(No Model.)

2 Sheets—Sheet 1.

J. STRATFORD.

APPARATUS FOR VENTILATING AND PURIFYING SEWERS.

No. 259,729. Patented June 20, 1882.

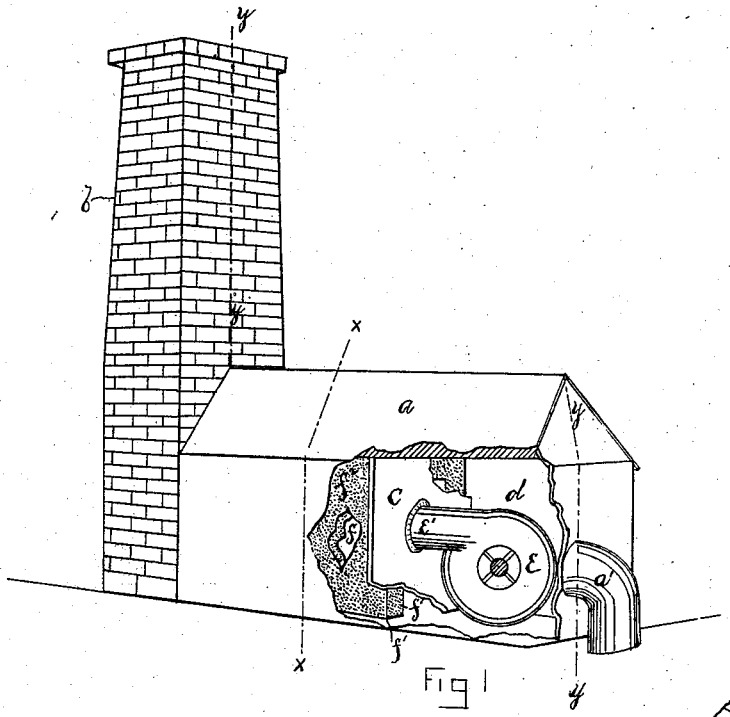

Fig 1

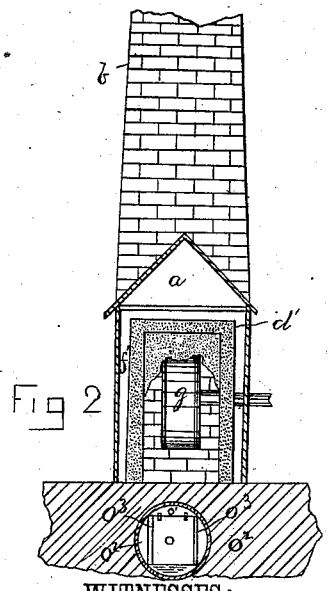

Fig 2

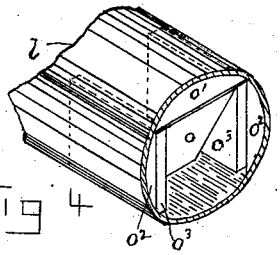

Fig 4

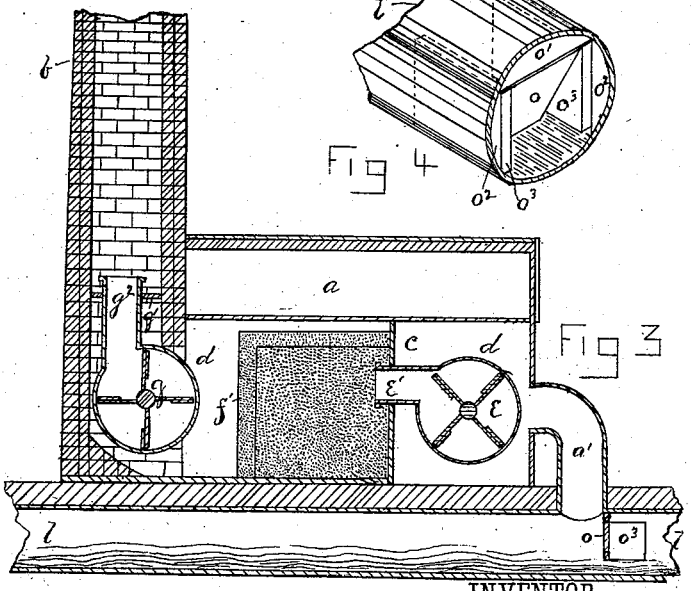

Fig 3

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(No Model.) 2 Sheets—Sheet 2.

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APPARATUS FOR VENTILATING AND PURIFYING SEWERS.

No. 259,729. Patented June 20, 1882.

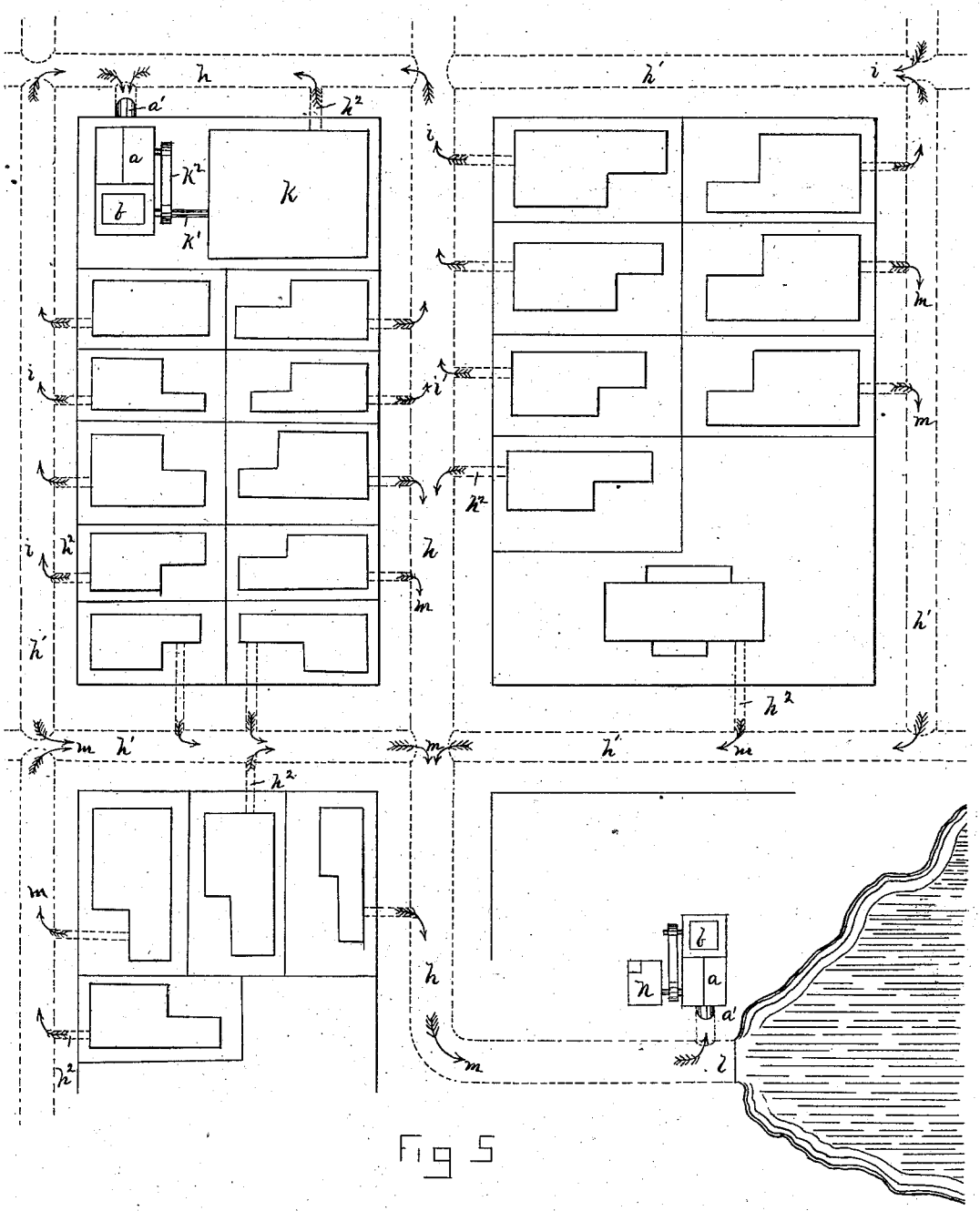

Fig 5

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JAMES STRATFORD, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO ELIAS S. HAWLEY, OF SAME PLACE.

APPARATUS FOR VENTILATING AND PURIFYING SEWERS.

SPECIFICATION forming part of Letters Patent No. 259,729, dated June 20, 1882.

Application filed November 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES STRATFORD, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Apparatus for Ventilating and Purifying Sewers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to provide for a thorough ventilation and purification of a system of sewers in a city or town; and to this end it consists broadly in removing the obnoxious gases at suitable points in the trunk and branch sewers and passing such gases through a disinfecting-chamber out into the open air.

The apparatus which I have found most expedient and effective in carrying out my invention consists substantially of a main chamber connected by suitable pipes with the interior of the trunk or branch sewer. In the end of this chamber at which connection is made with the sewer is located a fan-blower, by means of which a proper suction is produced, which draws the gases from the sewer into such chamber. These gases are passed from thence through the fan-blower into an interior chamber having double reticulated walls filled in with suitable disinfecting materials, which remove the impurities from the gases passing through. The purified gases then pass over through a suitable chimney or flue into the open air.

To further assist in the passage of the gases through my improved apparatus, I have found it desirable in some instances to provide an additional suction-fan, located at the bottom of the chimney or flue. The effect of this extra suction-fan is to produce a partial vacuum outside of the disinfecting-chamber, and thereby assist in drawing the gases through the walls of such chamber and discharging them into the open air through the chimney or flue.

My invention further consists in an automatic valve to be used in connection with and as a part of my improved apparatus when it is located near the mouth of a sewer.

In the drawings, Figure 1 is a perspective view of my improved apparatus with a portion broken away to show the interior structure. Fig. 2 is a vertical transverse section taken on the line *x x*, Fig. 1, also showing the sewer in section. Fig. 3 is a vertical longitudinal section taken on the line *y y*, Fig. 1, also showing a similar section of the sewer. Fig. 4 is a perspective view of the automatic valve, and Fig. 5 is a plan showing a system of sewers with my improved apparatus applied thereto.

Referring to the drawings, *a* is a building, one end of which communicates with the sewer through the pipe *a'*. This building is made of suitable shape and dimensions to accommodate the suction fan or fans and disinfecting apparatus.

b is the chimney or flue, which communicates at the bottom with the interior of the building, and through which the purified gases pass to the open air.

c is an air-tight partition, which divides the interior of the building into two compartments, *d* and *d'*. In the compartment *d* is placed the suction-fan *e*, the discharge-pipe *e'* of which passes through the partition *c* and into the disinfecting-chamber *f*. This chamber *f* is built with double reticulated walls *f' f'*, between which is placed suitable disinfecting material f^2, such as charcoal, chloride of lime, &c. *g* is an auxiliary suction-fan, located near the opening of the chimney into the compartment *d'*. Just above this fan *g* is placed the diaphragm *g'*, through which the discharge-pipe g^2 of fan *g* passes. This diaphragm is necessary in order that a partial vacuum may be produced by fan *g* in the compartment *d'*, to assist in drawing the gases out of the disinfecting-chamber.

In Fig. 5 I have shown in plan view the adaptation of my improved apparatus to a system of sewers, in which *h* is the trunk sewer, *h'* the branch sewer, and h^2 the connections between the sewers and houses, all shown in dotted lines. At the top left-hand corner of the

figure I have located one of my devices, which, as will be seen by the direction of the arrows *j*, collects and discharges the gases which accumulate in the sewers in its vicinity. The suction fan or fans may be operated with power from the factory *k*, communicated by shaft *k'* and belt k^2. At the mouth *l* of the trunk sewer I have located another of my devices, which operates in a similar manner to the one just described, the necessary power being obtained from any suitable motor located at *n*.

In order that a proper suction may be obtained in the right direction, as indicated by the arrow *m*, it is necessary that provision should be made to prevent the admission of air at the mouth *l* of the sewer *h*, which would otherwise be a serious obstacle to the effective working of my device. To overcome this obstacle I have provided the automatic valve which is clearly shown in Figs. 2, 3, and 4, in which *o* is the gate. This gate is so hinged to the segmental piece *o'* that it can only swing in the direction of the mouth *l* of the sewer. o^2 are segmental side pieces, which, with the piece *o'*, serve to permanently close that part of the sewer around the rectangular gate *o*, except the lower part, where the sewage flows out. During an ordinary flow of sewage the space between the bottom of the gate *o* and the bottom of the sewer is sufficient for the discharge of such sewage, and the gate and sewage together form an effectual barrier to the entrance of air from without, which would otherwise rush in at the mouth of the sewer and prevent the effective working of my improved apparatus. Should there be a rise in the outflowing stream of sewage, the gate *o* will be swung upwardly and outwardly between the wings o^3 by the force of the sewage to accommodate such increased outflow, and it will still be impossible for the air to enter from without, for the gate *o* and wings o^3, (which fit closely to the sides of the gate,) together with the stream of sewage, will still form a practically impassible barrier to the ingress of air. It will thus be readily seen that by this arrangement the outside air is at all times prevented from entering at the mouth of the sewer in such quantities as to impair the effective working of my improved apparatus when it is located at or near the mouth of the sewer.

The suction-fan E, being set in motion, serves to draw the gases from the sewer through the connection *a'* and into the compartment *d*. From thence they pass, by the action of the fan, into the disinfecting-chamber *f*, and are forced through its reticulated walls into the compartment *d'*. In passing through the walls of the chamber *f* the disinfecting material frees the gases of their impurities, and they are discharged in this state through the chimney *b* out into the open air. I do not consider the auxiliary fan *g* as entirely essential to the perfect working of my device, although it is evident that it is of great assistance in passing the gases through the disinfecting material.

The disinfecting-chamber might be placed at the top of the chimney or flue with advantageous results; but the present location of this chamber is perhaps the best on account of the easy access which may be had to it for purposes of renewal or repair.

It will be seen that by my improved apparatus I am enabled to thoroughly ventilate the sewers of a city by removing the obnoxious gases generated therein and purifying such gases before discharging them into the open air.

My apparatus is located at such points in a system of sewerage as to thoroughly drain the entire system, and thereby prevent the escape of sewer-gas in houses and streets.

I claim—

1. In ventilating and purifying the sewers of a city, an apparatus consisting substantially of a disinfecting-chamber having double reticulated walls filled in with disinfecting material, combined and operating in connection with a suction fan or fans, such disinfecting-chamber being connected both with the sewers and the open air, whereby the sewer-gases may be passed through the walls of such disinfecting-chamber by the action of the fan or fans, and thereby purified before being discharged into the open air, substantially as shown and described.

2. An apparatus for ventilating and purifying sewers, consisting of a disinfecting-chamber having double reticulated walls filled in with disinfecting material, as shown, and a suction fan or fans for drawing the obnoxious gases from the sewer and passing them through the walls of the disinfecting-chamber in order to remove their impurities, the whole being inclosed in a suitable building having connection with the sewer, and provided with a flue through which the purified gases are discharged into the open air, substantially as shown and described.

3. In an apparatus for ventilating and purifying sewers, the combination of the suction-fans *e* and *g* with the disinfecting-chamber *f*, all located and operating within the building *a*, provided with connection *a'* and flue *b* at its ends, substantially as shown and described.

4. In an apparatus for ventilating and purifying sewers, the combination, with the suction-fan *e* and disinfecting-chamber *f*, operating, as shown, within the building *a*, of the automatic valve *o*, located within the sewer, near its connection with the building *a*, to prevent the ingress of air from the mouth of the sewer, substantially as shown and described.

5. In an apparatus for ventilating and purifying sewers, the automatic valve consisting of the swinging gate *o* and wings o^3 o^3, operating as shown and described, and for the purpose stated.

JAMES STRATFORD.

Witnesses:
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W. T. MILLER.