No. 804,140. PATENTED NOV. 7, 1905.

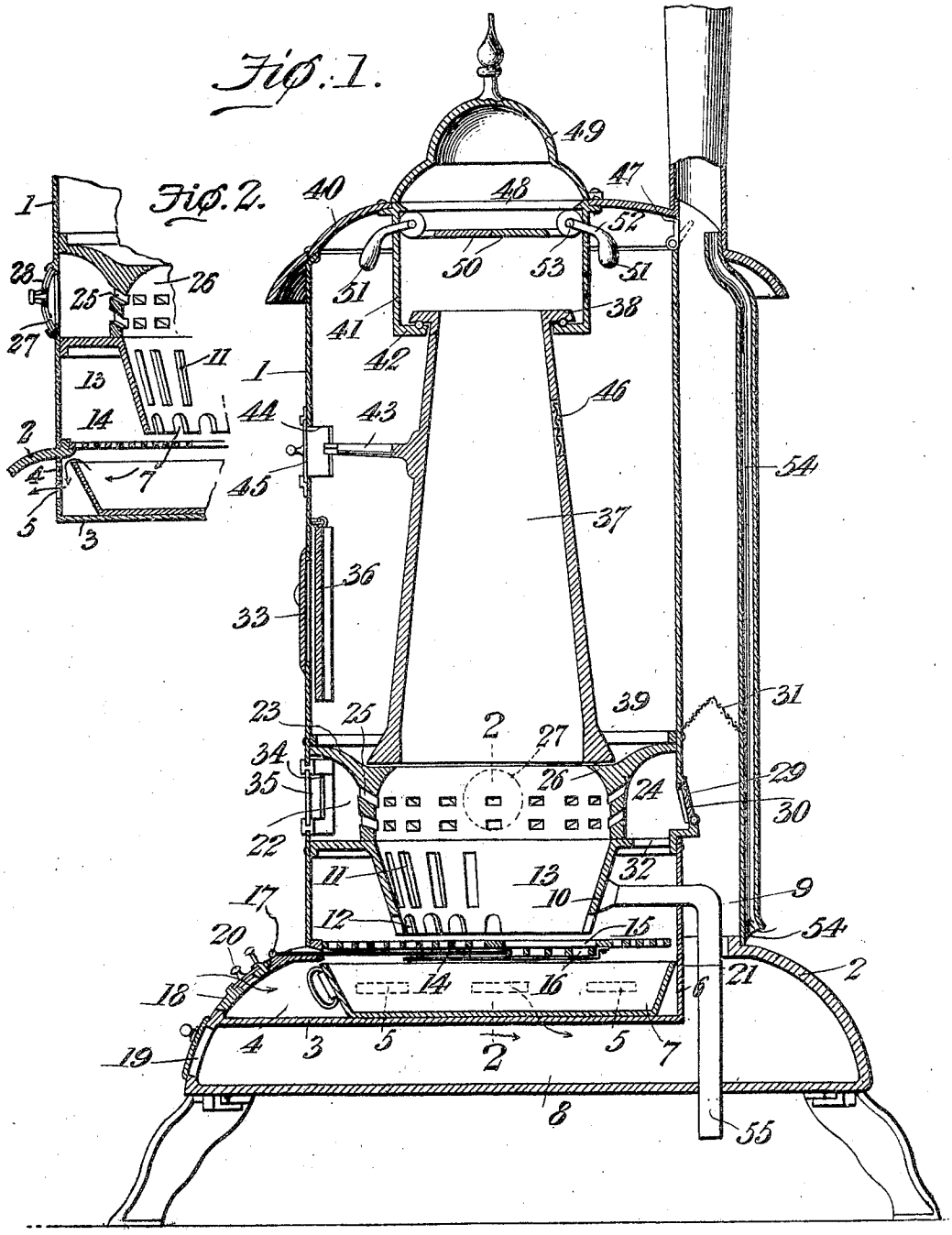
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SOFT COAL BASE BURNING STOVE.

APPLICATION FILED JAN. 7, 1904.

Fig. 1.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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SOFT-COAL BASE-BURNING STOVE.

No. 804,140. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed January 7, 1904. Serial No. 188,077.

To all whom it may concern:

Be it known that I, EDWARD J. LAHAN, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Soft-Coal Base-Burning Stove, of which the following is a specification.

This invention relates to stoves, and more particularly to heating-stoves adapted for the consumption of soft coal and which are provided with a magazine.

The present invention has among its objects to provide feed-doors at the top of the magazine, which shall be counterbalanced, so as to close automatically when unobstructed by the contents of the magazine, so as to form a tight closure whereby the escape of gases shall be prevented, to provide for the suspension of the magazine in such a manner that it shall be thoroughly supported and adapted for oscillation for the purpose of agitating its contents and feeding the same to the fire-pot, and to generally improve the construction in such a manner as to provide a device which shall possess superior advantages in point of simplicity, durability, and general efficiency.

With these and other ends in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been selected for illustration a simple and preferred form of my invention, it being understood, however, that I do not limit myself with regard to the precise structural details therein exhibited, but reserve the right to such changes and modifications as may properly come within the scope of my invention and which may be resorted to without departing from the spirit or sacrificing the utility of the same.

In said drawings, Figure 1 is a vertical sectional view of a heating-stove constructed in accordance with the principles of my invention. Fig. 2 is a sectional detail view taken on the line 2 2 in Fig. 1.

Corresponding parts in both figures are indicated by similar numerals of reference.

In carrying out my invention I provide an outer casing 1, which is supported upon a base 2. The latter is provided with a horizontal partition 3, extending from the front end in a rearward direction and provided with upwardly-extending side walls 4. The side walls 4 are provided with slots or draft-openings 5. The partition 3 divides the base into an upper chamber or ash-pit 6, in which an ash pan or receptacle 7 is placed, and a lower chamber 8, connected at its rear end with the lower end of a back flue 9, adjacent to the rear wall of the stove-casing. Suitably supported in the lower end of said stove-casing is the fire-pot or basket 10, which consists of an annular casting provided in the front portion thereof with vertical slots 11 and with notches 12 in its lower edge, the rear half of said fire-pot or basket being solid, as will be seen at 13. The grate 14, which is suitably supported below the fire-pot, has near the rear end thereof an opening 15, below which is disposed a sliding member 16, having a forwardly-extending handle 17, which may be operated for the purpose of shaking the grate and also for the purpose of withdrawing the sliding member 16 to permit the contents of the fire-pot to be dumped into the ash-pit below.

Access to the ash-pit 6 and to the lower compartment 8 of the base may be had through doors 18 and 19 upon the front of the base, the door 18 being provided with a draft-slide 20. The upper compartment 6 has a rear wall 21, which extends upwardly to the upper edge of the fire-pot.

The fire-pot or basket 10 is provided at its upper edge with an annular flange 22, contacting with the stove-casing and supporting a ring 23, which is curved in cross-section and which coöperates with the flange 22 and with the stove-casing 1 to form an annular air-chamber 24. The ring 23 is provided in its lower inner portion with slots 25, which by preference are downwardly and inwardly inclined, so as to project air from the chamber 24 downwardly into the fire-pot. The ring 23 is also provided with a shouldered flange 26.

The air is supplied to the annular air-chamber 24 through openings 27 in the sides of the stove-casing, said openings being provided with closures 28, which are of a construction that will enable them to regulate the air-supply or to cut it off altogether. At the rear part of the stove the air-chamber 24 communicates with the back flue 9 through a passage or opening 29, which is capable of being closed by a suitably-constructed damper 30, operable from the outside of the stove. In the back flue is located a transverse grating 31, the bars of which are of inverted-**V** shape, as clearly shown in Fig. 1 of the drawings. This

grating has in the accompanying drawings been shown as located above the passage 29; but it may without departing from my invention be disposed at any suitable point in said back flue, either below or above said passage, the object of said grating being to break and mix the ascending flames and gases, thus promoting the combustion of the latter without directly interfering with the draft. The flange 22 of the fire-pot, which, as stated, cooperates with the ring 23 and the stove-casing to form the air-chamber 24, is provided at the rear part thereof with an opening 32. Through this opening when the stove is adjusted for downdraft a portion of air will pass from the chamber 24 in a downward direction into the ash-pit, where it will mingle with the products of combustion, passing downwardly through the grate, thus assisting in promoting the combustion of the gases, which pass from the ash-pit through the slots 5 in the side walls of the latter downwardly into the flue-chamber in the base of the stove and from thence into the back flue.

The front side of the stove-casing is provided with a door 33, through which access may be had to the interior, and below the said door is an opening 34, covered by a plate 35, of transparent refractory material, such as mica. Interiorly of the stove-casing, directly above the opening which is normally closed by the door 33, is hingedly mounted a fender-plate 36, which when the said door is opened prevents the emission into the room of smoke and products of combustion.

37 designates a magazine, which consists of a tapering funnel-shaped structure which may be either circular or polygonal in cross-section and which is provided at its upper and lower edges with circular flanges 38 39, the latter of which extends over and is almost in contact with the shouldered offset 26 of the ring 23, and thus forming a joint which is sufficiently close to prevent leakage without interfering with the oscillation of the magazine, as will be presently described, and which also serves when said magazine is being oscillated horizontally to prevent it from swinging in a vertical plane. The top plate 40 of the stove-casing supports a downwardly-extending casing 41, provided at its lower edge with an annular flange 42, supporting the flange 38 of the magazine, of which the casing 41 may be described as constituting the upper end. The magazine proper, 37, is provided with a lug 43, accessible through an opening 44 in the stove-casing, normally closed by a door 45 and through which a shaker may be inserted for engagement with the lug 43, by means of which the magazine may be oscillated for the purpose of agitating its contents and feeding the same downwardly into the fire-pot. The magazine is provided near its upper end with a grated opening 46, through which gases may escape into the space between the stove-casing and the magazine. An opening 47 for the passage of the gases into the back flue is formed near the stove-top, as shown.

The top of the casing 41 has a cover 48, which may be connected with the urn or ornament 49, so as to be capable of being swung out of the way with the latter, which may have pivotal connection in the usual well-known manner with the stove-top. Near the upper end of the said casing 41 are disposed a pair of folding doors 50, each of which is counterbalanced by a weight 51, connected with an arm 52, extending from a hinge-rod 53. These doors are normally closed, and they afford a tight closure which will effectually prevent the upward escape of gases developed from the contents of the magazine. When it is desired to fill the magazine, the fuel is simply dumped upon the upper sides of the folding doors 50, when the latter will swing open on the arcs of the dotted lines shown in Fig. 1. As the fuel passes above the doors into the magazine the doors will swing shut under the impulse of the weights 51.

Adjacent to the rear side of the back flue 9 is an air-flue 54, the lower end of which is open adjacent to the base of the stove and the upper end of which extends into the back flue 9 a short distance below the cover of the stove and terminates at about the level of the gas-escape opening 47. Air entering the lower end of the tube 54 and becoming heated will rise, thus inducing an upward current of air from the lower part of the room, where the air is cold and vitiated. This hot air being discharged into the chimney, which is connected to the upper end of the back flue, will induce an upward suction through the opening 47, thereby assisting in causing noxious gases to escape from the space surrounding the magazine 46.

A radiating member, which is preferably in the shape of a pipe, (designated 55,) is suitably connected with the solid rear side of the fire-pot, and said member extends downwardly through the base of the stove, terminating at its lower end through the bottom of the base. When a fire is made in the stove, this member will become rapidly heated and will at a very early moment serve to radiate heat at its lower projecting end, causing the cold strata of air near the floor of the room to be displaced and gradually heated.

When a fire is to be started in the stove, the damper 30 and the draft-slide 20 are opened. When a fire is kindled, there will thus be a direct draft through the slide 20, upwardly through the grate and fire-pot, and through the passage 29 direct to the back flue. When the fire gains headway and it is desired to use the downdraft or back draft, the draft-slide 20 and the damper 30 are closed, while the closures 28 are partly opened to the admission of air through the openings 27 into the annular air-chamber 24 and through the slots 25 of

the latter downwardly into the fire-pot. From thence the draft is downwardly through the grate and through the slots 5 in the sides of the ash-pit into the lower compartment 8 of the base and thence upwardly through the back flue 9 to the final point of exit. When this draft is established, the fuel is economically consumed and the greatest possible amount of heat developed and utilized. It is obvious that the draft is capable of being very thoroughly and conveniently regulated and that all waste of fuel may be readily avoided.

It will be seen from the foregoing description that not only is the construction of my improved stove simple and inexpensive, but that said stove is capable of being easily regulated and operated to the very best advantage. The escape of smoke and gases into the room, which when soft coal is the fuel used is apt to occur to a highly-objectionable extent, is well provided against, the feeding device being of such a nature that coal may be dumped into the magazine with only momentary displacement of the feed-doors.

Other advantages of my invention will readily suggest themselves to those skilled in the art to which it appertains.

Having thus described my invention, I claim—

1. In a stove, a hollow base, a cylindrical casing supported upon the base, a fire-pot arranged in the lower part of the stove-casing and having an annular flange at its upper edge, contacting with the stove-casing, a grate supported below the fire-pot, an ash-pit disposed below the grate within the hollow base and having slotted side walls communicating with said base, a door in the base communicating with the ash-pit, an annular member supported upon the flange of the fire-pot, said member having downwardly-inclined apertures and a flange contacting with the stove-casing, a back flue communicating with the hollow base, a damper in the stove-casing forming a closure for an opening in said casing which connects the back flue with the space bounded by the stove-casing, the annular slotted member and the flange of the fire-pot, said flange being provided with an opening communicating with said space, and means for admitting and for regulating the admission of air through the stove-casing and into the space bounded by said casing, by the annular slotted member and by the flange of the fire-pot.

2. A stove-casing, a fire-pot having a laterally-extending flange contacting with said casing, an annular member supported upon the upper edge of the fire-pot at a distance from the stove-casing and having an outwardly-curved annular flange contacting with the latter and an inwardly-extending annular shoulder, and a magazine supported for oscillation within the stove-casing and having its lower end extended over and nearly in contact with said shoulder.

3. In a stove, the combination of a casing, a top plate supported upon said casing, a chamber supported by and depending from said top plate and having an annular flange disposed in a horizontal plane at its lower edge, and a magazine flanged at its upper edge, and supported for oscillation upon the annular flange of said chamber.

4. In a stove, the combination of an exterior casing, a top plate, an interior casing connected with and depending from said top plate and having an annular inwardly-extending flange disposed in a horizontal plane at its lower end, a lid upon the top plate of the exterior casing, and auxiliary swinging lids near the upper end of the interior casing and accommodated within the latter, and a magazine supported for oscillation upon the flange of said casing.

5. In a magazine-stove of the class described, an exterior casing, a top plate in said casing, an interior casing depending from said top plate and having an annular flange at its lower end, a magazine flanged at its upper edge and supported upon said annular flange, rock-shafts journaled near the upper end of the interior casing and having weighted arms extending into the space between the inner and the outer casings, and doors supported upon said rock-shafts and held normally closed by the weighted arms, and adapted to move within said casing.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD J. LAHAN.

Witnesses:

EDWARD P. ALLEN,

R. C. ALLEN.