No. 849,872. PATENTED APR. 9, 1907.

J. W. WELDON.

HEATING STOVE.

APPLICATION FILED OCT. 30, 1906.

Fig. 1.

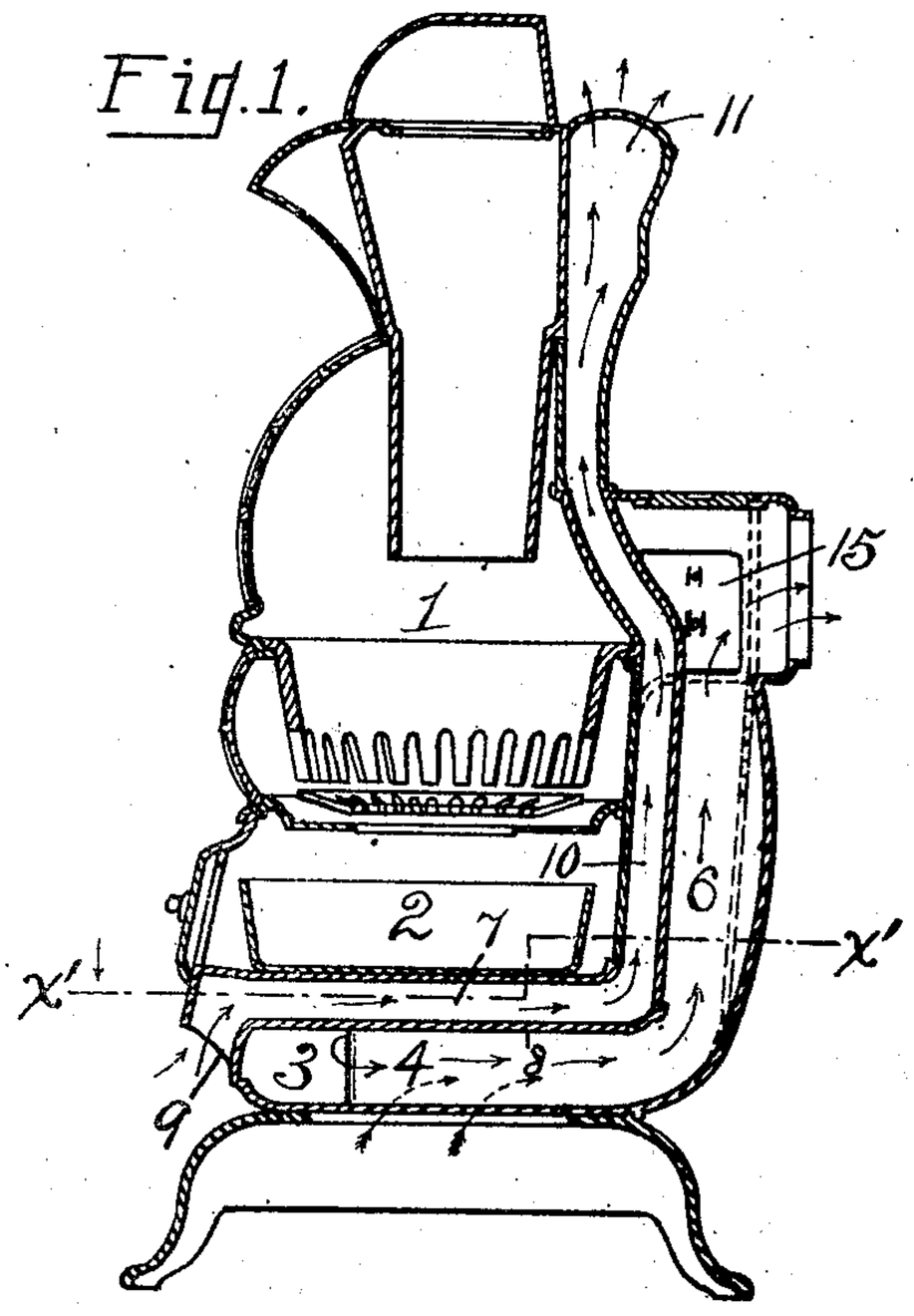


Fig. 2.

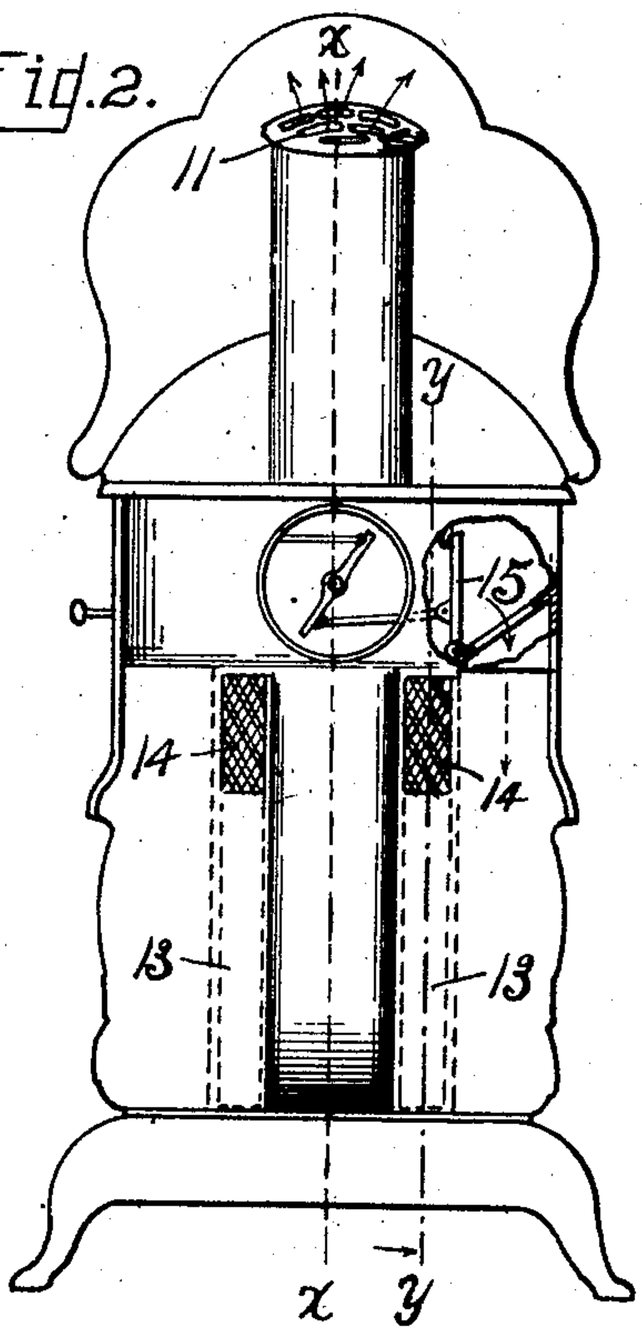


Fig. 3.

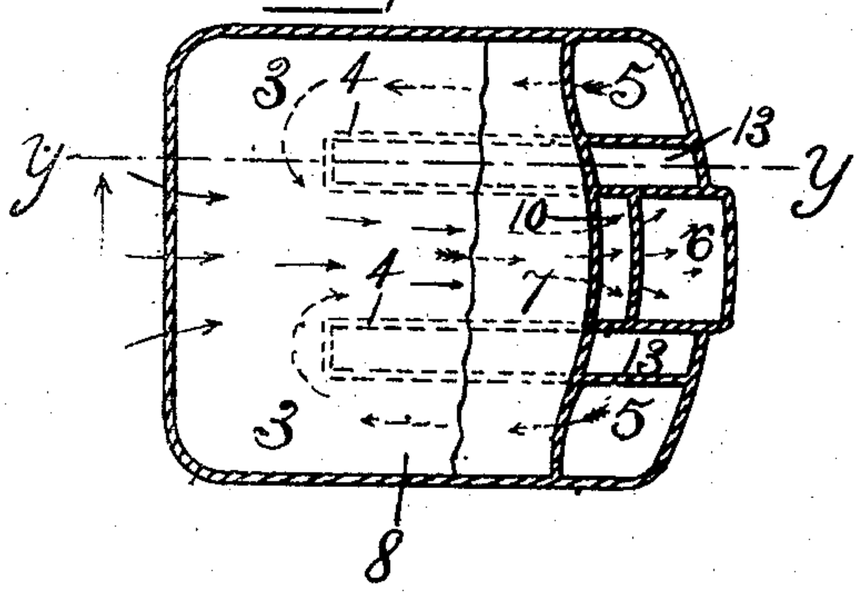
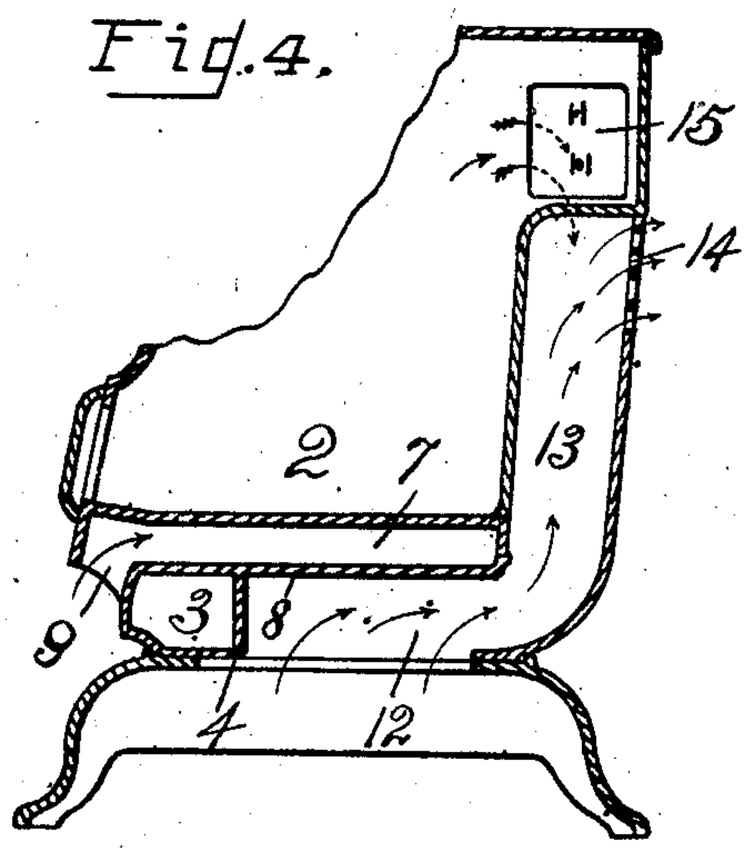


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES W. WELDON, OF TOLEDO, OHIO.

HEATING-STOVE.

No. 849,872. Specification of Letters Patent. Patented April 9, 1907.

Application filed October 30, 1906. Serial No. 341,355.

To all whom it may concern:

Be it known that I, JAMES W. WELDON, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Heating-Stoves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to heating-stoves of the class having a base-flue section through which the highly-heated gaseous products of combustion may be directed prior to being expelled from the stove through the exit-flue.

The object of the invention is the provision in a stove of this kind of a series of air-flues adapted to receive cold air and expel it to the atmosphere in a highly-heated state, said flues being so arranged relative to the ash-pan section and the descending, base, and ascending flues of the stove as to utilize the maximum heat-radiating surface of such parts for the heating of cold air, whereby to increase the efficiency and commercial value of the stove.

The operation, construction, and arrangement of the parts of the invention are fully described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of the stove embodying my invention taken on the dotted line $x\ x$ in Fig. 2. Fig. 2 is a rear elevation of the stove with a portion of the casing broken away. Fig. 3 is an irregular cross-section on the line $x'\ x'$ in Fig. 1, and Fig. 4 is a partial vertical section on the lines $y\ y$ in Figs. 2 and 3.

Referring to the drawings, 1 designates the combustion-chamber, 2 the ash-pan section, and 3 the horizontal or prostrate base-flues of any ordinary type of base-burner. The base-flues 3 are separated by flue-strips 4 4 and communicate with the combustion-chamber through the side descending flues 5 5 and with the exit through the central ascending flue 6 in the usual manner. In the construction of stoves of this class it has been customary to locate the base-flues 3 immediately beneath the bottom of the ash-pan section, so that they are separated by a single partition or wall. While this wall or partition becomes heated to a high state, due to its proximity to the combustion-chamber, it is not sufficiently heated to effect a further heating of the products of combustion descending to the flues 3 from the combustion-chamber, thus occasioning a complete loss of the heat-radiating efficiency of such partition. In order to utilize this lost heat energy, I interpose a horizontal flue 7 between the bottom of the ash-pan section and the top 8 of the flues 3, as shown. The flues 7 is substantially the width of the ash-pan section and has its forward end provided with a broad mouth 9, opening to the atmosphere, whereby to receive cold air, and its rear end communicating with a narrowed vertical flue 10, which is disposed immediately in advance of the ascending exit-flue 6 with its rear wall exposed to said flue and its front wall exposed to the ash-pan and combustion-chamber sections. The upper end of this flue terminates adjacent the top of the stove and is open, as at 11, to expel to the atmosphere the air, which becomes highly heated in its passage therethrough.

It is apparent that the lower and rear walls of the flue 7 10 are heated to a high state by the passing of the highly-heated gases of combustion around the base-flues 3 and up the ascending flue 6 and that the top and front walls of said flue are highly heated from the ash-pan and combustion-chamber sections, thus causing the air passing through said flue to be acted on by the heat radiation from all of said walls, and consequently heated to a very high state prior to its expulsion to the room.

In order to further utilize the otherwise lost radiation surface of the stove interior, I make the flue-strips 4 4 hollow to form flues 12, with their bottoms opening below the stove for the admission of cold air thereto, as shown in Fig. 4. The rear end of each of these hollow flue-strips communicates with a vertical flue 13, which is located between the contiguous side descending flue 5 and ascending flue 6 of the stove, and has its front wall exposed to the ash-pan and combustion-chamber sections, thus causing the air which passes through the flue 12 13 to be continuously acted on by the heat radiation from the gases of combustion from the time said gases leave the combustion-chamber until they have been expelled to the exit-flue from the ascending flue 6, and also to be acted on by

the heat radiation from the rear wall of the ash-pan and combustion-chamber sections, The two vertical flues 13 13 communicate with the room at their upper ends through suitable openings arranged in the stove-back, as at 14 14. The descending flues 5 5 are controlled in the usual manner by dampers 15, which when in vertical position, as shown in Fig. 2, close the direct draft and direct the products of combustion into said descending flues.

The operation of the stove is as follows: The highly-heated products of combustion on leaving the combustion-chamber descend through the two side flues 5 5, pass around the hollow flue-strips 4 4, and ascend through the common flue 6 to find an exit from the stove, thus heating the lower and rear wall of the air-flue 7 10 and both side walls of the air-flues 12 13. In addition to this the front walls of the flues 10 and 13 radiate heat to said flues from the ash-pan and combustion-chamber sections of the stove, and the upper wall or the top of the flue 7 radiates heat to said flue from the ash-pan section, thus utilizing all the available heat-radiating surface for the heating of cold air taken in from the room and materially increasing the heating efficiency of the stove.

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

1. The combination in a stove having communicating side descending flues at its rear, horizontal base-flues, and an ascending flue disposed between the descending flues, of vertical flues separating each side descending flue from the ascending flue and open to the atmosphere adjacent their tops, and hollow flue-strips separating the base-flues and having their bottoms opening below the stove and their rear ends communicating with the contiguous vertical flue, substantially as described.

2. The combination in a stove having two communicating side descending flues, horizontal base-flues, and an ascending flue for the products of combustion, of a vertical air-flue disposed between each side descending flue and the contiguous side of the ascending flue, the front walls of said air-flues forming a part of the rear wall of the ash-pan and combustion-chamber sections, and flue-strips separating the base-flues and having their bottoms open to the atmosphere and their rear ends communicating with the vertical air-flues.

3. The combination in a stove of horizontal base-flues, a central ascending and two side descending flues communicating with the base-flues and disposed at the rear of the stove, and a vertical air-flue disposed between each side descending flue and the contiguous side of the ascending flue and having its side walls forming the contiguous side walls of the descending and ascending flues, said air-flue having both ends open to the atmosphere.

4. The combination in a stove of horizontal base-flues, a central ascending and two side descending flues communicating with the base-flues and disposed at the rear side of the stove, a vertical air-flue between each side descending flue and the ascending flue and open at its top to the atmosphere, said air-flues having their side walls forming the contiguous side walls of the ascending and descending flues and their front walls exposed to the ash-pan and combustion-chamber sections, and hollow flue-strips separating the base-flues and having their bottoms open to the atmosphere and their rear ends communicating with the vertical air-flues, substantially as described.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JAMES W. WELDON.

Witnesses:
HAZEL B. HIETT,
C. W. OWEN.