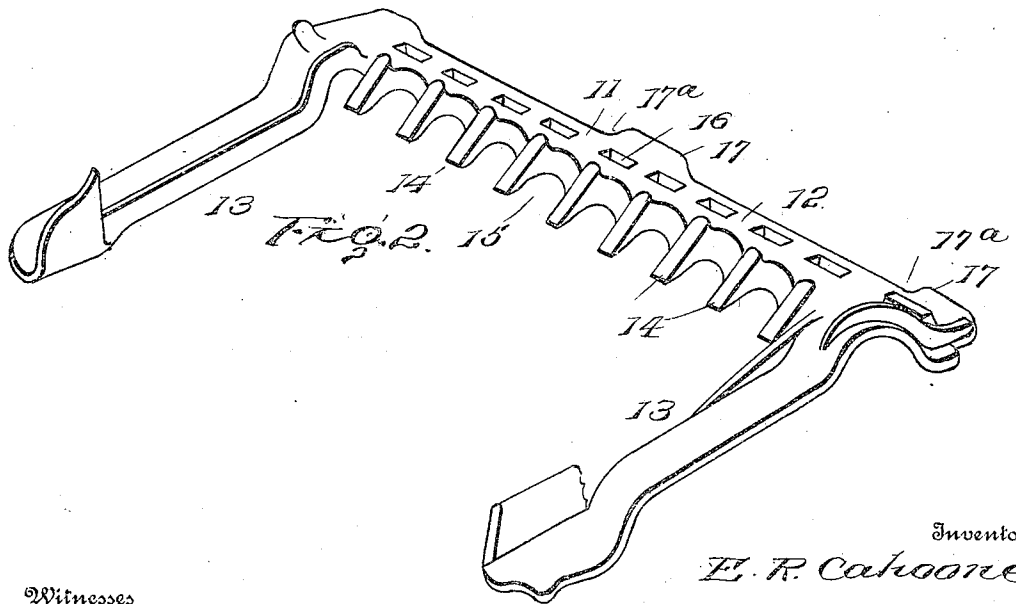
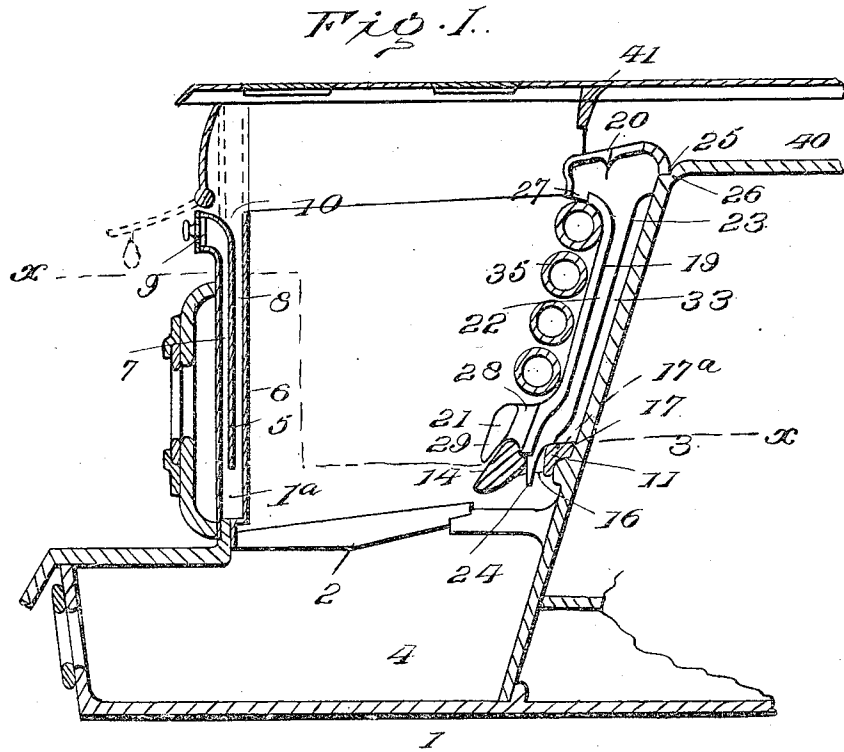


E. R. CAHOONE.
STOVE.
APPLICATION FILED MAR. 5, 1906.

953,513.

Patented Mar. 29, 1910.

3 SHEETS—SHEET 1.



Witnesses
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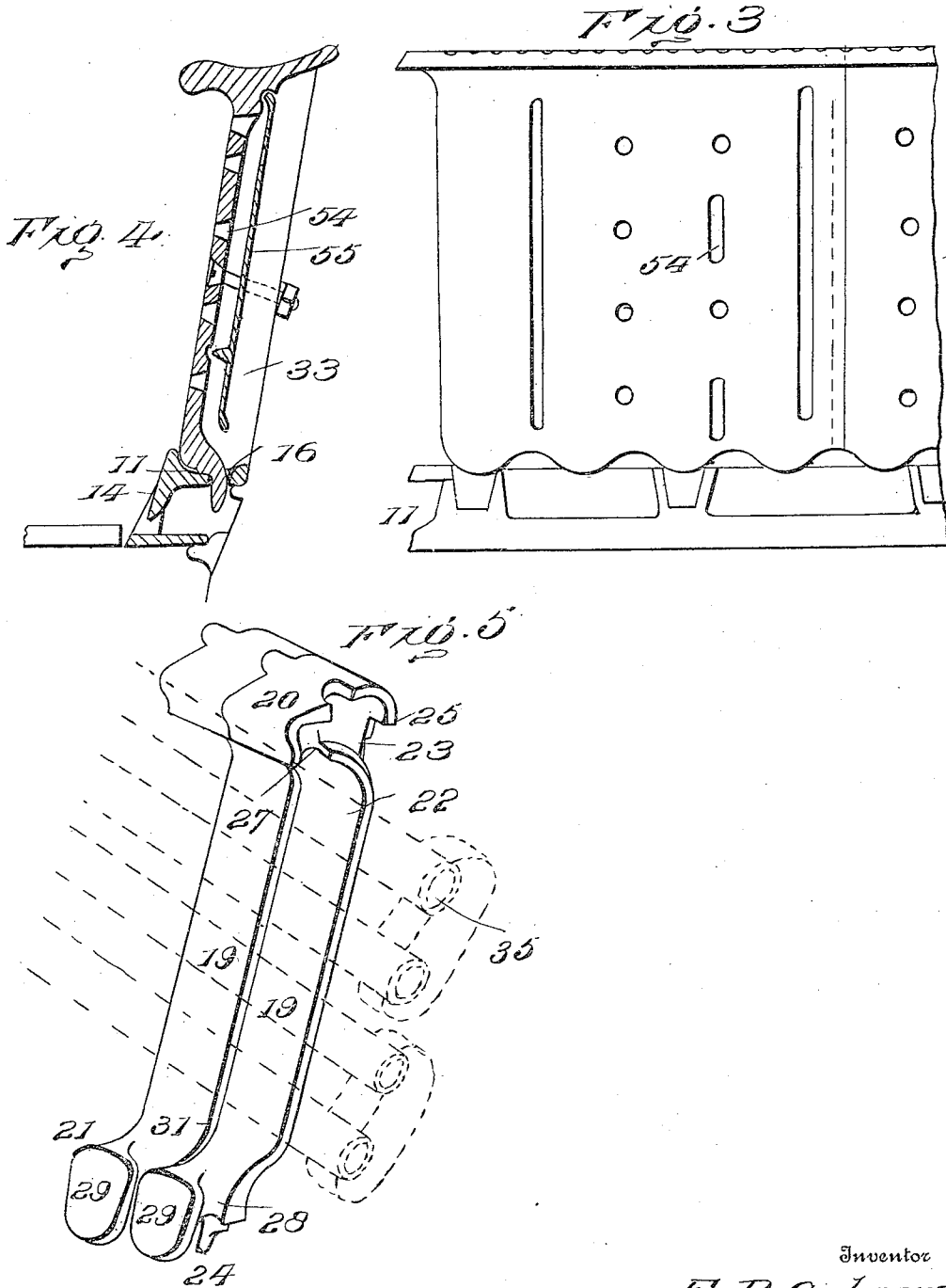
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

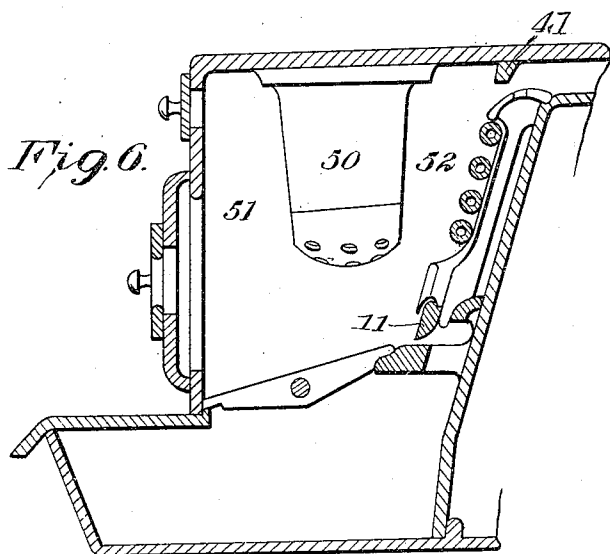


Fig. 7.

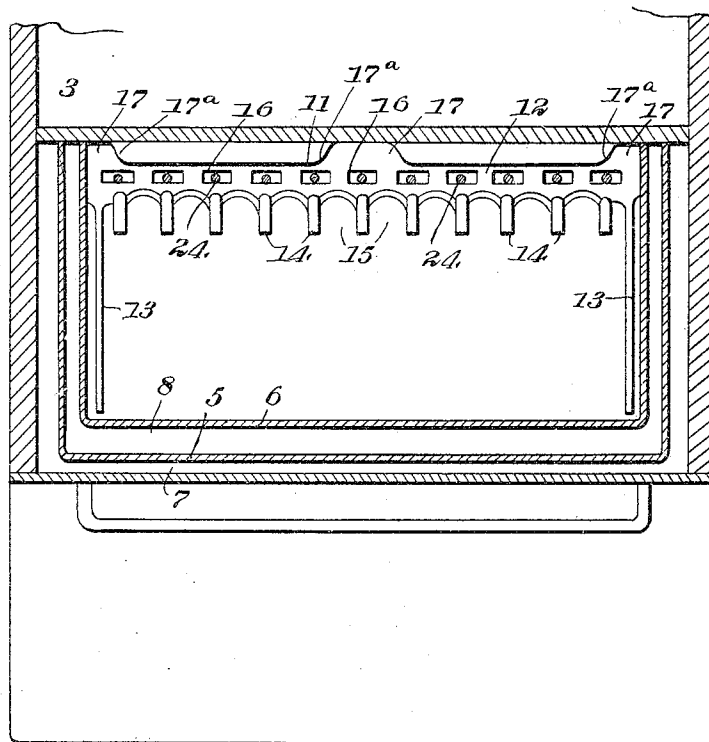
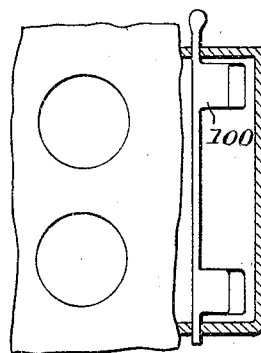


Fig. 8.

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UNITED STATES PATENT OFFICE.

EDWIN R. CAHOONE, OF TROY, NEW YORK.

STOVE.

953,513.

Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed March 5, 1906. Serial No. 304,317.

To all whom it may concern:

Be it known that I, EDWIN R. CAHOONE, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Stoves, of which the following is a specification.

This invention relates to improvements in stoves.

The object of the invention is to provide specific details of construction, to economize in the expense of manufacture and simplify the assembling of the parts.

A further object of the invention is to provide means for distributing air to the fire-pot, to promote combustion.

A further object of the invention is to arrange a water-back adjacent the rear lining and the oven, whereby the heat of the oven is not reduced.

Other objects and advantages will be hereinafter referred to, and particularly pointed out in the claims.

In the drawings—Figure 1 is a sectional view of a conventional stove. Fig. 2 is a view of a lining support. Fig. 3 is a face view of a rear lining which is of slightly modified form. Fig. 4 is a sectional view of the same. Fig. 5 is a detail perspective view of the rear lining shown in Fig. 1. Fig. 6 is a vertical section of another form of stove with my improvement applied. Fig. 7 is a detail plan view of a slightly different means for retarding the escaping products of combustion. Fig. 8, is a horizontal sectional view taken above the lining supporting frame about on the line *x-x*, Fig. 1.

The numeral 1, indicates a stove casing, having a grate 2, oven 3, and ash pit 4. In the front and sides of the stove, I provide a lining, composed of two sections 5, and 6. The lining section 6, is spaced from the casing 1, to form an air heating chamber 1^a, at the front and sides of the fire box, the said lining section 6, terminating a short distance from the top of the stove to provide an exit 10, for the heated air to pass to the fire pot. The lining section 5, extends from the casing 1, at a point adjacent the upper end of the lining section 6, and extends down within the air heating chamber 1^a, to a point just above the bottom of the same. This lining section 5, is spaced from the casing 1, and the inner lining section 6, to provide an air inlet passage or chamber 7, and an outlet

passage or chamber 8, air being admitted from the atmosphere at 9, and passing to the fire pot at 10.

A lining frame 11, is mounted in the lower part of the fire-pot, and it consists of a rear bar 12, and end bars 13—13. The front edge of the rear bar is formed with a series of fingers 14, and notches 15, and in rear of the fingers are openings 16, while projections 17, abutting against the oven or back wall of the fire chamber, form intermediate spaces 17^a, through which air passes from the ash-pit to the fire-pot.

19, indicates sections of a rear fire-pot lining, each section consisting of an overhanging head 20, base 21, and a central body portion 22, extending therefrom being a rib 23. Depending from base 21, is a lug 24, which fits in one of the openings 16, while the step 25, of head 20, rests in a seat 26, on the upper edge of the oven. By reference to Fig. 1, it will be noted that rib 23, is slightly spaced from the oven to permit free passage of air between the said lining and oven. At the top and bottom of the body portion 22, are openings 27 and 28, and extending downwardly from the base 21, is a finger 29, which rests over one of the fingers 14.

When the lining is assembled, a slight space 31, is formed for the free passage of heated air, and by the construction of the base and the frame 11, a series of air inlets are formed at the bottom of the fire-pot, whereby the products of combustion may pass from the fire-pot up and behind the lining. Air passes from the ash-pit 4, into the chamber 33, behind the lining where it is mixed with the products of combustion, and then escapes to the fire-pot through the spaces 31, and through the openings 27, at the top. The highly heated air is therefore introduced to the body of fuel, through space 31, and to the escaping products of combustion above the top of the fuel through openings 27.

Located between the head 20, and base 21, is a water back 35, in the present instance a coil of pipe, and by its location it is subjected to the influence of heat, first by the products of combustion within the fire pot, and secondly by the heated air passing from the chamber 33, to the exit flue. By the location of the water back as described, it is subjected to the products of combustion on one side, and highly heated air on the other, without in the least affecting the tem-

perature of the oven, as the air mixed with the products of combustion in chamber 33, is sufficient for this.

The exit flue 40, is contracted above the rear lining, by a deflector 41. The function of this feature is to somewhat retard the escaping products of combustion in the fire pot. Air from the front and side linings is delivered above the top of the fuel and mixes with the escaping gases, to furnish a higher grade of combustion, which is further augmented by the heated air coming from the chamber 33, in a reverse direction. By contracting the exit flue these various streams of air tend to mix with the gases to better consume the fuel.

In Fig. 6, I have shown a stove of a different type, with my improvements applied thereto, 50, indicating an air duct, which divides the fire pot into a fuel chamber 51, and a combustion chamber 52. Under these conditions the rear lining distributes the air in exactly the same manner as previously described, and the water back is acted upon in like manner.

In Figs. 3 and 4, I have shown the rear lining formed of fewer sections, and having openings 54, for the escape of the heated air. In connection with this feature I have shown a deflector 55, in chamber 33, to deflect and more thoroughly heat and mix the air, as will be readily understood.

As shown in Fig. 7, a swinging damper 100, is shown at or near the rear of the exit flue, to retard the escaping products of combustion when it is turned in a vertical position. When starting a fire the damper is turned down flat to allow all the draft possible, and after the fire is well under way, the damper is thrown up and it performs the same function as rib 41.

What I claim is:

1. In a stove, the combination with a casing, a fire-pot, of an oven spaced from the top of the casing to form an exit flue, a water-back in the fire-pot, said water-back being spaced from the oven, the space communicating with the fire-pot near the top thereof, means supplying heated air to the lower end of the space formed between the water-back and the oven, and means at the point of communication of the space with the fire-pot for directing the products of combustion toward the front of the latter, to cross the products of combustion escaping to the exit flue.

2. In a stove, the combination with a casing, and a fire pot, of an oven spaced from the top of the casing to form an exit flue, a water back in the fire pot, said water back having openings for the passage of air and being spaced from the oven, means supplying heated air to the lower end of the space formed between the water back and the oven, means affording communication be-

tween the upper end of said space and the fire pot near the exit flue, said latter means directing the products of combustion toward the front of the fire pot to cross the products of combustion escaping to the exit flue and above the point where air is admitted to the bottom of said space.

3. In a stove, the combination with a fire-pot, an oven, a rear lining for the fire-pot adjacent the oven and spaced therefrom to form an air heating chamber, said lining being formed of a series of sections with interposed spaces between said sections to form communication between the air heating chamber and the fire-pot and through which a part of the products of combustion enter the air heating chamber under the influence of the draft, said lining sections having flanges to direct the products of combustion across the fire-pot, means for supplying air from the ash-pit to the air heating chamber, and a water-back including horizontally spaced pipes supported in front of the rear lining with which the products of combustion escaping through the interposed spaces contact.

4. In a stove, the combination with a fire pot, a casing, an oven spaced from the casing to form an exit flue, a rear fire pot lining formed with openings and spaced from the oven to form a chamber, a part of the products of combustion being drawn through said openings into the chamber under the influence of the draft, means for supplying the chamber with air from the ash-pit, said air passing to the fire-pot and through the openings formed in the lining, thence to the exit flue, means at the top of the chamber for directing the products of combustion across the fire-pot, means for supplying heated air at or near the top of the fire-pot to commingle with the escaping products of combustion at the exit flue, and a water-back including horizontally spaced pipes supported in front of the rear lining with which the products of combustion escaping through the openings formed in said sections contact.

5. In a stove, the combination with a fire-pot, an oven, a frame in the fire-pot, said frame being formed with a series of notches and openings, a series of lining sections supported by the oven and the frame, each section having a head at its upper end which rests against the oven and a projection at its lower end adapted to fit in one of the openings of the frame, spaces being formed between the sections when they are assembled, a chamber formed between the sections and the oven, means for supplying air to the chamber from the ash-pit, the products of combustion passing through the notches in the frame to mingle with the air in said chamber, and a water back including spaced pipes supported in front of the lining sec-

tions with which the products of combustion escaping through spaces formed between said sections contact.

6. In a stove, the combination with a casing, a fire-pot, a lining at the front and sides thereof, the lining at the front having an air heating chamber which communicates with the atmosphere at one end and the fire-pot at the opposite end, an oven spaced from the casing to form an exit flue, a rear lining having openings and located adjacent the oven and spaced therefrom to form an air heating chamber, a part of the products of combustion being drawn through the openings into the latter chamber under the influence of the draft, and means for supplying air to the chamber formed between the rear lining and oven, said air passing from the air heating chamber formed between the rear lining and the oven through the openings in said rear lining into the fire-pot, means near the top of the lining for directing part of the products of combustion across the fire-pot, means for retarding the products of combustion in the exit flue, and a water-back including spaced pipes supported in front of the rear lining with which the products of combustion escaping to the fire-pot from the air heating chamber contact.
7. In a stove, the combination with a casing, and oven, spaced from the casing to form an exit flue, a rear lining formed with openings and located adjacent said oven, said lining being spaced from said oven to form a chamber, a part of the products of combustion being drawn through the openings into the chamber under the influence of the draft, means for supplying air to said chamber, said air passing through said openings

formed in the rear lining to the fire-pot, means for directing part of the products of combustion in the chamber across the fire-pot, means for retarding the products of combustion in the exit flue, means for supplying heated air to the escaping products of combustion at a point adjacent the retarding means, and a water-back including spaced pipes supported in front of said rear lining with which the products of combustion escaping through the openings contact.

8. In a stove, the combination with an oven, a fire-pot, linings at the front and sides of said fire-pot, the lining at the front having an opening communicating with the atmosphere and other openings communicating with the fire-pot above the fuel, a lining formed with openings and located in rear of the fire-pot adjacent the oven, said latter lining being spaced from the oven to form an air chamber which communicates with the ash-pit and the fire-pot, a part of the products of combustion passing into the chamber through the openings under the influence of the draft, means near the top of the lining for directing the products of combustion across the fire-pot, an ash-pit, and a water-back including spaced pipes supported in front of the rear lining with which the products of combustion passing therefrom contact.

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

EDWIN R. CAHOONE.

Witnesses:

JOSEPH P. SWIFT,
HENRY G. ANDREWS.