

(No Model.)

F. V. KNAUSS.
FIRE BOX.

2 Sheets—Sheet 1.

No. 501,885.

Patented July 18, 1893.

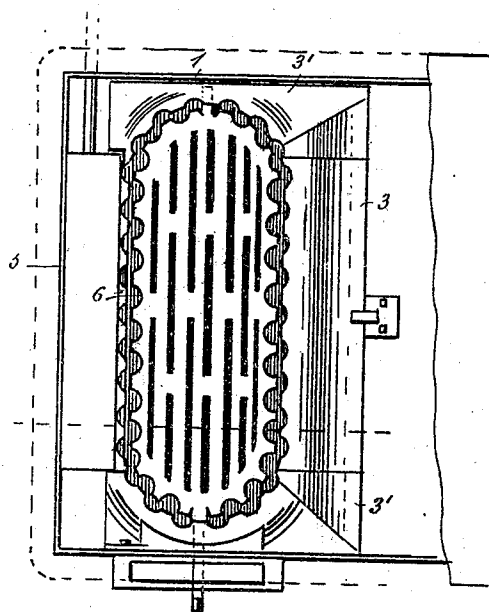


Fig. IV.

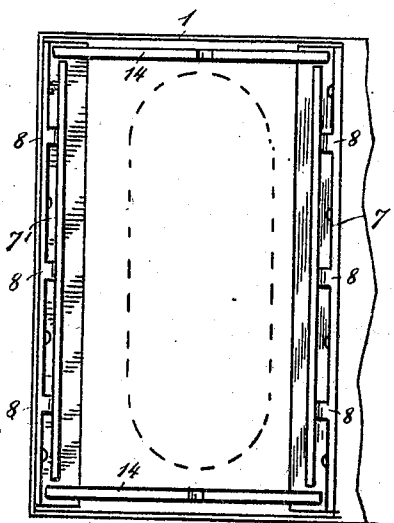


Fig. III.

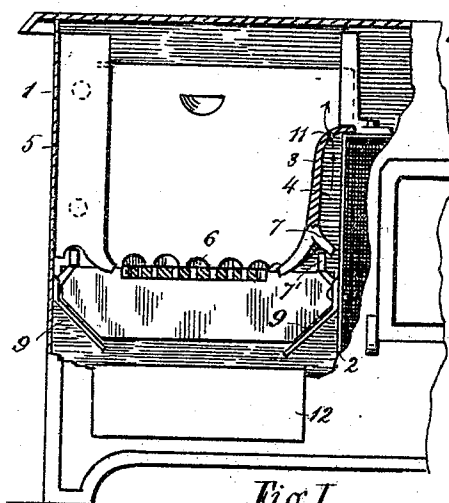


Fig. I.

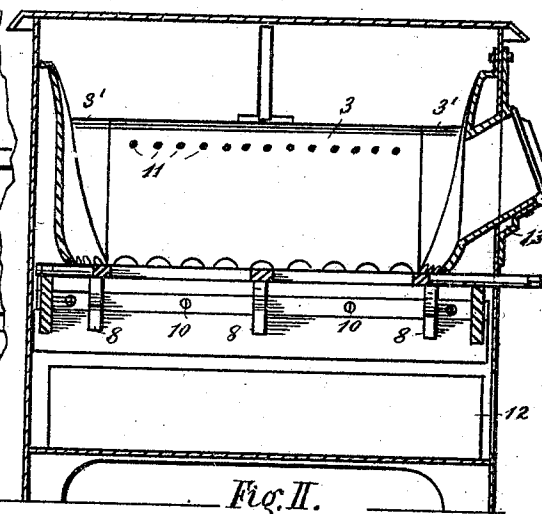


Fig. II.

Witnesses

R. L. Millar
L. M. Adams

Inventor

F. V. Knauss
By J. Bailey Atty

(No Model.)

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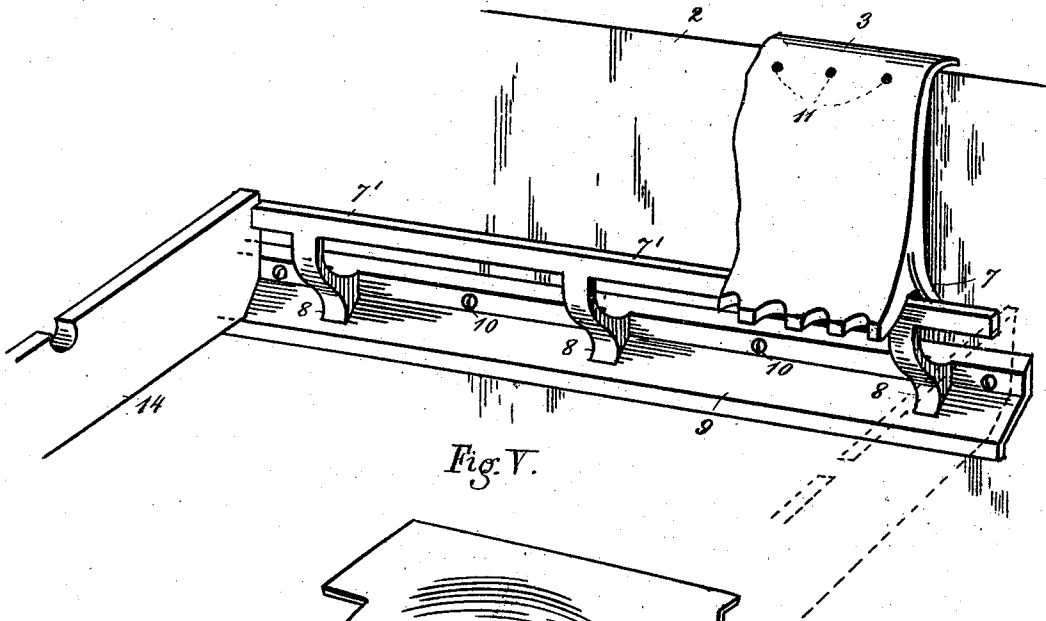


Fig. V.

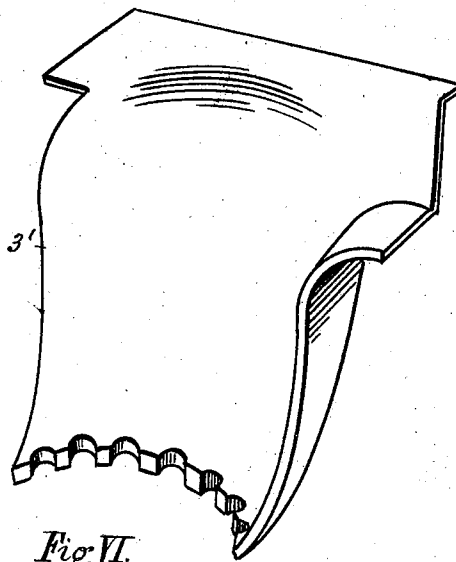


Fig. VI.

Witnesses
R. S. Millar
L. M. Adams.

Inventor
F. V. Knauss
By C. Bailey Atty.

UNITED STATES PATENT OFFICE.

FRANK V. KNAUSS, OF PORTSMOUTH, OHIO, ASSIGNOR TO THE PORTSMOUTH STOVE AND RANGE COMPANY, OF SAME PLACE.

FIRE-BOX.

SPECIFICATION forming part of Letters Patent No. 501,885, dated July 18, 1893.

Application filed December 31, 1892. Serial No. 456,937. (No model.)

To all whom it may concern:

Be it known that I, FRANK V. KNAUSS, a citizen of the United States, residing at Portsmouth, in the county of Scioto and State of Ohio, have invented a new and useful Improvement in Fire-Boxes, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a front view, partly in section, of a cooking stove provided with my improved fire box; Fig. 2, a central longitudinal section of the fire box and its adjuncts; Fig. 3, a plan view of the rails which support the fire box and the transverse bars which support the grate; Fig. 4, the same showing the shaking grate in position; Fig. 5, a perspective detail of one of the supporting rails and a section of lining in position thereon and Fig. 6, a detail view of one of the end linings.

My invention pertains to improvements in fire boxes especially that class which is generally found in modern cooking stoves and ranges. In the construction of these appliances, it is customary to provide air spaces or recesses between the fire box and the adjacent parts of the stove in order to prevent, as far as practicable, the outward radiation and waste of heat, and also to confine it to the passages or chambers where it may be utilized. It has been discovered that the advantages of this construction are diminished in a large degree by reason of the fact that ashes and soot will find entrance through crevices and the air holes in the linings and the recesses, being inaccessible from without, will soon be partially filled by the accumulation. The free and uniform radiation of heat will thus be interrupted and the deposit of ashes being a non-conductor, the adjacent walls or linings of the fire box will become superheated and destroyed.

My invention consists primarily, in the application of novel and effective means whereby the fire box and grate respectively, are supported in such a manner as to provide a downwardly extending open space or passage through which the ashes or other matter which may find entrance will be uninterruptedly discharged into the ash-pan.

The invention furthermore provides an improved construction for the interior of the

fire box as will be hereinafter shown and described.

Referring to the accompanying drawings, 1 designates the exterior shell of a cooking stove or range, 2 the wall of the oven, 3 the lining of the fire box, 4 the air space between the lining and the oven and 5 the water heater. The upper edge of the lining is curved as shown and forms a lip which rests upon the upper corner of the oven. The lower edge or foot, curves inwardly and projects over the outer edges and ends of the grate 6 and is provided on its ends with heel spurs 7 forming saddles which rest on the rail 7'. This rail with its supporting braces 8 and the downwardly inclined flange or apron 9 are integral, and may be easily fastened to the adjoining wall of the oven and to the water heater on the opposite side by bolts 10. It will be observed that the air space is thus made continuous and a free communication is established with the open space beneath the grate. The air in this space being rarefied by the heat will ascend and pass into the fire box through the perforations 11 and affect a thorough combustion of the gases. It is well understood that this upward current of air will continue so long as a high degree of heat is maintained, but it has been discovered that when the fire is low or extinguished, counter currents are generated and the light particles of ashes and soot will find their way into the air space through the perforations and the joints of the linings. There being no lodging places in this form of construction, the ashes and other matter thus admitted will pass downward and be discharged into the ash-pan 12 by the deflecting apron 9. The front and back linings 3' are formed and arranged substantially in the same manner and for the same purpose as the side section 3. The doorway in the front lining is boxed, as shown in Fig. 2, in order to prevent the escape of heat from the air space and the consequent admission of cold air. Additional heating surface is secured by a transverse recess 13, formed as shown, beneath the doorway. The heat produced by the fuel which overlies this recess is thus added to the air within the main recess, and the bottom plate of the door-way having a

body of air beneath it, is thereby protected from injury which would result from any excess of heat which may be produced by the overlying mass of burning fuel. The grate 6 is journaled in the cross bars 14 and has a longitudinal as well as a rocking movement. The side bars and end sections are provided with a series of notches. The lower edges of the linings are similarly notched. It will be obvious that when the grate is moved longitudinally, the notches will engage and crush all clinkers and other incombustible matter which accumulates in the lower corners of the grate and interferes with the perfect combustion of the fuel.

It will be understood that my invention is herein shown and described as applied to stoves having a water heater, and the linings are attached to only one side and the ends of the fire-box. The inner plate of the water heater has a curved and notched lower edge to enable it to operate in conjunction with the grate. In stoves having no water-heater, the linings are applied to both sides and ends of the fire-box.

What I claim is—

1. A cooking stove or range having a fire box consisting of the herein described supporting rails, the inclined flanges integral therewith, the side and end lining provided

with perforations for the admission of heated air into the fire box and upheld by the rails and adapted to form an air space between the combustion chamber and the vertical walls of the stove, and provided with the recess leading from the door-way to the interior of the fire chamber and forming a supplementary air space beneath the door-way of the fire box, all constructed and arranged substantially as and for the purposes set forth.

2. In a cooking stove or range the lining of the fire box curved at the upper edge to form a lip so as to rest upon the upper corner of the oven, and having a lower edge or foot curved inwardly and projecting over the outer edges of the grate and provided with heel spurs 7, forming saddles combined with the rail 7', and supporting braces 8, and the downwardly inclined flange or apron 9, thus forming a continuous air space and free communication with the open space beneath the grate, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, this 13th day of December, 1892, in the presence of witnesses.

FRANK V. KNAUSS.

Witnesses:

L. W. BAKER,
W. S. TODD.