

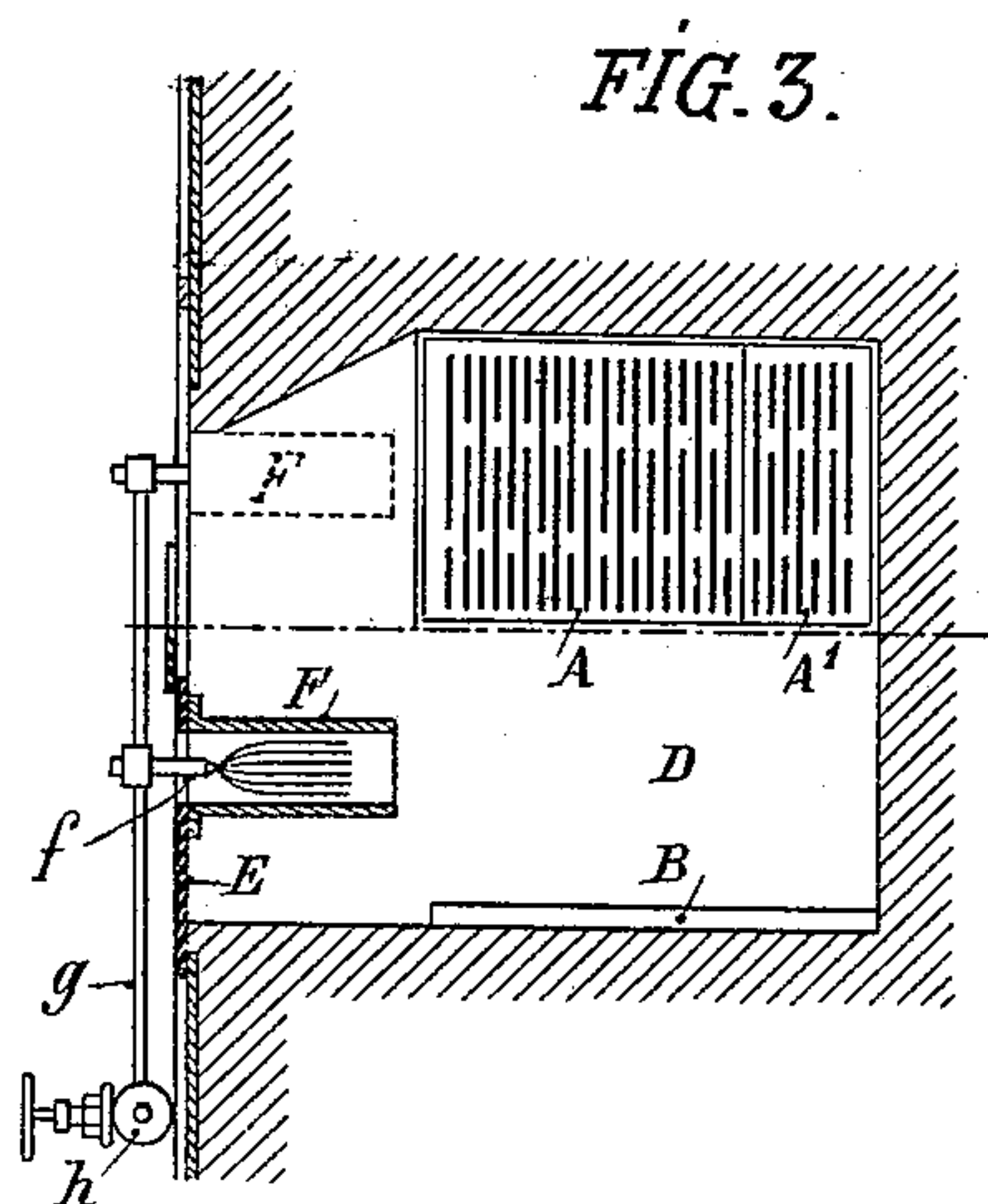
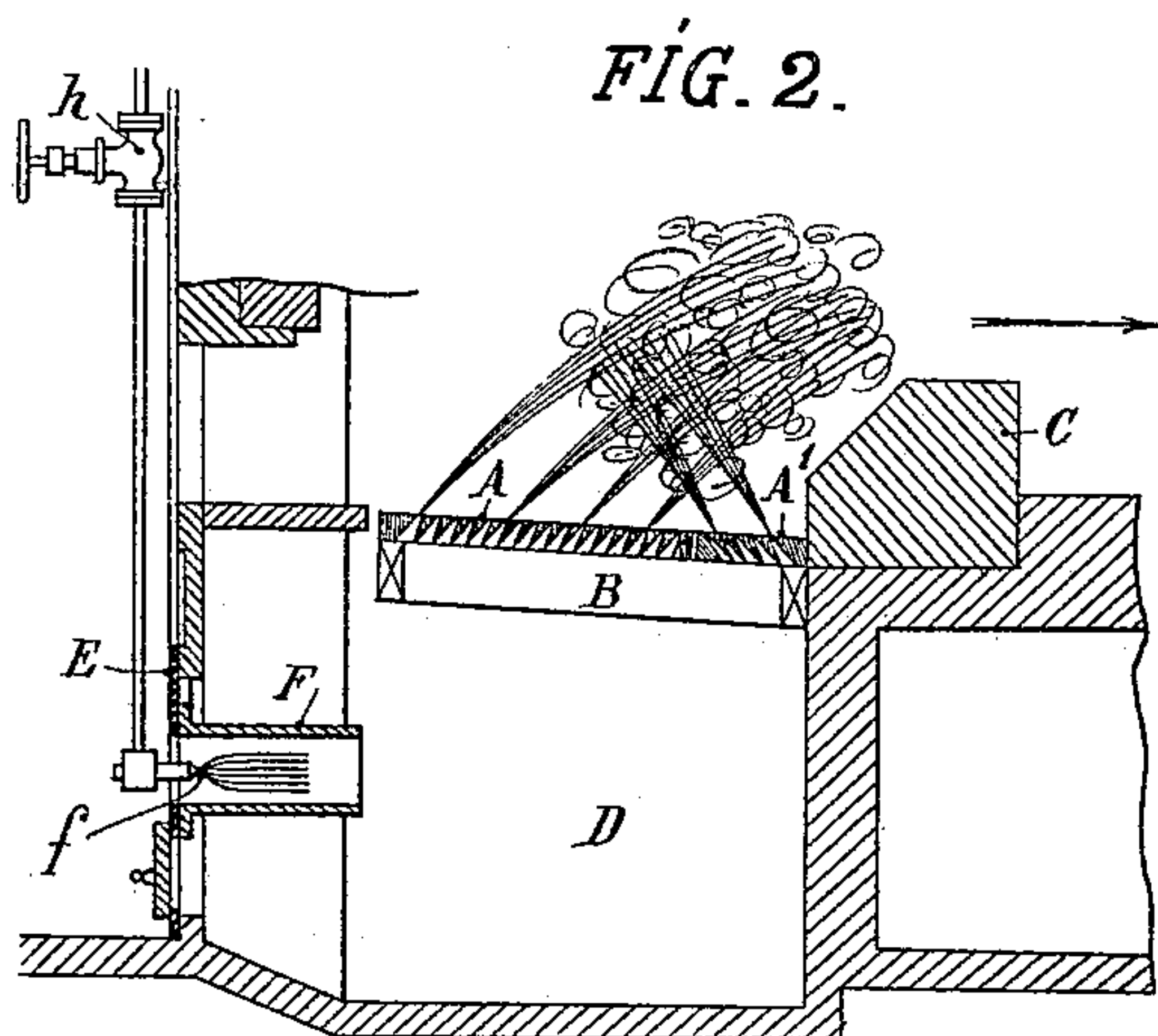
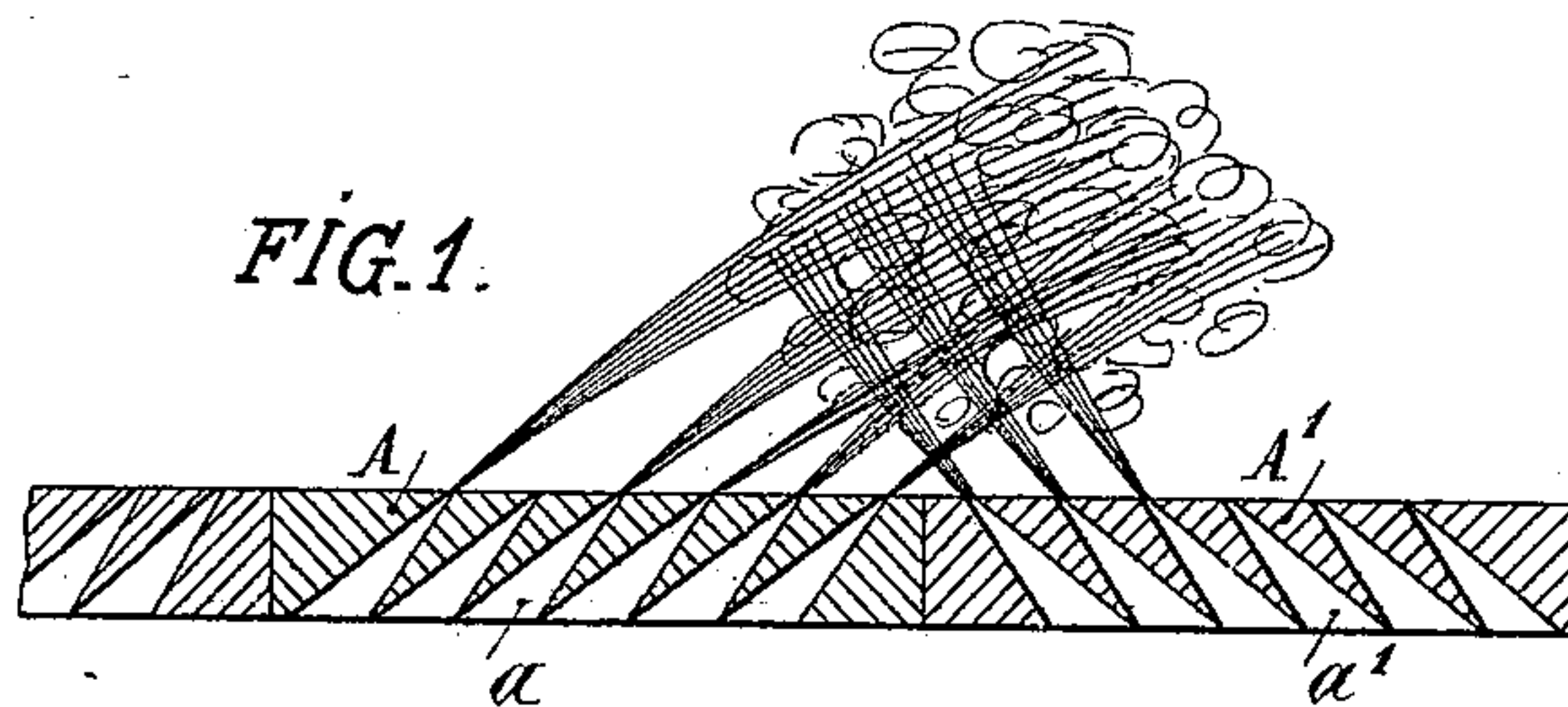
No. 621,373.

Patented Mar. 21, 1899.

E. J. POILLON.  
FIRE BARS.

(Application filed Dec. 27, 1897.)

(No Model.)



Witnesses  
Louis Tailfer  
Jacques Condomy

Inventor  
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# UNITED STATES PATENT OFFICE.

EDOUARD JULIEN POILLON, OF AMIENS, FRANCE.

## FIRE-BARS.

SPECIFICATION forming part of Letters Patent No. 621,373, dated March 21, 1899.

Application filed December 27, 1897. Serial No. 664,584. (No model.)

*To all whom it may concern:*

Be it known that I, EDOUARD JULIEN POILLON, engineer, residing at 7 Rue Leroux, Amiens, in the Republic of France, have invented Improvements in Fire-Bars, (applications for French patent filed the 25th day of March, 1897, No. 265,308; British patent filed the 21st day of July, 1897, No. 17,243; Spanish patent filed the 25th day of August, 1897, No. 21,190, and Russian patent filed the 20th day of October, 1897, No. 3,074,) of which the following is a specification.

This invention relates to an improvement in fire-grates formed of a series of bars placed side by side in the same plane and in the front part of the grate.

It consists, essentially, in constructing a grate in which the air-passages are placed or directed obliquely to the surface of the bars and are convergent, by which means the air-currents passing through them are compelled to cross each other, and thus become thoroughly mixed with the combustible gases.

The invention is fully described hereinafter and is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of the fire-bars at enlarged scale. Fig. 2 is a sectional view of a fire-box with the ash-box closed and steam-jets. Fig. 3 is a plan with portion of the same in sectional view.

In carrying my invention into practical effect I prefer to make the grate of cast-iron plates A, Fig. 1, each having a certain number of slits or air-passages *a* inclined in the same direction and which are very wide at the bottom, so as to afford easy ingress to the air, and very narrow at the top, so that the currents of air which issue from these passages move with sufficient velocity to preserve their inclined direction after they have passed through the layer of coal resting on the grate. These results are obtained by making these slits or passages of a marked triangular section in such manner that the axis of the triangular sections be inclined on the surface of the grate.

When a horizontal draft is required, I arrange, as shown in Figs. 2 and 3, the plates A A' transversely to the fire-box, the ends being supported on blocks or bars B, placed lengthwise, and I place these plates in the re-

quired direction, so that the air-currents from the front plates A are directed toward the bridge C. On the other hand, the air-currents coming from the back plates A' of the fire-box issue in the opposite direction. It will be understood that by this means the intersection of the currents of air issuing from the slits *a a'* causes a quick agitation of the ignited gases, thus insuring their complete combustion. This arrangement, moreover, possesses this important advantage: It absolutely prevents the formation of vertical gas-jets, called "pipe-jets," which cause unequal combustion on the bars and frequently bring about boiler damages.

When the draft is vertical—as, for instance, when it is intended to heat a vertical boiler—the plates are placed lengthwise of the grate—that is to say, in the usual manner—care being taken to alternate the direction in which they are placed, so that the currents issuing from one plate will cross the currents issuing from the next plate, thus producing the whirling of the gases in ignition and insuring the same results which have been confirmed by experience. This disposition is not shown on the drawings.

When the chimney-draft is strong, the system works without any special arrangement; but if the contrary is the case it is advisable to make use of a forced draft.

A forced draft may be obtained, as shown in Figs. 2 and 3, by closing the ash-box D by means of a plate E, in which are fitted the pieces F, in the center of which are placed the steam-jets *f*, branching from an ordinary conduit or pipe *g*, fitted with a regulating-tap *h*.

Any other suitable arrangement may be used for causing a sufficient pressure in the ash-box to impart to the air issuing from the slits in the grate the high degree of speed which is requisite in order to obtain the result desired.

I have stated that I prefer to use plates with oblique slits for the passage of the air to promote combustion, and experience has proved that the plates in this case do not get overheated and that the clinker does not adhere to the plates and stop up the narrow passages intended for the exit of the air; but inclined bars placed close together may also be used, care being taken that they are of exact cali-

ber, so as to make thin and regular currents of injected air, which are requisite for the purpose in view, and these bars should be placed in groups in opposite directions, as described above.

Having now particularly described and ascertained the nature of the said invention, I declare that what I claim is—

A flat grate formed of a series of bars placed side by side in the front part of the grate, said bars having approximately triangular cross-section, and having apertures between the bars, small at top, and widening progressively downward, the axes of said apertures

being at an angle to the plane of the grate, and pointing toward the furnace-bridge, in combination with a like series of bars placed at the back of the furnace and having the axes of the apertures between them, inclined at an angle to the plane of the grate, and toward the front of the furnace.

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

EDOUARD JULIEN POILLON.

Witnesses:

JACQUES COUDONRY,  
LÉON MARTZ.