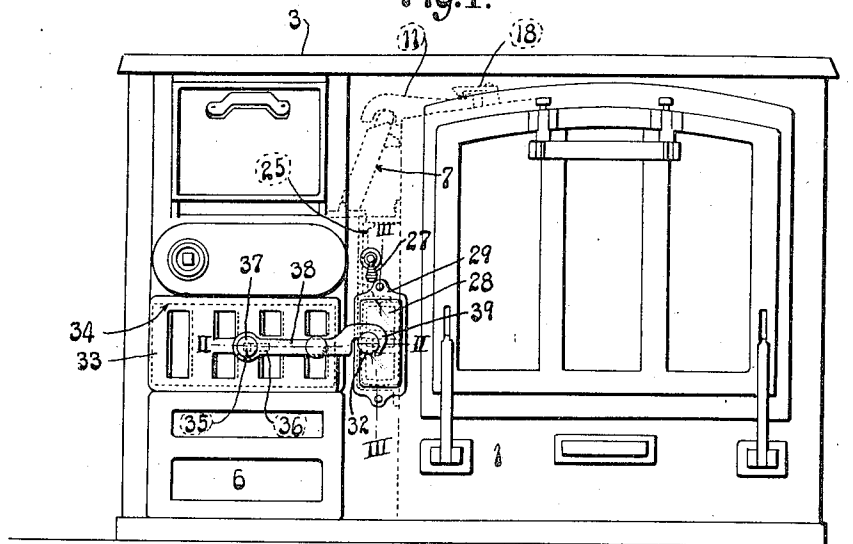
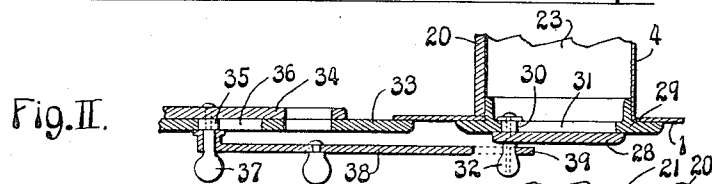
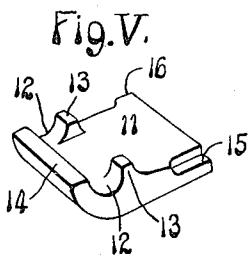
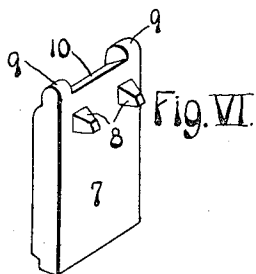
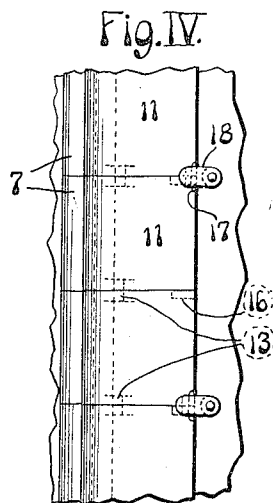
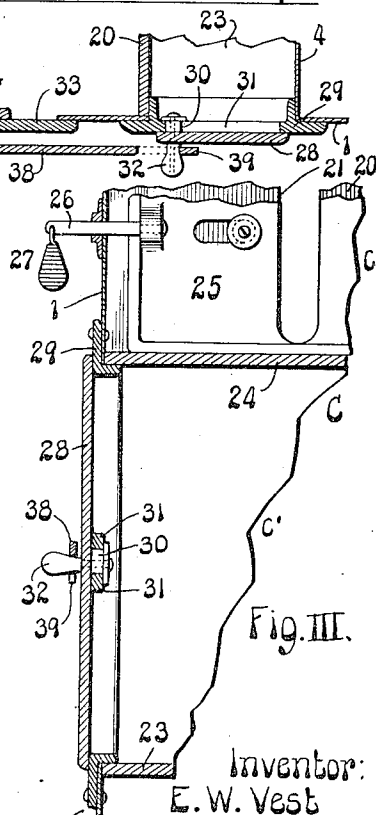


1,289,321.

Fig. I.



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STOVE.

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Patented Dec. 31, 1918.

2 SHEETS—SHEET 2.

Fig. VII.

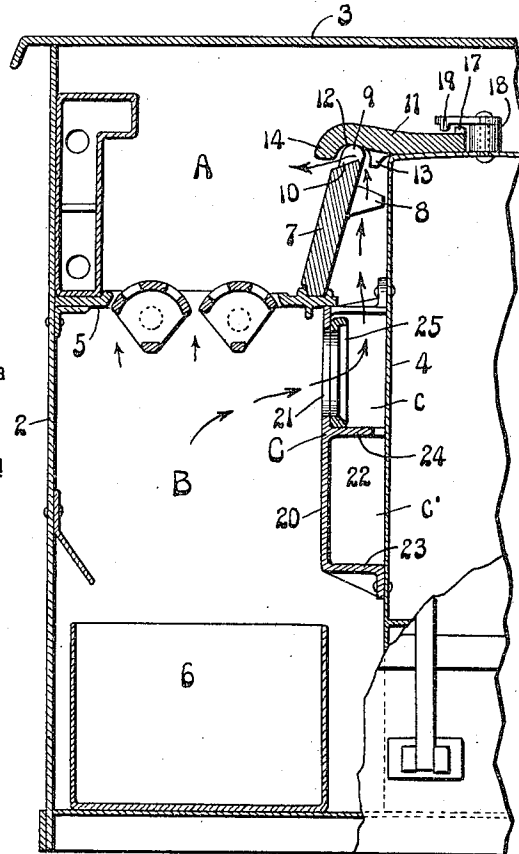


Fig. IX.

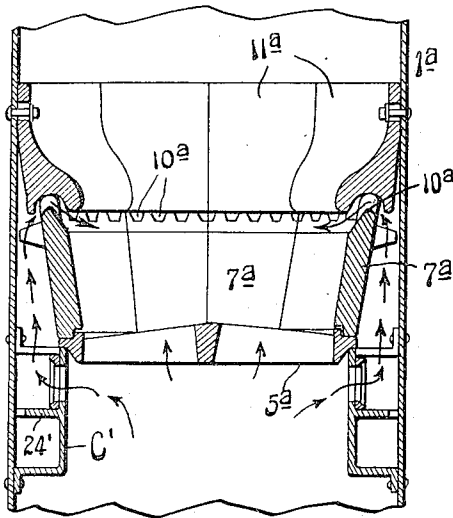
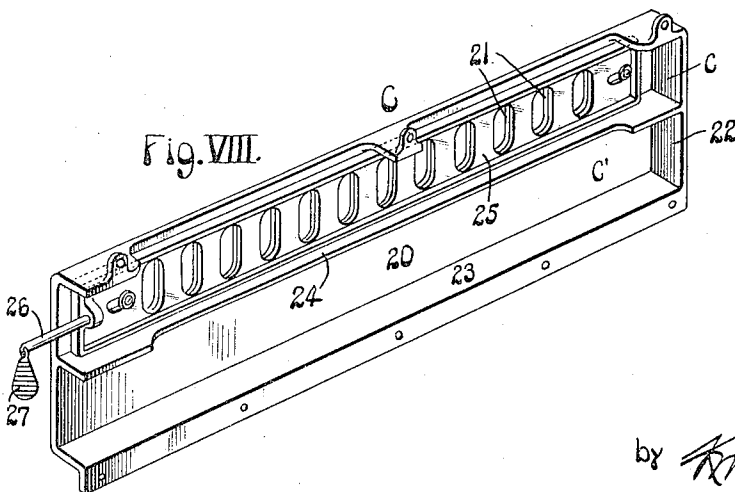


Fig. VIII.



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STOVE.

1,289,321.

Specification of Letters Patent.

Patented Dec. 31, 1918.

Application filed March 9, 1916. Serial No. 83,095.

To all whom it may concern:

Be it known that I, EUGENE W. VEST, a citizen of the United States of America, a resident of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to stoves, the present improvement being more particularly intended for incorporation in cooking stoves or ranges, but also suitable for use in heating stoves and furnaces.

One of the objects of the present invention is to provide a fire-box lining capable of withstanding or resisting the destructive effects of changes in temperature in a fire-box, due to expansion and contraction in the lining and the stove elements closely associated with the lining. Another object of the invention is to so deliver air to a fire-box as to affect combustion of combustible gases to a maximum degree.

Figure I is a front elevation of a cooking stove or range having my improvements incorporated therein.

Fig. II is an enlarged horizontal section taken on line II—II, Fig. I through the dampers of the stove.

Fig. III is an enlarged vertical transverse section taken on line III—III, Fig. I, through the air box and auxiliary damper of the stove.

Fig. IV is a top or plan view of a fragment of the fire-box lining.

Fig. V is a perspective view of one of the cap sections of the fire-box lining inverted.

Fig. VI is a perspective view of one of the wall sections of the fire-box lining.

Fig. VII is a vertical longitudinal section through the end of the stove containing the fire-box.

Fig. VIII is a perspective view of the air box, which extends transversely of the stove, detached from its support.

Fig. IX is a vertical section through a heating stove or furnace having my improvements incorporated therein.

Referring first to Figs. I to VIII, inclusive:

1 designates the front wall of the cooking stove (Figs. I and III), 2 is an end

wall at the end of the stove containing the fire-box (see Fig. VII), and 3 is the top of the stove. 4 as seen in the accompanying drawings is an end wall of the oven of the stove and in the subsequent description this will be considered as the oven wall although it might be an inner wall member of the stove aside from the oven.

The fire-box A and the ash compartment B are located between the side wall 2 and the wall 4, these compartments being separated by a suitable grate including the frame 5 (see Figs. I and VII). 6 is the ash pan in the compartment B.

The lining of the fire-box A includes wall lining sections 7 resting upon the grate frame 5 in proximity to but spaced from the wall 4, and also cap sections partly superposed above the wall sections 7. There is a series of the lining wall sections 7 extending throughout the length of the fire-box A and at the back of each of the sections are lugs or projections 8 which are opposed to the wall 4, as seen in Fig. VII. At the upper end of each section 7 adjacent to its side edges are vertical ears 9 between which is a passageway 10, this passageway being inclined forwardly and downwardly from the rear portion of the section. The cap sections previously mentioned are denoted by the reference character 11. As seen in Fig. VII, the cap sections rest in part upon the top of the oven of the stove and in part upon the lining wall sections 7. The forward ends of the cap sections are in the form of downturned lips 14 which overhang the wall lining sections 7 and said cap sections are provided back of said lips with curved seats 12 in which the ears 9 of the sections 7 rest. Back of said seats, adjacent the side edges of the cap sections, are depending lugs 13 between which and the lips 14 the sections 7 are loosely confined. The cap sections 11 are interlocked with each other at their inner ends by providing the sections at their rear corners with notches 15 and tongues 16. These tongues and notches are fitted to each other when the cap sections are assembled, as seen in dotted lines Fig. IV. Some of the cap sections are provided at their rear corners with upwardly extending studs 17 which receive the engagement of clips 18 riveted or otherwise suitably secured to the stove oven, as seen in Figs. IV and VII. The overhang-

ing arms of these clips are provided with lugs 19 arranged in opposition to the lugs 17 on the cap sections. The clips resist forward movement of the cap sections 11, due to the opposing lugs 17 and 19 and they perform this office in such manner as to permit limited play of the cap sections as may be required due to contraction or expansion of the co-related elements.

It will be apparent that by fitting the lining sections 7 and 11 to each other, as has been described, it is possible for these sections to partake of movement independently of each other, and, consequently, expansion and contraction of the material of which they are composed may take place without injury to the sections as would occur if they were integrally connected.

I will now proceed to description of the means for admitting air to the fire-box to cause complete combustion of the combustible gases produced in such fire-box.

C designates an air box secured to the wall 4 and located in the ash compartment B, the box being open at its top to permit the ascent of air therefrom into the space back of the lining sections 7, in order that such air may enter the fire-box through the passageways 10 at the upper ends of said lining sections. The air box, the structure of which is most clearly illustrated in Fig. VIII, comprises a side wall 20 containing apertures 21, a rear end wall 22 and a bottom wall 23, the two last mentioned walls being closely fitted against the wall 4. The air box is open at its front end which is fitted against the front wall 1 of the stove. The interior of the air box is subdivided by a horizontal partition 24 into an upper compartment *c* and a lower compartment *c'*, the said partition being partly cut away throughout the most of its length to permit communication between the lower and upper compartments. The lower compartment *c'* is not open to the ash compartment B, but the upper compartment has communication with said ash compartment through the apertures 21. These apertures are controlled by an apertured damper 25 which is slidably fitted to the side wall of the air box and is furnished with a handle rod 26 which extends through the front wall of the stoves and is preferably supplied with a handle 27 (see Figs. III and VIII).

28 designates a slidable auxiliary damper plate at the front of the stove adapted to control the admission of air into the front end of the air box C directly from the exterior of the stove. The damper plate 28 is fitted to a damper frame 29 attached to the front wall 1 at the front end of the air box C (Figs. I to III inclusive), and said plate is provided at its rear side with a guide stud 30 operable between a pair of horizontal guides 31 forming a part of the damper frame 29. At the front of the damper plate

is an operating knob 32. The damper just described is an auxiliary damper and is intended to be opened only for the promotion of complete combustion in maintaining a low fire in the fire-box of my stove.

The admission of air for promoting complete combustion, when other than low fire is desired, is admitted to the ash compartment B through an apertured damper frame 33 secured to the front wall of the stove in front of the ash compartment. The apertures in this damper plate are controlled by an apertured damper plate 34 which is movable horizontally and is directed in its movement by the operation of a guide 35 fitted to the damper plate and located in a slot 36 in the damper frame. The damper plate is supplied with a knob 37 which is conveniently accessible at the front of the stove.

It is important that the auxiliary damper be closed when the main damper is open in order that all of the air for promotion of combustion at such time may pass through the ash compartment and become heated before entering the air box for delivery to the fire-box, and, owing to the importance of this, I provide a connection between the two damper plates 34 and 28. This connection, in the form illustrated in the drawings, comprises a connecting rod 38 pivotally fitted to the knob 37 of the main damper plate at one end and having at its other end a hook 39 which engages the knob 32 on the auxiliary damper plate. When a full fire is being burned in the fire-box of my stove the main damper at the front of the stove is opened so that the apertures in the damper plate 34 will register with the apertures in the damper frame 33 and air from the exterior of the stove will be then admitted into the ash compartment B, to rise therein toward the bottom of the fire-box. The apertures 21 in the air box C are located only slightly beneath the grate of the fire-box and, consequently, the air becomes quite hot so that it is in the best condition to promote combustion before it passes through the apertures 21 into the upper compartments *c* of the air box. It will be understood that the damper 25 is open at this time to permit the described passage of the heated air into the compartment *c*. The air entering said air box compartment rises immediately into the space back of the fire-box lining where it is further heated and then moves through the passageways 10 in the wall lining sections 7 to become mixed immediately with the products of combustion in the fire-box. The damper 25 provides means for the regulation of the supply of the requisite quantity of air through the air box and therefrom to the fire-box, it being obvious that this damper may be adjusted to any required position so that just the proper amount of air will be delivered through the air box to the top of a bed of fuel burning in

the fire-box and from which the gases of combustion rise. The damper 25 is, therefore, a very important feature in the air delivery means of my stove.

5 When it is desired to maintain a low fire in my stove the air to support combustion is admitted to the air box C by opening the auxiliary damper at the front end of the air box. This auxiliary damper is opened by
10 closing the main damper at the front of the stove which results in the movement of the connecting bar 38 and the shifting of the auxiliary damper plate 28 in a lateral direction simultaneously with the closing of the
15 main damper. It is desirable to open the auxiliary damper only slightly and for this reason the connecting bar 38 is provided with an elongated notch in which the knob 32 of the auxiliary damper plate is seated.
20 This elongated notch permits of partial closure of the main damper before any movement is imparted to the auxiliary damper plate 28 and the auxiliary damper plate is therefore moved to a degree corresponding
25 to the final closing movement of the main damper.

In Fig. IX I have shown my improvements incorporated in a heating stove. In this heating stove construction the fire-box
30 lining wall sections 7^a are constructed similarly to the previously described lining wall sections 7 and rest upon the grate 5^a. The wall sections of the lining are surmounted by cap sections 11^a which are loosely connected to the shell 1^a of the stove and seat
35 loosely connected at their lower ends upon the ears at the upper ends of the sections 7^a, the lower ends of the cap sections being

grooved to receive the upper ends of the sections 7^a and overhanging the air passage- 40 ways 10^a through which air enters the fire-box. Beneath the fire-box of the heating stove is a circular air box C' having lower and upper air compartments separated by the horizontal partition 24'. The shell 1^a is 45 provided with a main damper (not shown) for the admission of air into the ash compartment beneath the fire-box in order that it may enter the upper compartment of the air box and move into the fire chamber as in 50 the previously described construction. Provision is also made for the supply of air into the lower compartment of the air box to pass therefrom to the chamber when the main damper is closed and a low fire is being 55 maintained in the fire chamber.

I claim:—

1. An air box open at the top comprising a side wall having apertures in its upper part, a horizontal partition cutaway at its 60 inner edge and located beneath the apertures, a rear wall, a bottom wall and an apertured damper slidingly fitted to the side wall of the air box and provided with an operating rod. 65

2. An air box open at the top comprising a side wall having apertures in its upper part, a horizontal partition cutaway at its inner edge and located beneath the apertures, a rear wall, a bottom wall, an aper- 70 tured damper slidingly fitted to the side wall of the air-box and provided with an operating rod, a damper frame at the front end of the air-box and a slidable auxiliary damper plate fitted to the damper frame.

EUGENE W. VEST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."