

(No Model.)

J. T. GRINDROD.  
HEATING APPARATUS.

2 Sheets—Sheet 1.

No. 526,780.

Patented Oct. 2, 1894.

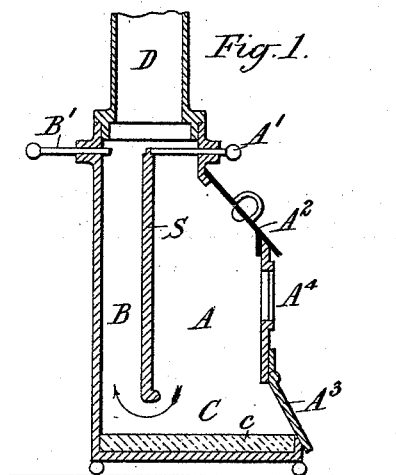


Fig. 1<sup>a</sup>

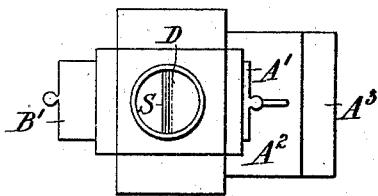
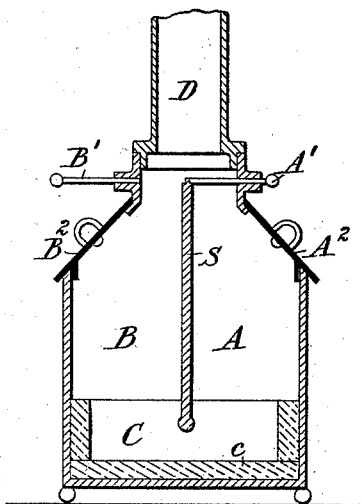


Fig. 3.



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(No Model.)

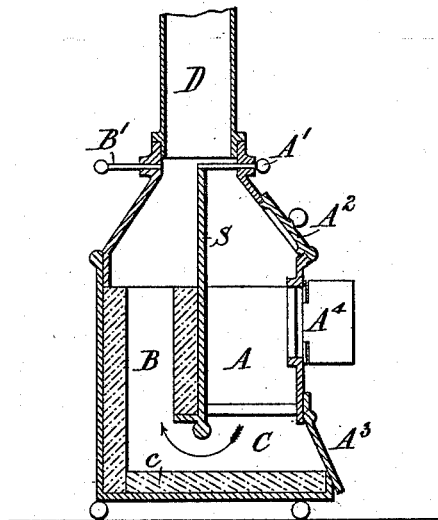
J. T. GRINDROD.  
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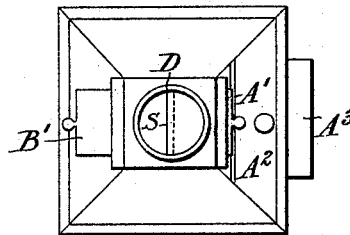
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*Fig. 2.*



*Fig. 2<sup>a</sup>*



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# UNITED STATES PATENT OFFICE.

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## HEATING APPARATUS.

**SPECIFICATION** forming part of Letters Patent No. 526,780, dated October 2, 1894.

Application filed December 13, 1893. Serial No. 493,522. (No model.) Patented in England February 10, 1893, No. 2,994.

*To all whom it may concern:*

Be it known that I, JOHN TROUGHTON GRINDROD, a subject of the Queen of Great Britain, residing at Heswall, in the county of Chester, England, have invented certain new and useful Improvements in Heating Apparatus, (for which I have obtained English Letters Patent No. 2,994, of February 10, 1893,) of which the following is a specification.

My invention has relation to heating apparatus by which certain advantages are obtained; and it relates more particularly to the construction and arrangement thereof.

The principal objects of my invention are first, to provide a comparatively simple, durable and effective heating stove or appliance; and, second, to provide a stove or heating appliance in which the parts thereof are greatly simplified and after ignition of the fuel the smoke is economically consumed and combustion of the fuel rendered smokeless and greater heat units obtained therefrom.

In carrying out the principle embodied in my invention there is employed a stove having a vertical partition or septum dividing the interior of the stove into two chambers. The said partition does not extend to the bottom of the stove, so that the two chambers thus formed communicate with one another. These chambers open respectively at the top into a common flue, or each into a separate flue as desired. At the point where the chambers open into the flue or flues, is placed two valves or dampers each of which serves to cut off communication as required between its chamber and the flue. The bottom of the stove may be lined with fire-clay or the like and when desired a part or parts of the said chambers may be so lined. One or both of the chambers may be provided with a door for the introduction of fuel and for the admission of air, or with separate doors for the introduction of fuel and the admission of air. One or both of the said chambers may be provided with an ash door.

According to my invention the employment of fire bars is not essentially necessary, but they may be employed in some cases.

The nature and objects of my invention will be more fully understood from the following

description taken in connection with the accompanying drawings forming part hereof, and in which—

Figures 1 and 1<sup>a</sup> are respectively views in vertical section and in plan of a simple form of stove embodying the features of my invention. S, is the vertical partition dividing the interior of the stove into two chambers A and B. C, is the bottom of the stove with which the two chambers are in communication. D, is the flue common to the two chambers A and B. A' and B', are the two dampers, and c, is the fire-clay lining on the bottom of the stove. A<sup>2</sup>, is a door for the insertion of fuel; A<sup>3</sup>, an ash door, and A<sup>4</sup>, a door for the admission of air.

Figs. 2 and 2<sup>a</sup>, are respectively views in vertical section and in plan of another form of my invention. In this view the stove differs from that of Figs. 1 and 1<sup>a</sup>, in that fire bars are placed in the chamber A and the sides of part of the chamber A below said bars and the back, front and sides of the chamber B, are lined with fire-clay.

When fuel is placed on the bottom of the stove illustrated in Figs. 1 and 1<sup>a</sup>, or on the bars of the stove of Figs. 2 and 2<sup>a</sup>, it is ignited at its upper surface. It may be here remarked that the flames and products of combustion drawn in the direction of the arrow, are filtered through the fuel and pass through the chamber B. At this stage the smoke will escape just as in an ordinary stove or furnace. As soon, however, as the entire mass of the fuel becomes incandescent, the fresh fuel is supplied at the surface to the chamber A, and the smoke from this chamber is as before filtered through the body of the fuel, but as it becomes incandescent and the chamber B, becomes thus highly heated, the smoke will be consumed. It will therefore be seen that the fuel, except when first ignited will be smokeless or give practically a smokeless combustion of the fuel.

Fig. 3, illustrates in vertical section a reversible form of my invention. It will be seen that it is practically a duplication of the parts shown in Fig. 1, on the right hand side of the partition S. In this form of reversible stove instead of having separate doors for the ad-

mission of air and the introduction of fuel, there is generally used only one door for such purposes.

The action of the stove is as follows: Let it be assumed that the fuel has been placed on the bottom of the stove and that the damper of the chamber A, has been closed and its door or doors opened and that in the chamber B, the doors have been closed and the damper has been opened. The fuel may now be ignited in any of the usual ways at its surface in the chamber A. Air will enter by this chamber to support combustion and will pass downward through the fuel, and the products of combustion will rise through the chamber B, to the flue. If now the door of the chamber A, be closed and its damper opened while at the same time the door in the chamber B, is opened and its damper closed, it will be obvious that the action of the stove can be reversed. In a word, a direction of the current of air can be obtained and likewise of the products of combustion.

Such a form of stove is very advantageous for use in heating two rooms or compartments separated from one another by a partition wall. When such a stove is placed in an opening in the said partition wall, or built into the same, it is obvious that either of the two rooms or compartments may be heated at will. Thus, for example, if it is desired to heat one of the said rooms that in which the chamber A, of the stove, is located is designated as room *a*, while that in which the chamber B, of the stove, is located is designated as room *b*. To heat the room *b*, to a higher temperature than the other, say room *a*, then the damper in the stove chamber B, will be opened and its door closed, while in the stove chamber A, the damper will be closed and the door opened. Room *a*, it will be obvious, will be only slightly heated, if at all, while in room *b*, the temperature will be raised to the desired degree. If on the other hand it be desired to heat room *a*, to a higher temperature than room *b*, the action will be

reversed as hereinbefore explained. Such mode of heating two contiguous rooms or compartments will be found much more economical than the old plan of having separate stoves or fire places in each room.

When desired the stoves may be rendered portable by mounting them on wheels or casters.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A heating stove or furnace, comprising a shell having a vertical outlet or flue, an air inlet in said shell having a regulating device connected therewith, an internal partition extending downward in said shell and terminating some distance above the bottom thereof and dividing the interior of said shell into two communicating chambers, the top of said partition forming a bearing for the engagement therewith of movable dampers extending through said shell and located in proximity to said outlet or flue, and a fire clay lining in the interior of said shell, substantially as and for the purposes described.

2. A heating stove or furnace, comprising a shell provided with a vertical outlet or flue, a controlled air inlet, a detachable fuel door in said shell, an internal partition extending downward in said shell and terminating some distance above the bottom thereof and so arranged as to form the wall of two communicating internal chambers and the top of said partition recessed to form bearings or seats for movable dampers extending through said shell and located in proximity to said outlet or flue, one of said chambers lined as well as the bottom with fire clay partially supported to position by said partition, and the other chamber provided with grate bars, substantially as and for the purposes described.

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Witnesses:

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