Oct. 20, 1931. S. J. CHLAPOWSKI ET AL 1,828,644

HEATING DEVICE

Filed May 9, 1930

Fig. 1.

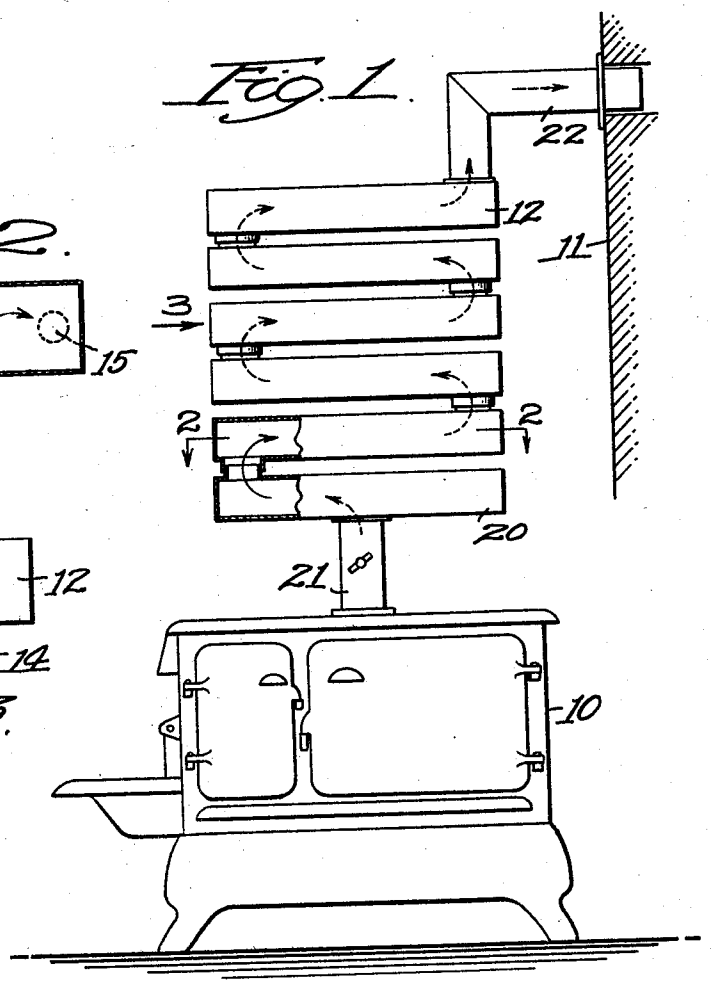
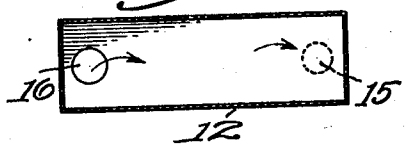


Fig. 2.



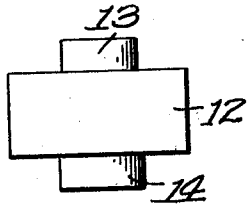


Fig. 3.

Fig. 4.

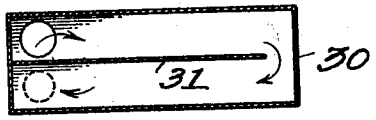
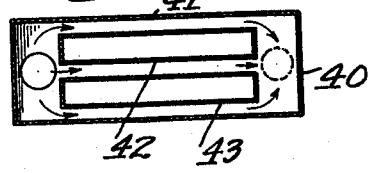


Fig. 5.



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UNITED STATES PATENT OFFICE

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HEATING DEVICE

Application filed May 9, 1930. Serial No. 451,097.

This invention relates to a device for conserving heat of flue gases produced in a stove, range, or other heater. Such flue gases commonly escape directly to a stack or chimney and carry away many valuable heat units.

It is the object of our invention to utilize a large proportion of the waste heat of flue gases by interposing our heating device in the path of travel of the gases between the heater and the stack or chimney.

In the preferred form, our heating device is made in separable sections which may be built up in any desired combinations.

Our invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention, together with certain modifications, is shown in the drawings, in which

Fig. 1 is a front elevation of our improved heating device, partially broken away to show interior structure;

Fig. 2 is a sectional plan view, taken along the line 2—2 in Fig. 1;

Fig. 3 is an end elevation of one sectional unit, looking in the direction of the arrow 3 in Fig. 1, and

Figs. 4 and 5 are sectional plan views similar to Fig. 2 but showing modified constructions.

Referring particularly to Figs. 1 to 3, we have shown our improved heating device connected between a range 10 and a stack or chimney 11.

In the preferred form, our heating device comprises a plurality of sectional units 12 provided with upper and lower connecting sleeves 13 and 14. The lower sleeves 14 are preferably of slightly greater diameter than the upper sleeves 13 so that they may telescope therewith.

Each sectional unit 12 preferably comprises an elongated rectangular heating chamber having an opening 15 at one end in its upper surface into the connecting sleeve 13 and an opening 16 at the opposite end into the lower connecting sleeve 14. The sleeve 13 fits snugly in the sleeve 14 of an adjacent section. By reversing the members 12 they may be built up as indicated in Fig. 1 in any desired numbers to provide the desired area of supplemental heating surface.

The lower sectional unit 20 may be provided with a lower inlet near the center of the bottom face to receive a short pipe 21 extending upward from the usual smoke outlet of the range 10. The upper sectional unit 12 is connected by the usual stove-pipe 22 to the stack 11.

When our improved heating device, as above described, is applied to a range or other heater, the flue gases travel through the various sectional units 12, as indicated by the arrows in Fig. 1, and part with a large proportion of their heat units before the gases escape through the pipe 22 into the stack 11. The greatly enlarged cross section of the units 12 decreases the rate of movement of the gases and also presents greatly increased radiating surface.

By the use of our improved heating device much valuable heat is retained within the rooms in which the heating device is located. While we have shown the heating device as placed directly above a range, it will be evident that the pipe 21 may be made of any desired length and that the heating device may be located in a room above that in which the range is placed, if so desired.

In the modified construction shown in Fig. 4, each heating unit 30 is provided with a baffle plate 31 extending longitudinally within the unit throughout the greater portion of its length, causing the gases to travel through two parallel passages successively before escaping into the next heating unit. In this construction, the inlet and outlet connections are at the same end of the heating unit.

In the further modification shown in Fig. 5, the end portions of the heating unit 40 are connected by parallel flues 41, 42 and 43. In this case the gases enter at one end of the sectional unit, flow through the parallel flues 41, 42 and 43, and escape through an opening at the opposite end. The general use and utility of these modifications is the same as for the preferred form.

While we have shown our invention as

applied to a range, it is not limited in its utility to such use and may be used with equal satisfaction in connection with furnaces, steam boilers or any other form of heater in which hot flue gases are developed and escape to a stack or chimney. The device is particularly useful when used in connection with oil burners where the flue gases escape at relatively high temperature.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what we do claim is:—

A flue gas heating unit adapted to be interposed in a flue gas passage and comprising a top heating unit, a bottom heating unit and a plurality of intermediate heating units, the bottom unit and each intermediate unit having a single opening in the top side thereof and adjacent one end thereof with an upwardly projecting sleeve surrounding each such opening, the top unit and each intermediate unit having a single opening in the bottom side thereof and adjacent the opposite end thereof, with a downwardly projecting sleeve surrounding each such opening, the upwardly and downwardly projecting sleeves of adjacent units telescoping and fitting closely one within the other and supporting said units in spaced relation, said top heating unit having an exit opening in its top side, and said bottom heating unit having an inlet opening in its bottom side located substantially midway of its length, whereby said heating device is disposed and supported substantially symmetrical with respect to the vertical axis of the inlet opening.

In testimony whereof we have hereunto affixed our signatures.

STANISLAW J. CHLAPOWSKI.
PETER P. CHLAPOWSKI.