

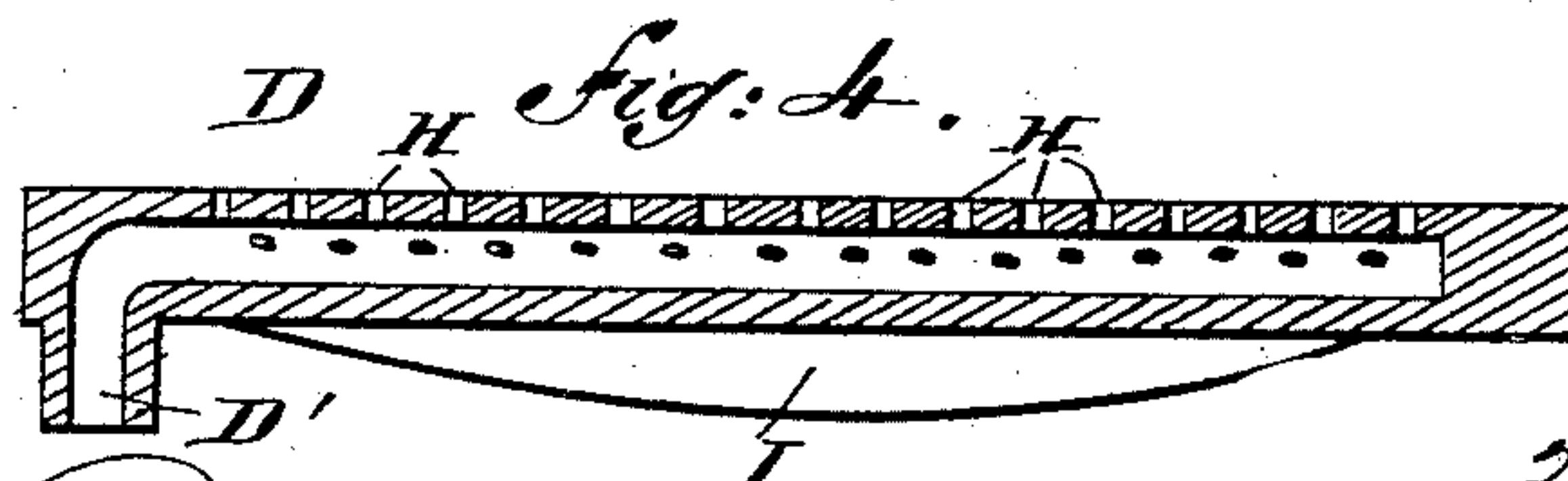
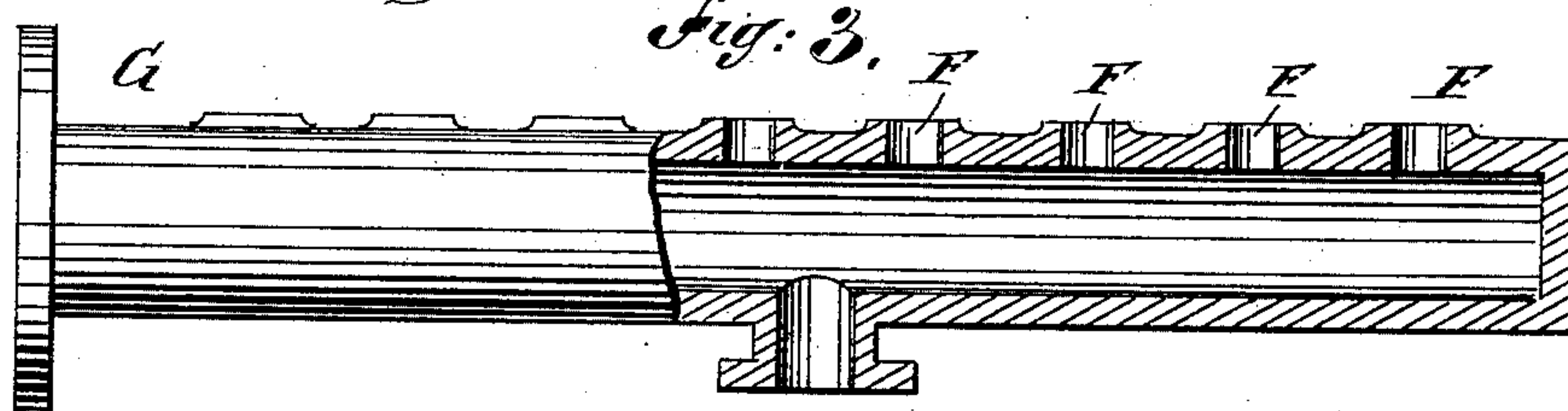
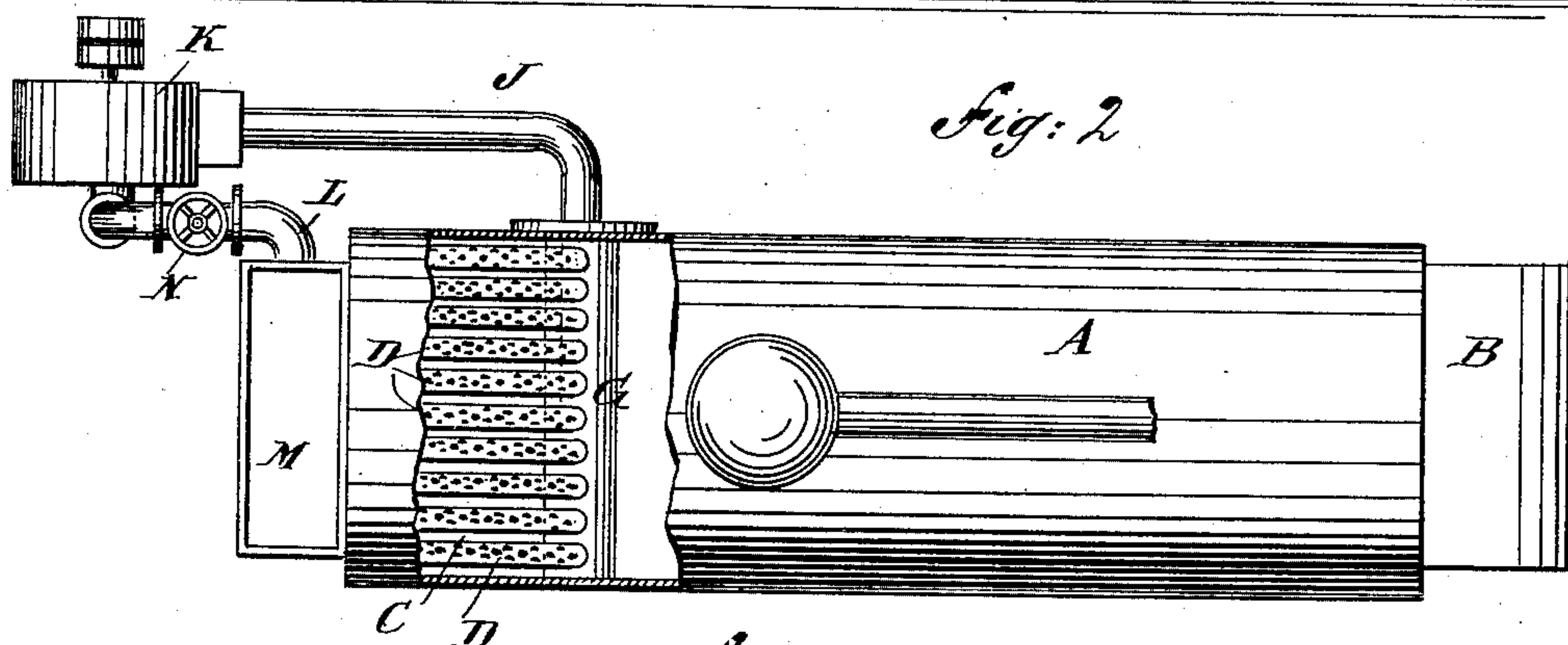
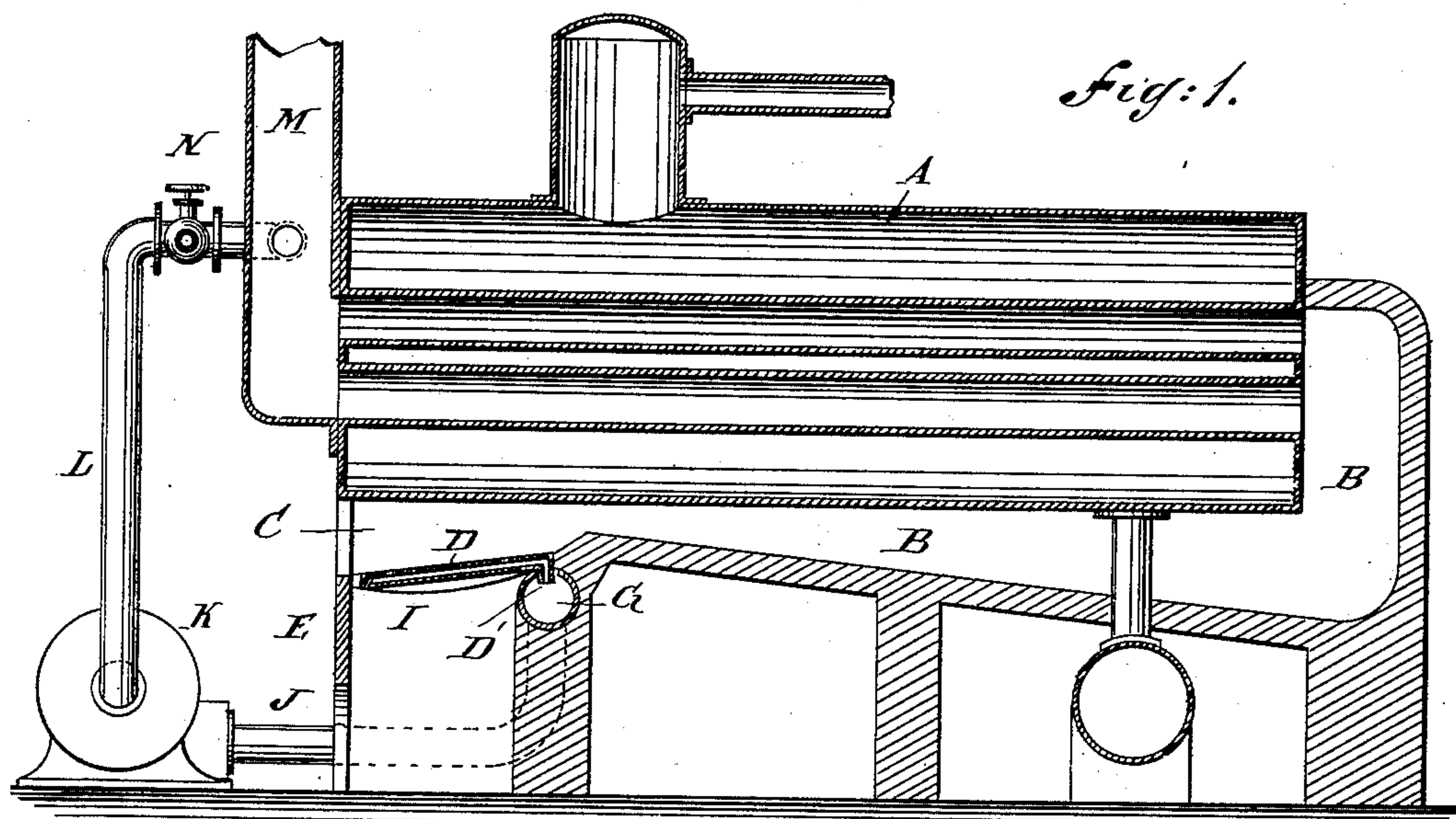
(No Model.)

Z. T. RENO.

FURNACE FOR STEAM BOILERS.

No. 359,034.

Patented Mar. 8, 1887.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ZACHARY TAYLOR RENO, OF NEW ORLEANS, LOUISIANA, ASSIGNOR TO HIMSELF, AND JOHN S. SNEDEKER, OF NEW YORK, N. Y.

FURNACE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 359,034, dated March 8, 1887.

Application filed June 23, 1886. Serial No. 206,007. (No model.)

To all whom it may concern:

Be it known that I, ZACHARY TAYLOR RENO, of New Orleans, in the parish of Orleans and the State of Louisiana, have invented a new and Improved Furnace for Steam-Boilers, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved furnace in which a perfect combustion of the fuel on the grate-bars takes place.

The invention consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my improvement. Fig. 2 is a plan view of the same, parts being broken out. Fig. 3 is a side elevation of the feed-tube, partly in section; and Fig. 4 is a sectional elevation of one of the grate bars.

The boiler A, of any approved construction, is suitably mounted in the furnace B, having the fire-place C, in which are placed the hollow grate-bars D, each mounted with its closed end in the front wall, E, of the furnace B, while the rear end of each end bar, D, is provided with a downwardly-extending pipe, D', which fits into an opening, F, in the tube or cylinder G, placed transversely in the furnace B and supported in the side walls of the same. Each grate-bar D is thus supported by the front wall, E, of the furnace B and by the tube G. Each of the grate-bars D is provided on its top and sides with perforations H, and a strengthening-rib, I, is secured to the under side.

Into the tube G leads the pipe J, which connects with a fan, K, of suitable construction, and connected by a pipe, L, with the chimney or smoke-stack M of the boiler A. The pipe L is provided with the three-way valve N for regulating the supply of pure air, combined with gas and smoke from the smoke-stack M, for the fan K.

The operation is as follows: The fan K forces a mixture of pure air and gas derived from the smoke-stack of the boiler into the tube G, from which it passes into the cross-bars D, and out of the same through the perforations H directly into the fire on the top of the grate-bars D, so that a complete combustion of the fuel on the grate bars D is obtained, thereby increasing the heating capacity of the furnace, and at the same time utilizing and consuming smoke and waste gases, which would otherwise pass out into the air through the chimney N.

In this furnace bagasse and rice-hulls can be very successfully burned.

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

In a furnace, the combination of the hollow grate-bars D, having the perforations H, and provided with the angular pipe D' and transverse tube G, with the pipe J, the fan K, and the pipe L, connected with the smoke-stack M of the boiler A, and provided with the three-way valve N, substantially as shown and described.

ZACHARY TAYLOR RENO.

Witnesses:

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