

No. 733,432.

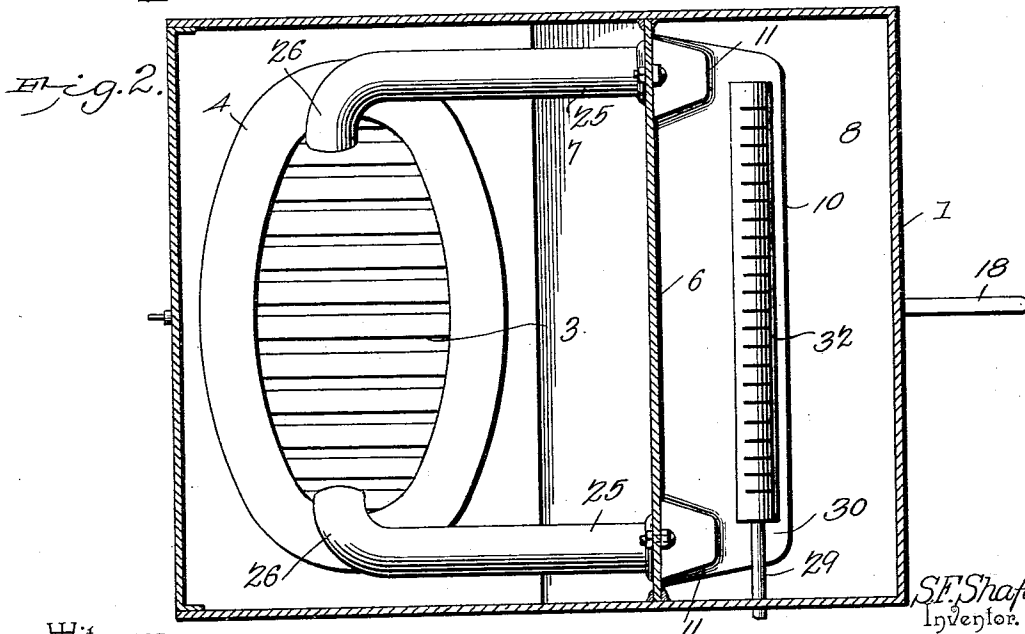
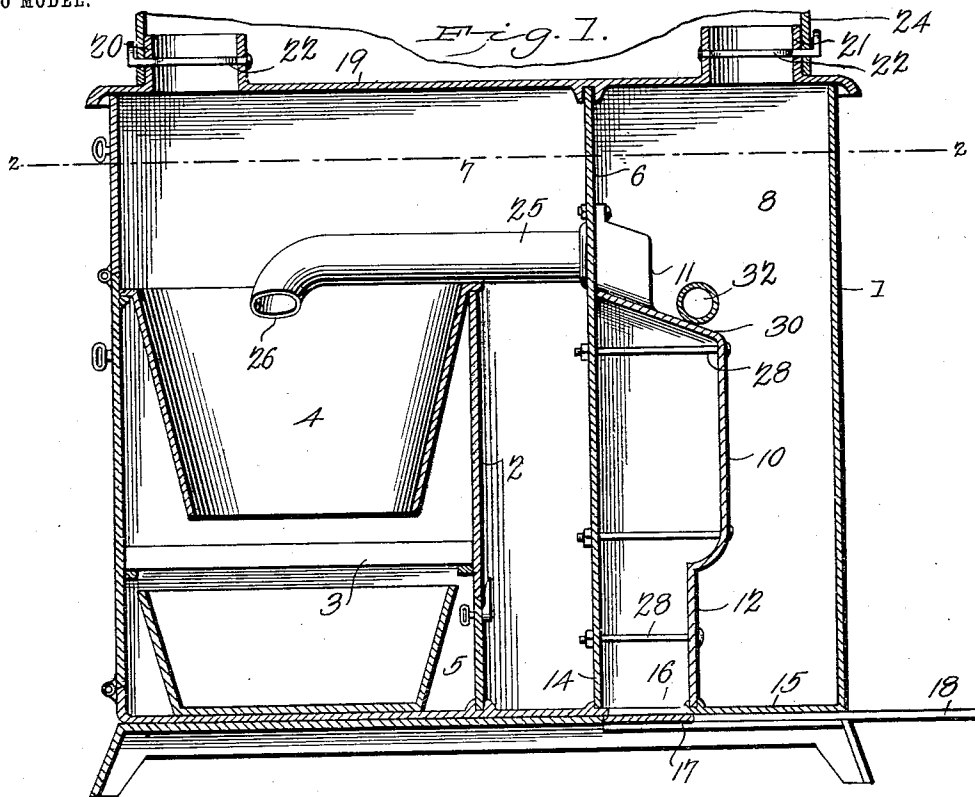
PATENTED JULY 14, 1903.

S. F. SHAFER.
HEATING STOVE.

APPLICATION FILED OCT. 9, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
E. H. Stewart
Wm. Bagger

by

C. A. Snow & Co.
Attorneys

S. F. Shafer,
Inventor.

No. 733,432.

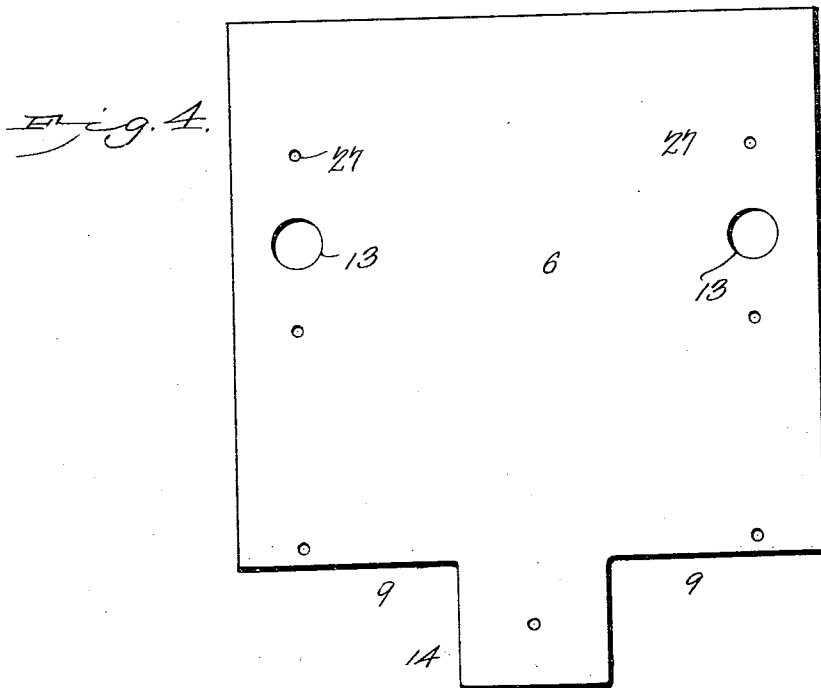
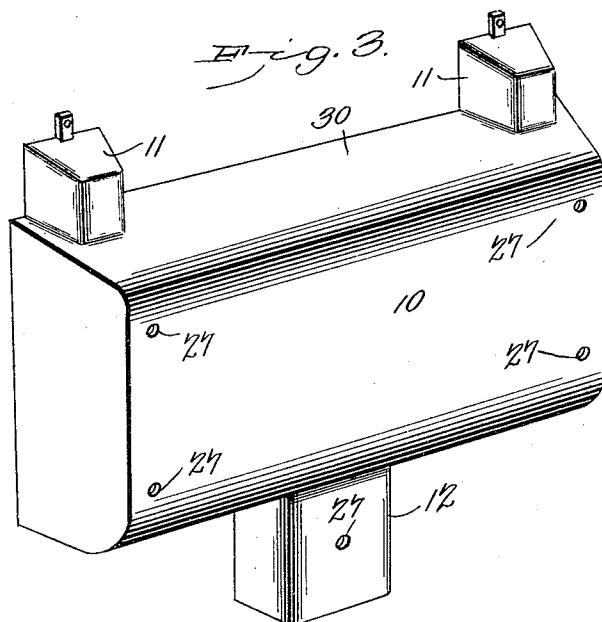
PATENTED JULY 14, 1903.

S. F. SHAFER.
HEATING STOVE.

APPLICATION FILED OCT. 9, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses
E. H. Stewart
Wm. Bagger

S. F. Shafer, Inventor.
by *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL F. SHAFER, OF FINDLAY, OHIO, ASSIGNOR TO THE AMERICAN STOVE & FURNACE COMPANY, A CORPORATION OF WEST VIRGINIA.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 733,432, dated July 14, 1903.

Application filed October 9, 1902. Serial No. 126,598. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL F. SHAFER, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented a new and useful Heating-Stove, of which the following is a specification.

This invention relates to stoves, and more especially to heating-stoves; and it has for its object to provide a device of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency, which shall be provided with an interiorly-located air-chamber of peculiar construction, the walls of which shall be exposed on all sides to the heat of the products of combustion passing around the same, and which shall be provided with an air-inlet at its bottom and with discharge-pipes so constructed and disposed as to discharge the air previously heated in said chamber directly upon the top of the burning fuel contained in the fire-box, thereby creating a hot draft, whereby the gas, soot, smoke, and other products of combustion shall be entirely consumed, thus preventing waste of fuel and contributing to cleanliness in the use of the same.

A further object of my invention which practically results from the improvements above referred to is to provide a practical and convenient method of ventilating the room where the stove is located by constantly taking the foul and cold air directly off the floor, thus keeping the air in the room pure and warm.

With these and other ends in view my invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of the lower part of a stove constructed in accordance with my invention. Fig. 2 is a horizontal sectional view taken on the line 2-2 in Fig. 1. Fig. 3 is a perspective view of the casting which, in conjunction with the flue-plate of a stove, forms the air-chamber of my invention. Fig. 4 is a plan view of the said flue-plate.

Corresponding parts in the several figures

are indicated by similar numerals of reference.

1 designates the stove-casing, which in this instance has been shown as being rectangular in horizontal section, although it is obvious that it may be manufactured in any desirable shape which shall lend itself to the purposes of my invention. The stove-casing is preferably, but not necessarily, constructed of cast-iron, and it contains a dividing-plate 2, which, in conjunction with the front of the casing, supports the grate 3 and the fire-box 4. The ash-pit 5 as well as the fire-box are accessible through suitably-arranged doors, as will be readily understood.

6 designates a flue-plate, which divides the stove-casing vertically into two parts, which may be appropriately designated as the "combustion-chamber" 7 and the "radiating-chamber" 8, the latter being in the nature of a flue which has connection with the combustion-chamber through openings formed by recesses 9 in the lower corners of the flue-plate, as will be seen in Fig. 4 of the drawings.

10 designates the casting, which, in connection with the flue-plate 6, forms the air-chamber, which is the important feature of my invention. Said casting may be described as consisting of a bowl-shaped body having upward extensions 11 at the upper corners thereof, said extensions being closed at their upper ends, and a centrally-disposed downward extension 12, which is open at its lower end. The flue-plate 6 is provided with openings 13, alining with the extensions 11 of the air-chamber 10, and the downward extension 12 of the latter alines with the central downward extension 14 of the flue-plate, which is formed between the recesses or cut-away portions 9.

The bottom 15 of the stove-casing is provided with an opening 16, alining with the open lower end of the downward extension 12 of the air-chamber, and a valve or damper 17 is disposed slidingly below said opening to control the admission of cold air, said slide being provided with a handle 18, by means of which it may be conveniently manipulated.

The top plate 19 of the stove-casing is provided with exit-flues 20 and 21 for the prod-

ucts of combustion, said flues extending, respectively, from the combustion-chamber 7 and the flue or radiating chamber 8, the exit 20 being preferably provided with a damper 22, which may be opened to cause a direct draft from the combustion-chamber, or it may be closed to force the products of combustion to seek an exit through the openings 9 in the lower part of the flue-plate adjacent to the central downwardly-extending portion 12 of the air-chamber and thence upward through the flue or radiating chamber and the exit 21. The top plate of the stove-casing supports a body constituting a radiator through which the products of combustion pass to the chimney. Of this body or radiator, which forms no part of my present invention as regards the details of construction thereof, only the extreme lower portion (designated 24) has been shown in Fig. 1 of the drawings.

Suitably secured to the flue-plate 6 in alignment with the openings 13 and with the upward extensions 11 of the air-chamber 10 are pipes or flues 25, which are extended forwardly into the combustion-chamber above the fire-box and provided with curved ends 26, which are so disposed as to discharge in the direction of the center of the fire-box, or approximately so, so that the contents of said fire-box shall be subjected to the greatest possible extent to the discharge of hot air from said pipes.

The assembling of the different parts of the stove will be readily understood by reference to the several figures of the drawings. The flue-plate 6 and air-chamber 10, with the extensions of the latter, are provided with appropriately-disposed perforations 27 for the reception of connecting-bolts 28, and ordinary well-known stove construction is resorted to in connection with the parts constituting the air-chamber with the stove-casing and the members of the latter with each other.

32 designates a gas-burner which is supported upon the upper wall of the air-chamber 10 in rear of the upward extensions 11 of the latter. The feed-pipe 29 of said gas-burner extends through one of the side walls of the casing. While this gas-burner does not constitute a part of my present invention, I desire to state that it is my intention to use said burner in connection with my improved stove and that the air-chamber 10 is specially constructed with the intention of forming a support for said burner. For this reason the upward extensions 11 are not extended to the rear wall of the casing 10, but project upwardly from an intermediate point of the upper wall 30 of said air-chamber.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. When a fire is started in the stove, the damper 22 may be opened, so as to afford a direct draft. As soon as the fire has become well started the damper

22 may be closed, and the products of combustion will then be forced to pass downwardly through the openings 9 on either side of the downward extension 12 of the air-chamber and thence upwardly through the flue or radiating chamber 8 and to the exit 21. The valve 17 being at this time opened admits the cold and foul air from the floor of the room into the air-chamber, in which, the said air-chamber being surrounded on all sides by heating-spaces, the said air becomes quickly heated and is discharged through the pipes 25 in the passage through which, said pipes being located or extended directly above the fire-box, the said air becomes still further heated prior to its discharge upon the burning surface of the fuel contained in the fire-box, thus creating a hot-air draft which greatly assists in promoting combustion and in consuming all the combustible particles contained in the fuel.

I have in the foregoing described what I consider to be the preferred form of my invention; but I desire it to be understood that I do not limit myself with regard to the exact structural details, but reserve to myself the right to any changes, alterations, or modifications which may be resorted to without detracting from the utility of my invention or departing from the spirit and scope thereof.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a stove, an air-chamber located within the stove-casing and having a reduced downward extension forming an intake of air through the bottom plate of the stove-casing, the entire surface of said air-chamber being surrounded by heating-space and subjected to the influence of the products of combustion in a heated state, and pipes extending from said air-chamber over the fire-box and having curved ends discharging in the direction of the center of said fire-box.

2. In a stove, a casing, a flue-plate forming a transverse partition and having recesses at its lower corners, an air-chamber comprising a bowl-shaped casting having a reduced downward extension engaging the lip formed between the cut-away lower corners of the flue-plate, and having an air-intake through the bottom of the stove, and discharge-pipes connected with the flue-plate, receiving the heated air from the air-chamber, extended laterally over the fire-box and discharging in the direction of the latter.

3. In a stove, a casing, a flue-plate forming a transverse partition and having recesses at its lower corners, an air-chamber consisting of a bowl-shaped casting having a reduced downward extension engaging the lip formed between the cut-away lower corners of the flue-plate and having an air-intake through the bottom of the stove, a regulating-damper for said intake, upward extensions at the upper corners of the casting forming the air-chamber, and alined with openings in the flue-

plate, and discharge-pipes extending from said openings over the fire-box and discharging obliquely downwardly into the latter.

4. In a stove, an air-chamber the component
5 elements of which form a transverse partition dividing the stove-casing into a combustion-chamber and a radiating flue-chamber, passages being provided for the products of combustion in the lower part of such partition,
10 an air-intake at the lower end of said air-chamber, and discharge-pipes disposed to discharge the heated air from said air-chamber downwardly into the fire-box.

5. In a stove, an air-chamber the elements
15 of which combine to form a transverse partition dividing the stove-casing into a combustion-chamber and a radiating flue-chamber, passages connecting the lower ends of the combustion and flue chambers, an air-intake
20 to the air-chamber, and discharge-pipes from the latter directed downwardly into the fire-box.

6. In a stove, an air-chamber the elements
25 of which combine to form a transverse partition dividing the stove-casing into a combustion-chamber and a radiating flue-chamber,

passages connecting the lower ends of said chambers, an air-intake to the air-chamber, pipes discharging from the latter into the fire-box, a valved exit from the combustion-chamber, and an independent exit from the radiating flue-chamber. 30

7. In a stove, a flue-plate forming a transverse partition and having cut-away lower corners a depending lip formed between the
35 recesses thus formed and exit-openings, in combination with a bowl-shaped casting having a reduced downward extension alining with the depending lip of the flue-plate, and upward extensions alining with the exit-open-
40 ings in the flue-plate and having closed upper ends.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SAMUEL F. SHAFER.

Witnesses:

JOHN SCHAFER,
FRANK WEBER, Sr.