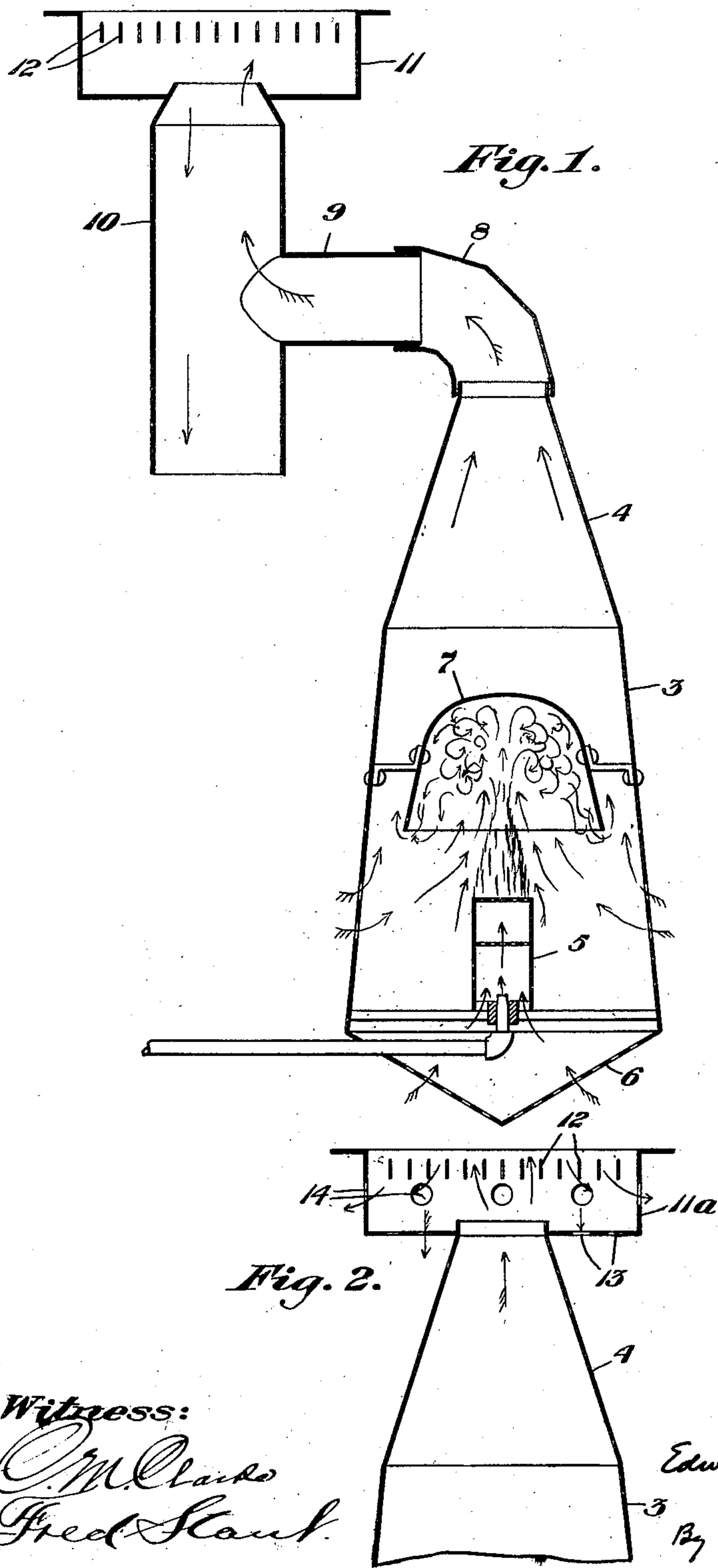


No. 877,871.

PATENTED JAN. 28, 1908.

E. N. SNITJER.
FURNACE.

APPLICATION FILED NOV. 16, 1907.



Witness:
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UNITED STATES PATENT OFFICE.

EDWIN N. SNITJER, OF PITTSBURG, PENNSYLVANIA.

FURNACE.

No. 877,871.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Original application filed November 5, 1906, Serial No. 342,153. Divided and this application filed November 16, 1907.
Serial No. 402,430.

To all whom it may concern:

Be it known that I, EDWIN N. SNITJER, a citizen of the United States, residing at Pittsburgh, in the State of Pennsylvania, have invented a certain new and useful Improvement in Furnaces, of which the following is a specification.

My invention relates to heaters burning gases or vapors and particularly to means for preventing downdraft in heaters attached directly to a register and to means for causing complete combustion of the gases, as well as other advantages which will hereinafter appear.

This application is a division of my co-pending application No. 342,153 filed November 5th, 1906, and the burner itself herein described is claimed in the parent application, and not here.

In the accompanying drawings Figure 1 is a vertical central section illustrating a heater with my improvement, and Fig. 2 shows a modification of the connection between the heating furnace and the register.

In this class of heaters here illustrated as a gas furnace, the heater is attached directly to a register in the floor and the products of combustion are emptied into the room to be heated. It is therefore highly essential that the combustion of gas be complete and steady and reliable, and also highly important that all effects of downdraft through the register be avoided.

In Fig. 1 I have illustrated a simple form of furnace comprising a casing 3 preferably made with a conical top 4 to fit the outlet connection. This casing contains a burner 5 which is fed with air either by perforations through the casing or else through the perforated conical bottom 6. Above the burner is a reverberatory hood which accomplishes complete combustion of the gases by confining them until an ample supply of air has been attained. It will be noted that the flame is provided with air inside as well as outside and that a current of air follows the flame into the hood and there reverberates with the gas some time before the burned gases escape. For the perfect operation of this reverberatory hood the currents of air in the hood should be steady and undisturbed, and particularly downdrafts should be avoided. At the top of the casing 3, 4, I preferably provide an elbow pipe 8 which

connects with a tee pipe 9, and the tee pipe has a larger pipe 10 connected thereto and extending downwardly as shown directly under the register. The pipe 10 is fitted into the box 11 which contains the register vanes 12. In this instance the part 11 is a simple metal box and the opening therefrom is directly downward; it will be noted that the furnace does not hang beneath the register but to one side of it so that no trash or dirt can fall into the furnace and also allowing a direct straightaway downdraft past and apart from the opening from the furnace casing. In case of accidental downdraft the larger pipe 10 admits of escape of the air without entering through pipe 9, and this construction has been proven in practice to entirely avoid any effect on the burner in the furnace by reason of downdraft.

In Fig. 2 I show a modified form of the register box 11^a in which the casing 3, 4, opens directly into the bottom of the box, but provision for escape of downdraft is made by the holes 13 and 14 as will be evident.

There has been found in practice to be great danger from the use of this type of gas heater because of the accidental downdraft through the register, which blows out the gas flame and thereafter without warning the gas itself continues to flow into the room. Moreover, the complete combustion device will not operate efficiently when the currents of air in the casing are interfered with in any way. It will be seen that by my construction I entirely avoid the downdraft and at the same time insure the burner and reverberatory hood against interference by accidental drafts.

The complete combustion device itself is not claimed herein but in the parent application above referred to.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. The combination with a furnace, and a hot air register, of a connection between the furnace and register having one opening into the furnace and a supplementary direct downward draft opening from the register independent of the furnace.

2. The combination with a furnace adapted to discharge the products of combustion di-

rectly through a register into a room, of a register and a connection between the furnace and the register comprising a casing having one opening from the furnace and a
5 separate opening downward past the furnace opening, to allow direct escape of downdraft.

3. A register and a furnace having a casing, an outlet pipe from the casing having
10 two branches, one connected with the register, and the other opening directly downward from the register to allow escape of downdraft.

4. The combination with a furnace comprising a casing, a burner and a reverberatory hood therein over the burner, of an outlet for the casing comprising a register box and a pipe connected thereto and to the furnace casing and having a separate direct
20 downdraft passage to one side of the opening from the casing, whereby downdrafts are

prevented from interfering with the operation of the burner and hood in the casing.

5. An attachment for heating furnaces comprising a register box having a downwardly directed extension and a side pipe connection between the furnace and said box entering the side wall of the register box extension. 25

6. The combination with a register, of a furnace beneath but to one side of the same, and an elbow and tee pipe connection between the furnace and the register, whereby is provided a direct downdraft from the register to one side of the furnace connection. 30

In testimony whereof I have hereunto subscribed my name in the presence of the two subscribed witnesses. 35

EDWIN N. SNITJER.

Witnesses:

F. W. H. CLAY,
FRED STAUB.