

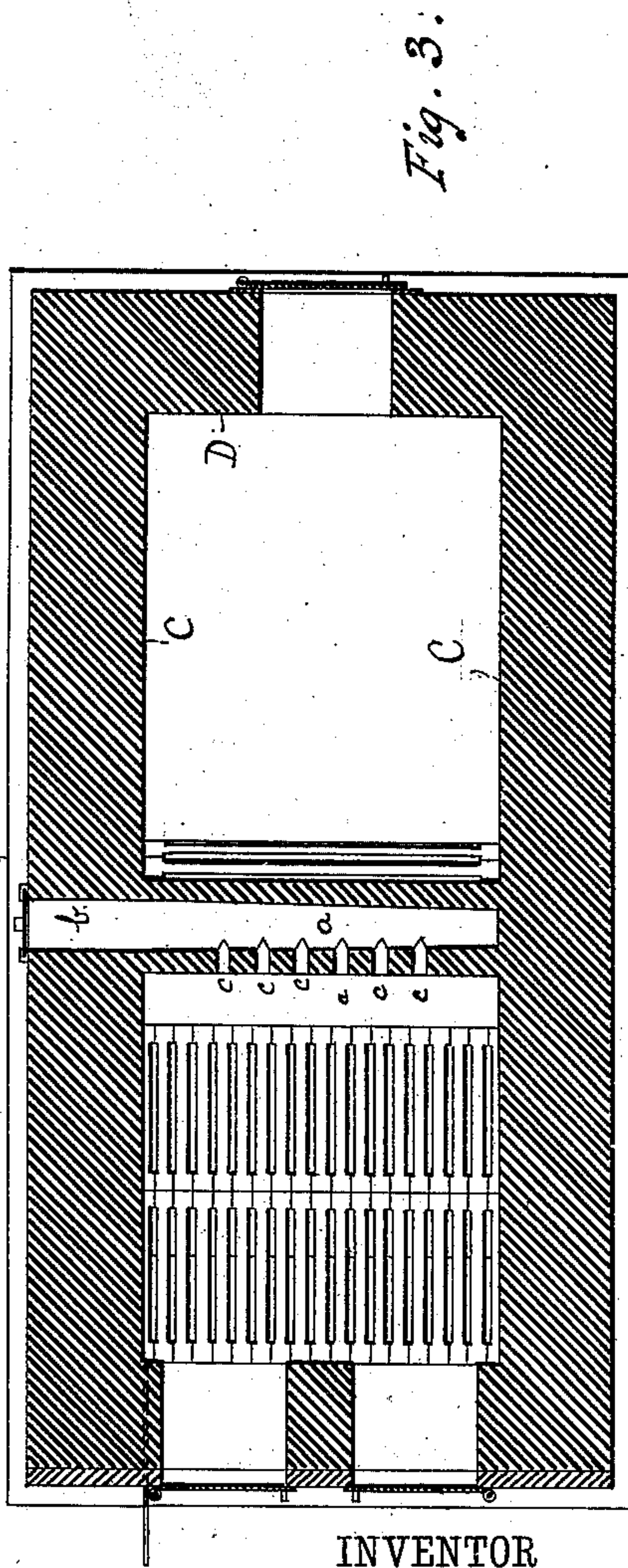
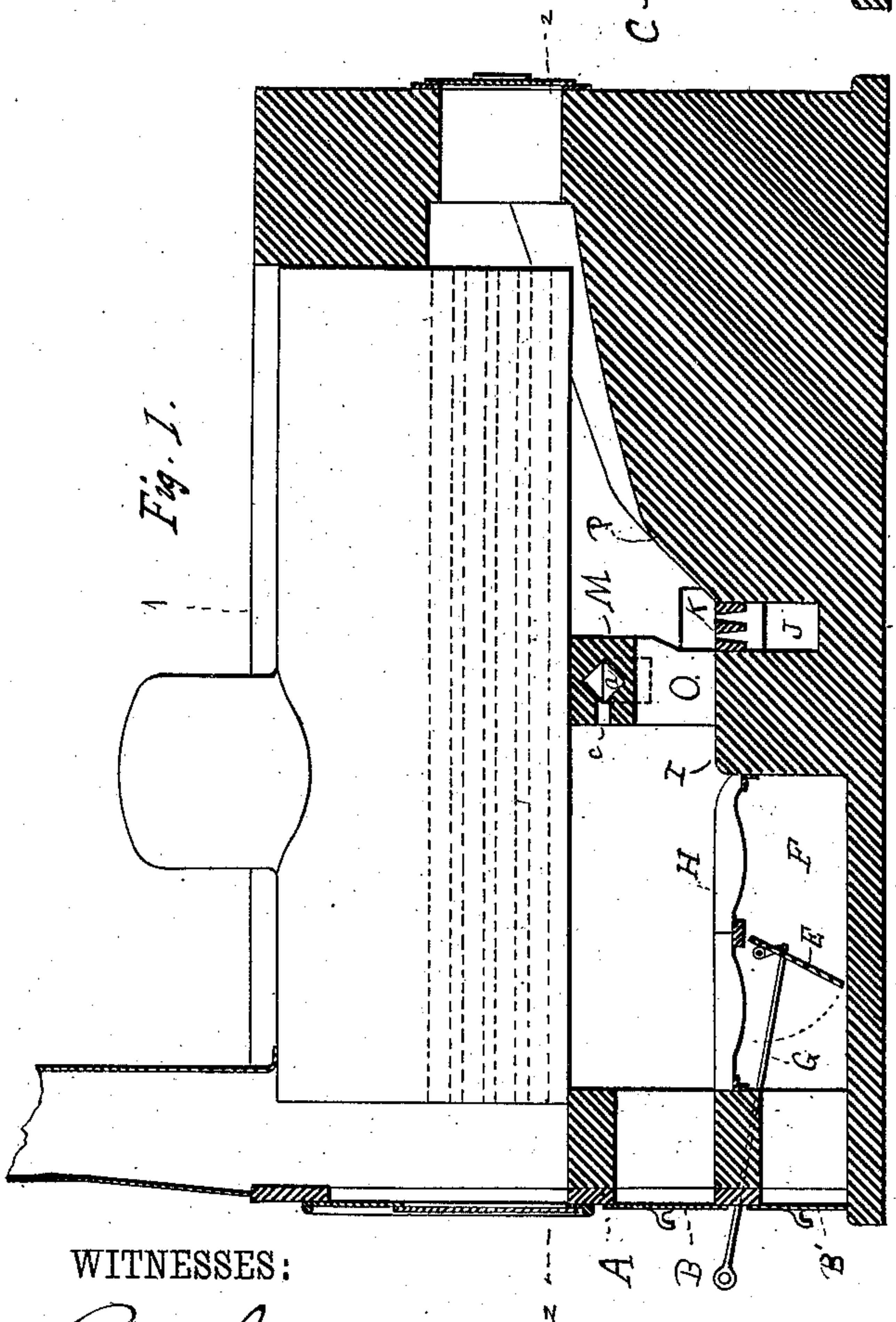
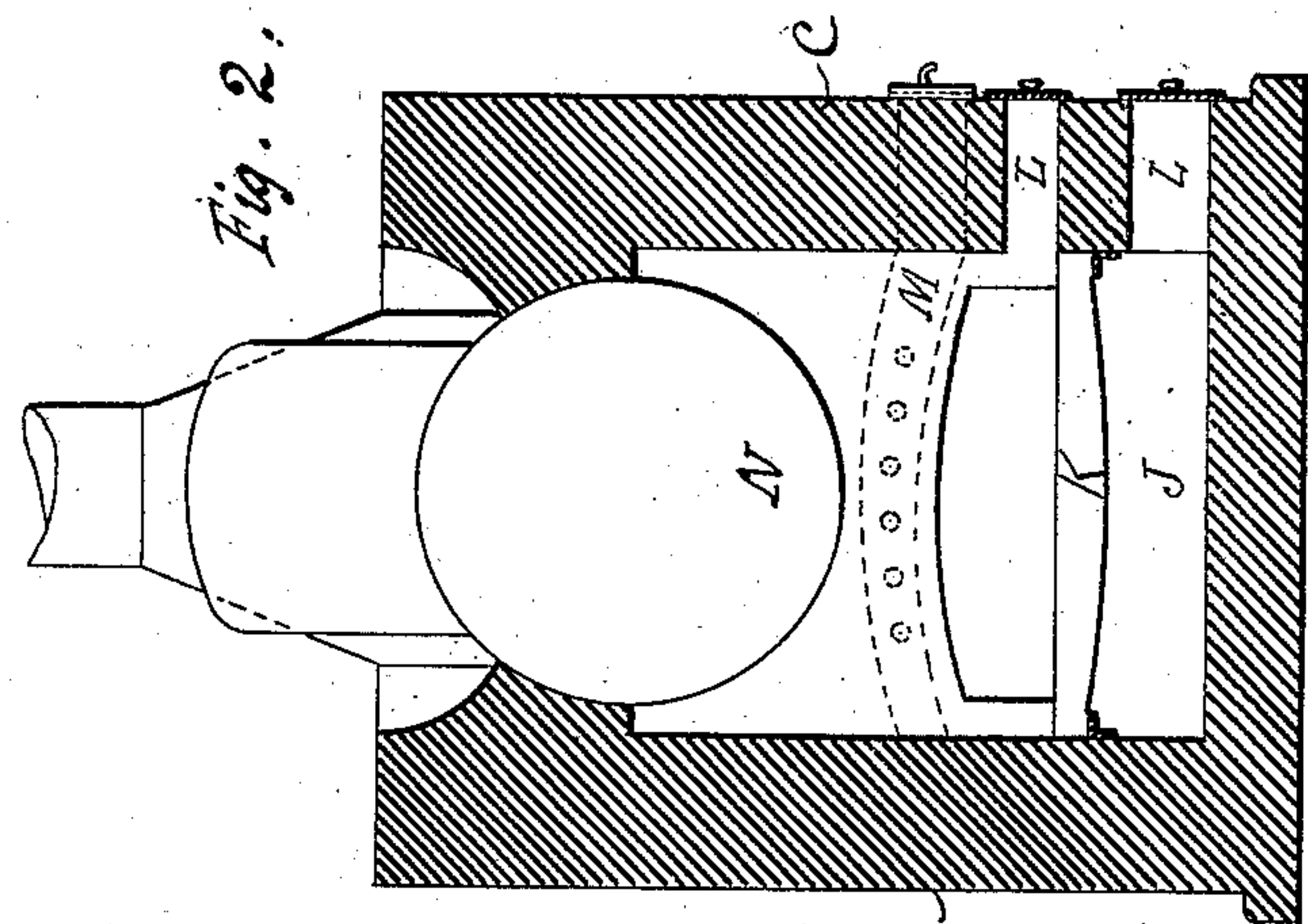
(No Model.)

H. C. WILLIAMSON.

FURNACE.

No. 294,556.

Patented Mar. 4, 1884.



WITNESSES:

*G. Peck*  
*Louis Volting*

INVENTOR

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# UNITED STATES PATENT OFFICE.

HENRY C. WILLIAMSON, OF MICHIGAN CITY, INDIANA.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 294,556, dated March 4, 1884.

Application filed October 30, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. WILLIAMSON, a citizen of the United States of America, residing at Michigan City, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in furnaces. The object it has in view is to obtain a more perfect combustion, and thereby more thoroughly consume the smoke.

To the accomplishment of the above, the invention consists of certain novel devices and combination of devices, as will be described and claimed.

Reference will be made to the accompanying drawings, in which Figure 1 is a longitudinal sectional view; Fig. 2, a section on line 1 1 of Fig. 1, and Fig. 3 a section on line 2 2 of Fig. 1.

Like letters refer to like parts in each view.

In the drawings, A represents the front wall, in which are formed the ordinary fuel-doors, B, and ash-pit doors B'.

C C are the side walls, and D the rear wall, of the furnace. A damper, E, is located in ash-pit F, said damper having bearings in side walls, C, and being operated by a rod, G, which passes out through the front wall. The object of this damper is to vary the force of the air-currents on different parts of grate H, as will be understood. The bridge-wall I separates the ash-pit F from an additional or auxiliary ash-pit, J. (Shown clearly in Figs. 1 and 3.) Ash-pit J is covered by a grate, K, and access thereto is gained through openings L, made in the side wall of the furnace. The object of this additional ash-pit and grate is to consume any fuel which may accidentally be forced beyond the main grate, and by providing means for the admission of air through the openings L combustion is increased.

Situated over bridge-wall I, and a short distance to the rear of the front edge thereof, is an arch, M, which nearly closes the space between said bridge-wall and the boiler N, leaving only an arched passage, O, between those parts. A passage, a, is formed through the arch M, which communicates with the outer air through a passage, b, formed in the

side wall of the furnace, and with the interior of the furnace through a series of openings, c, made in the front face thereof. The passage a, formed in the arch, decreases gradually in size from the point where it communicates with passage b, in order that the current of air passing through openings c may be uniform. The passage b, formed in the side wall, is closed by a suitable register, whereby the air to be admitted is regulated, and the openings c of arch M are so arranged that the air passing therethrough will be brought in direct contact with the gases arising from the fire-bed, whereby the parts commingle and serve to increase combustion and consume smoke.

To the rear of the auxiliary ash-pit J there is formed a floor of masonry, P, as shown in Fig. 1. As shown in that figure, this masonry from the additional grate takes an abrupt turn upward, and then is built on a gradual incline to the rear wall of the furnace, whereby the space between it and the boiler through which the currents escape to the flues gradually diminishes in size.

By the arrangement and construction of the parts, as hereinbefore described, the gases arising from the fire-bed are thoroughly commingled with the air-currents and thoroughly heated and consumed, whereby the waste of heat and fuel in the form of smoke is greatly lessened.

What I claim is—

1. The damper E, situated in ash-pit F, and operated as described, in combination with arch M, provided with passage a and openings c, and communicating with the outer air, as and for the purpose set forth.

2. The combination of damper E, arch M, provided with passage a and openings c, and communicating with the outer air, and auxiliary ash-pit J and grate K, as and for the purpose set forth.

3. The combination of damper E, arch M, constructed as described, auxiliary ash-pit J and grate K, and inclined floor P, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. WILLIAMSON.

Witnesses:

JARED H. ORR,

J. A. THORNTON.