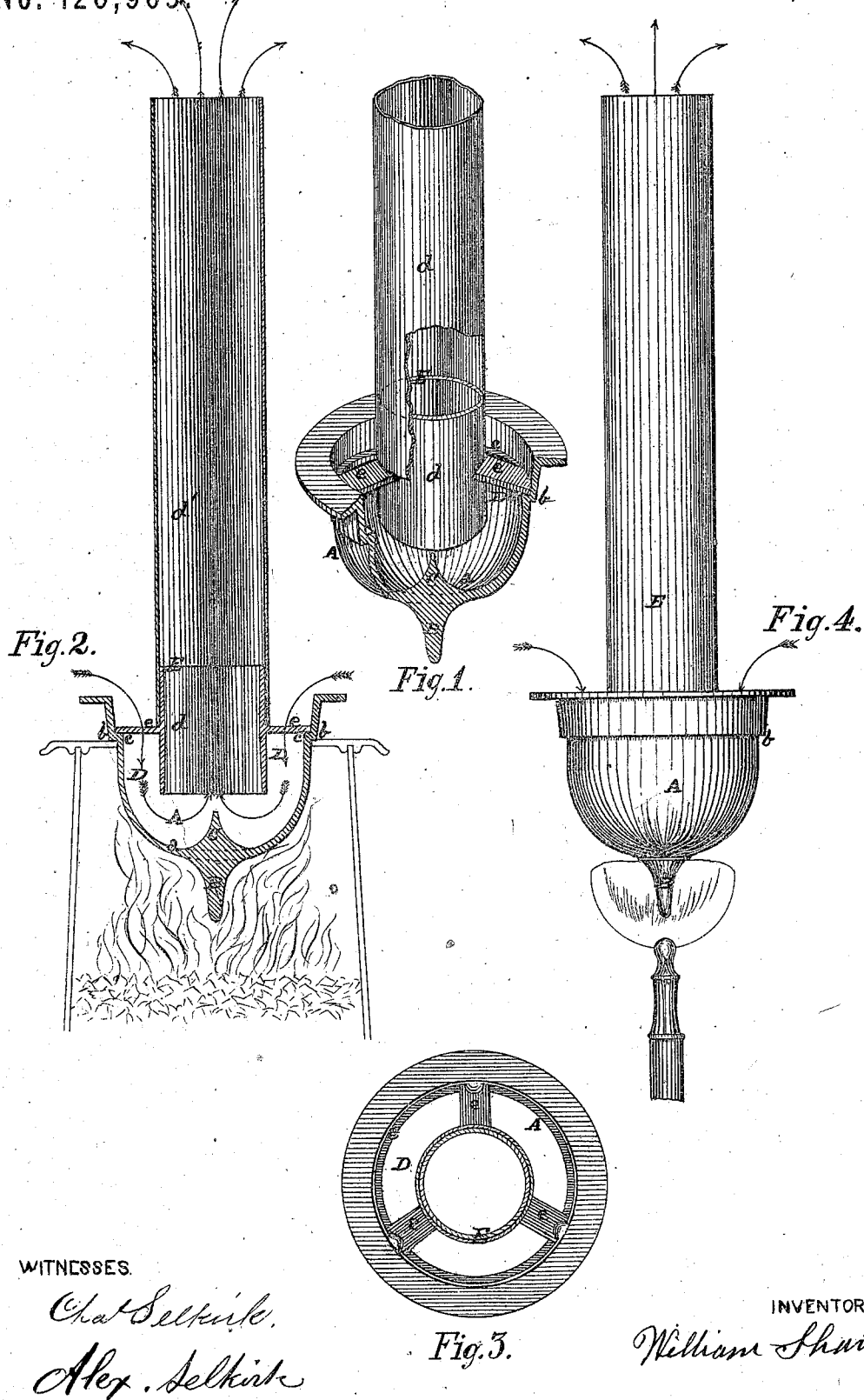


WILLIAM SHAW.

Improvement in Portable Heating Apparatus.

No. 120,905.

Patented Nov. 14, 1871.



WITNESSES.

Chas Selkirk.
Alex. Selkirk

INVENTOR

William Shaw

UNITED STATES PATENT OFFICE.

WILLIAM SHAW, OF ALBANY, NEW YORK.

IMPROVEMENT IN PORTABLE HEATING APPARATUS.

Specification forming part of Letters Patent No. 120,905, dated November 14, 1871.

To all whom it may concern:

Be it known that I, WILLIAM SHAW, of the city and county of Albany, State of New York, have invented a new and Improved Apparatus for Heating and Distributing Air for Warming Rooms; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a perspective view of the apparatus embodying the invention, with parts broken away to illustrate the improvements. Fig. 2 is a vertical lateral sectional view of the same, illustrating its application to a stove. Fig. 3 is a vertical view of the apparatus from above. Fig. 4 is a side view of the apparatus and its application to a gas-flame or lamp-flame.

My invention relates to an improved apparatus for heating air; and consists of the arrangement of certain elements, both new and old, in such a manner that the said apparatus will be capable of operating very effectually by the application of a small quantity of fuel in combustion (whether from a stove-heater, or a gas-burner or lamp) to heat air and diffuse the same in the room.

To enable others skilled in the art to make and use my invention, I will proceed to describe it in reference to the drawing and the letters of reference marked thereon, the same letters indicating like parts.

In the drawing, A represents what I denominate the retort, which may be made of any suitable metal, cast-iron being preferred for application and use with stoves, and brass or copper for use with a gas or lamp flame. The said retort can be made of any suitable size and of any form of periphery, and is provided with a rounded or bowl form of bottom, *a*, which will present an inside surface of a form other than that of a flat or convex nature, the object of which I will hereafter describe. At a little distance from the top of the retort I prefer to form a shoulder or offset, *b*, which will rest on the top or ring of the stove or bracket to support the apparatus. I combine with the said retort, on its bottom side, the depending piece B, which I denominate the heat-conducting drop, which may be cast solid with the retort, or, if the retort be made of struck metal, may be riveted to the same. The said heat-conducting drop B consists of a solid piece of metal of a thickness considerably greater than

the sides of the retort, and is intended to depend down into the flame or fire to become more highly heated than the portion of the retort outside the said piece, and thus effect a greater heating of the portion of the bottom of the retort, with which the said drop is directly and intimately connected, by its conduction of the heat to the said intimately-connected portion of the bottom of the retort. On the inside of the bottom of the retort, directly over the heat-conducting drop, I form or place the projecting-piece C, which piece I denominate the volatilizing projection, which projection, when heated, is intended to effect more directly the air coming in contact with the same to rarify, and expel it from the retort through a proper conduit placed vertically over the said projection. On the inside of the retort, at a little distance from the top, I prefer to make a continuous seat, *c*, which is to receive the arms used to support the other parts of the apparatus, though several holding-lips properly set would act to effect the same end. Within the retort A, and vertically over the most depressed portion of the bottom proper of the same, I place the vertical flue E, which flue can be made in whole or in part of cast or sheet metal, or both; but, for economy of construction, I make the said flue to consist of the two sections *d* and *d'*. The lower section *d* (in an apparatus for use with a stove) I would prefer to make of cast metal, while for use with a gas-flame sheet metal might be preferred on account of lightness. Attached to the lower section *d* of the said flue are two or more supporting-arms, *e e*, radiating out from the periphery of the said flue, as shown in Figs. 1, 2, and 3, the ends of which arms are intended to rest on the seat *c* on the side of the retort, or on the equivalent bearing-lips before referred to, and afford a proper support to the flue E. The flue E thus supported is made with both its ends open, and its lower open end drops down into the retort to within a short distance of the most depressed portion of the bottom, and is there sustained in a vertical position of the same, while the upper portion *d'* of the flue (which may be made of sheet metal) rises up to any desired height, as shown. The said flue is intended to operate to effect a draught to the air radiated by the highly-heated portion of the bottom of the retort directly below the open end of the said flue. Around the outside of the said flue E, and between the same and

the sides of the retort A, is the annular opening D, through which the cold air is to be admitted to the inside and bottom of the retort. The said annular opening D is intended to permit the free admission of fresh or cool air into the retort from every side, to replace the air thus heated and passed out by the draught effected by the flue E. The bottom *a* of the retort being made bowl-form or concave on its inside, as before described, is intended to act in conjunction with the projection C to make the whole apparatus more effective in its operation, though the bottom thus formed will alone operate well to effect the radiation of the air. This apparatus is intended to be used with a stove or furnace, or with a gas or lamp flame, and its size and form would be varied and modified to suit or conform with the requirements of the attending circumstances of its application to such places. Should the apparatus be applied to a stove I place the retort in the usual pot-hole over the fire, with its shoulder *b* resting on the stove-plate and bottom depending into the fire-pot, as shown in Fig. 2; but if the apparatus is to be operated by a gas or lamp-flame I would support the same by a bracket from the wall, or by suitable chains or cords depending from the ceiling.

The manner in which the several parts of this invention operate, when the heat is applied by any of the means above referred to, is as follows: The fire, acting on the conducting-drop C, heats the same to a high temperature. The heat runs up the said piece and heats the volatilizing projection rising up within the bottom of the retort, and the more depressed portion of the bottom of the retort, under the open end of the vertical flue, will also become heated, while the sides of the same would be comparatively cool, or of a considerably less temperature; the more highly-heated portion of the retort will act on the air in immediate contact to radiate the same, which radiated air will rise upward and escape through the flue E. The rising up of the radiated air tends to form a vacuum within the retort, to which the cold air will rush to replace the rising heated and radiated air in escaping through the flue above; the heating operation being continued, the cool air

outside will be continually drawn into the retort and will pass down inside and move in close contact with the heated bottom of the same, and, becoming heated, will rise and escape; and the direction given to the currents of cold and heated air will be substantially as indicated by arrows.

This apparatus is very simple and inexpensive in construction, and can be readily applied to all cook-stoves and to many cylinder-stoves; and when made to be operated by gas-flame could be used by travelers and others to warm their sleeping-rooms.

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

1. The arrangement of the heat-conducting drop C with the retort A at the lowest or most depressed portion of the bottom *a*, substantially as and for the purpose set forth.

2. The arrangement of the volatilizing projection D within the retort and over the most depressed portion of the bottom of the same, substantially as and for the purpose set forth.

3. The arrangement of the flue E, having both ends open, with the retort A, when the lower open end of the said flue is placed in position over the most depressed portion of the said retort, substantially as and for the purpose set forth.

4. The arrangement of the vertical flue E, having both of its ends open and its lower open end dropping down over the most depressed portion of the bottom of the retort A, and at a short distance from the same, with the annular space constructed between the sides of the said retort and the said flue, substantially as and for the purpose set forth.

5. The arrangement of the seat *c*, or equivalent projecting lips described, with the retort A, substantially as and for the purpose set forth.

6. The arrangement of the supporting-arms *e e* with the vertical flue E and the retort A, substantially as and for the purpose set forth.

WILLIAM SHAW.

Witnesses:

CHAS. SELKIRK,
ALEX. SELKIRK.

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