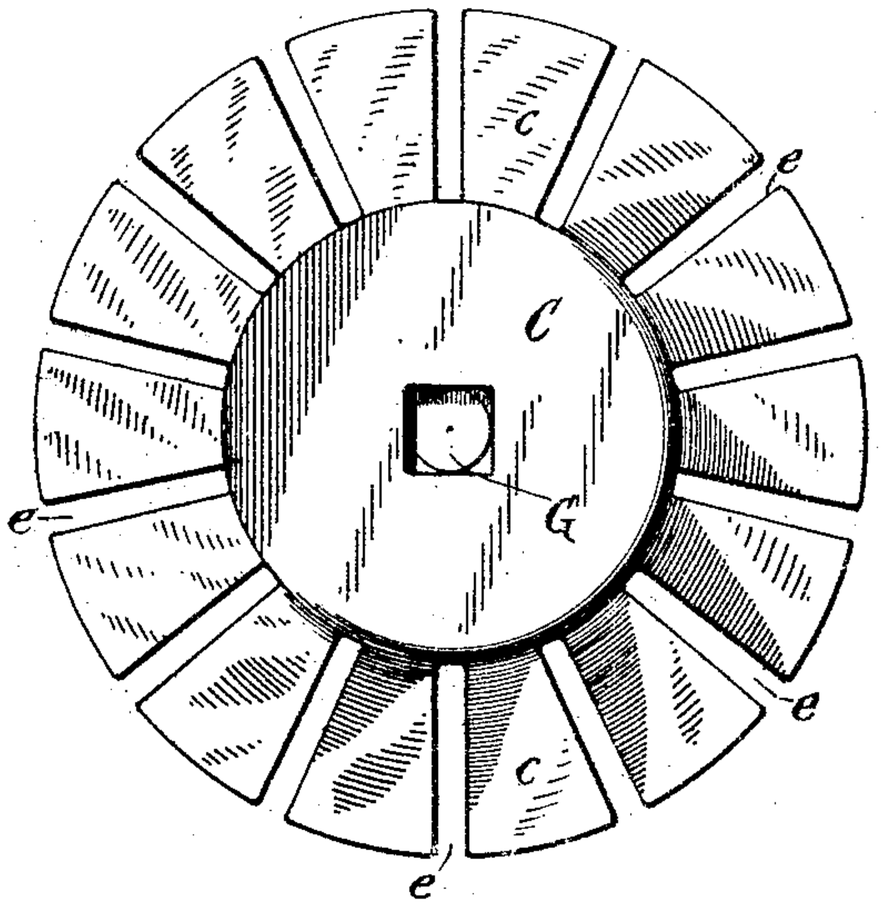


Fig. 4.

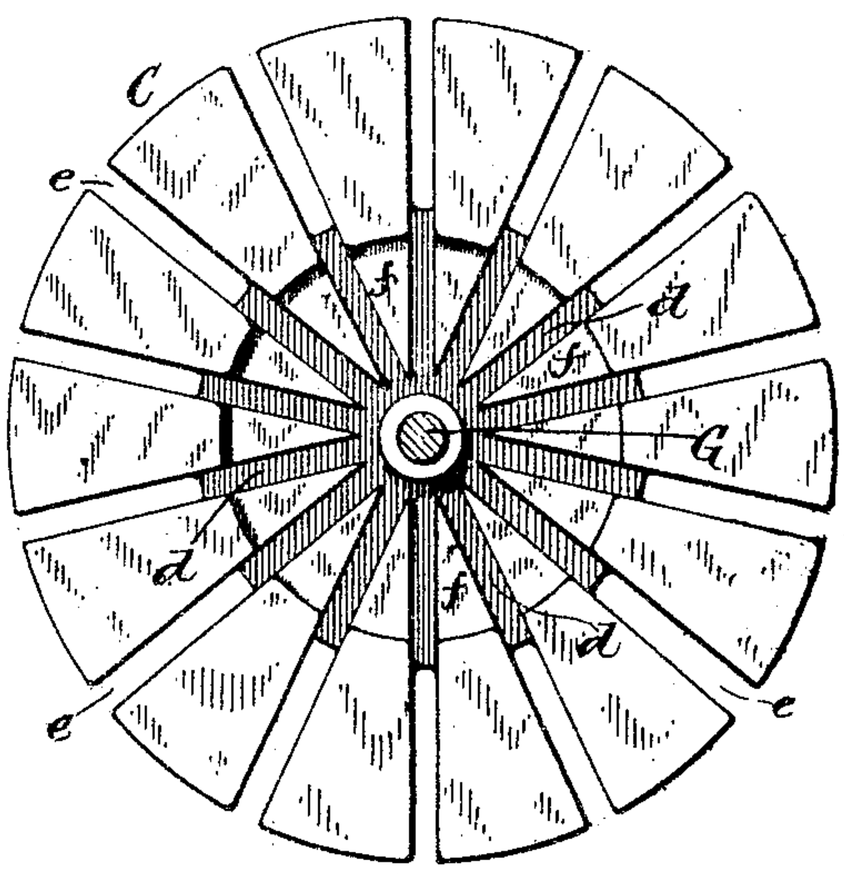
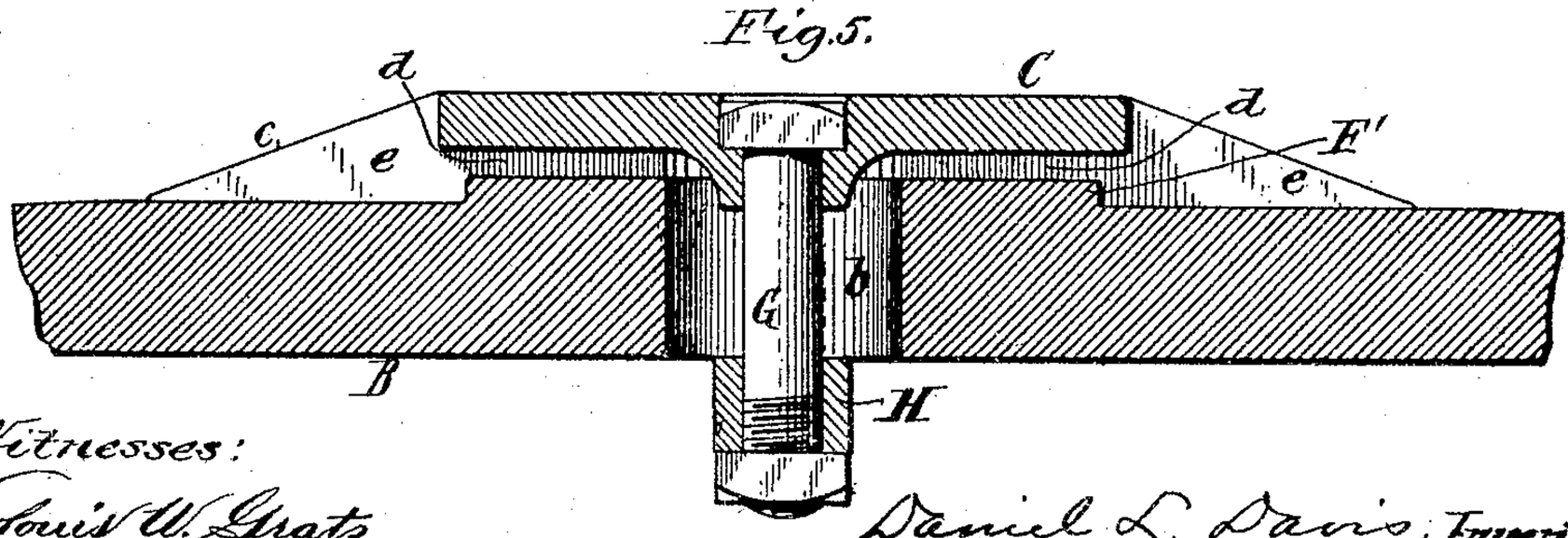


Fig. 5.



Witnesses:

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No. 770,959. Patented September 27, 1904.

UNITED STATES PATENT OFFICE.

DANIEL L. DAVIS, OF BUFFALO, NEW YORK.

MANHOLE-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 770,959, dated September 27, 1904.

Application filed February 6, 1904. Serial No. 192,338. (No model.)

To all whom it may concern:

Be it known that I, DANIEL L. DAVIS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Manhole-Ventilators, of which the following is a specification.

This invention relates to a ventilator designed more particularly for the manholes of sewers and other underground conduits, such as the conduits of telephone and telegraph systems. Owing to leakage of adjacent gas-mains, gas sometimes collects in these manholes in large quantities, and when the same becomes ignited from underground electric conductors or other causes the resulting explosion is liable to blow off the manhole-cover, endangering life and property.

The object of my invention is to provide an efficient ventilator of simple construction which while preventing the entrance of dirt and water into the manhole furnishes a free and ample escape for any gas that may leak into the manhole or be generated therein, thus obviating all liability of blowing off the cover.

In the accompanying drawings, Figure 1 is a fragmentary vertical section of a manhole provided with the improved ventilator. Fig. 2 is a similar section, on an enlarged scale, of the ventilator and the manhole-cover. Fig. 3 is a top plan view of the ventilator. Fig. 4 is a bottom plan view thereof with the clamping-bolt shown in cross-section and the guard-ring removed. Fig. 5 is a section similar to Fig. 2, showing a modified construction of the invention.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the casing of a manhole, and B its cover, which may be countersunk in a rabbet in the upper end of the casing in the usual manner. The cover has a comparatively large vent-opening *b*, preferably at its center, for the escape of any gases leaking into or generated in the manhole.

C indicates a plate of circular or other suitable form secured to the upper side of the manhole-cover over its opening *b* and made of considerably larger diameter than said opening. This plate is flat on its under side and rests upon the manhole-cover, while the upper side of its marginal portion is beveled or inclined toward the edge of the plate, as shown at *c*, to facilitate the passage of vehicles over the same. The plate is provided in the under side of its central portion with radial or outwardly-extending vent channels or grooves *d*, which communicate at their inner ends with the vent-opening *b* of the cover and at their outer ends with the atmosphere. In the preferred construction of the device (shown in the drawings) the plate C is provided in its marginal portion with radial slots or apertures *e*, arranged in line with the vent-channels *d* and extending from the outer ends of the latter to the edge of the plate. These slots form extensive ventilating-exits and also reduce the weight of the plate.

F is a dam or guard surrounding the vent-opening *b* on the upper side of the cover and serving to prevent any water which may enter the outer ends of the channels from flowing through said opening into the manhole. When the ventilator is to be applied to existing manhole-covers, this dam preferably consists of a separate ring seated in an annular recess or pocket *f* in the under side of the plate C, as shown in Figs. 1 and 2, and having its opening arranged to register with the vent-opening *b* of the cover. This ring thus forms the bottom of the radial vent-channels *d*. The ring is flush with the bottom of the plate C, so as to rest upon the manhole-cover, and in order to form a water-tight joint between these parts the ring is preferably cemented to the cover. When the manhole-cover is originally constructed to receive the ventilator, the dam may be made integral with the cover by casting a boss or raised portion F′ around its vent-opening, as shown in Fig. 5, which boss occupies the central recess or pocket in the under side of the plate C.

The ventilator-plate may be secured to the cover by any suitable means; but I prefer to employ for this purpose a clamping-bolt G, passing through a central opening of the plate, the vent-opening *b* of the cover, and a bridge-

piece H, which bears against the under side of the cover, the head of the bolt being countersunk in the cover, as shown in the drawings.

Any sewer-gas or other gas formed in or entering the manhole finds a free and ample vent through the cover-opening *b*, the vent-channels *d*, and slots *e*, thus effectually guarding against the accumulation of a sufficient volume of gas in the manhole to cause an explosion and avoiding the danger liable to result from such explosion. By arranging the vent-channels *d* radially, as shown, a draft or circulation of air can take place through opposing or alining channels and across the upper end of the cover-opening *b*, creating a suction which insures the withdrawal of any gas as soon as the same enters the manhole.

The device while reliably ventilating the manhole fully covers the comparatively large vent-opening *b* of the cover, preventing the passage of water and dirt through the same into the manhole.

I claim as my invention—

1. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the cover over said opening and provided in its under side with vent-channels which communicate with the cover-opening, substantially as set forth.

2. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the cover over said opening and provided in its under side with vent-channels which communicate with the cover-opening, and a dam surrounding the vent-opening of the cover, substantially as set forth.

3. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the upper side of the cover over said opening and provided in its under side with a recess or pocket and vent-channels which communicate with said vent-opening, and a dam surrounding said vent-opening and seated in the recess of said plate, substantially as set forth.

4. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the upper side of the cover over said opening and provided in its under side with a recess or pocket and vent-channels which communicate with said vent-opening, and a ring surrounding said vent-opening and seated in the recess of said plate, said ring resting upon the manhole-cover and extending above the surface thereof, substantially as set forth.

5. The combination with a manhole-cover, of a ventilator consisting of a plate applied to the upper side of the cover over said opening and provided in its under side with a recess or pocket and radial vent-channels which communicate with said vent-opening, and a dam surrounding said vent-opening and seated in said recess, whereby the dam forms the bottom of said radial channels, substantially as set forth.

6. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the upper side of the cover over said opening and provided in its under side with outwardly-extending vent-channels communicating with said vent-opening and in its marginal portion with slots which communicate with said channels, substantially as set forth.

7. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the upper side of the cover over said opening and provided in its under side with a recess or pocket and radial vent-channels communicating with said vent-opening, said plate having its marginal portion provided with slots arranged in alinement with said vent-channels, and a dam surrounding said vent-opening and seated in the recess of said plate, substantially as set forth.

8. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the upper side of the cover over said opening and provided in its under side with outwardly-extending vent-channels communicating with said opening, a yoke bridging the lower end of said vent-opening, and a clamping-bolt passing through the central portion of said plate, said vent-opening and said yoke, substantially as set forth.

9. The combination with a manhole-cover having a vent-opening, of a ventilator consisting of a plate applied to the cover over its opening and having a beveled margin, said plate being provided in its under side with a recess or pocket, outwardly-extending vent-channels communicating with said opening, and a dam surrounding said opening and seated in said recess, substantially as set forth.

10. A manhole-ventilator consisting of a plate adapted to be applied to a vent-opening in the manhole-cover, said plate being provided in its under side with vent-channels extending outwardly from its central portion and constructed to communicate with the cover-opening, and in its marginal portion with slots or apertures which communicate with said vent-channels, substantially as set forth.

Witness my hand this 3d day of February, 1904.

DANIEL L. DAVIS.

Witnesses:
CARL F. GEYER,
EMMA M. GRAHAM.