

A. W. BRAND.
 DEVICE FOR FEEDING AIR TO FURNACES.
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934,275.

Patented Sept. 14, 1909.

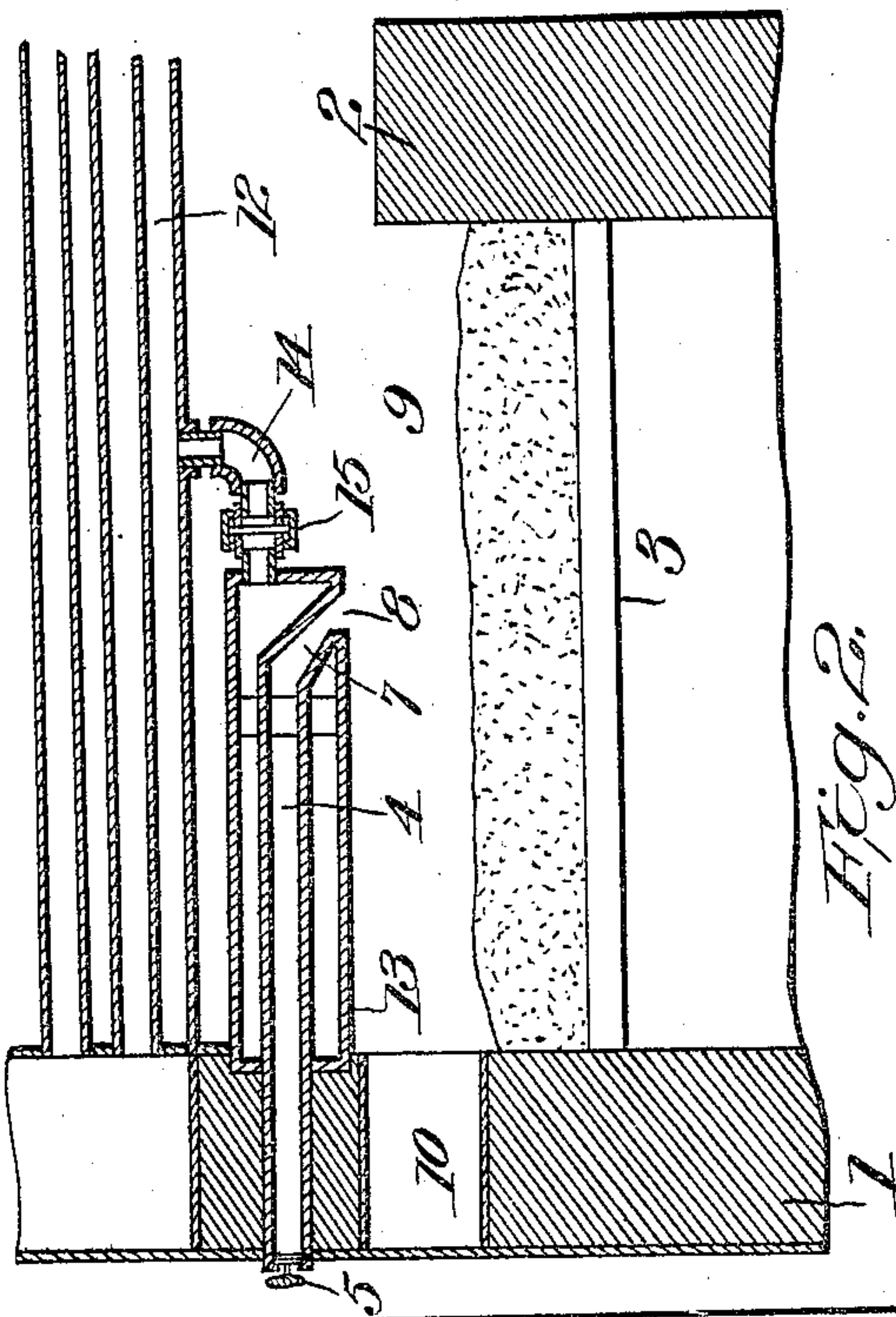


Fig. 1.

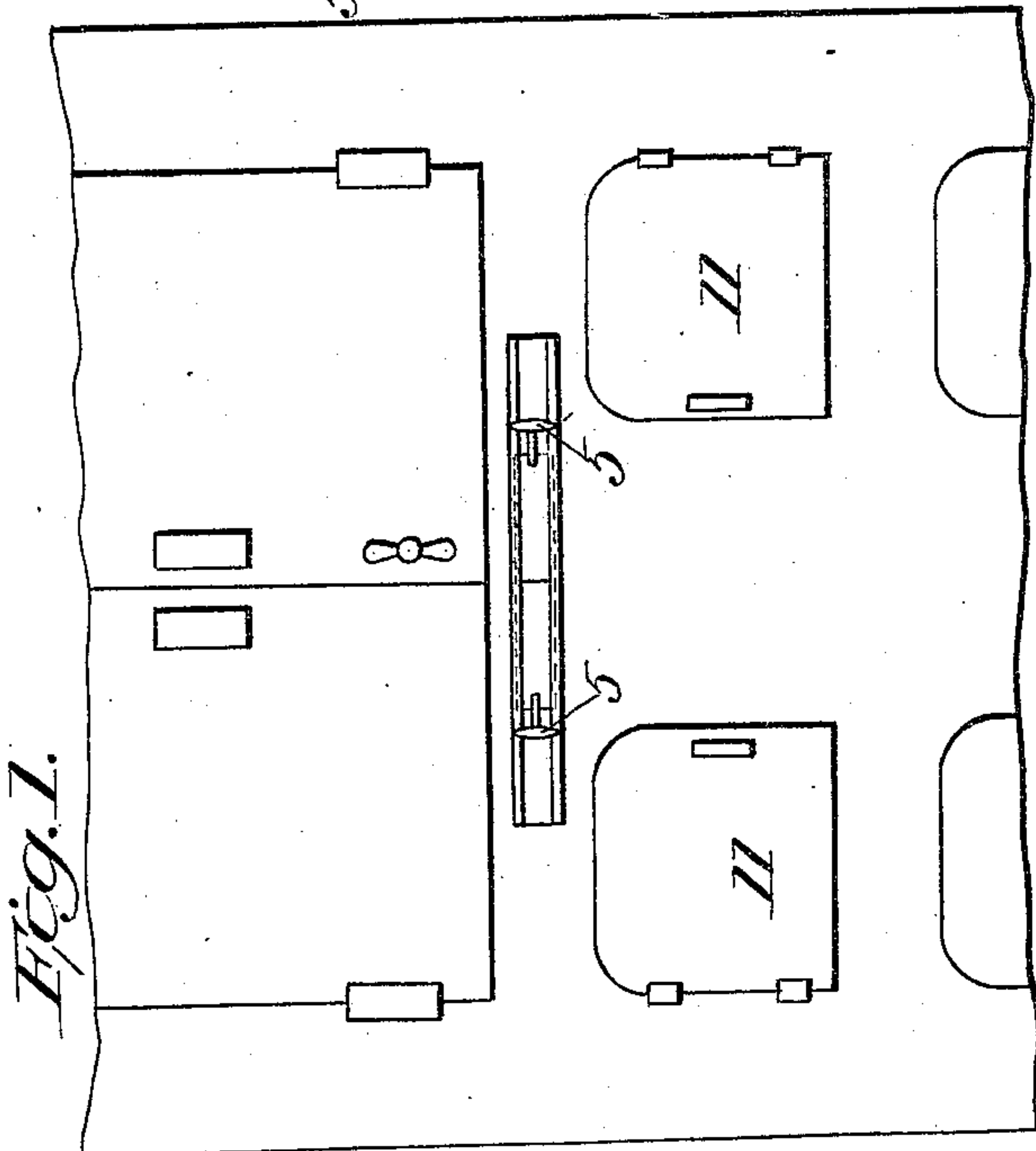
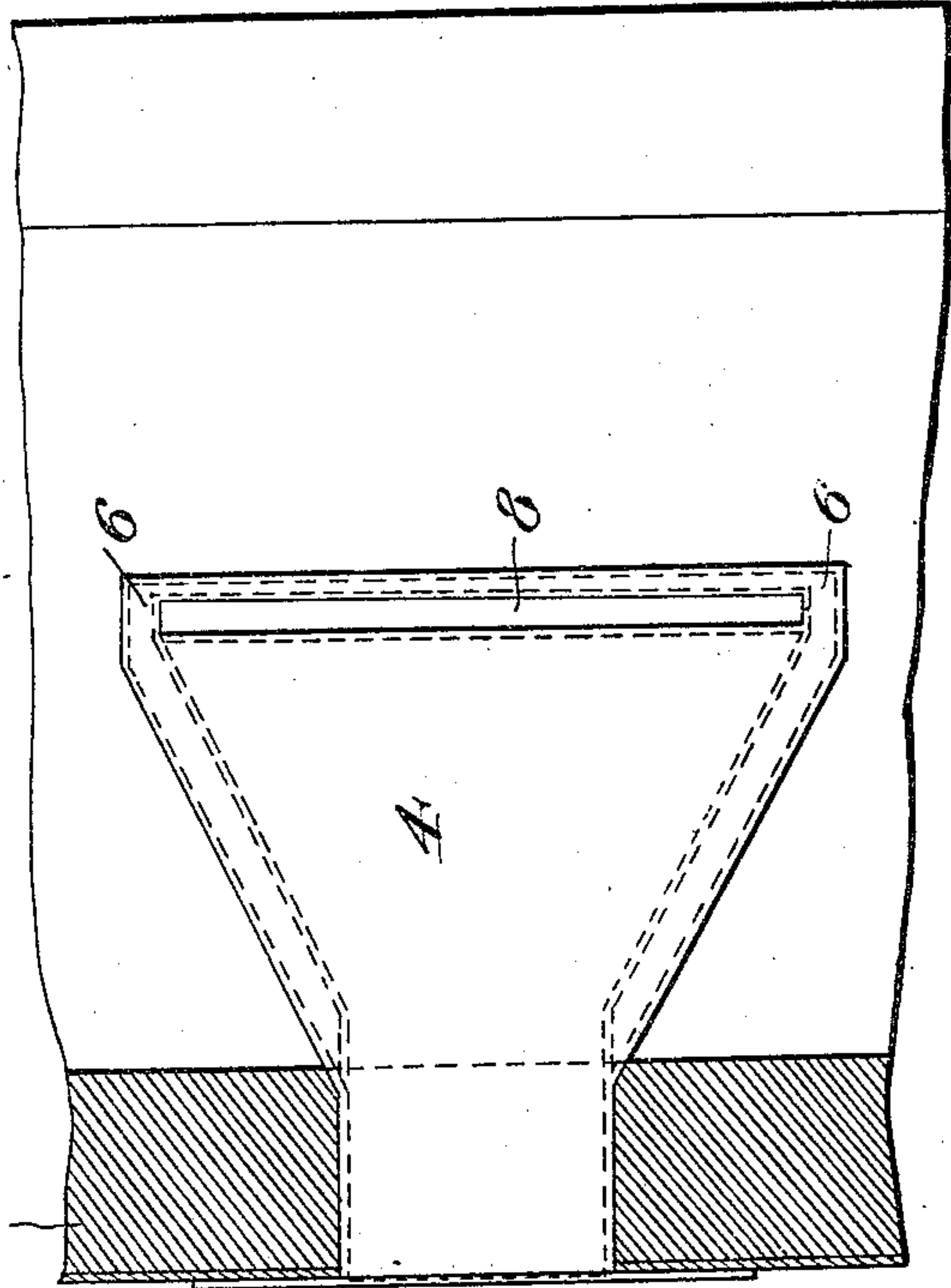


Fig. 3.

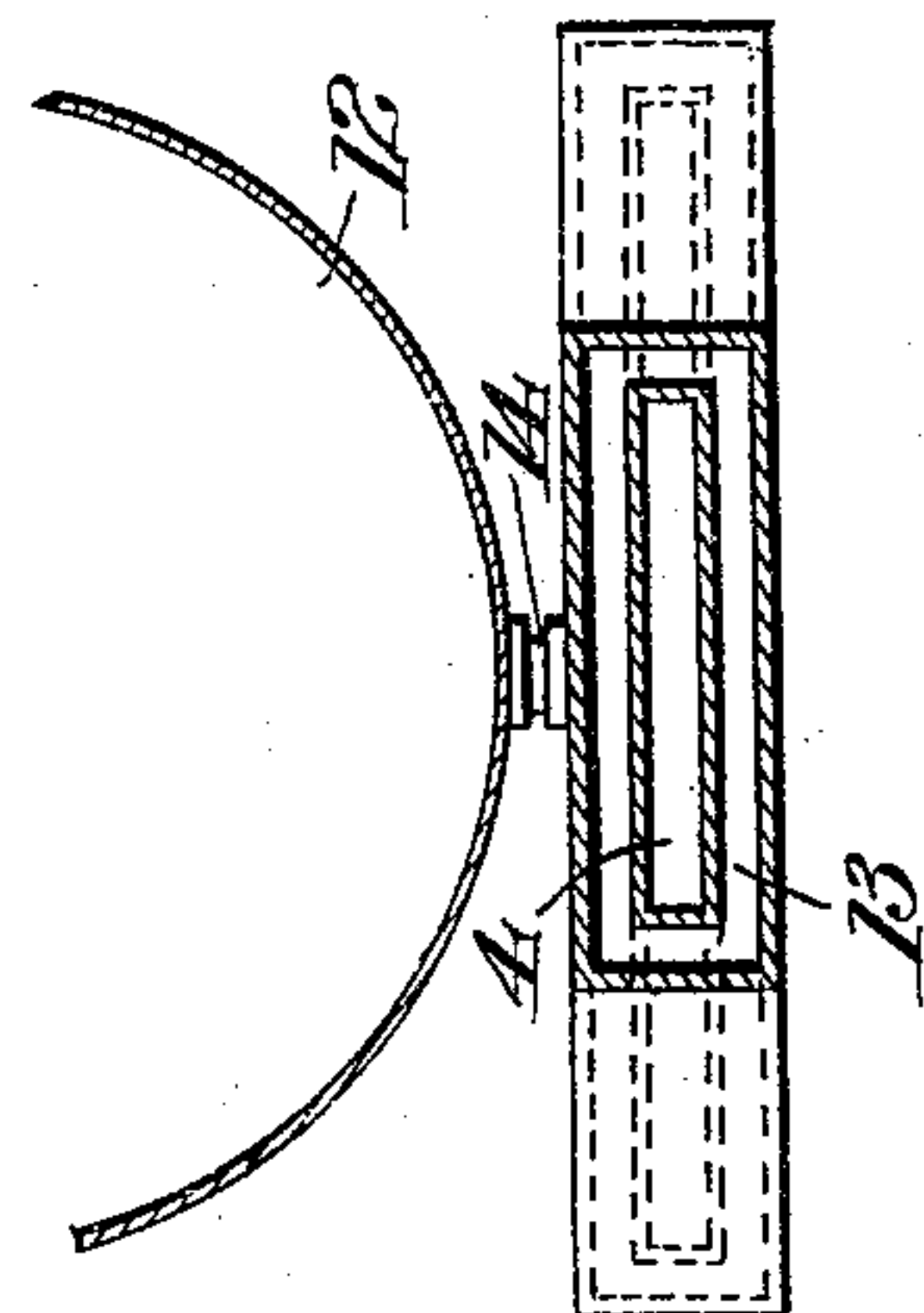


Fig. 4.

Witnesses:

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DEVICE FOR FEEDING AIR TO FURNACES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ACHILL WALTER BRAND, a citizen of the United States, residing at Boise, in the county of Ada, State of Idaho, have invented certain new and useful Improvements in Devices for Feeding Air to Furnaces, of which the following is a description, reference being had to the accompanying drawing, and to the figures of reference marked thereon.

My invention relates to new and useful improvements in devices for feeding air to boiler fires, furnaces and other fuel chambers.

The object of my invention is to provide a down draft of air on the fuel in the fuel chamber, whereby the efficiency of the combustion is greatly increased, producing quicker and much more intense heat, and, at the same time, abolishing the smoke and soot nuisance.

A further object of the invention is to provide a device for feeding air to the central part of the fuel chamber and at a point above the fuel, which device is provided with a water jacket to prevent the air supplying device from being damaged by the intense heat.

Further objects of the invention will in part be obvious, and in part be hereinafter more fully described.

In the drawings which show by way of illustration, my invention as applied to a boiler,—Figure 1 is a front view of the ordinary boiler front; Fig. 2 is a section through the boiler, showing my improved device in vertical section; Fig. 3 is an inverted plan view of the device, parts of the furnace being shown and the connections with the boiler being omitted; Fig. 4 is a sectional view through my improved air feeding device, showing the relation and its connection with the boiler.

While I have shown my improved device as applied to a boiler for feeding air to a boiler fire, it is to be understood that said device may be used in connection with furnaces or fuel chambers of any desired character, and that it is merely shown herein as applied to a boiler for the purpose of illustrating the invention.

In the present embodiment of the invention, the boiler front 1 with the bridge wall 2 and the support 3 for the fuel, may be of the ordinary construction, although the support 3 for the fuel may be either a grate

or a solid portion, for in the use of my device the combustion takes place at the surface of the fuel by reason of the fact that air is fed to the fuel chamber directly over the fuel.

In starting the fire, the coal is placed on the support 3, and the kindling is placed on top of the support. The down draft on the fuel causes the combustion.

My improved device for providing a down draft, as herein shown, consists of an air passage 4, which extends to the front of the boiler, where it is closed or regulated by means of suitable dampers 5, 5. The dampers herein shown are of a sliding character, but it is obvious that any other form of damper may be provided. The air chamber 4, after passing through the front wall of the fuel chamber, expands outwardly in a lateral direction, as at 6, 6, to substantially the width of the boiler as shown in Fig. 4.

The air chamber 4 at its inner end is bent downward as at 7, so as to provide an open mouth 8, directly over the fuel 9, which rests on the support 3 of the fuel chamber. The open mouth 8 of the air chamber 4 is located substantially centrally of the fuel chamber and as the mouth of the air chamber extends substantially across the entire width or diameter of the boiler, it will readily be seen that a sheet of air will be fed to the central part of the fuel chamber which sheet of air extends substantially across the fuel chamber or across the natural path of the gases passing underneath the boiler. The gases will therefore, be thoroughly mixed with the air and the combustion greatly increases.

Instead of leading the air chamber 4 directly through the front wall of the fuel chamber, it is obvious that said air passage may be led to the upper side of the boiler, or to any other desired plate, the essential feature being that air may be taken from outside of the fuel chamber and fed to a point centrally of the chamber and directly over the fuel. The fuel chamber is supplied with fuel through the usual openings 10, which are closed by suitable doors 11, 11.

As shown herein, the boiler 12 is located directly above the fuel chamber, and may be of any desired form. As a means for protecting the walls of the air chamber 4, I have surrounded the same with a water jacket 13, which extends entirely around the air chamber 4, as is clearly shown in Fig. 4. The water jacket, as herein shown, is con-

nected by a suitable coupling 14 with the boiler 12. A valve 15 may be provided, if desired, in said coupling 14.

In the operation of my device, as above
5 noted, the fuel is laid on the support 3 with the kindling on top and the dampers 5 open, so as to supply air to the air chamber at a point directly above the fuel. By my device, where air is supplied to the fuel at a point
10 directly above the same, a very complete combustion is secured, producing quicker and much more intense heat. The complete combustion also avoids all objectionable smoke and soot.

15 The air passing through the air passage 4, before leaving the mouth 8 thereof, becomes intensely heated, which also aids greatly in the free combustion of the fuel. The water jacket surrounding the air passage, prevents
20 the intense heat from in any way destroying the device for feeding the air. Said water jacket is kept supplied with water from the boiler.

While I have shown the water jacket as
25 connected with the boiler, it is obvious that said water jacket may be supplied with water by other means, if desired.

Having thus described my invention, what
I claim as new and desire to secure by Let-
30 ters Patent, is:—

1. The combination with a fuel chamber having a front wall of a device for feeding air to the fuel chamber extending through

the front wall and to a point within said chamber centrally over the fuel therein, said
35 device diverging outwardly toward the center of the chamber whereby the delivering end thereof extends substantially across the width of the boiler and is adapted to dis-
40 charge a sheet of air which extends substantially across the fuel chamber, the delivery end of said device being bent downwardly so as to direct a sheet of air downwardly di-
rectly on to the center of the fuel.

2. The combination with a fuel chamber
45 having a front wall of a device for feeding air to the fuel chamber extending through the front wall and to a point within said chamber centrally over the fuel therein, said device diverging outwardly toward the cen-
50 ter of the chamber whereby the delivering end thereof extends substantially across the width of the boiler and is adapted to discharge a sheet of air which extends substan-
55 tially across the fuel chamber, the delivering end of said device being bent downwardly so as to direct a sheet of air downwardly directly on to the center of the fuel, and a water jacket surrounding said device.

In testimony whereof I affix my signature, 60
in presence of two witnesses.

ACHILL WALTER BRAND.

Witnesses:

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