

(No Model.)

W. M. GREEN.  
VENTILATING SEWERS.

No. 301,230.

Patented July 1, 1884.

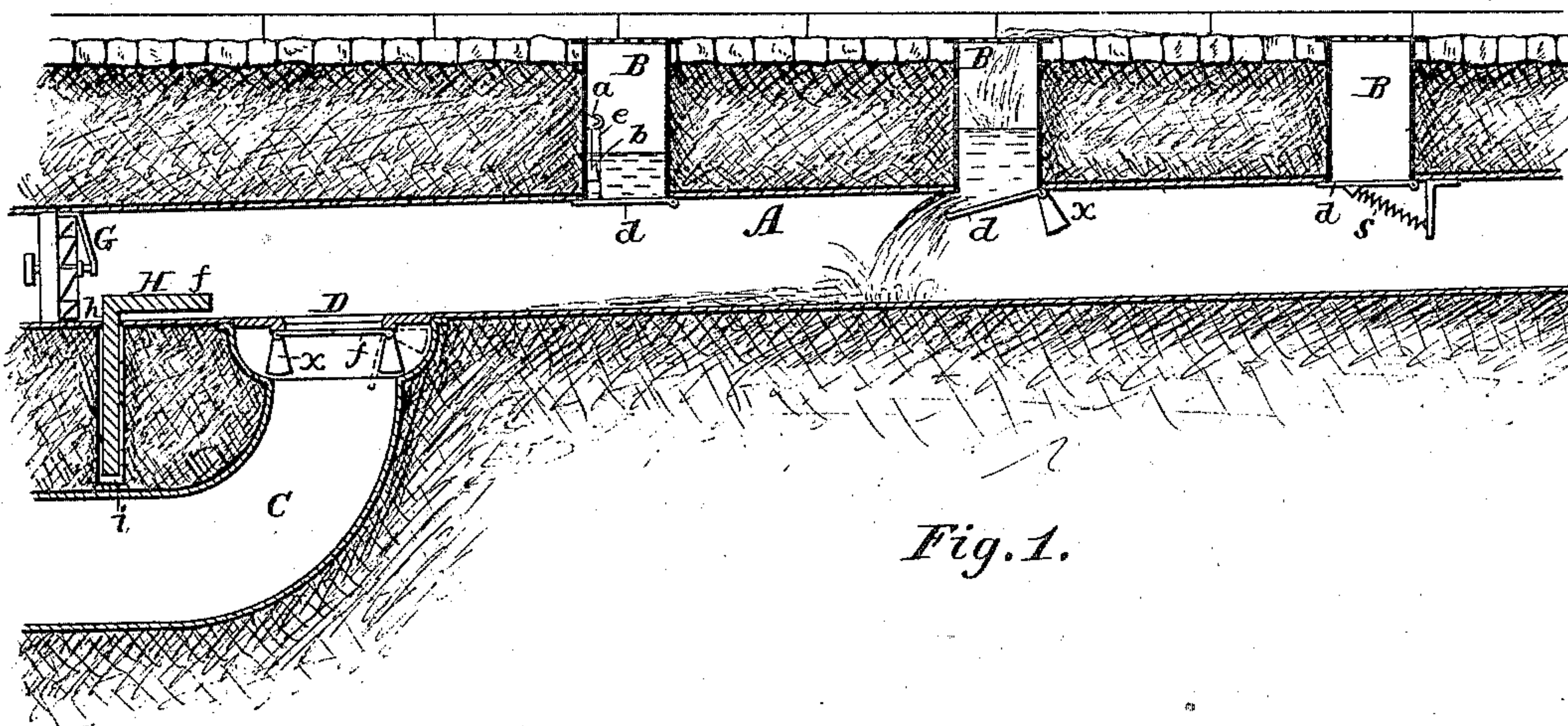


Fig. 1.

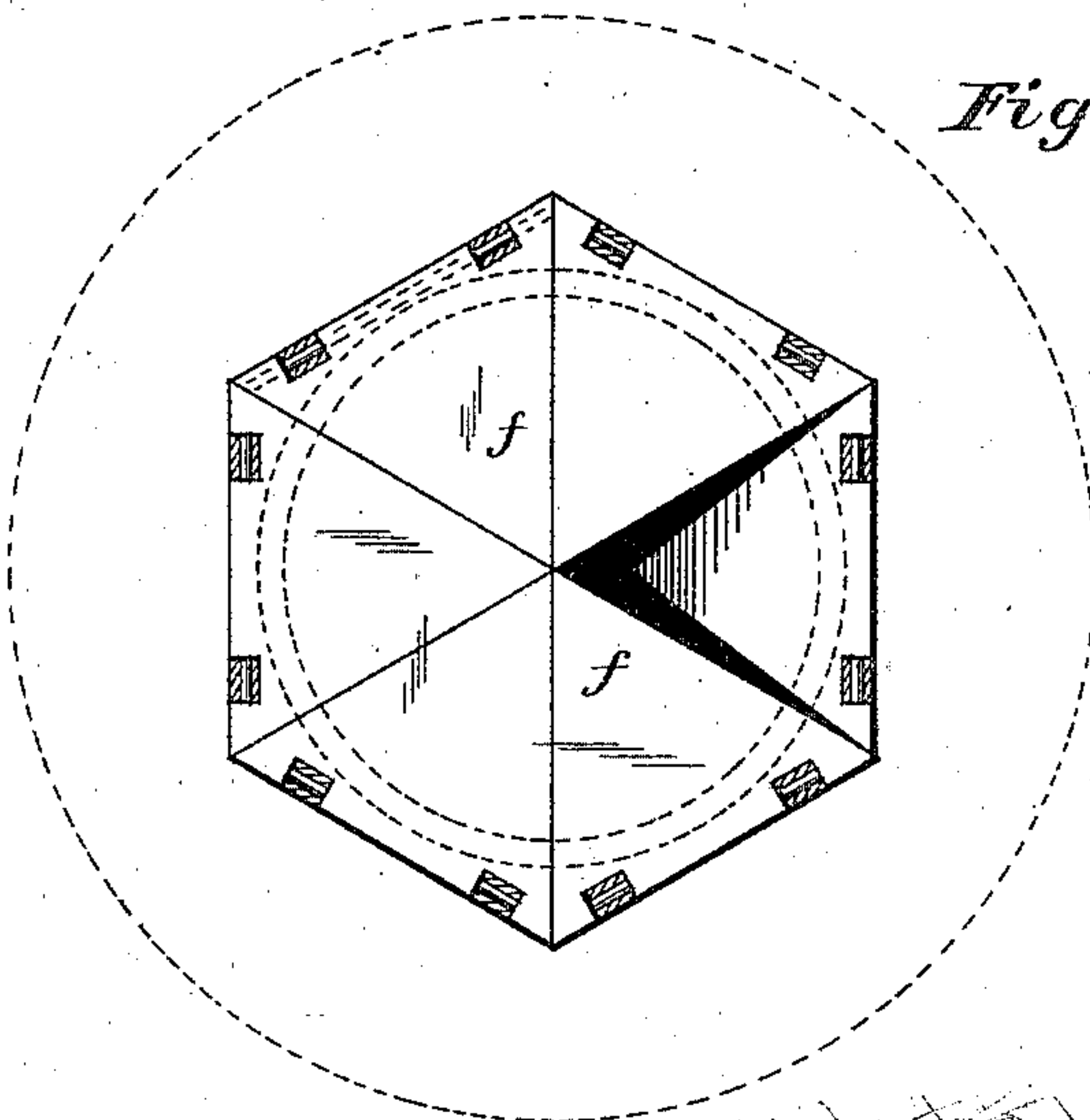


Fig. 2.

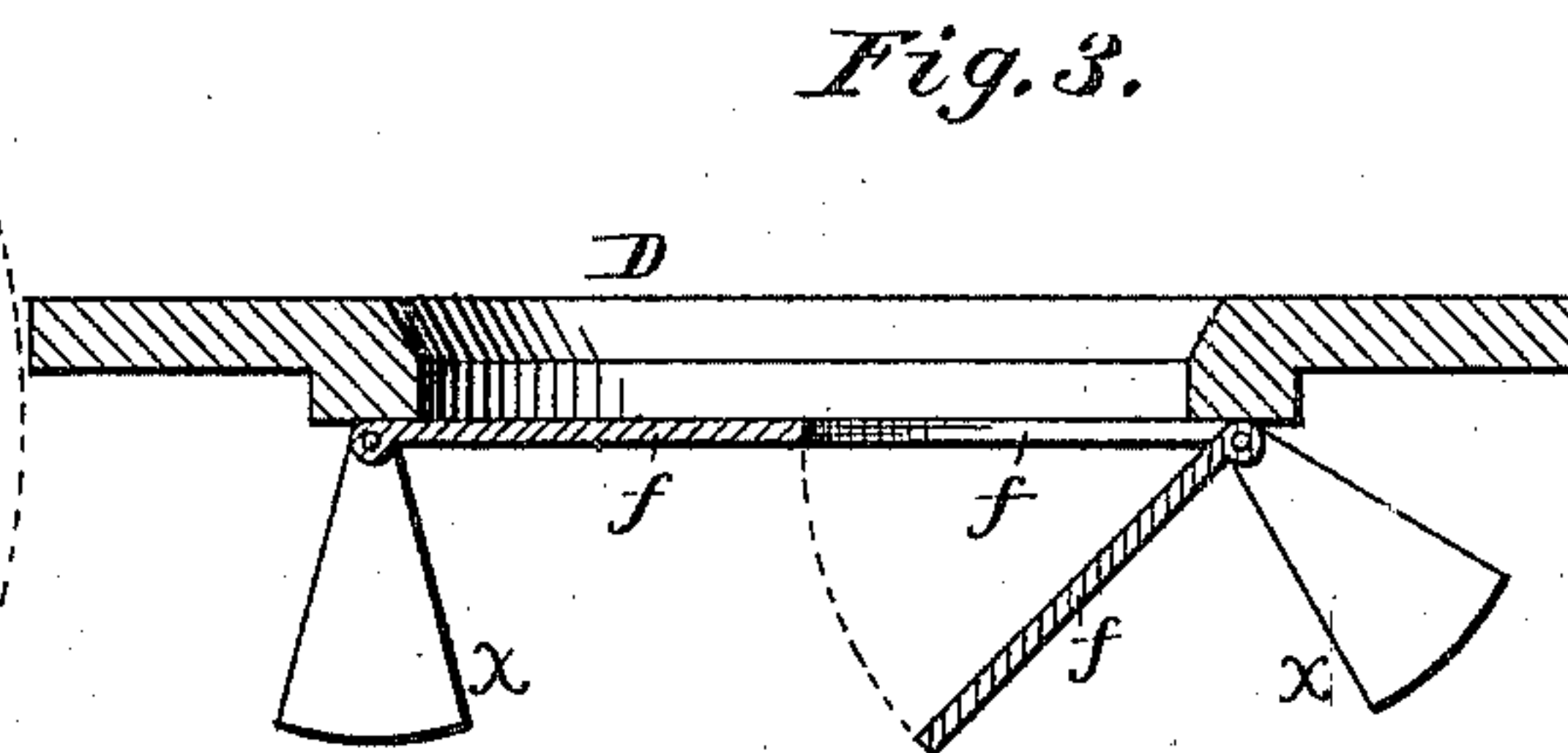


Fig. 3.

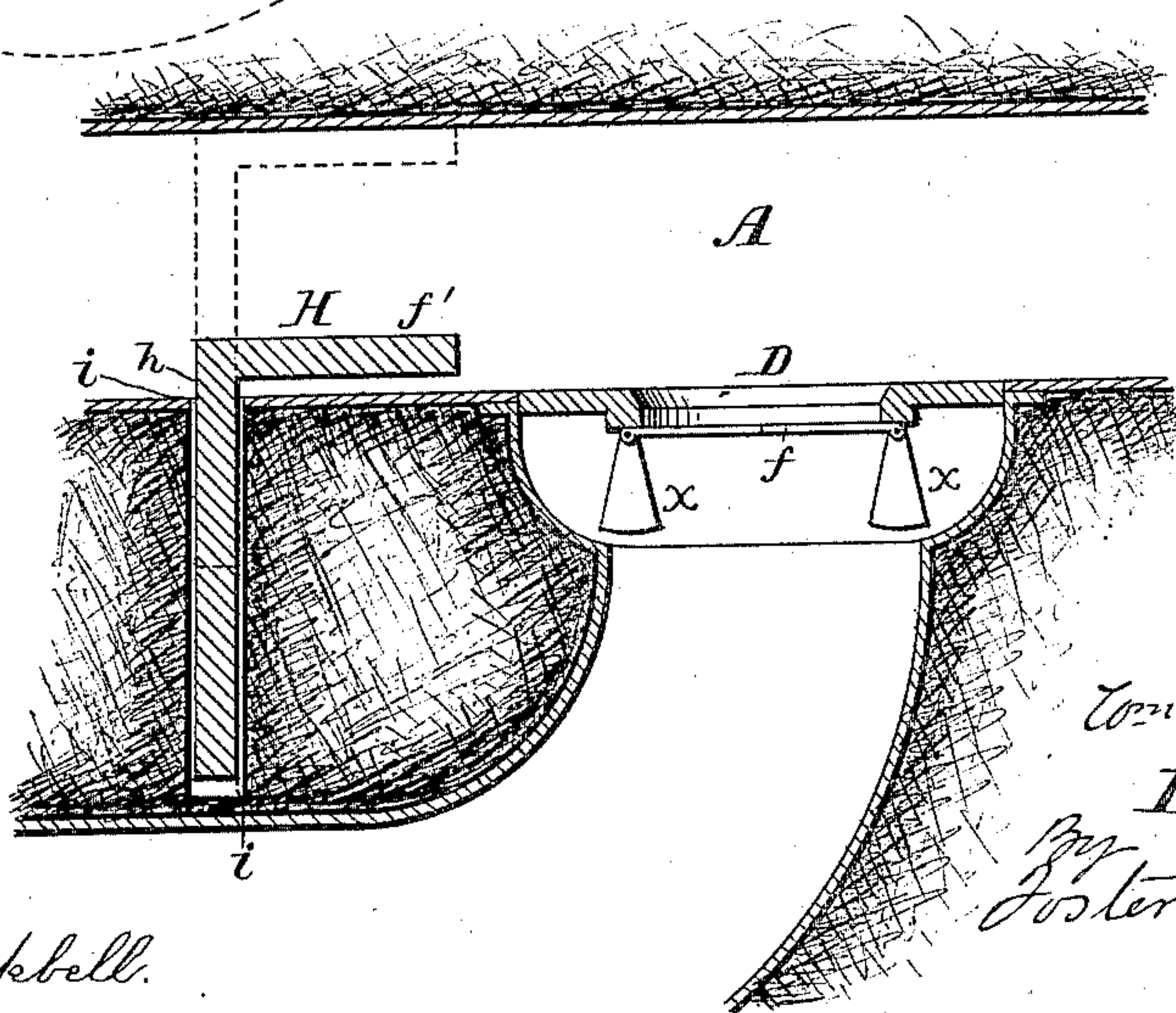


Fig. 4.

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# UNITED STATES PATENT OFFICE.

WILLIAM M. GREEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE EXHAUST VENTILATOR COMPANY, OF SAME PLACE.

## VENTILATING SEWERS.

SPECIFICATION forming part of Letters Patent No. 301,230, dated July 1, 1884.

Application filed June 7, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. GREEN, of Chicago, Cook county, State of Illinois, have invented certain Improvements in Ventilating Sewers, of which the following is a specification.

The object of my invention is to remove the foul gases from sewers, and prevent at all times any such excess of pressure therein or such upward flow of the lighter gases as will enable the latter to pass from the sewers to the streets or buildings connected therewith; and this object I attain by combining with the main sewer or main branches an exhausting apparatus, and by providing means whereby the inlets communicating with the sewer are sealed against the passage of gases therefrom, while the inflow of liquid matter is not interfered with.

In the drawings, Figure 1 is a longitudinal section illustrating a main sewer, laterals, and sealing and exhausting appliances. Fig. 2 is a plan of the gate used for one of the discharge-openings. Fig. 3 is a vertical section of Fig. 2. Fig. 4 is a section illustrating one form of gate used for protecting the exhausting apparatus.

A indicates the terminal portion of a main sewer at the end of a wharf, embankment, or other usual place, and B represents inlets, which may be the inlets leading from street-openings or the ends of drains from buildings.

C is a branch extending from the lowest point of the main sewer, within the mouth thereof, to the point where the liquid matter should be discharged, the object of this branch being to deflect said liquid matter from the mouth of the sewer and from the air or gas exhausting device G, which is arranged therein.

As shown, the exhausting device G is an exhaust fan or wheel of suitable construction, to which a rotary motion is imparted from any suitable apparatus, and whereby the gases within the sewer are forcibly drawn out and expelled.

It is of course necessary that the sewer shall be sealed so far as to prevent the ingress of air, as otherwise there could be no exhausting effect sufficient to prevent the light gases from escaping through the openings uniting with the streets or buildings, while it is also essen-

tial that there shall be no impediment to the free discharge of liquid matter through said openings into the main sewer. To effect this each opening is provided with a gate which will remain automatically closed until the pressure of fluid thereon causes it to open for the discharge of the fluid into the sewer. As shown, each gate is a plate, *d*, hinged at the edge farthest from the outlet of the sewer, fitted closely to the mouth of the inlet B, and held in contact therewith, so as to seal said mouth, either by a counter-weight at the rear side of the hinge, as shown at *x*, Fig. 1, or by a weight, *b*, secured to a cord, *e*, passing over a pulley, *a*, arranged within the inlet-pipe, or by a spring, *s*, or otherwise. The weight maintains the gate closed until the pressure of water above it causes it to open and discharge the said water into the sewer.

The gate D of the branch C should be made so as to open to a slight extent to discharge the fluid when a small portion only passes through the sewer, and yet be capable of opening so as to expose the entire area of the branch when the discharge is great enough to require it. To secure this result the gate is made in sections, each section capable of opening independently of the other, but all capable of opening together. Such gates may be made in different ways, a preferable construction being shown in Figs. 2 and 3, where the gate consists of triangular plates *f*, each hinged at one side, so as to swing downward independently of the others, and each supported by a counter-weight or spring. When but a small portion of water is thrown upon a gate thus constructed, the sections will separate but slightly, and the water will pass downward without exposing an opening of any considerable extent for the admission of air; but when the volume of water increases, the further separation of these sections will permit its free passage. Some of these sections are counterweighted to a greater extent than others, so that but one or more of the sections will yield and expose but a small opening when the stream is small.

To prevent injury to the exhausting device should the sewer become flooded, I place between the latter and the gate D a self-closing gate, H, Figs. 1 and 4, which, should the wa-



ter pass beyond the branch C, will rise, and by obstructing the sewer prevent the water from passing through the exhausting device. This gate may be made in different ways. As shown, 5 it consists of a wooden panel, *h*, sliding vertically in a well, *i*, and provided at the top with a wood or hollow float, *f'*, which will rise with the surface of the water, carrying the gate with it. The panel, however, may be 10 hinged at the outer edge, and provided with a float at the inner edge, so as to rise from a vertical to a horizontal position.

In some instances the water may discharge directly from the mouth of the main sewer, 15 and the exhaust apparatus may be arranged in an opening leading from the top of the sewer. An ejector or other suitable exhausting device may take the place of the wheel shown.

20 Without limiting myself to the precise construction and arrangements of parts described, I claim—

1. The combination, with a sewer, of an exhaust apparatus at the outer end thereof, and 25 gates arranged at the mouths of the sewer-inlets communicating with the top of the sewer, constructed to open automatically for the pas-

sage of fluid, and to close after the same has been discharged into the sewer without obstructing the flow of liquid through the same, 30 substantially as set forth.

2. The combination of the sewer, exhaust apparatus, discharge branch arranged at the rear of said apparatus, self opening and closing gates at the mouths of the inlets, and 35 an automatic gate at the mouth of the branch, substantially as specified.

3. The combination, in the gate D, of the series of sections independently hinged, and weighted or counterbalanced to different de- 40 grees, for the purpose specified.

4. The combination, with the sewer discharge branch and exhaust apparatus, of a self-closing gate, H, arranged between the branch and mouth of the sewer, to prevent the 45 passage of water to the exhaust apparatus, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM M. GREEN.

Witnesses:

CHAUNCEY KEEP,  
WILLIS H. BRUMLEY.