

(No Model.)

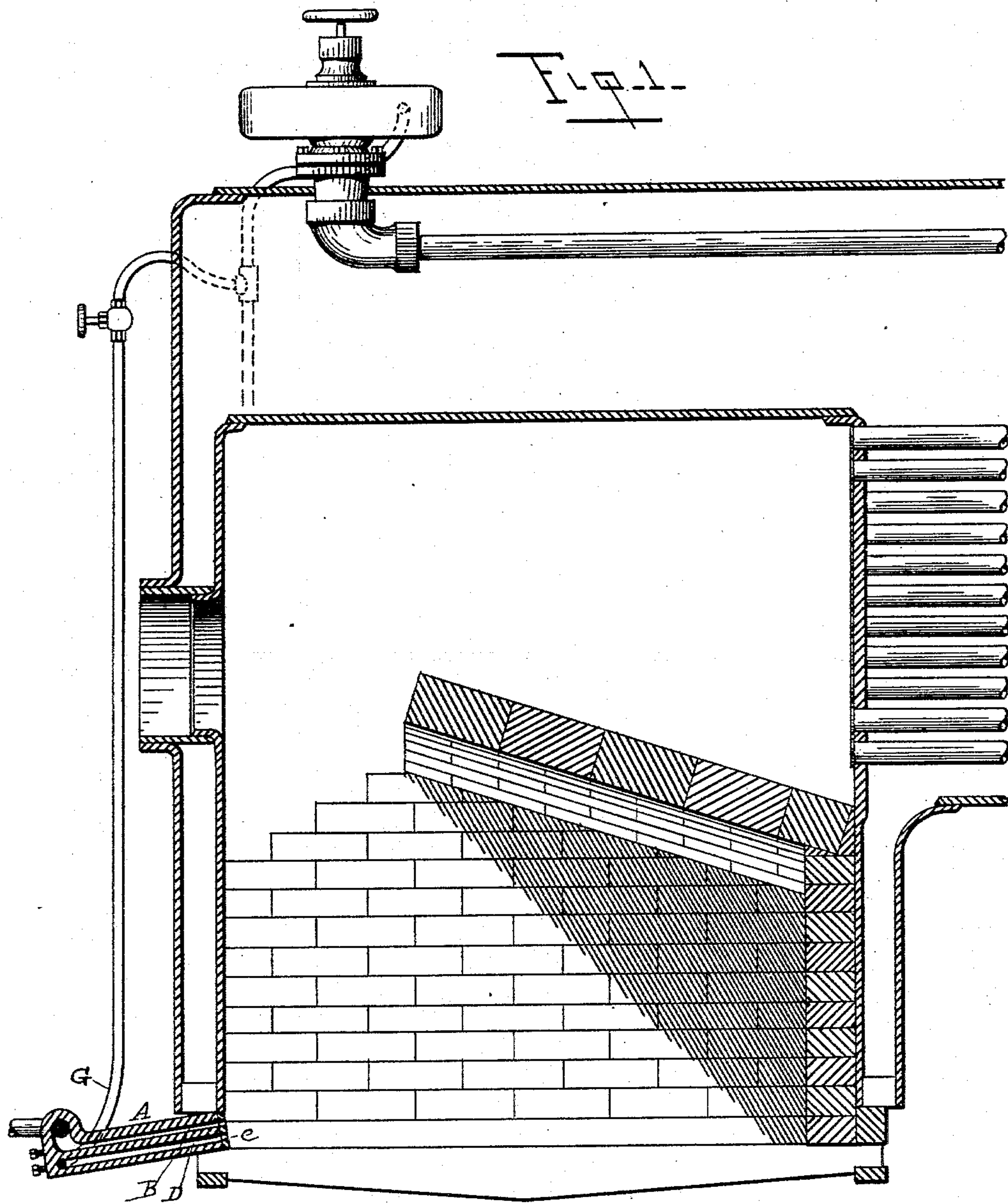
2 Sheets—Sheet 1.

W. BOOTH.

APPARATUS FOR BURNING PETROLEUM IN FURNACES.

No. 533,521.

Patented Feb. 5, 1895.



Witnesses

*A. S. Fair*  
*Wm. E. Howell*

Inventor

*William Booth*  
*by Jno. L. Boone*  
Attorney

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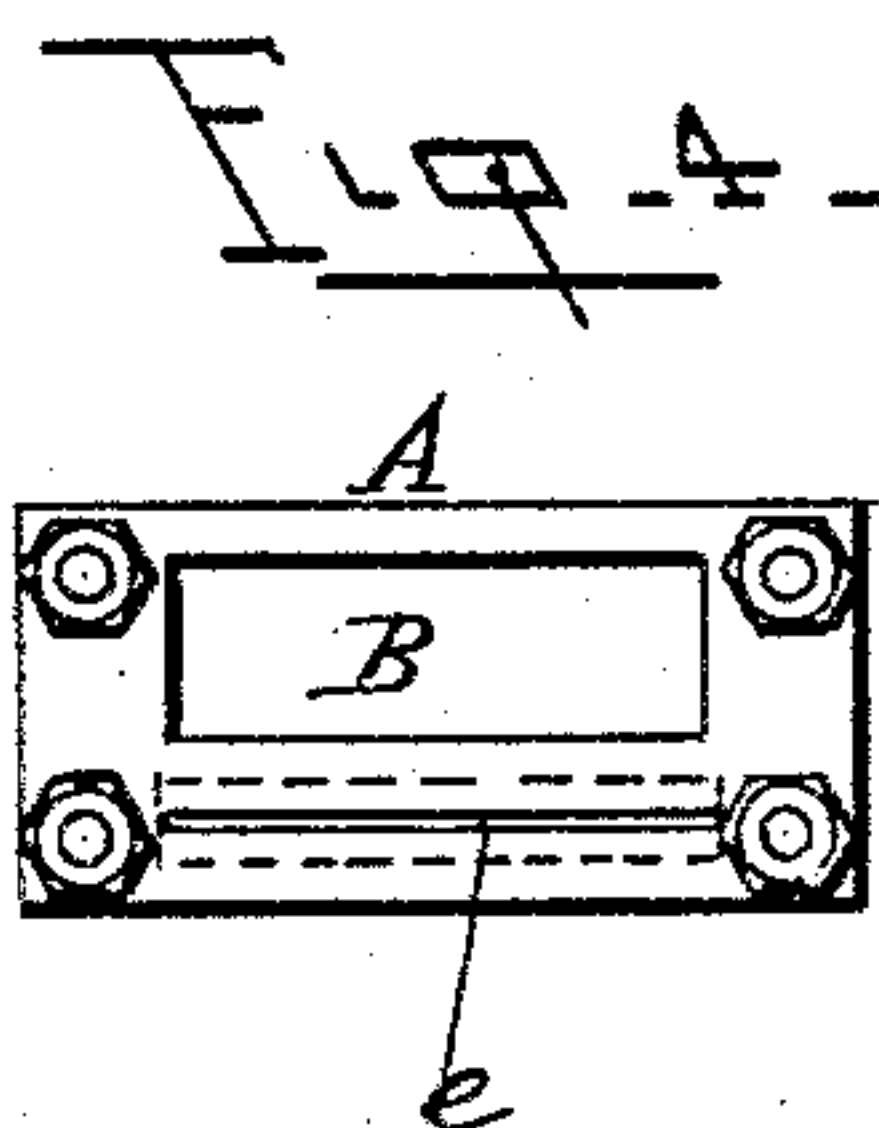
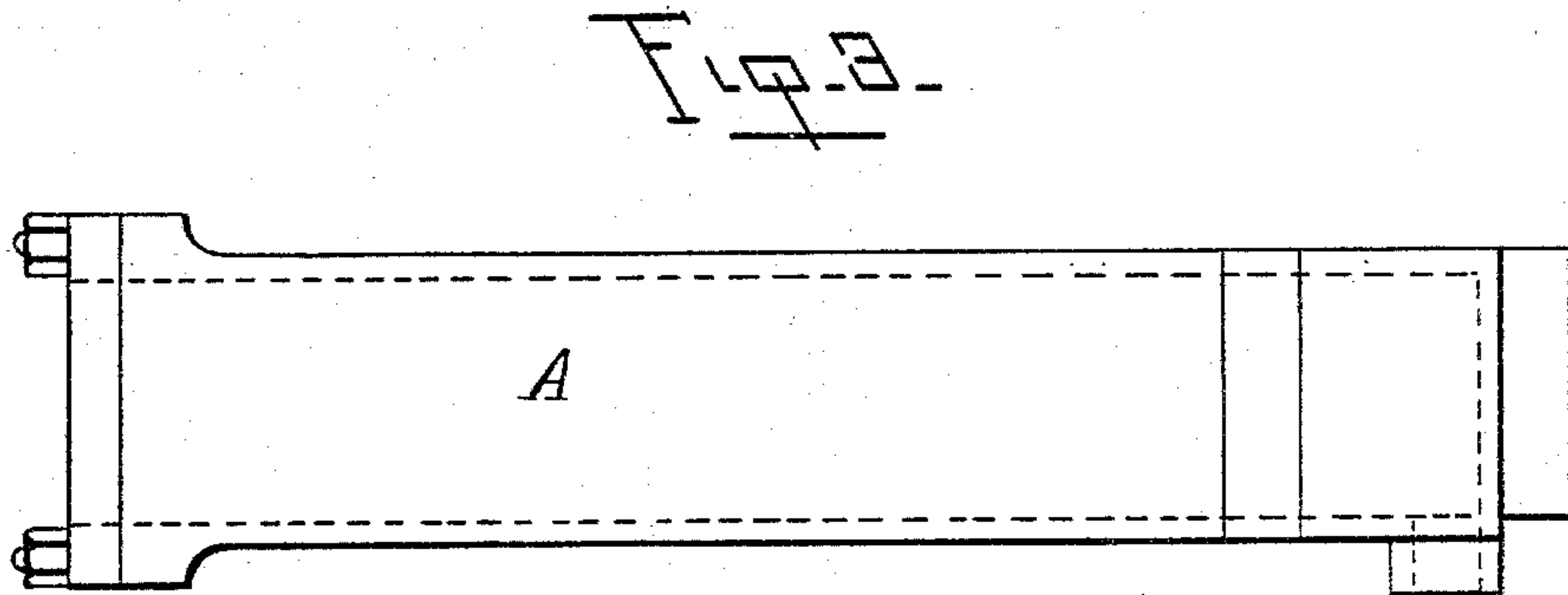
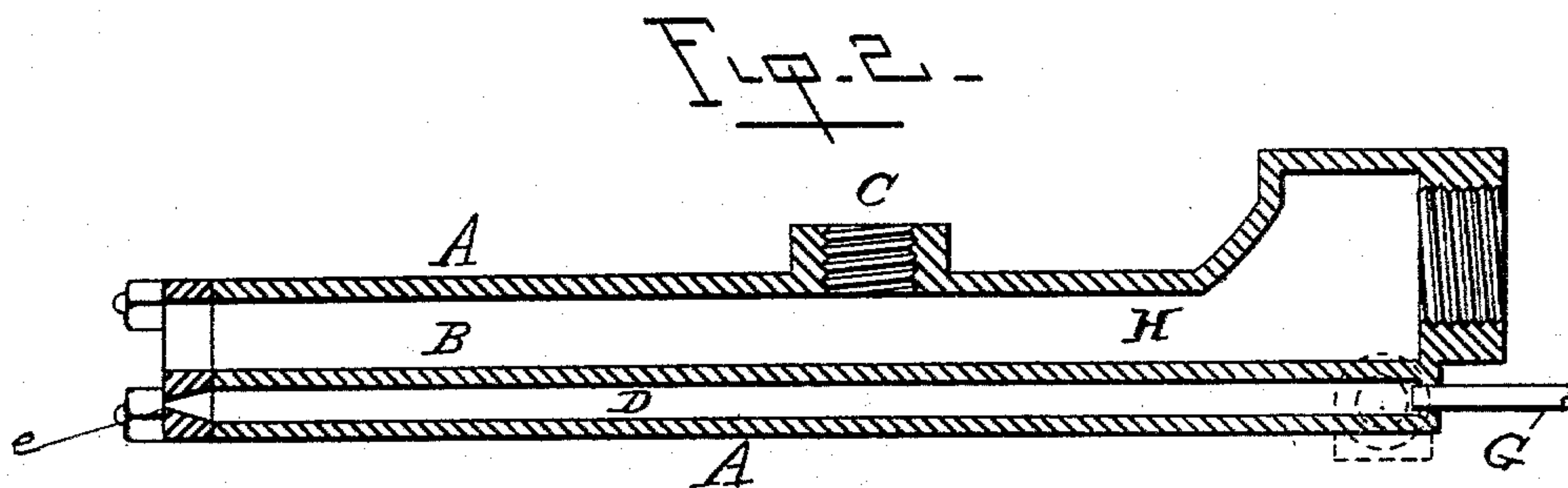
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# UNITED STATES PATENT OFFICE.

WILLIAM BOOTH, OF SAN FRANCISCO, CALIFORNIA.

## APPARATUS FOR BURNING PETROLEUM IN FURNACES.

SPECIFICATION forming part of Letters Patent No. 533,521, dated February 5, 1895.

Application filed June 28, 1894. Serial No. 615,986. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BOOTH, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Apparatus for Burning Petroleum in Furnaces; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention relates to an improved apparatus for injecting hydrocarbon oil, and especially crude petroleum, into furnaces, so that it may be used as a fuel.

It consists of the detailed construction of the device involving parallel chambers. The upper passage is rectangular in form and is adapted to receive and convey the hydrocarbon oil to the extremity of the casting, where it will flow in a broad, flat, thin stream down across the lower opening. The lower passage is the steam passage, and it terminates in a long narrow slit in the end of the casting directly below the opening in the oil passage, so that as the thin, flat stream of oil flows downward across it it is caught by the steam jet and sprayed into the furnace, where it is burned.

Referring to the accompanying drawings for a more complete description of my oil burner, Figure 1 is a vertical longitudinal section of a furnace showing the brick work lining, and the burner in place. Fig. 2 is a longitudinal section of the oil burner. Fig. 3 is a plan view of the burner, and Fig. 4 is an end view showing the oil and steam orifices.

A is a casting, which I have represented in the drawings as being made of a single straight casting, but it can be variously shaped.

In the upper part of the casting is a rectangular passage B, which I prefer to make wide and flat, as shown at Fig. 4, so that the oil which passes through it will flow from its extremity down across the end of the casting in a broad, thin, flat sheet.

C is the supply opening, through which the oil is delivered into the oil passage. A pipe

or tube connects this opening with the oil reservoir, which is placed at a distance from the burner and on a somewhat higher level, so that the oil will flow into the burner by gravity. A cock in the length of this pipe serves to regulate the flow of oil.

D is the steam passage in the casting underneath the oil passage B. It terminates at the end of the casting in a thin narrow slit somewhat longer than the width of the oil passage, as shown at *e*, Fig. 4. The steam pipe which delivers steam into this pipe is connected at G.

Although it is not indispensable in the use of my burner, I usually extend the oil passage farther back than the oil supply opening, and provide an air chamber or opening H, so that air will pass into the furnace with the oil through the oil passage. If, however, a sufficient supply of air can be obtained in the furnace through the usual furnace doors I can dispense with this air supply in the burner.

In using this burner I insert its extremity through an opening in the furnace front, so that it will project an inch or two into the furnace. It is fixed in place at a slight inclination so that the oil will flow from the supply opening into the furnace. As it flows down across the end of the casting the oil is caught by the thin sheet of steam that issues from the steam orifice *e*, and projected into the furnace in a finely subdivided condition like a spray, in which condition it is burned.

This burner can be used for burning crude oils in all kinds of furnaces, but care must be taken to line metal furnaces with fire brick before using it, as the heat generated is instantaneous and great.

I have used this burner in the furnaces of locomotive engines in Peru with the greatest success.

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

The burner for burning crude petroleum, consisting of the casting having parallel longitudinal passages or chambers, one for steam and the other for the fluid fuel and air, said steam-passage or chamber terminating at one

end in the form of a slit and having its opposite closed end provided with a steam-pipe connection, and the other passage or chamber provided with an intermediate fluid fuel  
5 supply-inlet and, in rear of said supply-inlet, with an air-inlet or chamber, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two witnesses.

WILLIAM BOOTH.

Witnesses:

CHAS. J. ARMBRUSTER,  
FRED C. HART.