

(No Model.)

A. E. SMITH.
AIR HEATING FURNACE.

No. 376,682.

Patented Jan. 17, 1888.

Fig. 1.

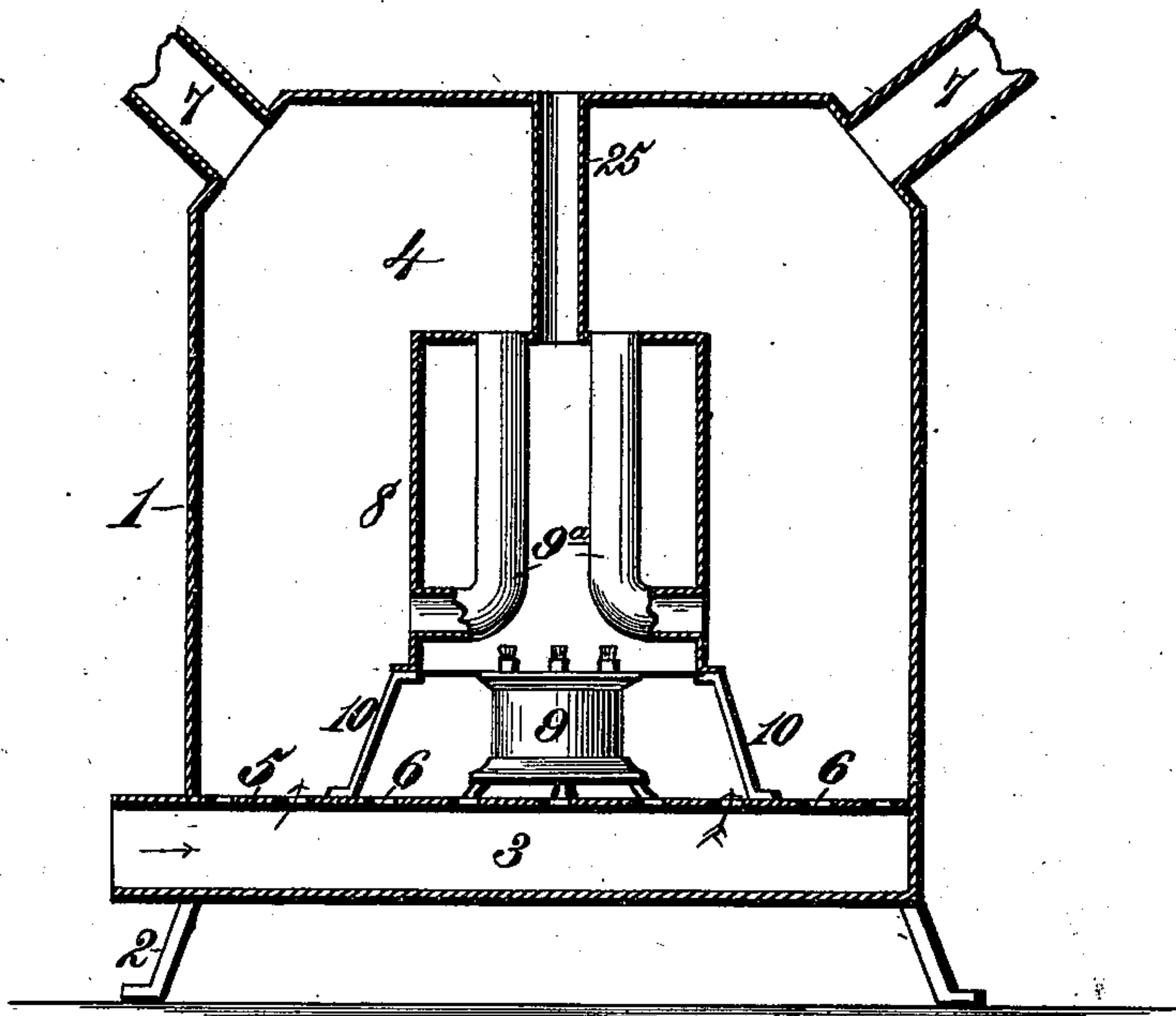
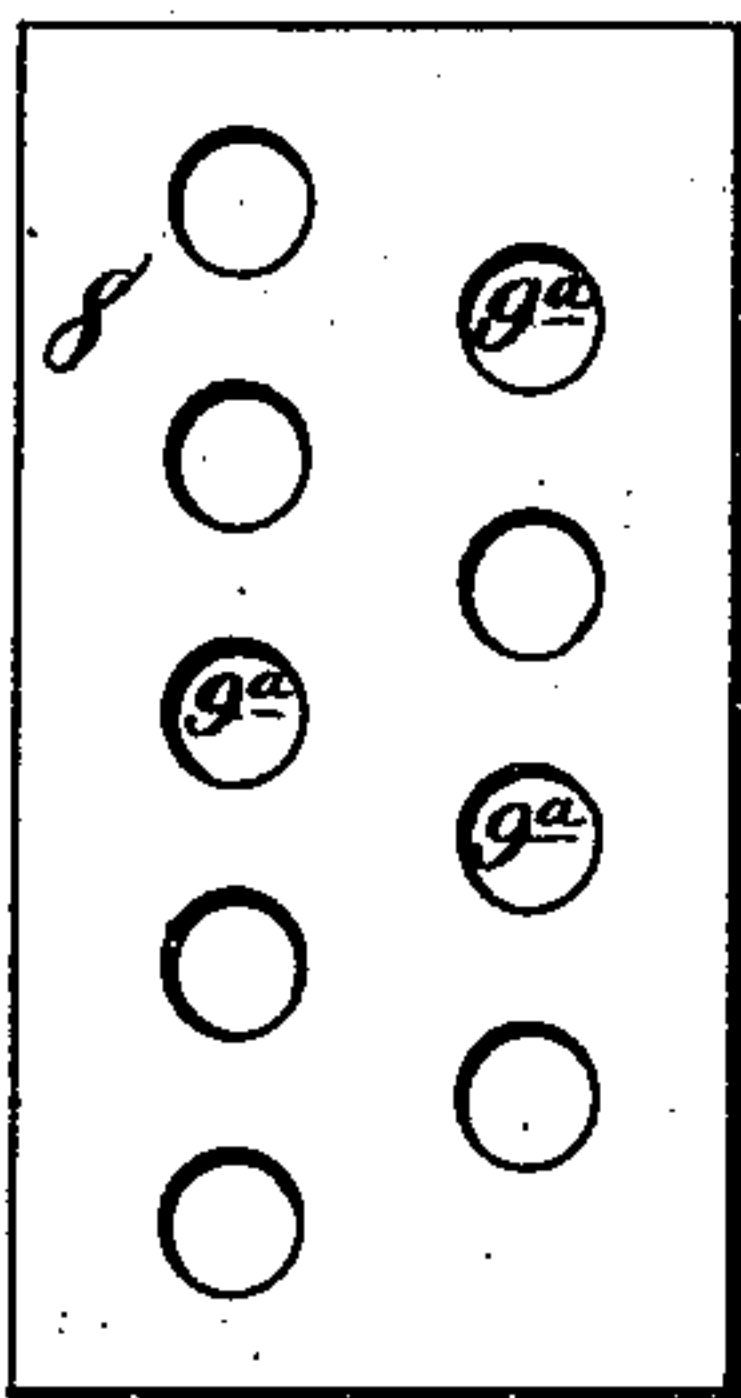


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

ALFRED E. SMITH, OF BRONXVILLE, NEW YORK.

AIR-HEATING FURNACE.

SPECIFICATION forming part of Letters Patent No. 376,682, dated January 17, 1888.

Application filed April 23, 1887. Serial No. 235,874. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. SMITH, a citizen of the United States, residing at Bronxville, in the county of Westchester and State of New York, have invented new and useful Improvements in Air-Heating Furnaces, of which the following is a specification.

The object of the present invention is to provide a heating-furnace in which liquid fuel is employed, and the air required for heating apartments or chambers is passed through a drum having flues and surrounding a petroleum or oil stove of any approved description. The heating-drum and oil-stove are placed within a casing constituting a furnace, and this casing has means for the admission of cold air and flues for the discharge of the heated air.

The invention briefly outlined in the above description will be fully hereinafter described, and then set forth in the claim.

In the accompanying drawings, Figure 1 is a vertical section of an air-heating furnace constructed according to my invention. Fig. 2 is a top plan view of the same.

The reference-numeral 1 designates a furnace-chamber or outer shell or casing, which is supported upon legs 2, of suitable length. At the bottom of the furnace is a cold-air chamber, 3, which is separated from the upper or hot-air chamber, 4, by means of a floor or horizontal partition, 5. The latter has a series of openings, 6, for admitting cold air into the chamber 4, and at the top of the furnace-chamber are arranged one or more flues, 7, for discharging the heated air into the room in which the furnace is located and into another room remote from the furnace. Suitable registers are applied to said flues for regulating the passage of hot air. Within the furnace, as a medium for heating the cold air admitted into the same, I locate an air-heating drum, 8, and a petroleum or other oil stove, 9, for furnishing the required heat. The drum 8 may be cylindrical, rectangular, or of any other desired shape, and it has a series of flues, 9^a, which extend from the base to the top thereof and serve as ducts for the air entering the furnace. The drum 8 is provided with legs 10, which stand upon the per-

forated floor 5 and serve to raise the drum above said floor. The petroleum-stove may be of the type recently devised by me, in which water is vaporized and burned in connection with oil; but any other form of oil-stove furnishing the necessary degree of heat may be resorted to. The oil-stove stands beneath the air-heating drum 8, or is surrounded by the same, so as to deliver the products of combustion or flame into the space surrounding the flues 9^a. By such arrangement it is obvious that the cold air entering the lower ends of the flues 9^a is heated during its upward passage, and it finally escapes into the furnace-chamber, and is from thence taken by the flues 7 to the desired locality for warming purposes.

A furnace constructed according to my invention is simple in construction and effective in use, and is portable, so that it can be moved from place to place. It has been ascertained that it will furnish as much heat for warming apartments as a type of furnace requiring the placing of a radiating-stove in a cellar and the building up of masonry around it to form a chamber.

The inner air-heating drum is provided with a pipe, 25, which passes through the outer shell and serves to carry off the products of combustion to the chimney. While an oil-stove is the most convenient and desirable heating medium, I desire it to be understood that in certain instances I may dispense with the same and make use of a coal or wood stove or coiled steam-pipe, or anything to generate heat that can be imparted conducted by the flues from the furnace to different rooms.

It will be observed that the sole object of the outlets 7 is to convey the heat to the apartment or apartments, and that the sole object of the pipe 25 is to convey the products of combustion from the drum 8 to a chimney. It will also be seen that the tubes 9^a are bent laterally at their lower ends and open through the side of the case, and that the heat-generator 9 is arranged below said drum and bent ends of the tubes. By this construction and arrangement the tubes are more exposed to the heat-generator, and I am enabled to fill the drum with tubes, and thus avoid the es-

cape of considerable heat through the pipe 25.

Having thus described my invention, what I claim is—

5 An air-heater consisting of the casing 1, having an outlet, 7, a horizontal perforated bottom wall, 5, a horizontal air-inlet flue, 3, beneath said bottom wall to supply air there-
through to the casing, a drum, 8, within the
10 casing, a series of air-heating tubes in the drum opening at their upper ends through the top portion of the drum, and having their lower ends bent laterally and opening through the

side of the drum, a heat-generator above the perforated bottom wall and below the drum and the laterally-bent ends of the tubes, and a 15 pipe, 25, leading from the drum through the casing to carry the products of combustion to a chimney, substantially as described.

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

ALFRED E. SMITH.

Witnesses:

W. BURGESS,
JOHN CRAWFORD.