No. 698,798. Patented Apr. 29, 1902.

E. R. CAHOONE.

STOVE.

(Application filed May 19, 1899.)

(No Model.) 4 Sheets—Sheet 1.

FIG. 1.

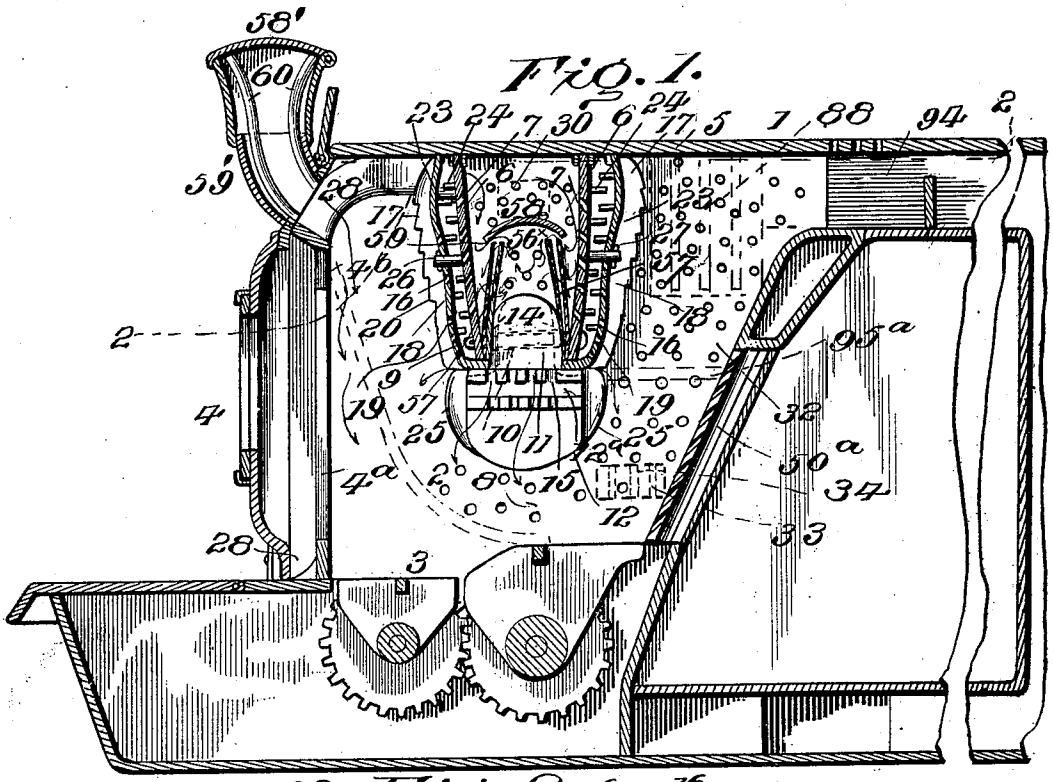
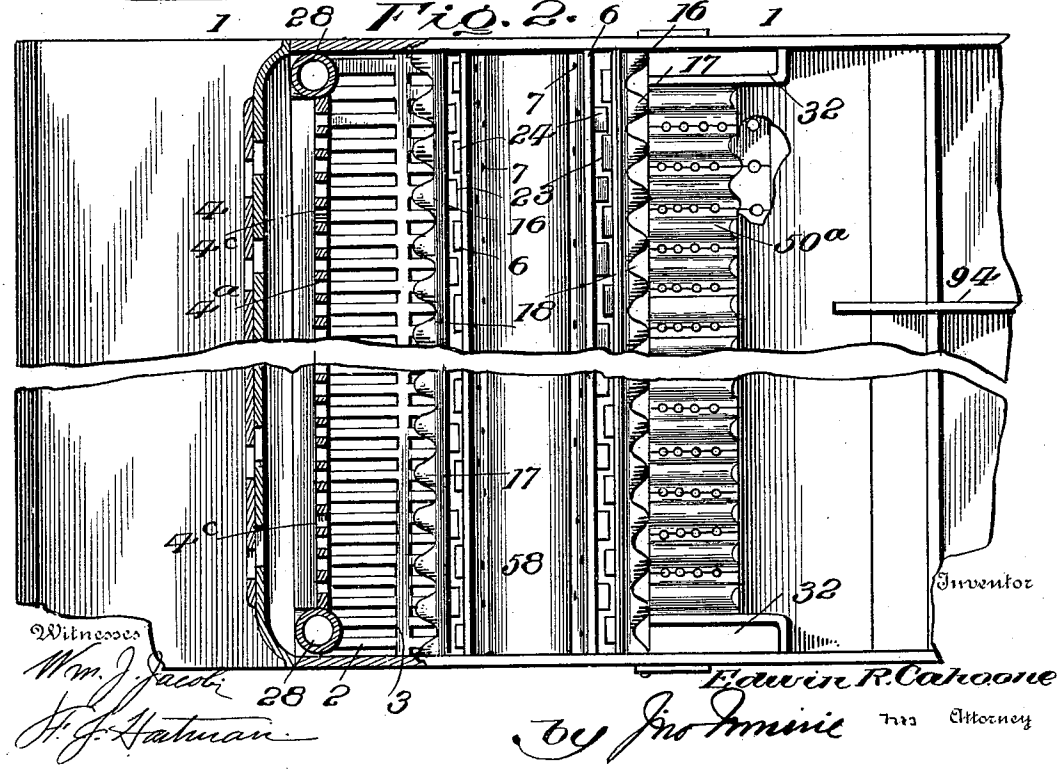


FIG. 2.



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(No Model.) 4 Sheets—Sheet 2.

Fig. 3.

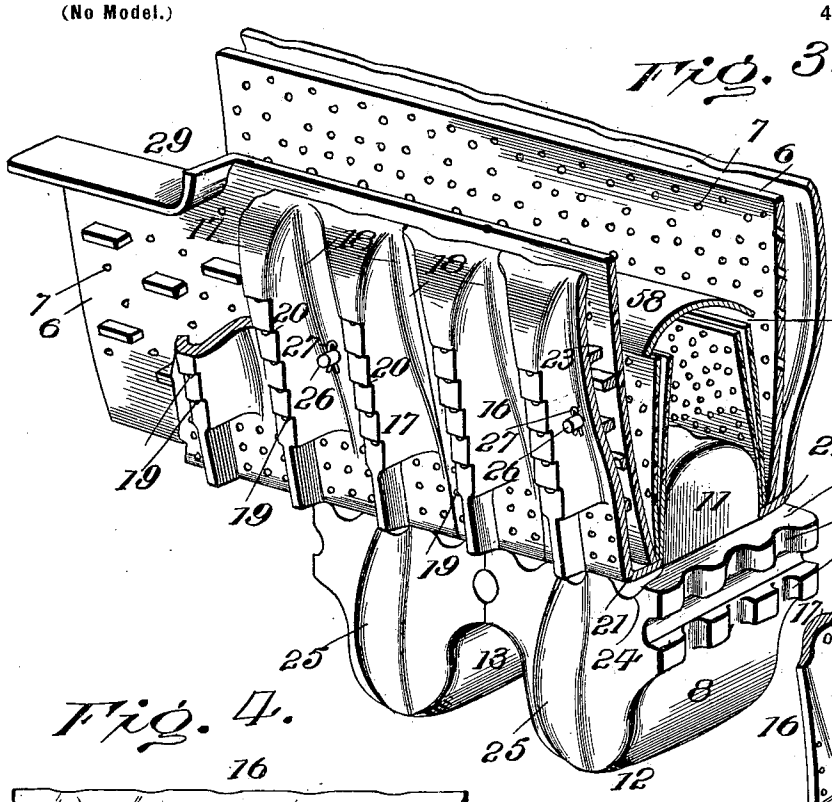


Fig. 5.

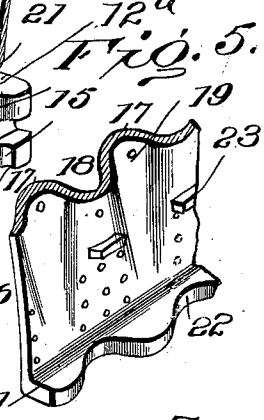


Fig. 4.

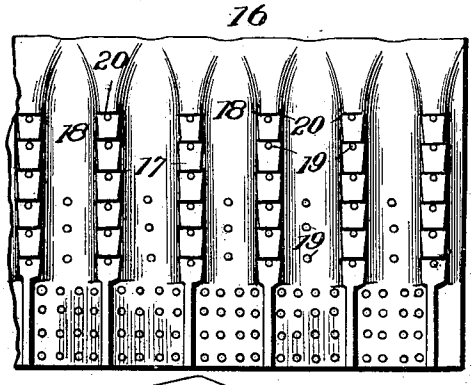


Fig. 7

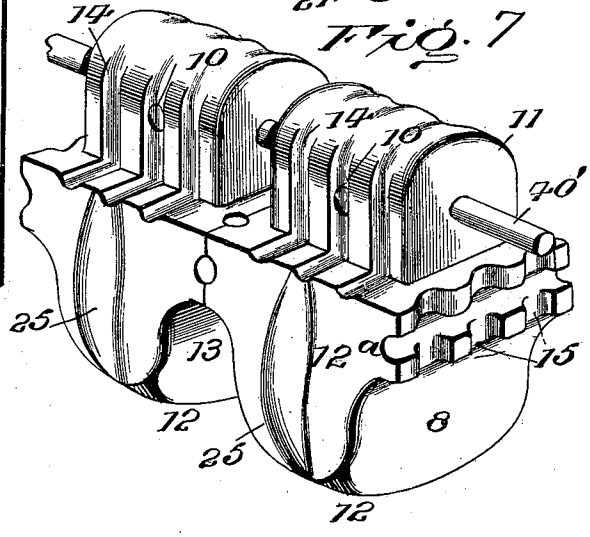
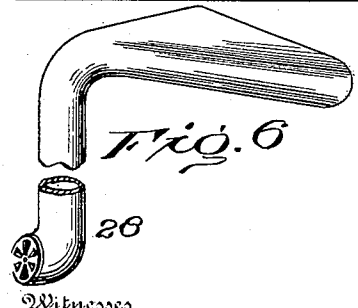


Fig. 6



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(No Model.) 4 Sheets—Sheet 3.

Fig. 8.

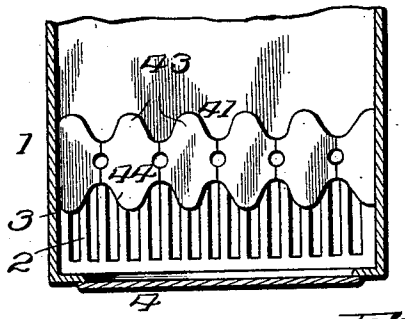


Fig. 9

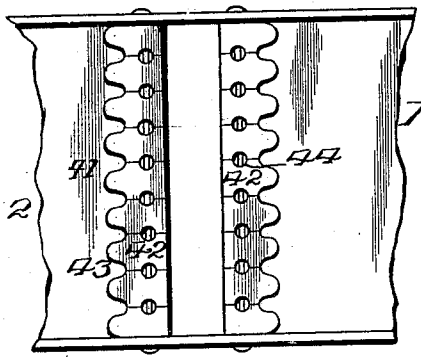


Fig. 11.

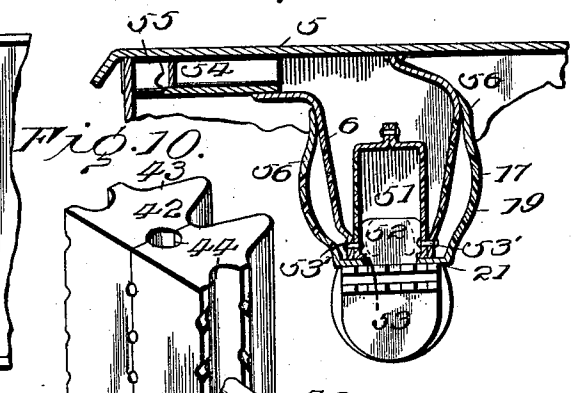


Fig. 10.

Fig. 12

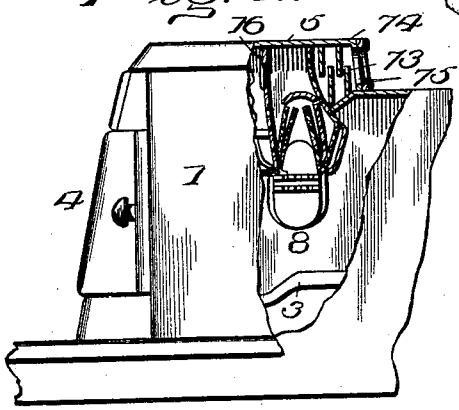
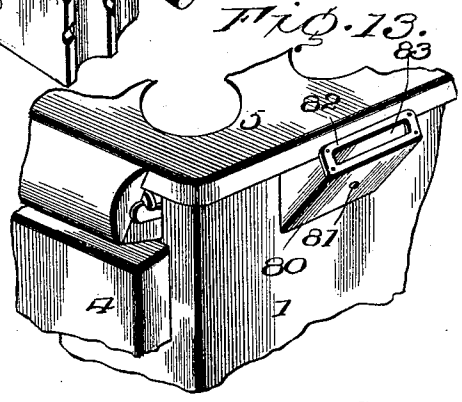


Fig. 13.



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(No Model.) 4 Sheets—Sheet 4.

FIG. 15.

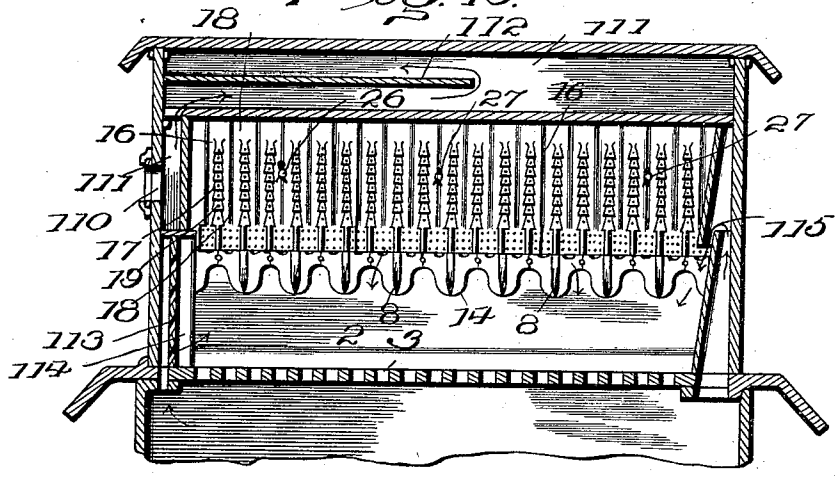


FIG. 14.

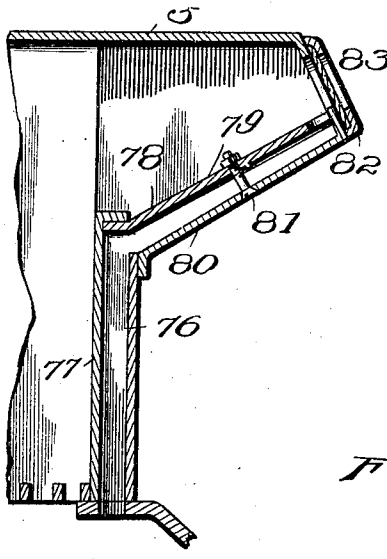


FIG. 16.

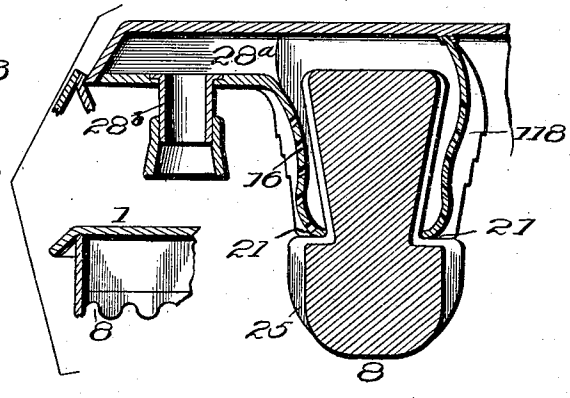
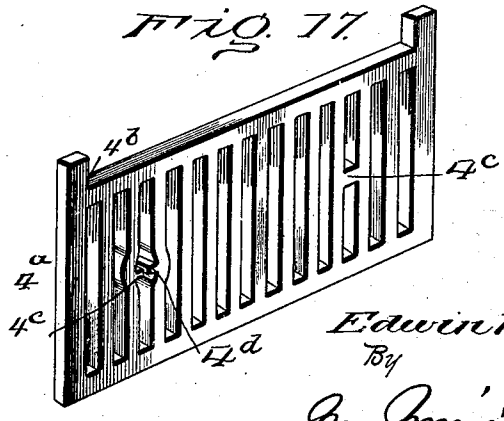


FIG. 17.



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UNITED STATES PATENT OFFICE.

EDWIN R. CAHOONE, OF NEWARK, NEW JERSEY.

STOVE.

SPECIFICATION forming part of Letters Patent No. 698,798, dated April 29, 1902.

Application filed May 19, 1899. Serial No. 717,516. (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.

My invention relates to improvements in stoves or ranges having a pendent air-duct, and is designed more especially for burning soft or bituminous coal.

The object of the invention is to provide means for delivering heated air to the pendent air-duct, breaking the same by contacting with peculiarly-arranged baffle-plates, and then delivering said air to the fuel through the various exits or chambers.

The prime object of my present improvement is to supply equally-distributed air to the fuel in the combustion-chamber and regulate the admission of the same.

A further object of this invention is to provide improvements in the details of construction of the air-duct.

Other objects will appear farther on in the description and be particularly pointed out in the claims.

In the drawings, Figure 1 is a sectional view of a stove, showing my improvements applied thereto. Fig. 2 is a horizontal section on line 2 2, Fig. 1, the air-duct being shown in full lines. Fig. 3 is a detail perspective view of a portion of the pendent duct. Fig. 4 is a detail front view of a burner plate or shield, showing more clearly the perforations therein for the exit of heated air. Fig. 5 is a detail perspective view of the lower portion thereof. Fig. 6 is a detail view of an air-heating pipe for admitting heated air to the air-duct. Fig. 7 is a detail view showing a modified form of securing together the heated-air distributers at the lower end of the air-duct. Fig. 8 is a plan view of a modified form of my improved air-duct. Fig. 9 is a further modification of the same. Fig. 10 is a detail thereof. Fig. 11 is a still further modification of an air-duct. Fig. 12 is a detail side elevation of the front portion of a stove, showing parts broken away to illustrate a modified means of introducing air to the air-duct. Fig. 13 is a detail view of a combined sight and draft opening. Fig. 14 is a section of the same. Fig. 15 is a view showing a means of admitting air to the air-duct from one side of the stove. Fig. 16 is a view of a modified form of heated-air distributer and shield together with a downwardly-extending tube. Fig. 17 is a detail perspective view of the front grate.

The numeral 1 represents a stove of ordinary construction; 2, the fuel-magazine; 3, the grate; 4, the front grate, and 5 the top.

The term "fuel-magazine" as used throughout this description and the claims is intended to refer to a fuel-magazine as generally understood or to a fire-pot.

In burning a certain grade of soft coal which is rich in gas, after it is lighted the gas spurts or puffs out between the cracks and joints of the front door. I overcome this objection and direct the gases back into the combustion-chamber by providing a grate located in front of the fuel-magazine and behind the door 4. The grate 4^a is substantially the same as those hereinbefore employed, except the upper edge is cut away, as at 4^b, and means are provided for the insertion of a poker, as at 4^c. This means consists of forming a rib 4^d between two of the grate-bars, so as to form a rest for the poker, so that it can oscillate or rock about on said rest. In order that the space above the connecting-bar 4^d might not be clogged up by the particles of fuel, I preferably have an opening therebetween which is large enough for the dust or small particles of coal to drop through and not large enough for the poker to drop down.

To the under side of the top of the stove are suitably supported two depending flanges 6, which extend all the way across the fuel-magazine and afford means for supporting the coöperating parts of the air-duct. The flanges or partitions 6, near the upper ends, have perforations 7. Between the lower ends of the flanges is supported a series of heated-air distributers 8. Said distributers are or may be held in position by a pin 9, passing through corresponding openings in the flanges, and a perforation 10 in the upper-reduced portion 11 of the heated-air distributers, the pins being locked by a pin or cotter. The construction and arrangement of these distributers form a very important part of my invention, and I will now proceed to describe them in detail. They are approximately

square at about their center, as shown at 12ª, and have an inwardly tapering and rounding lower portion 12, forming a series of arches 13 when two or more of them are put together. The fuel being fine and soft will readily accumulate in these arches around the depending portions 12, and by means of the air exits and passages to be described the air will readily percolate through said said fuel and an even combustion will be produced.

Along the inner and outer edges of the square portion above referred to and extending up to very near the top of the reduced portion 11 are grooves or air-passages 14, which communicate with the main air-duct formed by the depending flanges 6. On the ends of the square portion 12ª are vertical grooves 15, which when two or more of the distributers are put together form a series of air-passages to the main air-duct.

It will be seen that by the construction just described I provide a series of air-passages at right angles to each other—viz., those on the inner and outer sides and a series of direct vertical air-passages, and those on the ends which introduce an evenly-distributed supply of air to a point where the coal is the thickest and where it usually congeals. This mass is prevented or if the fuel should congeal it is separated by the arrangement of the numerous passages through which currents of heated air pass and the manner in which said currents of air are directed.

Owing to the excessive heat which naturally arises from burning soft coal, it is absolutely necessary that the depending flanges 6 and the supporting means be properly protected and prevented from being exposed to the direct action of the products of combustion. For the purpose of preserving these parts shields 16 are secured to each side of the air-duct, a portion of one of said shields being shown in detail in Figs. 4 and 5. It will be seen from these figures that each shield is preferably composed of a corrugated piece of material, the corrugations forming projections 17 and grooves 18, either or both of which may be provided with a series of small air-openings 19, each opening 19 on the projection 17 being protected and prevented from being choked by particles of fuel by an overhanging ledge 20. At the extreme lower end of the shields are inturned flanges 21, the inner edges being corrugated or formed with a series of notches 22, which preferably register with the notches or grooves 14 in the distributers 8 when the parts are put together. The turned-in portion prevents the action of the products of combustion from destroying the air-duct walls. The shields are also provided on their inner sides with a series of baffle-plates 23, alternating and coacting in connection with a similar series of baffle-plates 24, formed or secured on the depending walls 6 of the air-duct. Each of the projections 17 of the shields when put together abuts against a flange 25, formed on each of the distributers 8. However, this is not entirely necessary, but is found a ready means of breaking up the particles of air. The shields are secured to the walls of the air-duct by means of a pin 26, projecting from said duct and extending through a perforation in said shield, the parts being locked by means of a cotter 27 or any well-known means. If desired, however, the air-distributers may be connected in series by the arrangement disclosed at 40′ in Fig. 7.

I do not desire to be limited to a shield made in one piece, as it is often desirable to make them in sections, as shown in Fig. 3. By this construction one or more sections when burned out can be removed and the portions of the shield not having been affected by the heat can remain in place.

Referring more particularly to Fig. 16 of the drawings, it will be seen that I provide an air-passage 28ª, which may be supplied with air from either the front, top, or side, such supply means not being shown, and has communicating therewith a pipe or pipes 28ᵇ, which lead down directly to and within the fuel-magazine. A heated-air distributer of some refractory material is provided for the end of these pipes to protect the same from the heat. The heated-air distributer as disclosed in this Fig. 16 is solid and is incased by a shield 16. In this instance air is directed in the main passage 28ª, thence through the pipes or tubes 28ᵇ to and above the fuel. The air admitted through the passage 28ª also passes through the spaces formed between the grooved side walls 11 of the distributer and the grooved walls of the shields, through the perforations in said shields and the perforations in the flanges around the square portion 12ª of the distributer to the fuel-chamber.

To direct heated air to the main air-ducts I provide in this instance on each side and within the stove two draft-pipes 28, incased within some refractory material. These pipes, as I have shown in the drawings, are located in the corners and extend from a point just above the grate up to the top of the magazine and then bent at right angles, the inner sides being flared and directed to the main air-duct. It will of course be understood that the shields will or may have their corners cut away, as shown at 29, to accommodate the flared ends of the pipes. While the pipes or flues are the preferred manner of supplying heated air to the main air-duct, it is sometimes desirable to direct the air through perforations in the side of the stove, as shown at 30 in dotted lines in Fig. 1.

Heated air may be introduced to the fuel on the sides and in the rear of the air-duct, and I accomplish this by having a perforated plate 32 of such configuration as will form the inner lining of the fuel-magazine and fire-pot. A small air-space is formed between the sides of the stove and these plates, air being admitted to said space at a point 33 and its ad-

mission regulated by a damper 34. This feature is more especially designed to introduce currents of heated air at the very bottom of the fuel, said currents of air coöperating with the air-currents delivered to the fuel from the air-duct, and assists in producing a uniform combustion.

In the modified forms of my invention shown in Figs. 8, 9, and 10 I have shown a series of elongated heated-air distributers 41, each of which is composed of a body portion 42, projections 43, and semicircular grooves 44 in each side of said body portions, and a series of inclined grooves in the flanges surrounding the grooves 44. Said grooves communicate with the vertical grooves 44. While I have shown a single row of pendent elongated distributers forming an air-duct, I may arrange them as shown in Fig. 9, wherein an air-duct is formed by two or, if necessary, four of these distributers 41. These distributers are held together by bolts and can be made of any material, but preferably refractory, so as to withstand the excessive heat. It is evident these modifications may be used in place of the air-duct or they may be utilized as air-distributers in connection with an air-duct.

I am aware one pipe instead of two may be used to supply heated air to the air-duct, as clearly shown in Fig. 15. Air is admitted at 110 into a main passage 111, where it is distributed to all parts of the entrance of the duct by means of a dividing-plate 112, suitably supported in the main passage 111. The purpose of this dividing-plate, it is thought, will be evident. The air is divided, part of the supply going to the right and the other to the left, as clearly indicated by the arrows. As a further means of introducing air directly to the fuel in connection with the air-supply coming from the side of the stove to the air-duct the lining of the stove is constructed in the manner shown in this figure. Openings 113 are formed in the lower portion of the lining 114 and take air directly to the combustion-chamber. On the opposite side of the fuel-magazine the lining is made in sections and the upper one of said sections is located over the lower section and a slight distance in advance thereof. Air is admitted from the ash-pit and enters the combustion-chamber at 115.

The advantages of my improvements are numerous, and many changes may be made without departing from the spirit and scope of my invention. For instance, the air-distributers may be made of refractory or of any other material which will withstand the heat. The holes or perforations may not always be necessary in said distributers, and I reserve the right to the use of one or the other.

It will be noticed by reference to the drawings that a distributer when burned out or broken can be readily taken out and a new one replaced by simply taking off the shields and releasing the supporting-bolts 26. In this connection I desire to state that it is not necessary to use a series of distributers, as good results have been obtained from one extending from one side of the stove to the other.

While I have shown a shield applied to each side of the air-duct and prefer such arrangement, under certain conditions I may only use one of said shields, and if the fuel is not very soft both can be dispensed with. In this latter case the walls of the air-duct would have to be made of such material as would resist the heat. It is not absolutely essential that the shield should be perforated. In fact the walls of the air-duct need not be. However, I prefer that both should have air-exits, as shown. The corrugated shield affords a ready means for directing the air and distributing it among the particles of fuel. While I have shown these shields as being corrugated, I do not desire to limit myself to this construction, as a straight shield would answer the same purpose in many cases.

The operation of my invention will be readily understood by those skilled in the art to which it appertains. The soft coal is placed within the fire-chamber, the dampers being regulated accordingly until the fuel becomes ignited. The air is directed to the main air-duct and distributed therefrom to the coal through the various perforations already described and also through the grooves in the distributers in a very even and well-regulated manner, which will tend to burn the coal uniformly and every particle thereof.

In Fig. 11 is shown a construction whereby the heat-distributers are supported by a frame 51, made in sections and bolted together at the top either by bolts or other means. The frame 51 is provided at the lower ends with inturned lugs 52, which fit under a flange 53 on the reduced portion of the air-distributers, thus supporting said distributers in a fixed position. The frame 51 is supported by the pendent air-duct, as at 53′, the air-duct being held in position by having its upper ends flanged and riveted to the top of the stove. The flange on the front wall is dropped at intervals, so as to form a passage 54, said passage extending out to the front and provided with a suitable damper 55.

To further assist in heating the air before it reaches the fuel and to insure the removal of any chilled current being admitted thereto, a device $56^{\times}$ is arranged in the air-duct. This device consists of a perforated wall or walls 57, suitably supported, and a hood 58, placed over said walls, a slight space being formed between the tops of the walls and the hood. The air in entering the duct strikes the hood and is deflected down and through the perforations in the walls, then up through the space 59, and thence to the air-distributer. By this time it is thoroughly heated and absolutely prevents any chilled air entering the combustion-chamber. I do not care to at all times use this feature in connection with my distributer, but as an additional means for

preventing this chilling of the air, which under certain conditions must be retarded.

In Fig. 1 is shown a door or feeding device 58′ for supplying fuel to the fuel-magazine. This door consists of a suitable frame 59′ and air-flues 60, located in suitable positions therein, so as to admit a limited amount of air at the top of the fuel-magazine. The feeding device is so constructed that it can be attached and detached at will.

Experience has taught me that stoves of this class require an even distribution of air at a point where the flue passes up behind the pendent air-duct, and to admit heated air at this point a novel means is employed. As shown at 50ª, a series of pendent projections, such as before described for another purpose, are placed side by side and held together by a rod. In fact the manner of working and the detail description of these pendent pieces is substantially the same as above referred to. It will therefore be seen that by introducing air at this point I have distributed heated air to every side of the fuel and in proper proportions necessary to obtain the desired results. The air passes up through the ash-pit through the vertical air-passages, and thence in a downwardly direction through the inclined passages to the fuel.

Fig. 12 represents a form of stove whereby air may be taken into the air-duct from the rear, the only difference or addition being that of a series of baffle-plates 73, located between the upper rear wall of the air-duct and the upwardly-projecting portion 74 of the stove. The admission of air is regulated by a damper 75, said air being heated and delivered to the coals in the manner hereinbefore stated.

Figs. 13 and 14 represent a combined air-inlet and peep opening. A passage 76 is made between the lining 77 and the side of the stove. This passage communicates at the lower end with the ash-receptacle and at the upper end with a passage 78, formed between the bottom of the housing 79 and a plate 80, the latter being held in place by a bolt or screw 81. A frame 82 may be bolted to the outer end of the housing and supports the mica 33, the air passing between the mica and the end of the floor of the housing to the combustion-chamber. The purpose of this construction is twofold—it keeps the mica clean and at the same time introduces heated air to the fuel.

Having thus described my invention, what I claim is—

1. In a stove, the combination with a pendent air-duct open at the bottom, shields secured to the front and rear of said air-duct, and removable means within the bottom of said duct for distributing heated air, substantially as described.

2. In a stove, the combination with a pendent air-duct, shields secured to said duct, removable heat-distributers secured within the lower end of said duct, a fuel-magazine, air-feeding pipes, said pipes communicating with the air-ducts and the atmosphere, and means for regulating the admission of air to said pipes, substantially as shown and described.

3. In a stove, the combination with a fuel-magazine, a pendent air-duct, right-angular air-feeding pipes within the fuel-magazine, the horizontal portion of said pipes entering the air-duct at the upper end of the latter and the vertical portion of said pipes communicating with the atmosphere, and means for regulating the admission of air to said pipes, substantially as shown and described.

4. In a stove, the combination with a pendent air-duct, open at the lower end, of detachable shields on the front and rear of said air-duct, removable tips secured within the lower end of said duct, and air-inlet pipes entering the air-duct through the shields, substantially as shown and described.

5. In a stove, the combination with a fuel-magazine a pendent air-duct located within said fuel-magazine, shields on each side of said air-duct, and air-heating distributer or distributers removably secured within the lower open end of the air-duct, substantially as and for the purpose set forth.

6. In a stove, the combination with a fuel-magazine, a pendent air-duct located within said fuel-magazine, air-inlet pipes entering each end of said air-duct, said air-inlet pipes being located across the upper part and extending downwardly within the fuel-magazine, to a point above the grate, and means for regulating the admission of air to said pipes, substantially as and for the purpose set forth.

7. In a stove, the combination with a fuel-magazine, an air-duct, pipes located in said fuel-magazine, said pipes communicating with the atmosphere for supplying air to said air-duct, a lining set in from the sides of the stove to form an air-heating chamber, said lining having air-exits communicating with the fuel-magazine, and means for regulating the supply of air to said chamber, substantially as shown and described.

8. In a stove, the combination with a fuel-magazine, a pendent air-duct, means for supplying said air-duct with air at both ends, a perforated lining in said fuel-magazine set in from the stove sides to form an air-heating chamber, and means for regulating the admission of air entering at the ends of the air-duct, and the air-heating chamber, substantially as shown and described.

9. A pendent air-duct, and an air-distributer consisting of a main body portion, and a reduced portion, the latter portion fitting in said air-duct, and air-spaces being formed between said duct, and the reduced portion of the air-distributer for the escape of the air from the duct, substantially as described.

10. A pendent air-duct, and an air-distributer consisting of a main, solid portion, and a reduced upper portion, the latter portion fitting in said air-duct air-spaces being formed between said duct and the reduced portion

of the air-distributers, substantially as described.

11. A pendent air-duct, and an air-distributer consisting of a main body portion having a series of horizontal grooves and a reduced upper portion having a series of vertical grooves which form a continuation of the horizontal grooves in the main body portion, said upper portion fitting within said air-duct, substantially as and for the purpose set forth.

12. A pendent air-duct, and an air-distributer consisting of a main body portion, provided with a series of horizontal and vertical grooves, a reduced upper portion which fits within said air-duct, said portion having a series of vertical grooves which form a continuation of the horizontal grooves formed in the main body portion, and a tapering bottom, said tapering bottom forming one part of an arch, which latter is formed when two or more distributers are placed side by side, substantially as shown and described.

13. A shield for a pendent air-duct, consisting of a perforated corrugated main body portion, said corrugations gradually tapering to a straight edge and an inturned flange at the bottom, the inner edges of said flange being horizontally corrugated, substantially as and for the purpose set forth.

14. In a stove or range, the combination with a pendent air-duct, an air-deflector and baffle-plates arranged within said air-duct, and means for directing a current of air to the air-duct, substantially as and for the purpose set forth.

15. The combination with a pendent air-duct, and means for breaking air in said duct, said means comprising a series of spaced-apart perforated plates, and a hood or cover supported a slight distance above the upper ends of said plates, said hood overhanging the outermost plates, substantially as described.

16. In a stove, the combination with a fuel-magazine, a perforated pendent air-duct, means secured within the lower end of said air-duct for distributing the air, and a fuel-feeding chute entering said magazine, said chute being provided with air-inlet pipes, substantially as shown and described.

17. In a stove, the combination with an air-duct, a fuel-magazine, a housing having an inner and outer bottom, the former having a perforation near its outer end, said housing being formed at one side and at a point behind the air-duct, a frame carrying a sheet of mica in the outer end of said housing, and a flue communicating with the ash-pit, and supplying air around the inner face of the mica, substantially as shown and described.

18. In a stove, the combination with a fuel-magazine, a pendent air-duct located within said fuel-magazine, air-inlet pipe or pipes located within said fuel-magazine, the upper ends of said pipes communicating with the upper end of the air-duct and the lower ends of said pipes communicating with the atmosphere at a point near the grate, means for regulating the supply of air to the air-duct, and a plurality of air-distributers having exits formed at their meeting ends in the air-duct for distributing air, substantially as described.

19. In a stove, the combination with a fuel-magazine, a perforated air-duct having removable air-distributers secured within the lower end of said air-duct, pipes located in said fuel-magazine, said pipes communicating with the atmosphere at a point above the grate for supplying heated air to said duct, air-heating chambers located adjacent the magazine, said chambers having exits which communicate with the fuel-magazine, and means for regulating the supply of air thereto, substantially as described.

20. In a stove, the combination with an air-duct, and a plurality of air-distributers comprising securing ends and depending ends, said depending ends adapted to form arches between each other when secured to the air-duct, substantially as described.

21. In a stove, the combination with an air-duct, and a plurality of air-distributers, comprising securing ends and depending ends, said depending ends adapted to form arches between each other when secured to the air-duct, and a series of openings being arranged at right angles to each other in the meeting faces of said air-distributers, substantially as described.

22. In a stove, the combination with a fuel-magazine, a pendent air-duct, said duct comprising depending perforated plates, perforated shields provided with a series of ribs and attached to said plates, air-distributers removably secured between the lower ends of the plates, and ribs on said distributers which form continuations of the ribs on said shields, substantially as described.

23. In a stove, the combination with a fuel-magazine, a pendent air-duct, said air-duct comprising depending plates, corrugated shields attached to said plates perforations being formed in said corrugations, an air-distributer removably secured between the lower ends of said plates and being provided with air-exits and ribs, said ribs being in alinement with and forming a continuation of the corrugations, substantially as described.

24. A shield for a pendent air-duct, corrugated in cross-section and having at its lower end a right-angular inturned flange, and means coöperating with said inturned end to form air-distributers, substantially as described.

25. In a stove, the combination with a pendent air-duct, means secured in the lower end of said duct for distributing heated air, and a corrugated shield having an inturned corrugated right-angular flange at its lower end, said corrugations forming air-exits with the means for distributing heated air, substantially as described.

26. In a stove, the combination with a fuel-magazine, an air-duct having a plurality of

spaces or notches at its lower end, means for supplying air between said spaces, air-heating chambers having air-exits adjacent the fuel-magazine, means for supplying air to said chambers, a fuel-feeding chute, and air-feeding pipes entering the magazine through the feeding-chute, substantially as described.

27. In a stove, the combination with a feed-door, means in said door for admitting air, a fire-pot, a front grate, and a front door, a space being formed at the top of the grate forming communication between the fire-pot and the space between the front door and the grate, substantially as described.

28. In a stove, the combination with a feed-door, means in said door for admitting air, a fire-pot, a pendent air-duct, a front grate, and a front door, a space being formed at the top of the grate forming communication between the fire-pot and the space between the front door and the grate, substantially as described.

29. In a stove, the combination with a fuel-magazine, a pendent perforated air-duct, air-heating chambers having air-exits on the side of the fuel-magazine, a removable feeding-chute entering said magazine, and means in said chute for introducing air to the fuel-magazine, substantially as described.

30. In a stove, the combination with a pendent air-duct, open at the bottom, a plurality of removable air-distributers secured in said open bottom, and having air-exits at their meeting edges, baffle-plates in said duct, and means for introducing air to the duct.

31. In a stove, the combination with a fuel-magazine, a pendent air-duct open at the bottom, distributers provided with air-exits secured in said open bottom, shields secured to the duct, baffle-plates in said duct, and a pipe or pipes passing through said fuel-magazine to supply air to said air-duct, substantially as described.

32. In a stove, the combination with a fuel-magazine and fire-pot, a pendent air-duct, a vertical grate, open at the top, a door covering said grate, and a fuel-chute having air-inlet pipes entering the fuel-magazine above the upper end of the grate, substantially as described.

33. In a stove, the combination with a fuel-magazine, an air-duct, air-distributers in the lower end of said air-duct, means for supplying air to both ends of the air-duct, air-heating chambers having air-inlets for introducing heated air to said fuel-magazine, means for regulating the supply of air thereto, a fuel-supply chute having air-inlet pipes entering the fuel-magazine, and means for introducing heated air to the fuel-magazine behind the air-duct, substantially as described.

34. In a stove, the combination with an air-duct, a fuel-magazine, and means for introducing heated air to the fuel-magazine, said means comprising a housing having a false bottom provided with an opening which communicates with the interior of said housing, and a flue communicating with the space between the housing and the false bottom for the admission of air, substantially as described.

35. In a stove, the combination with a fuel-magazine, an air-duct comprising depending plates and air-distributers between the lower ends of said plates, means for delivering air to the fuel in the fuel-magazine from the air-duct, and a pipe or pipes passing through the magazine for supplying air to said air-duct from the atmosphere, said pipe or pipes each having a flaring end where it enters the air-duct, and means for regulating the admission of air thereto, substantially as described.

36. In a stove, the combination with a fuel-magazine, an air-duct comprising depending perforated plates, air-distributers, a perforated shield secured to said depending plates, baffle-plates between said depending plates and shield, baffle-plates between the depending plates, and a pipe or pipes passing through the magazine for supplying air to said air-duct, substantially as described.

37. In a stove, the combination with a fuel-magazine, means for introducing air thereto, said means comprising a flue located to heat air in its passage therethrough, a protuberance or housing in proximity to said flue, said housing having an opening which communicates with said flue, a sheet of transparent material in the housing and adjacent the opening therein, all for the purpose of supplying air to the fuel-magazine and preventing soot accumulating on the transparent material, substantially as described.

38. A pendent air-duct, open at the bottom, means for supplying air to said air-duct, and an air-distributer consisting of a pendent end, and a securing end, angular grooves in the distributer at a point where said distributer enters the air-duct, substantially as described.

39. An air-duct open at the bottom, a plurality of spaced-apart removable air-distributers having air-exits at their meeting edges and secured within the air-duct, and a sectional shield secured to said air-duct, substantially as described.

40. A pendent air-duct, and a series of air-distributers each consisting of a body portion which tapers at its lower end and is provided with horizontal and vertical grooves, a securing upper end portion which fits within said air-duct, said portion having a series of vertical grooves which form a continuation of the grooves in the body portion, said tapering ends forming spaces between said distributers when two or more of the same are placed in the air-duct, substantially as described.

41. In a stove, the combination with a fuel-magazine, a pendent air-duct, pipes in said magazine which communicate with the atmosphere and the air-duct to supply heated air to said air-duct, a perforated lining in said fuel-magazine set in from the stove sides to form an air-heating chamber, and means

for regulating the admission of air entering the air-duct and the air-heating chambers, substantially as described.

42. In a stove, the combination with a fuel-magazine, a pendent air-duct, means for supplying said air-duct with heated air, a perforated lining in said fuel-magazine set in from the stove sides to form an air-heating chamber, and means for regulating the admission of air entering at the ends of the air-duct and the air-heating chamber, substantially as described.

43. A pendent air-duct, and a plurality of solid air-distributers having notches at their meeting edges to form air-exits, said distributers consisting of a main portion, and a reduced upper portion, the latter portion fitting in said air-duct, substantially as described.

44. In a stove, the combination with a pendent air-duct, an air-deflector and baffle-plates arranged within said air-duct, and means for directing currents of heated air to the air-duct, substantially as described.

45. In a stove, the combination with a fuel-magazine, a pendent air-duct open at the bottom, air-distributers provided with air-exits at their outer edges and secured in said open bottom, shields secured to the air-duct, baffle-plates in said air-duct, and means in the magazine for supplying heated air to the air-duct, substantially as described.

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

EDWIN R. CAHOONE.

Witnesses:
WM. J. SNYDER,
RUSSELL J. W. SNYDER.