Sept. 22, 1942. L. L. LOWE 2,296,447

HEATING STOVE

Filed Feb. 1, 1941 2 Sheets-Sheet 1

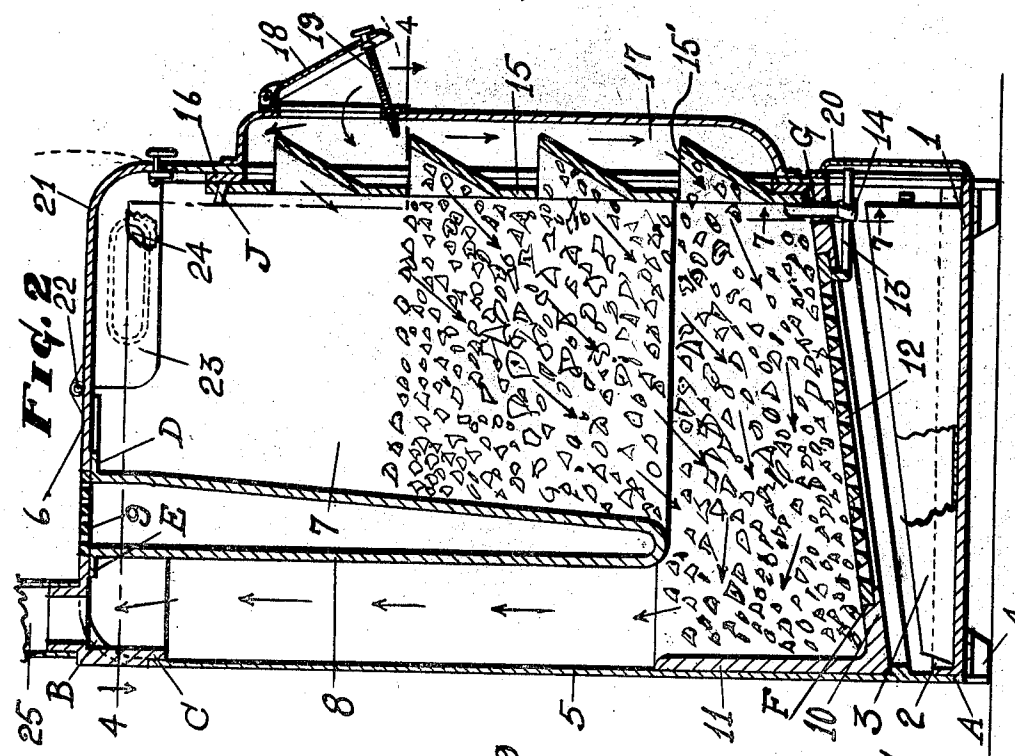


Fig. 2

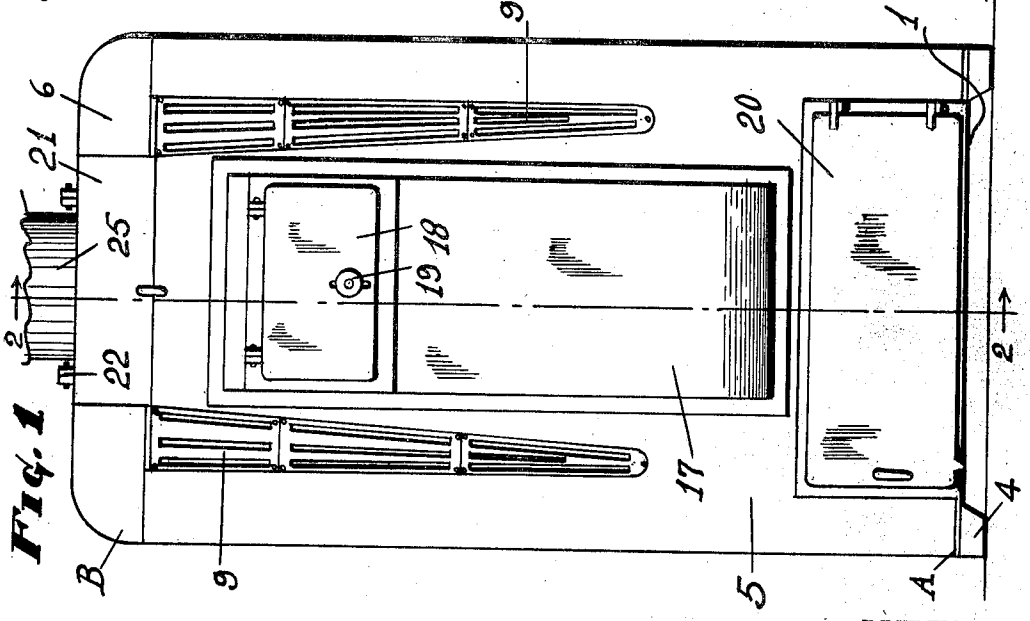


Fig. 1

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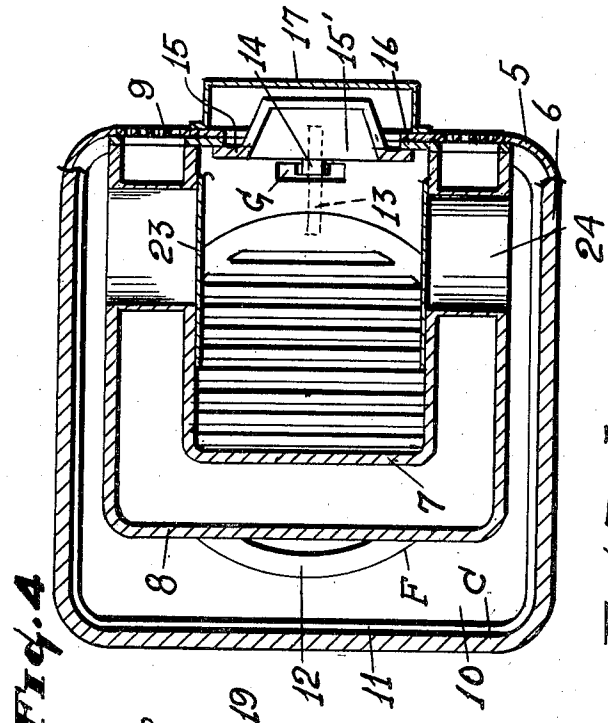


Fig. 4

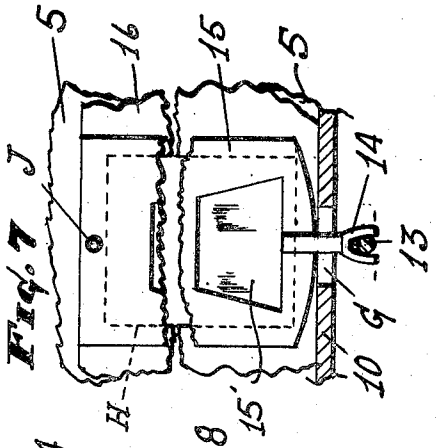


Fig. 7

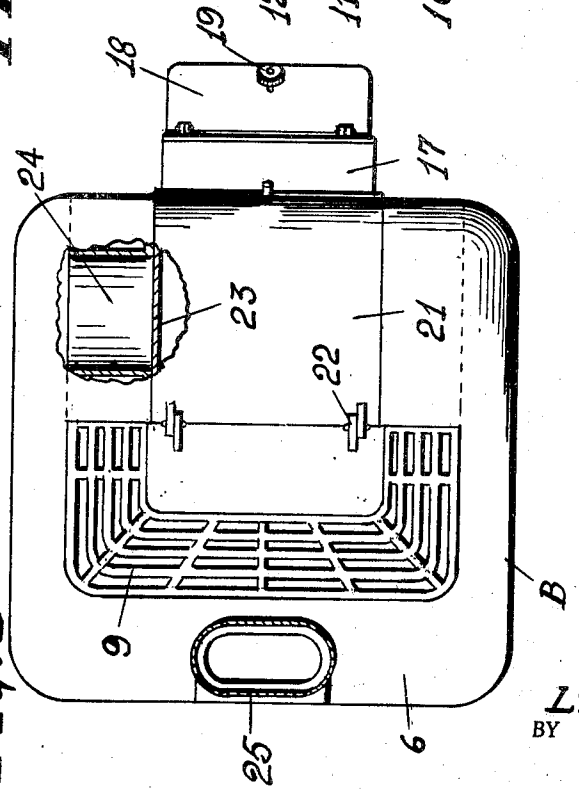


Fig. 3

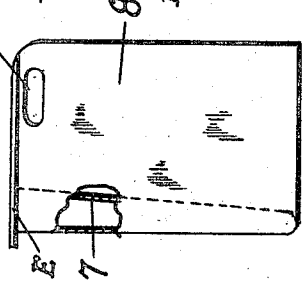


Fig. 6

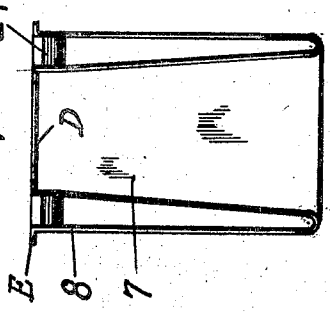


Fig. 5

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Patented Sept. 22, 1942 2,296,447

UNITED STATES PATENT OFFICE

2,296,447

HEATING STOVE

Lyall L. Lowe, Sioux City, Iowa

Application February 1, 1941, Serial No. 377,006

3 Claims. (Cl. 126—73)

This invention relates to a heating stove and has for one of its objects, the provision of a downwardly directed draft external of the fuel magazine and downward through the column of fuel contained in the magazine, and the draft being further directed through and across the burning fuel at the base of the magazine, and a damper means to control the draft.

Another object of this invention is to provide an exhaust for gaseous substance that may arise in the fuel magazine.

A further object of this invention is to provide a fuel magazine having downwardly divergent side walls to avoid bridging of the fuel in its descent through the magazine as consumed by combustion at the base thereof.

A still further object of this invention is to provide a grate for the combustion chamber slanting downward and rearward as displacing and spreading means for the burning fuel at the time of shaking the grate to separate ash accumulation into an ash pan housed beneath the grate.

A still further object of this invention is to increase the heating area of the stove by an external discharge from an internal heating chamber provided in the stove.

A still further object of this invention is to construct a stove with heating capacity sufficient to function as a furnace, to be housed within a standard make of jacket having pipes connected thereto as conductors for hot air to rooms of a dwelling or other structure, in which case, the furnace will preferably be installed in the basement of such structures.

A still further object of this invention is to provide means to shake the grate and simultaneously another means to shake the fuel in the magazine for prompt response of its descent toward the fire pot.

A still further object of this invention is to construct a stove with a maximum faculty of combustion for consumption of the fuel and gaseous substance within its combustion chamber, whereby a minimum loss of heat producing units is a feature of economy and an increased efficiency of the stove.

These and other objects will hereinafter be more fully explained, reference being had to the accompanying drawings forming a part of this specification, and in which like characters will apply to like parts in the different views.

Referring to the drawings:

Fig. 1 is a front view of the stove.

Fig. 2 is a vertical section taken on line 2—2 in Fig. 1.

Fig. 3 is a top plan view of the stove, parts removed for convenience of illustration.

Fig. 4 is a cross section taken on line 4—4 in Fig. 2, and including a plan view of the grate structure.

Fig. 5 is a reduced front view of the magazine, the rockable front being removed.

Fig. 6 is a side view of Fig. 5, parts removed for convenience of illustration.

Fig. 7 is a sectional view taken on line 7—7 in Fig. 2, and including the upper extremity of the rockable front plate, other parts being removed for convenience of illustration.

The invention herein disclosed relates to a stove, the component parts of which consist of a bottom 1, having two sides and a rear wall 2, the front wall being removed for free sliding movement of an ash pan 3 seated on the bottom, and the said bottom being substantially rectangular in form has a removable leg 4 at each corner thereof as carrying means for the stove. Said bottom walls are seated inward to provide a shoulder A on which the lower end of a casing 5 will seat as an enclosure for the interior arrangement of the stove, the stove having a top 6 to close the upper end of the casing, the four sides of said top being curved as at B, the lower edge of which has an offset C to receive the upper end of the casing therein and as carrying means for the top.

Positioned within the casing is a fuel magazine 7 pendently carried by the top by an appropriate means engaging through said top and flange D formed on the inner side of the magazine, the back and adjoining side walls thereto diverging downward for free descent of the fuel contained therein, being so arranged, the bridging of the fuel may not occur when the stove is in service.

Integrally joined to the lower extremity of said side and rear walls of the magazine are other walls 8 corresponding thereto, outwardly spaced from the magazine and vertically disposed, the upper ends of which terminate on a plane with the upper end of the magazine, said walls having a flange E to correspond with the magazine flange and being secured to the top in like manner.

It will now be seen that a heating chamber is formed between the fuel magazine and said walls 8, said chamber having external communication through the front of the stove casing and through the top thereof, each communicative opening having a grill 9 extending thereover as an ornamental feature and to provide free circulation of

air into the side and from the top as intensified by fuel combustion in a fire pot (later described) positioned below the lower extremity of the fuel magazine, and likewise radiation of heat is produced by the walls of the casing externally.

Between the said bottom and lower extremity of the magazine is a fire pot comprised of a bottom 10 slantingly positioned from the front of the stove rearward and a rear and oppositely disposed side walls 11 that extend upward substantially on a plane with the lower end of the magazine. It will now be seen that the space between the fire pot and bottom for the casing will function as an ash pit.

Centrally positioned in the bottom of the fire pot is a circular grate 12 placed in a corresponding opening through the bottom and being seated in a rabbet F circumscribing the opening and to turn therein a short distance reciprocatingly as separating means for ash from the fuel resting thereon and the said circular grating has a shaker bar 13 secured thereto and extending outward toward the front of the ash pit and across an elongated slot G extending through the bottom a spaced distance inward from its front and through which a bifurcated arm 14 will extend, the bifurcation to straddle said shaker bar as rocking means for a plate 15 to which said arm is attached, said plate having a series of vertically aligned vent openings 15' spaced apart longitudinally of the plate, each opening being formed in the upper extremity of oblique depression extending upward, and being at right angle thereto; being thus formed will retain the fuel in the magazine and provide for a downward draft through the openings.

It will be seen that the front of the fuel magazine and that of the combustion chamber has a wall 16 to engage with each, said wall 16 having an opening vertically extending therethrough as indicated by dotted lines H and over which the said vent plate will engage rockably inward of the wall, the plate being pivotally connected at its upper end as at J while the lower end is free to rock reciprocatingly across the opening and being actuated by the shaker arm of the grate heretofore explained, being so arranged shaking of the grate will oscillate the vent plate simultaneously to shake the fuel in the magazine sufficient to overcome bridging or clogging should the fuel become sluggish in its descent, it being understood that the said opening will be sealed at all times by the plate in its reciprocating movement.

The front of the stove has an outward extension 17 as a draft shaft to enclose the vent openings and to provide circulation of air from top to bottom of the extension whereby the current will enter the fuel magazine as well as through the draft shaft adjacent the combustion chamber to permit a cross draft through the burning fuel as indicated by arrows and a downward draft through the fuel to avoid gaseous fumes arising in the magazine, the draft being controlled by a door 18 hingedly carried adjacent the upper extremity of the extension, there being an opening over which the door will engage, and the said door being retained at a predetermined open position by a threaded member 19 carried thereby and adapted to turn therein, said member engaging in a threaded aperture adjacent the bottom of the door opening. It will now be seen how the draft above desscribed is controlled.

A hingedly connected door 20 is also provided for an opening at the ash pit as accessible means thereto in removing and replacing the ash pan.

To charge the fuel magazine with coal or other combustible substance, there is provided in the top of the stove an opening communicating with the magazine, said opening having a door 21 rockably carried by hinges 22, the said door adapted to fit snugly in the opening and has a flange 23 adjacent each side thereof inwardly extending and adapted to close the inner ends of vent pipes 24 that communicate with the magazine and combustion chamber oppositely, whereby in the vent of gas accumulation in the magazine the same will be instantly conducted into the combustion chamber at the instant of opening the door as the smoke pipe 25 is in close communication with the vents, each being at the upper extremity of said combustion chamber.

And modifications may be made as lie within the scope of the appended claims.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a heating stove, a casing of an appreciable length with open ends to function as a wall for the stove structure, a top and a bottom member and means to secure the same to their respective ends of the casing whereby a combustion chamber is formed, a fire pot secured in the casing a spaced distance upward from the bottom member and having side walls and a bottom, the bottom sloping downward toward one side, a circular grate rockably carried in an opening through the bottom, said grate having a shake rod radially extending therefrom, a fuel magazine of an appropriate length vertically positioned in the casing and being rectangular in cross section, the upper end of said magazine being secured to the top enclosing member as supporting means for the magazine, the walls of said fuel magazine diverging downward and being open at its lower extremity and in spaced relation from the fire pot, one side of the fuel magazine having an opening starting a spaced distance downward from its upper end and extending through the wall to its lower extremity, a plate having a plurality of vent openings therethrough and spaced apart longitudinally of the plate to engage over the opening and positioned inward of the wall, one end of the plate being pivotally connected to the wall adjacent its opening for oscillatory movement edgewise of the plate, and the said plate extending downward to close engagement with the bottom of the fire pot at which point a slot is formed through the bottom, a bifurcated arm secured to the lower end of said plate and extending through the slot so that the bifurcation will straddle the shake rod of the grate, whereby said plate is rocked simultaneously with the shaking movement of the grate, an outward extension for the casing adjacent the plate, vertically disposed, and being open at its upper extremity as a draft shaft for the fire pot, a door to engage with the opening, adjustably, to control the draft as it enters the shaft, whereby a current of air is conducted downward and across the fire pot and simultaneously downward through fuel contained in the magazine.

2. In a heating stove, a fuel magazine positioned in the stove adjacent the top thereof, the wall of the magazine diverging downward, said wall being severed from its lower extremity to near its upper extremity thereof, a plate to close the opening and extending downward from the lower extremity of the magazine, a plurality of

depressions spaced along the plate from its lower extremity upward, each depression slanting outward and upward toward and through the opening, the upper extremity of each depression being open as a draft vent through the plate whereby a downward draft is introduced through the magazine, therebelow and across at its lower extremity, and means at the lower end of the plate to rock the same reciprocatingly.

3. In a heating stove, a fuel magazine positioned in the stove adjacent the top thereof, the wall of the magazine diverging downward, said wall being severed from its lower extremity to near its upper extremity thereof, a plate to close the opening and extending downward from the lower extremity of the magazine, a plurality of depressions spaced along the plate from its lower extremity upward, each depression slantingly outward and upward toward and through the opening, the upper extremity of each depression being open as a draft vent through the plate, an arm downwardly extending from the lower end of the plate, a fire pot secured in the stove in spaced relation downward from the lower extremity of the fuel magazine to receive fuel discharged therefrom, said fire pot having a grate to discharge ash from its bottom, a shake rod to shake the grate reciprocatingly, means to connect the plate arm to the shake rod for simultaneous rocking movement of the plate and shaking movement of the grate.

LYALL L. LOWE.