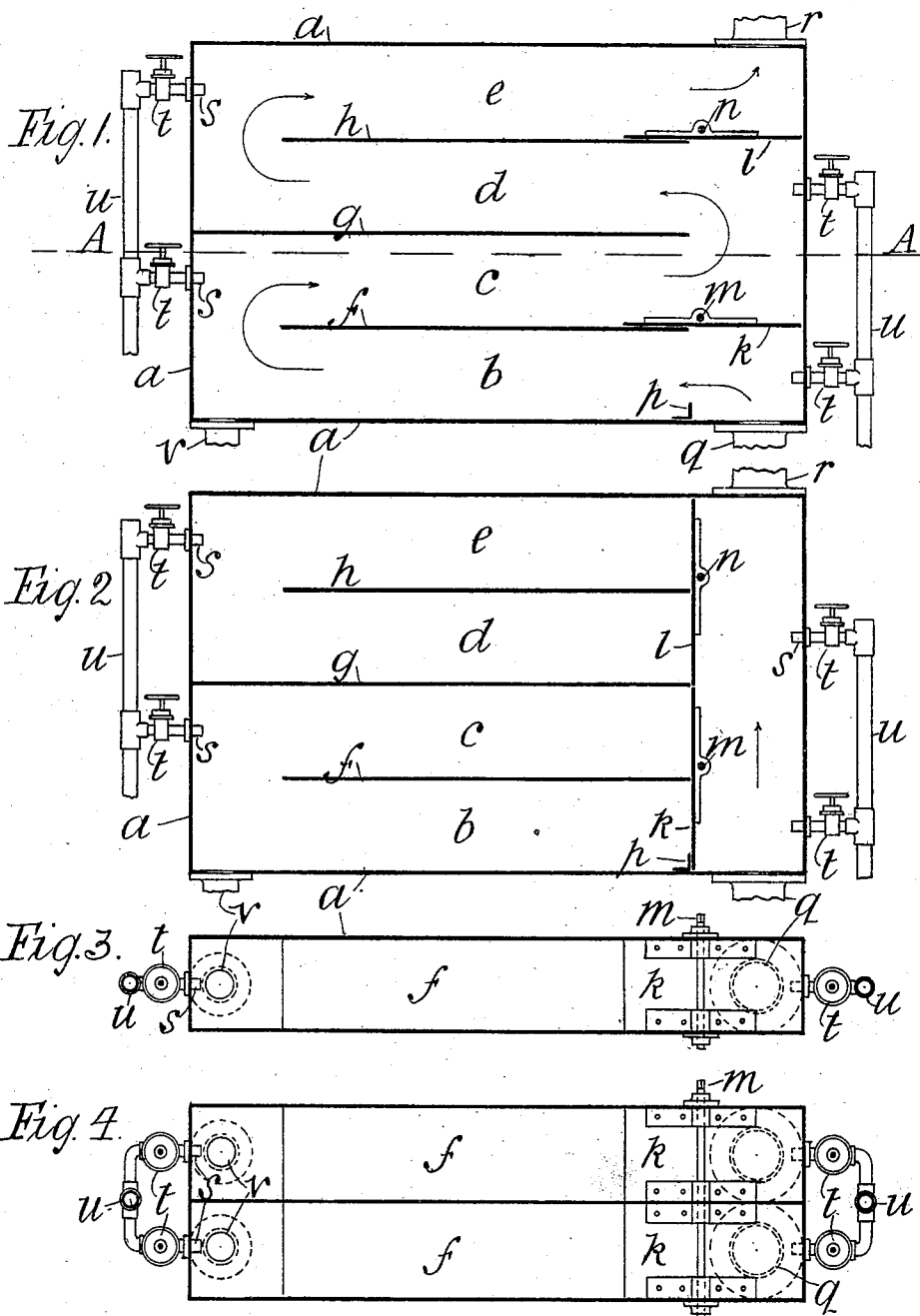


J. BLACK & A. H. & H. LENNOX.
 APPARATUS FOR CLEANING OR WASHING SMOKE OR GASES.
 APPLICATION FILED JUNE 1, 1908.

903,832.

Patented Nov. 17, 1908.



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UNITED STATES PATENT OFFICE.

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No. 903,832.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed June 1, 1908. Serial No. 435,900.

To all whom it may concern:

Be it known that we, JAMES BLACK, ALLISON HALL LENNOX, and HAROLD LENNOX, all subjects of the King of England, residing at Newcastle-upon-Tyne, England, have invented certain new and useful Improvements in Apparatus for Cleaning or Washing Smoke or Gases, of which the following is a specification.

10 This invention relates to an apparatus for cleaning or washing smoke or gases of that class which comprises a chamber divided by partitions into compartments adapted to be closed at one end by hinged doors and into

15 which a jet of liquid may be introduced and comprises the novel features of construction hereinafter fully described and specifically pointed out in the claim.

A preferred embodiment of the invention and a modification thereof are represented in the annexed drawings, in which

Figure 1 is a sectional elevation showing the apparatus with the doors, hereinafter referred to, open to permit the passage of smoke through the chambers, of which four are shown. Fig. 2 is a similar view to Fig. 1 with the doors closed. Fig. 3 is a section on line A—A of Fig. 1, and Fig. 4 is a similar section to Fig. 3, but showing two sets

30 of chambers alongside each other.

The apparatus consists of a metallic or brickwork casing *a* of suitable length breadth and height, and with one or more vertical chambers. When there are more than one chamber, each of the latter is independent of the other as shown in Fig. 4. Each vertical chamber is divided into a suitable even number of compartments *b c d e* of equal size by horizontal partitions *f g* and *h*. These partitions are stopped short a certain distance from the front or flue end of the chamber, and at the back end the first from the bottom and every alternate one above are stopped short a certain distance from the rear end, while the second partition from the bottom and every alternate one above are extended to said rear end, as shown in Figs. 1 and 2. The first and second compartments from the bottom, and similarly the third and fourth, and so on to the top are thus in communication. The front ends of the compartments that is at the ends of the horizontal partitions, are provided with metallic doors *k* and *l* on horizontal hinges or shafts *m* and *n* respectively, so arranged that when the doors

are closed or vertical as in Fig. 2, the space between the doors *k l* and the front end of the casing *a* is open from bottom to top.

When the doors are open or horizontal as in Fig. 1, the compartments *c* and *b* are extended to the front of the apparatus.

As each door is hinged at or near the middle, and covers two compartments when closed or vertical, and as the doors are pivoted adjacent the ends of the first and every alternate partition upwards, it is evident that when the doors are open, one part of each door will be on the partition and the other part will close the space between the ends of the partitions and the end of the casing, and prevent at this end any communication between the first and second compartments or the third and fourth and so on, but there will be communication between the second and third compartments and the fourth and fifth and so on.

If there are several vertical chambers all the doors in one horizontal plane are preferably carried on the same shaft *m* or *n* and by suitably connecting all the shafts which carry the sets of doors they may all be actuated by the same means and at the same time.

The shafts *m* and *n* may be carried in bearings or brackets on the casing *a* and have one or both ends squared for a handle or the like for opening and closing the doors, or other suitable means may be used for rotating said shafts. When the door *l* is closed the lower end thereof is stopped against the partition *g*, and when the door *k* is closed the lower end thereof is stopped against an angle bar *p* on the bottom of the casing *a*.

The smoke flue is connected to the space between the doors and the front of the casing, either on the underside of the casing as at *q* or at the end thereof, and the outlet *r* from the apparatus is at the top of this space. The said angle bar *p* prevents any water from flowing back into the flue or its connection *q*.

When the doors are open (Fig. 1), the smoke on being admitted passes through every compartment *b c d e* from the bottom to the top and out to the atmosphere at *r*; but if the doors are closed (Fig. 2) the smoke simply passes up the end space and out at the top at *r* without being acted upon. The arrows show the direction of flow of the smoke. As the smoke is passing through

the compartments of the apparatus, water at a suitable pressure is admitted into one end of each compartment at *s* in the form of a jet or spray, the pressure being sufficient to carry the jet or spray to the opposite end of the compartment. The direction of the jet or spray is always the same as the direction of travel of the smoke, the jets or sprays therefore cause an increased draft. *u* designates the supply pipes to the jets *s* and *t* stop-cocks in the connections between said pipes *u* and jets *s*. The horizontal partitions are preferably slightly inclined although shown horizontal in the drawings so that the water with the smoke impurities flows to the bottom of the apparatus whence it is conveyed by suitable means for example a drain *v* to a settling tank or other receptacle.

What we claim as our invention and desire to secure by Letters Patent of the United States is:—

Apparatus for cleaning smoke or gases comprising a chamber having an inlet for smoke or gases at the lower part and an outlet for smoke or gases at the upper part of

the chamber near one end thereof, a plurality of horizontal partitions extending at one end to a distance from the aforesaid end of the chamber and alternately extending at the other end up to the end of the chamber and to a distance therefrom, pivoted doors adapted when open to shut off communication at the first mentioned end of the chamber between certain of said compartments and when closed to form a vertical flue at said end of the chamber affording direct communication between the aforesaid smoke or gas inlet and outlet, and jets for supply of water in the other end of said chamber, said jets being directed to throw the water in the same direction as the stream of gases or smoke, substantially as set forth.

In witness whereof we have signed this specification in the presence of two witnesses.

JAMES BLACK.
ALLISON HALL LENNOX.
HAROLD LENNOX.

Witnesses:

A. B. LENNOX,
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