

No. 698,802.

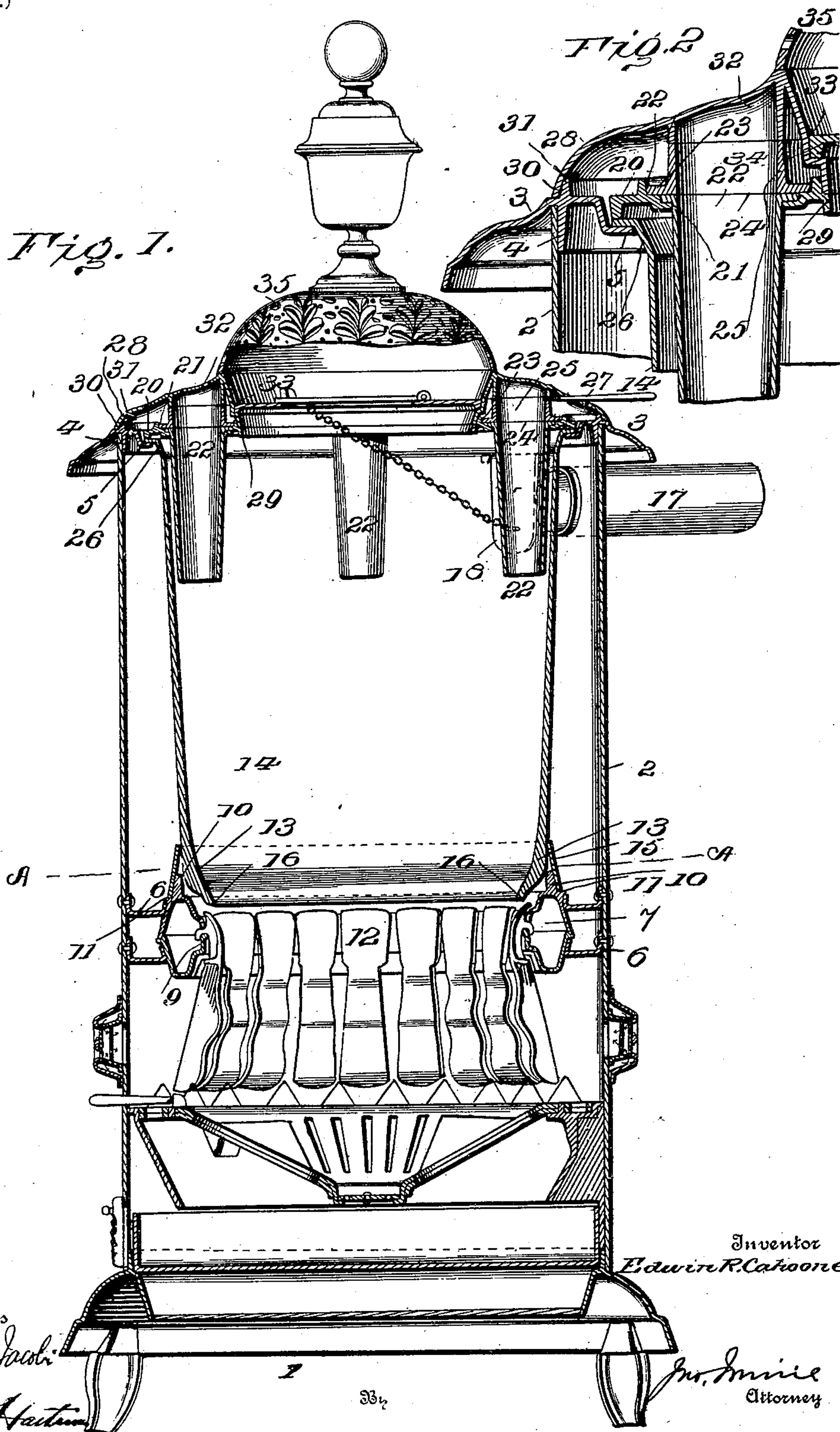
Patented Apr. 29, 1902.

E. R. CAHOONE.
STOVE.

(Application filed Mar. 5, 1901.)

(No Model.)

2 Sheets—Sheet 1.



No. 698,802.

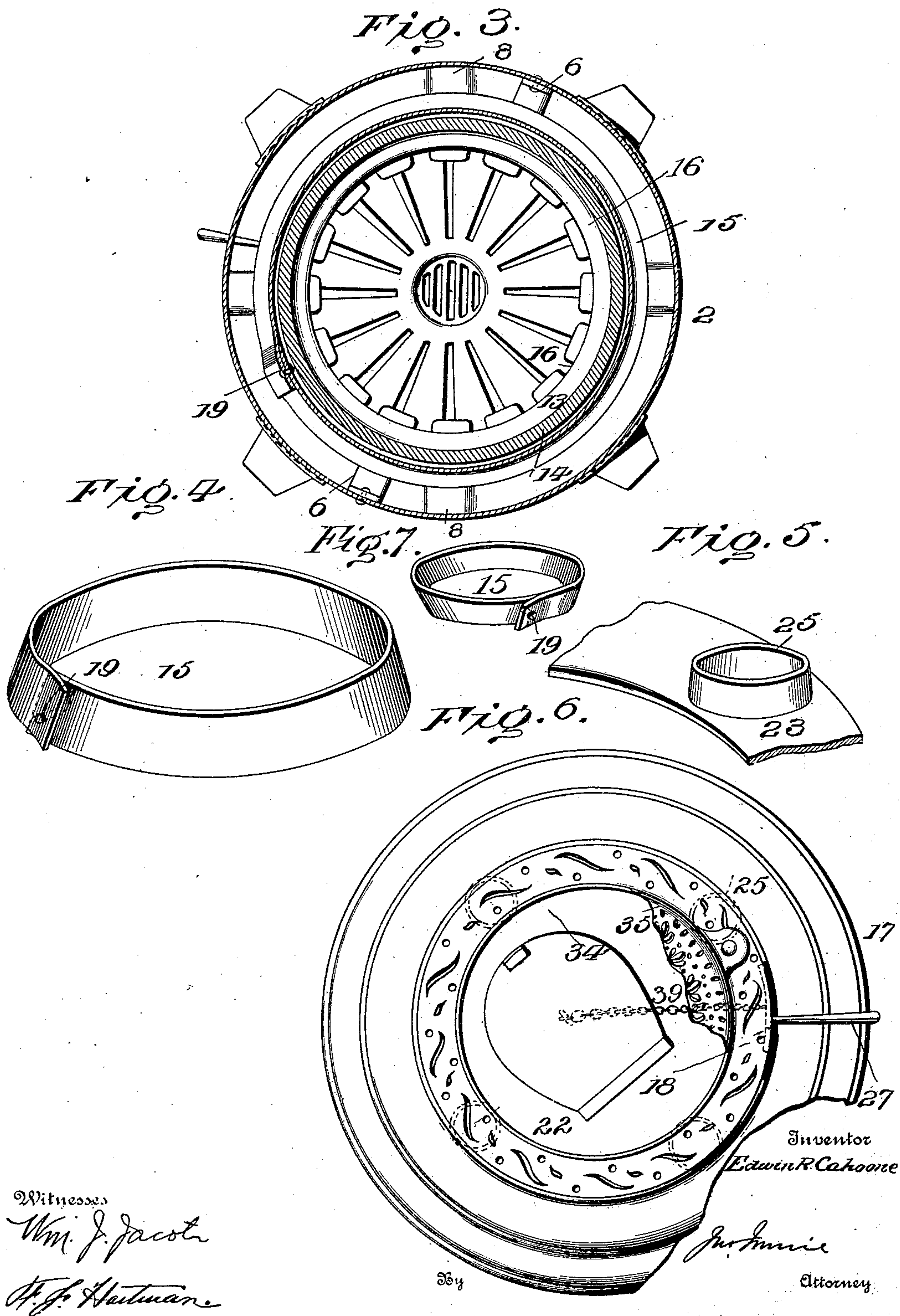
Patented Apr. 29, 1902.

E. R. CAHOONE.
STOVE.

(No Model.)

(Application filed Mar. 5, 1901.)

2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

EDWIN R. CAHOONE, OF NEWARK, NEW JERSEY.

STOVE.

SPECIFICATION forming part of Letters Patent No. 698,802, dated April 29, 1902.

Application filed March 5, 1901. Serial No. 49,819. (No model.)

To all whom it may concern:

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

This invention relates to improvements in stoves for burning soft or bituminous coal, and more especially refers to the details of construction thereof.

The object of my invention is to provide a stove structure whereby the parts can be assembled quickly and conveniently without the usual riveting or bolting, which requires the assistance of skilled help.

A further object of my invention is to provide a convenient construction for distributing air to the products of combustion as said products leave the fire-pot.

A further object of my invention is to provide a means for preventing the heat as it ascends from the stove from deflecting the air going into the tubes used to deliver currents of air above the top of the bed of the fuel.

Other objects and advantages will become apparent in the description to follow and be particularly pointed out in the claims.

Figure 1 is a vertical section of my improved stove. Fig. 2 is an enlarged detail section of the upper portion thereof. Fig. 3 is a section on the line A A of Fig. 1. Fig. 4 is a detail view of the packing-ring between the fuel-magazine and the air-heating chamber. Fig. 5 is a detail view of the annular ring, showing one of the flanges forming a part of the auxiliary chambers above the tubes. Fig. 6 is a plan view, the swinging ornamental top of the stove being broken away. Fig. 7 is a detail perspective view of the packing-ring, showing the rivet so positioned as to make said ring smaller at its lower end.

Referring to the drawings, the numeral 1 indicates a suitable base, which supports a drum or outer casing 2. Resting on the top of the drum 2 is a support 3, consisting of a depending flange 4, adapted to bear against the top of the inner side of the drum, and an inwardly-projecting step-flange 5, the latter supporting the fuel-magazine.

The term "fuel-magazine" as used throughout this description and the claims is intend-

ed to refer to a fuel-magazine as generally understood or to a fire-pot.

Secured to the drum in any preferred manner—for instance, as shown at 6—is an annular air-heating chamber 7, provided with extensions or ducts 8, communicating with the atmosphere, through which air enters the air-heating chamber. The air-heating chamber is preferably made in two sections and has three flanges 9, 10, and 11, the flange 9 forming a seat for the pendent bars 12, which comprise the fire-pot, the flange 10 forming an abutment for the lower thickened end 13 of the magazine 14, and the flange 11 forming a seat for an independent packing connection 15. The magazine 14 is of the usual flaring formation, except as it nears the bottom it gradually becomes thicker, as at 13, terminating in a depending inwardly-extending overhanging flange 16. Said flange 16 is to direct the fuel to the fire-pot and prevent undue accumulation at this point. A horizontal flange 26 surrounds the upper edge of the fuel-magazine 14 and is adapted to be seated on the step-flange 5. Near the top of the magazine and at the rear is an auxiliary smoke-exit 17, having a damper 18. The packing connection is made of a strip or piece of metal having its ends pivotally connected by a fastening 19, said fastening preferably passing through the metal at a point below a line drawn centrally around the connection, so as to permit of its assuming an approximately cone formation when the parts are assembled. The packing connection may be inverted, as shown in Fig. 7, to accommodate a magazine of larger diameter. In either form the diameter of the ring is adapted to be varied at either edge when the magazine or the fire-pot is being positioned.

Resting on the horizontal flange 26 of the magazine and prevented from lateral displacement by the step-flange 5 is a ring 20, having formed therein a series of depressions or seats 21, in which rest depending tubes 22. Over the ring 20 and fitting between upwardly-projecting flanges thereon is an annular plate 23, having a series of openings 24 and upwardly-projecting flanges 25, surrounding said openings, the latter corresponding in shape to that of the tubes 22. The annular plate is designed to be used as a damper to control the

admission of air to the tubes and is operated by a handle 27.

A stationary finishing-ring 28 of suitable design and shape has annular bearing-surfaces 29 and 30, the surface 30 being seated against a flange 31 on the support 3, while the surface 29 rests on the ring 20 and bears against a flange thereon. Depending from the finishing-ring 28 are annular flanges 32, corresponding in shape to the flanges 25. Said flanges when the parts are assembled form a continuation of the tubes 22 and serve as an auxiliary chamber.

Formed in the finishing-ring 28 is an annular seat 33 for the stove-top 34. Pivoted to the ring 28 is a horizontal swinging top 35, so positioned as to operate the feed door or cover 36 and that in turn the damper 18, now to be described. The feed-door 36 is hinged to the top 34 and has an upright lug 38 and a depending chain 39, connected at its opposite end to the damper 18, the latter being pivoted to the magazine, as at 40.

The drum is fixed to the base, and the annular air-heating chamber and the fire-pot are placed in position. After the bars forming the fire-pot are hung the top flange 5 is placed in the upper end of the drum and the magazine is then positioned, the lower end fitting nicely in the inner side of the beveled flange 10 of the air-heating chamber. When the magazine is in place, the packing-ring 15 can readily accommodate itself, forming a close joint to prevent the escape of air at this point. With the structure thus far assembled tubes 22, the ring 20, the annular plate 23, finishing-ring 28, top plate 34, swinging top 35, damper and attachments, and the air-introducers are fitted to their respective places, completing a stove structure capable of being assembled by any one of ordinary intelligence. With the parts constructed to be seated within and locked to each other the use of separate clamping devices is dispensed with. Further than this, if the connections should not be made to exactly fit each other the one or the other of parts adjacent the joint will cover the lap to such an extent as to practically make an unbroken finish. This is especially true of the joint between the magazine and the air-heating chamber. For instance, if the joint is not made perfect between the two elements it will be by the packing connection 15. Green fuel is delivered to the fire-pot and ignited, whereupon the products of combustion pass through the fuel and escape between the pendent bars into the space between the magazine and drum, thence to the chimney. The plate 23 is operated to admit air to the fuel according to the condition of the fire and force of the draft.

I have found by experience that when the upper part of a depending tube is on a level with the top of the stove structure surrounding it the heat as it rises has a tendency to and in fact does detract air going into said

tube and necessarily causes the loss of this most important element when the fire is burning. To overcome this objectionable feature, I provide the housing of chambers 25 above the top of the tube, so that the incoming air is out of the effective range of the surrounding ascending heat. By thus placing the inlets of the tube above the level of the top of the stove I have found that a greater per cent. of air is drawn in and through the fuel. To supply air direct from the atmosphere above the fuel without first being heated and then being broken before meeting the gases means practically the loss of a large percentage of combustion.

Having thus described my invention, what I claim is—

1. A stove comprising a casing, a fire-pot, a magazine, and an independent packing connection whose size is adapted to be varied at either edge when fitting it to overlap the abutting ends of said fire-pot and magazine substantially as described.

2. A stove comprising a casing, a fire-pot, a fuel-magazine having a depending overhanging lip projecting into said fire-pot, and an independent packing connection whose size is adapted to be varied at either edge when fitting the abutting ends of the fire-pot and the fuel-magazine, substantially as described.

3. A stove comprising a casing, a fire-pot, a fuel-magazine, and a loose independent packing connection whose size is adapted to be varied at either edge when fitting the abutting ends of said fire-pot and fuel-magazine, substantially as described.

4. A stove comprising a casing a fire-pot, a fuel-magazine, and a depending overhanging lip projecting into said fire-pot, and an independent packing connection between said fire-pot and the fuel-magazine, substantially as described.

5. A stove comprising a casing a fire-pot, a fuel-magazine, an air-heating chamber interposed between the fuel-magazine and the fire-pot said chamber having an upwardly-projecting abutting flange or seat which forms a rest for the fuel-magazine, and an independent connection whose size is adapted to be varied at either edge when fitting it to said fuel-magazine and the flange or seat on the air-heating chamber, substantially as described.

6. A stove comprising a casing, a fire-pot, a fuel-magazine, a supporting-ring in the upper end of said casing adapted to support the fuel-magazine, and an independent connection whose size is adapted to be varied at either edge when fitting it to the fire-pot and the fuel-magazine, substantially as described.

7. A stove comprising a casing, a fuel-magazine, a fire-pot, one or more tubes for introducing air to the fuel in the fire-pot, means for supporting the tubes, movable air-heating chambers formed above the upper ends of the tubes and above the means for supporting said tubes, and plates connecting said cham-

bers for covering the tubes when the chambers are moved, substantially as described.

8. A stove comprising a casing, a fuel-magazine, a fire-pot, one or more tubes for introducing air to the fuel in the fire-pot, means for suspending the tubes, and independent air-heating chambers formed above the upper end of each of the tubes and above the means for supporting said tubes, substantially as described.

9. A stove comprising a casing, a fuel-magazine, a fire-pot, a support fitted to the upper end of the casing and adapted to support the fuel-magazine, a top for said casing and magazine, one or more pipes or tubes depending from said top, and upwardly-extending flanges above said tubes to form air-heating chambers, substantially as described.

10. A stove comprising a casing, a fuel-magazine, a fire-pot, a support seated in the upper end of the casing having formed therein a stepped seat, one or more depending tubes, a support for holding said tubes, said support which is seated in the casing supporting both the fuel-magazine and the support from which the tubes depend, substantially as described.

11. A stove comprising a casing, a fuel-magazine, a fire-pot, a support seated in the upper end of the casing having formed therein a stepped seat, one or more depending tubes, a support for holding said tubes, a base having openings therein and surrounded by upwardly-extending flanges, which form continuations of the depending tube or tubes, and a stove-top composed of a lid portion and an outer portion surrounding said lid portion, said latter portion having depending flanges adapted to coincide with the upwardly-projecting flanges on the base, substantially as described.

12. A stove comprising a casing, a fuel-magazine, a fire-pot, one or more pipes or tubes adapted to deliver air to the fuel in the fire-pot, means for supporting said tubes, independent auxiliary air-heating chambers above and for each of said tubes, said chambers being formed above the upper open end of the tubes and above the support therefor, substantially as described.

13. In a stove, the combination of a fire-pot, one or more tubes adapted to deliver air to the fuel in the fire-pot, means for supplying said tubes with air, a cover over said means for supporting the tubes, auxiliary chambers located above the open ends of said tubes, said chambers being formed by flanges projecting above the means for supporting the tubes, and flanges projecting from the cover, substantially as described.

14. In a stove, the combination of a fire-pot, one or more tubes adapted to deliver air to the fuel in the fire-pot, a cover, supports for the tubes and movable auxiliary air-heating chambers located above and for each of

the tubes for heating the air before entering said tubes, substantially as described.

15. In a stove, the combination of a fire-pot, a magazine, means for supporting the magazine, one or more tubes adapted to deliver air to the fuel in the fire-pot, a support for the tubes which is seated on the upper end of the magazine, and means for regulating the admission of air to the tubes, substantially as described.

16. A stove comprising a casing, a fire-pot having an upwardly-projecting flange, a magazine, and an independent packing connection whose size is adapted to be varied at either edge when fitting it to the ends of the fire-pot and fuel-magazine, said packing connection being seated on the upwardly-projecting flange of said fire-pot, substantially as described.

17. A stove comprising a casing, a top, a fuel-magazine having a flange at its upper end, a fire-pot, a support mounted in the upper end of the casing having a seat formed at its inner edge, the flange of the magazine fitting the seat formed in the support thereby suspending the magazine, a ring seated on the upper part of the magazine, a finishing-ring seated on the support on which the top rests, substantially as described.

18. A tube or tubes for the purpose specified, a support for the same, and means located above the support to prevent the heat rising therefrom deflecting air entering said tubes, said means opening vertically to the atmosphere, substantially as described.

19. A downdraft-stove, comprising a casing, a fuel-magazine, a fire-pot, a support, tubes hung in the support, a cover, and independent auxiliary air-heating chambers located between the outer ends of the tubes and the cover, substantially as described.

20. A casing for a stove, and a top provided with flanges which extend from the upper and lower sides, the lower flange fitting the casing, an opening being formed for a feed-door and a flange surrounding the same, a feed-door, and a cover adapted to fit the flange on the upper side of the top of the stove and the flange surrounding the feed-opening, substantially as described.

21. A stove comprising a casing, a stove-top having an opening surrounded by a flange, a fuel-magazine provided with a flange which fits the flange of the top, a fire-pot, and independent means connecting the magazine and fire-pot, whose size is adapted to be varied at either edge when the magazine and fire-pot are placed in position, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWIN R. CAHOONE.

Witnesses:

GEO. E. FRECH,

W. A. WILLIAMS.