No. 742,363. PATENTED OCT. 27, 1903.

L. H. SNOOR.

SMOKE CONSUMER.

APPLICATION FILED NOV. 30, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

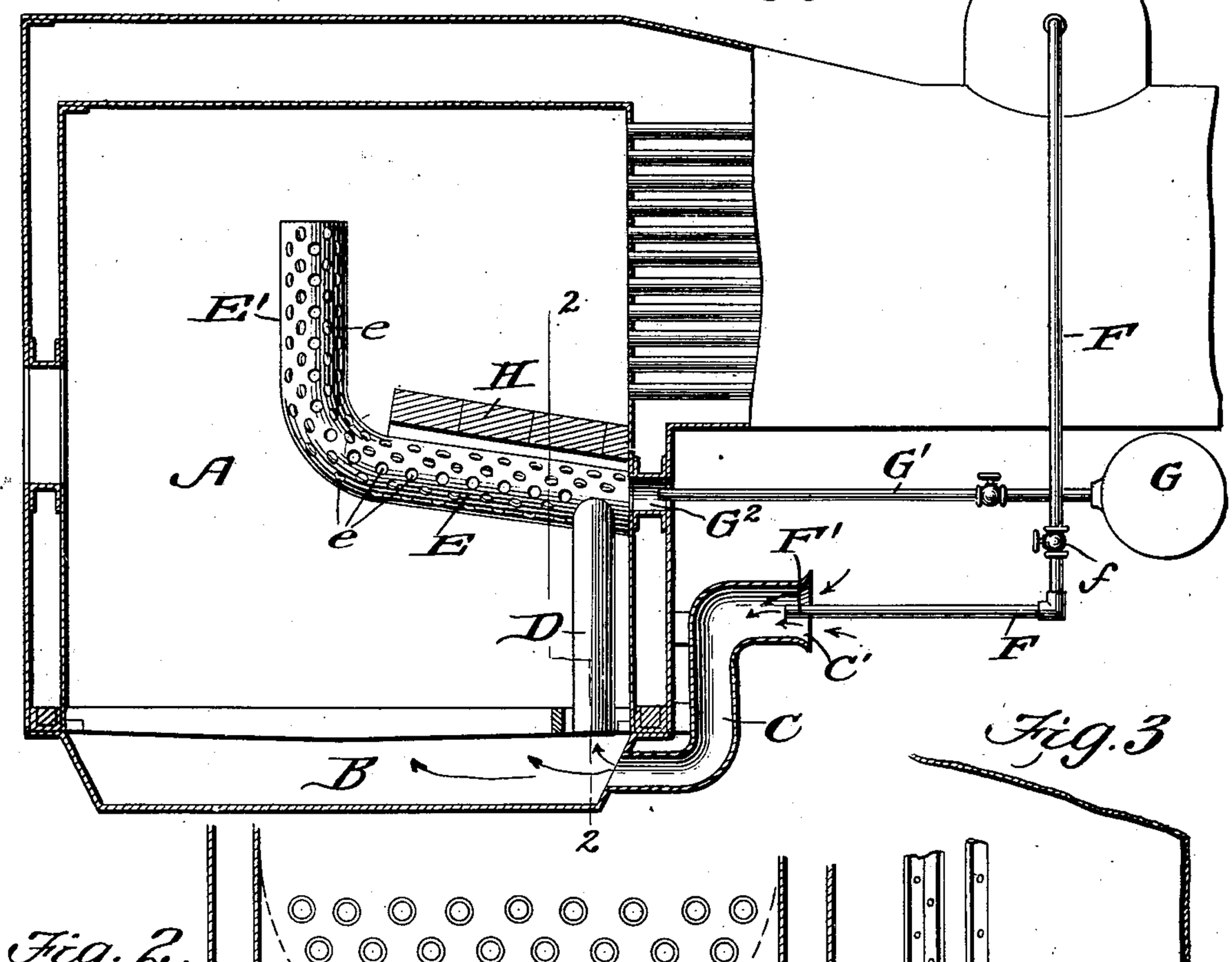


Fig. 3

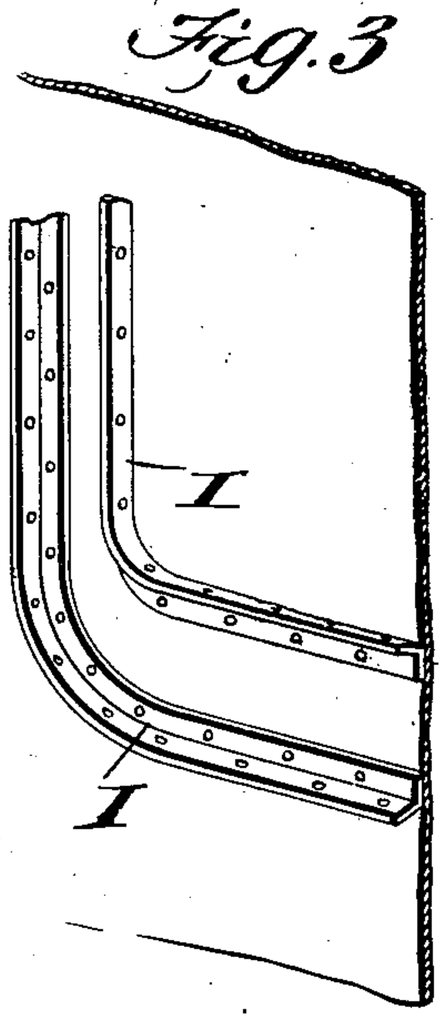
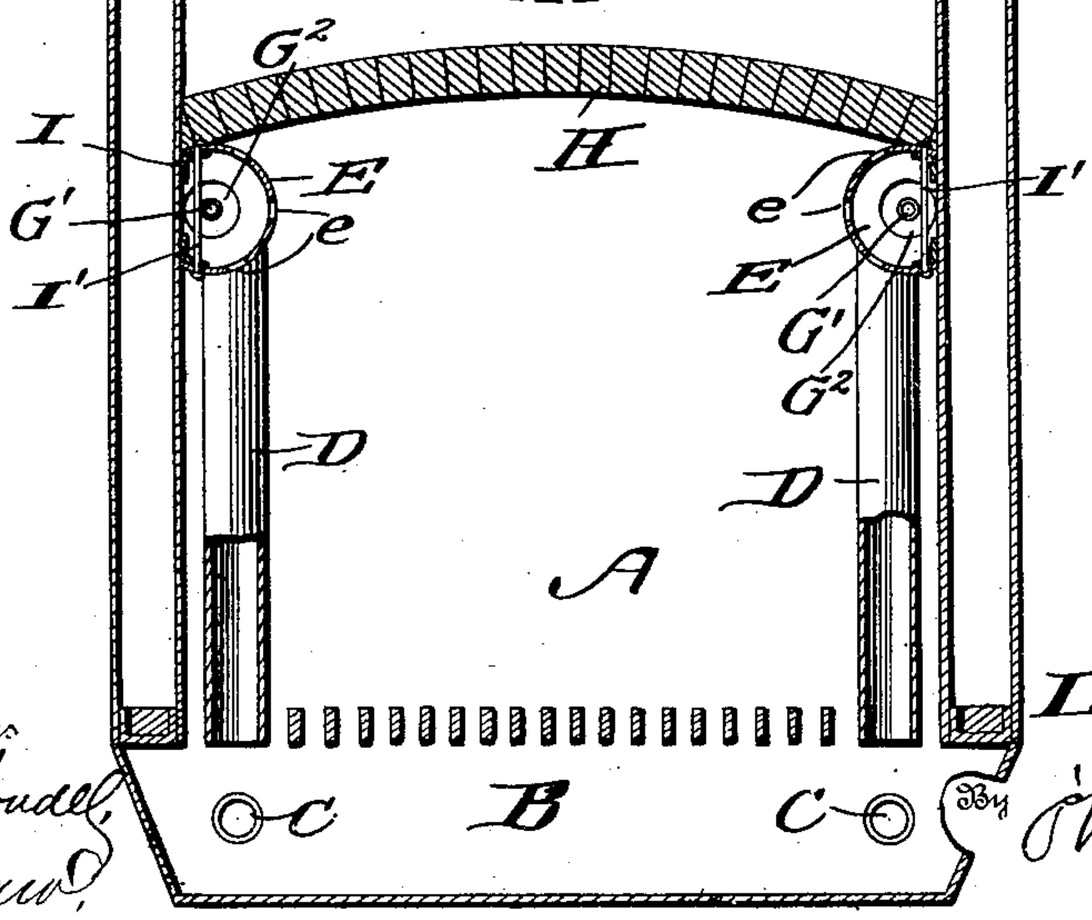


Fig. 2.



Witnesses
M. L. Woodell,
C. Shaw.

Inventor
Lars H. Snoor.

By Thurston & Co
Attorneys

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

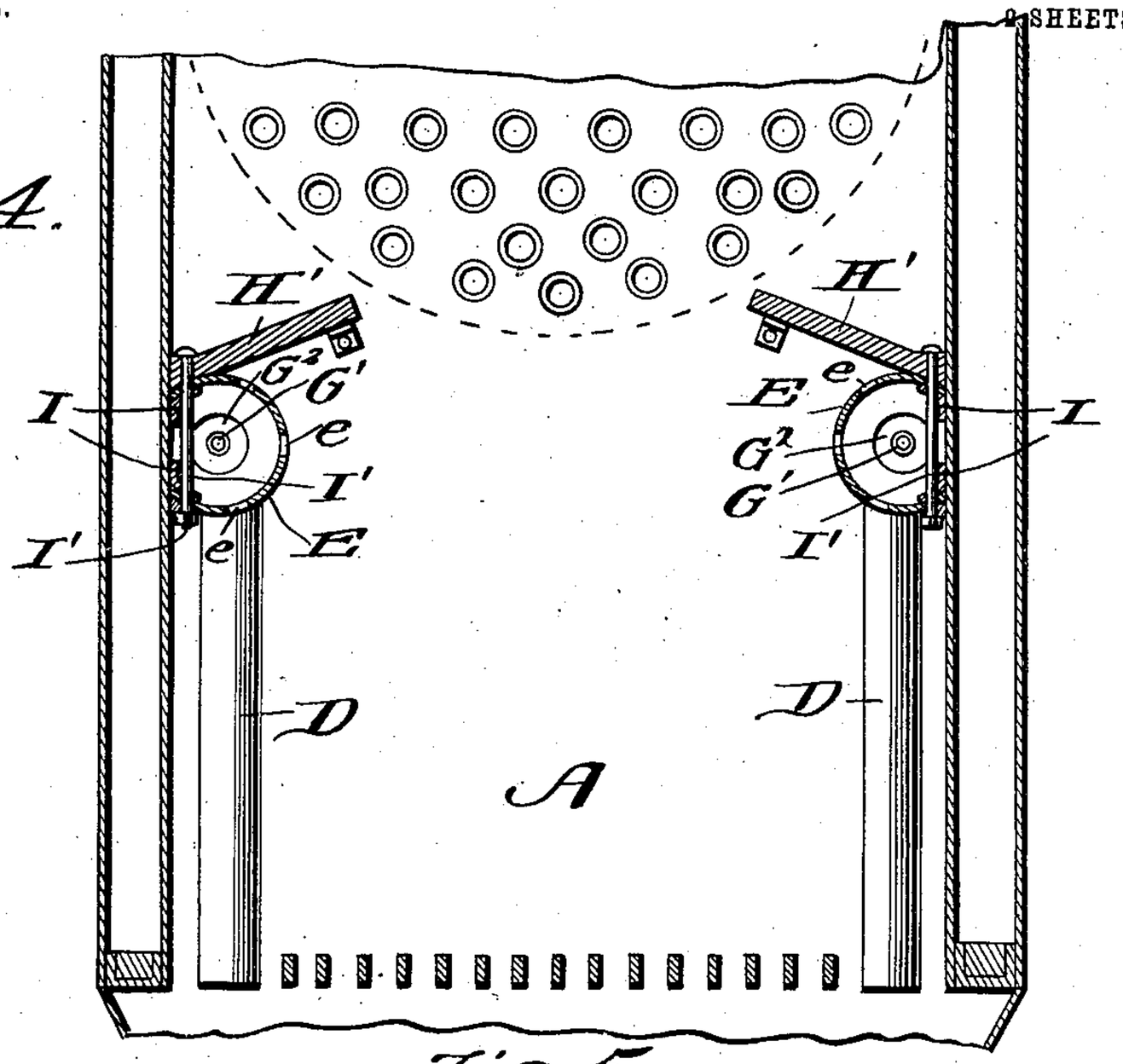
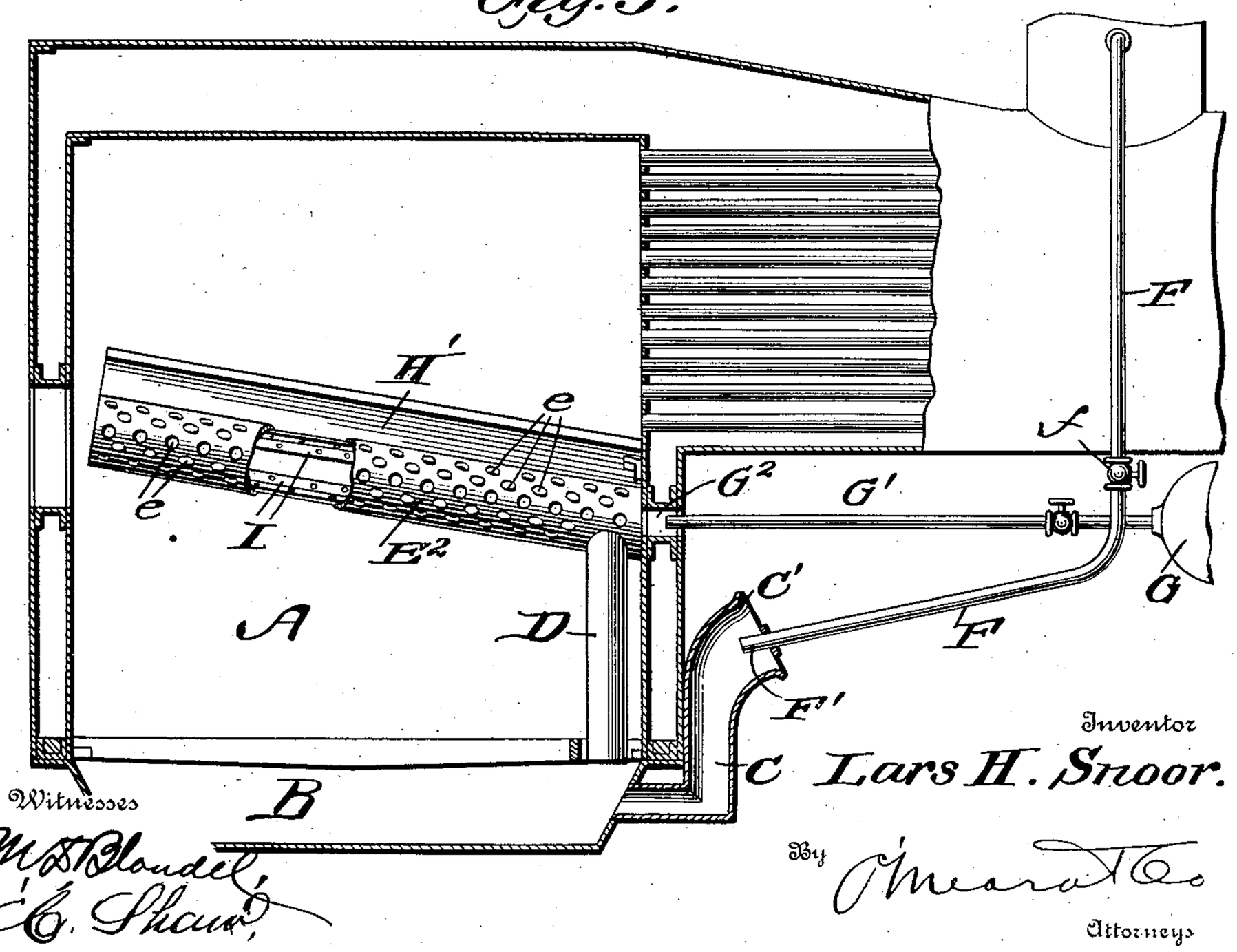


Fig. 5.



Witnesses
W. B. Blondell,
C. Shaw.

Inventor
Lars H. Snoor.

By Howard & Co
Attorneys

No. 742,363. Patented October 27, 1903.

UNITED STATES PATENT OFFICE.

LARS HANSEN SNOOR, OF SHELBY, OHIO.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 742,363, dated October 27, 1903.

Application filed November 30, 1901. Serial No. 84,175. (No model.)

To all whom it may concern:

Be it known that I, LARS HANSEN SNOOR, a citizen of the United States, residing at Shelby, in the county of Richland and State of Ohio, have invented a new and useful Smoke-Consumer, of which the following is a specification.

This invention relates to an improvement in fire-boxes, and particularly locomotive fire-boxes; and the object thereof is to provide an arrangement for introducing air into the fire-box over the fuel for the purpose of producing a more complete combustion.

Another object of my invention is to provide an arrangement to introduce air in such a way that the possibility of the formation of clinkers is reduced; and a still further object is to do away with the blower now commonly used and which is a detriment to an engine.

With these and other objects in view my invention consists in certain peculiar features of construction and novelties of combination, as will be fully described in the following specification and pointed out in the claims, reference being had to the drawings, in which—

Figure 1 is a longitudinal section of my improvement as applied to a locomotive fire-box, the fire-box and boiler being shown in outline. Fig. 2 is a sectional view taken about on the line 2 2 of Fig. 1. Fig. 3 is a detail view of construction. Figs. 4 and 5 show slightly-different arrangement of construction.

While I have shown my invention as applied to the ordinary locomotive fire-box, it will of course be understood that my improvement may be applied with equal effectiveness to various other forms of fire-boxes.

In the drawings, A indicates the fire-box, having a closed ash-pan B, to whose forward end is connected elbow-pipes C, which are preferably arranged upon either side of the front of the pan. Directly above the said elbow C and within the fire-box I arrange pipes D, which have their lower ends terminating flush with the bottom of the grate, their upper ends being connected to and communicating with semicircular pipes E, which are perforated throughout their entire length, as shown at *e*. In Fig. 1 of the drawings the pipe E is shown as formed with an elbow extension E′, the said section E′ extending up a considerable distance within the fire-box; but this form of pipe may be varied and a continuous straight section used, as shown at E^2 in Fig. 5.

Now in order to create a draft in the fire-box I provide the elbow-pipes C with a flaring mouth C′, through which air is admitted, and to cause a more positive draft I arrange pipes F, that are connected to the dome of the boiler and having their lower ends projecting into the flaring mouth of the elbow-pipes, as shown at F′, the said pipes F having valves *f*, by which the amount of steam fed into the elbow-pipes may be regulated or entirely cut off, as conditions may require. By this arrangement it will be seen I obtain a very simple and positive means of securing a draft to the fire, and in order to create a positive draft through the pipes E and into the fire-box I arrange an air drum or cylinder G at any suitable point under the boiler, from which project valve-controlled pipes G′, whose forward ends project a slight distance into an opening G^2 produced in the front of the fire-box and which communicate with the pipes E, and in order to prevent the draft thus created passing direct into the flues of the boiler I arrange an arch H, that is positioned below the flues and extends entirely across the fire-box. This arch may be made of any suitable metal or of fire-brick, as may be found most desirable and durable.

In cases where the flues of the boiler are arranged too low to permit of the arch being used I provide a straight pipe-section E^2, as shown in Fig. 5, and instead of the arch I arrange a shield H′ over each of the pipe-sections E^2, as will be seen by reference to Figs. 4 and 5 of the drawings.

Any suitable means may be employed for securing the pipes E and E^2 in position, but I prefer to securely fasten angle plates or strips I to the sides of the fire-box, to which are connected the pipes by means of bolts I′, that extend from the upper angle-plates entirely through the pipe and through the angle-plates and pipe, where they are headed to hold them in position, and in cases where the shields are used I utilize the bolts I′ for securing the inner edges of the shields in place

and also to hold the pipes in position. The outer edges of the shield are preferably supported by means of cleats or angle-plates, as shown.

By the arrangement of the perforated pipes I am enabled to introduce air into the upper portion of the fire-box, and escaping as it does through the perforations in the pipes it strikes the gases as they leave the coal and commingling with the gases causes them to be consumed before reaching the flues of the boiler.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a fire-box having angle-plates arranged upon the inner face thereof, perforated pipes connected to the said angle-plates and bolts engaging said pipes and angle-plates whereby the said pipes are held in position, and an arch arranged above and supported by the said perforated pipes, substantially as shown and described.

2. The combination with a locomotive fire-box, of an inclosed ash-pan below the fire-box, air-pipes opening horizontally into said ash-pan, perforated pipes arranged in the fire-box and opening exteriorly thereof, means for feeding air into said pipes and vertical pipes opening downwardly into the ash-pan adjacent the horizontal pipes, and opening upwardly into the perforated pipes.

3. The combination with a locomotive fire-box and grate, of an inclosed ash-pan below the grate, pipes flaring at their outer ends opening horizontally into said ash-pan, steam-pipes projecting into and discharging within said flaring mouths, perforated pipes in the fire-box, means for feeding air to said pipes, and vertically-arranged pipes opening downwardly through the grate into the ash-pan, and upwardly into the perforated pipes.

4. The combination with a fire-box and boiler, of an ash-pan below the fire-box, air-pipes opening into the rear end of the ash-pan, steam-pipes adapted to inject steam into said air-pipes, perforated pipes arranged in the fire-box, means for feeding air into said perforated pipes, pipes opening downwardly into the ash-pan adjacent the inner ends of the air-pipes first mentioned, and opening upwardly into the perforated pipes, and an arch arranged above a portion of the perforated pipes.

LARS HANSEN SNOOR.

Witnesses:
C. H. HUBER.
WM. RHINE.