No. 843,106. PATENTED FEB. 5, 1907.

C. F. A. RÖELL.

MAGAZINE STOVE.

APPLICATION FILED APR. 18, 1906.

Fig. 1.

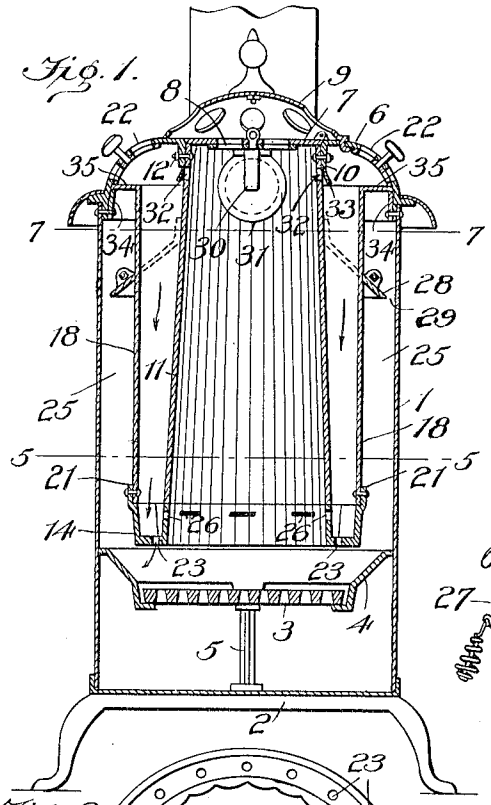


Fig. 2.

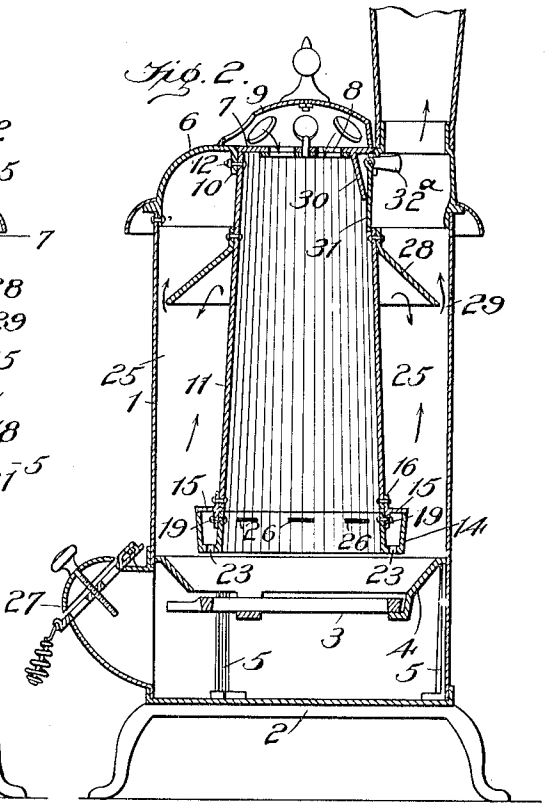


Fig. 3.

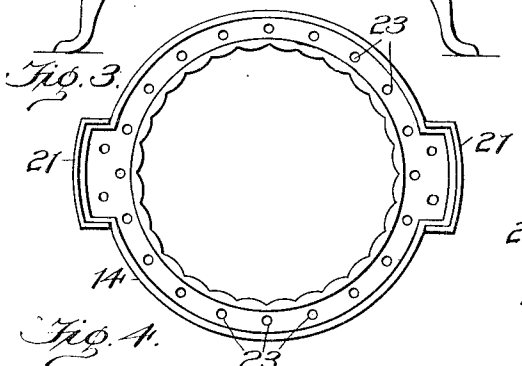


Fig. 5.

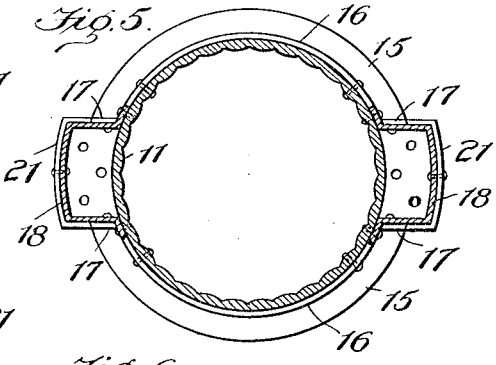


Fig. 4.

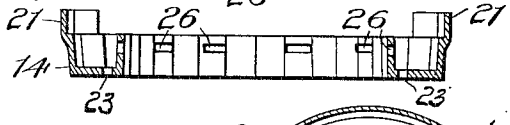


Fig. 6.

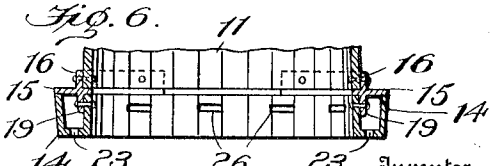
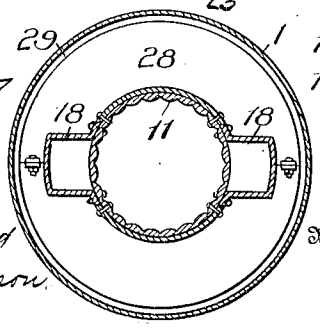


Fig. 7



Witnesses

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UNITED STATES PATENT OFFICE.

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MAGAZINE-STOVE.

No. 843,106. Specification of Letters Patent. Patented Feb. 5, 1907.

Application filed April 18, 1906. Serial No. 312,356.

To all whom it may concern:

Be it known that I, CORNELIS F. A. RÖELL, a citizen of the United States, residing at Independence, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Magazine-Stoves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to heating-stoves in which the fuel is fed by gravity from a magazine; and the objects of my improvement are to feed highly-heated air to the fire-zone space to effect the combustion of the smoke and gases, to increase the heating capacity, and to provide for this purpose a cheap and effective construction and in which the manufacture and assembling of the parts is rendered easy.

Referring to the accompanying drawings, Figure 1 is a vertical section of a stove embodying my improvements. Fig. 2 is a like section taken at right angles to Fig. 1. Fig. 3 is a top view of the hollow ring, showing the ring cover-plate removed to expose the hot-air-exit openings. Fig. 4 is a vertical section of the hollow ring part. Fig. 5 is a horizontal section on the line 5 5 of Fig. 1, showing the air-ring cover-plates and their relation to the air-inlet pipes and the magazine. Fig. 6 is a vertical section of the parts which form the hollow ring and its attachment to the magazine. Fig. 7 is a horizontal section on the line 7 7 of Fig. 1.

The inclosing casing 1 is mounted upon a base-casting 2, and the grate 3 is supported upon the lower edge of a ring-casting 4, which has the form of an inverted frustum of a cone and is supported at its upper edge, preferably by legs 5, against the inner wall of the casing, and this shallow flaring casting forms the fire-pot. A casting 6 surmounts the top of the casing and has a central opening to receive a swinging feed-lid 7, having a register 8 for controlling the inlet of air for the downdraft, and a laterally-swinging cover 9 is provided for the feed-lid. The top casting has a depending flange 10 around its feed-opening, and to this flange a corrugated magazine 11 is suspended by nutted bolts 12 and preferably flares downward. To the lower end of the magazine a hollow ring is secured, so that its inner wall is in alinement with the inner wall of the magazine. This ring is preferably formed of a lower part 14, of trough shape, and cover-plates 15, secured to the trough part and to the magazine, and is for heating and for delivering hot air to the fire-zone space.

The ring cover-plates 15 are preferably of two segmental parts, (see Fig. 5,) each formed near its inner edge with a vertical rim 16, which terminates in angles at the ends 17 of each part. The inner edge of each ring part extends under the edge of the magazine, as in Fig. 6, and the rim 16 of each cover part is bolted to the magazine, as in Figs. 2 and 5, while the lower trough part is secured to the plate cover parts by nutted bolts and lugs 19, depending from the plate cover parts within the chamber of the lower part. The lower ends of the inlet air-pipes 18 form joints with the plate cover parts, and this joint is inclosed by the angle ends 17 of the plate cover parts and by a rim 21 at the outer wall of the ring trough part, so that the plate parts form covers for the trough part, except at the junction of the inlet air-pipes with the trough part. By this construction the ring is suspended by the magazine and by the air-inlet pipes 18 by the bolting of the outer walls of the latter to the rims 21 on the outer walls of the ring trough part and the bolting of the plate cover parts to the inner wall of the trough part by the lugs 19, whereby the trough-ring parts are easily assembled and separated for repairs.

At opposite diameter-points the trough-ring is set out or offset from its circular walls, and on these set-out parts the rims 21 21 are formed for fastening to the lower ends of the air-inlet pipes and for closing their joints. The upper ends of these air-feeding pipes 18 are secured to the top casting at openings in which the pipes open and are provided with registers 22 for controlling the inlet of the air into the pipes. By this construction the air-feeding pipes and the magazine both serve as the means of suspending the trough-ring, the bottom of which has perforations 23, through which the air entering the pipes at their registered openings passes down into the chamber or trough of the ring, where it is highly heated, and then passes out through apertures 23 into the fire-zone space which is formed by the grate-supporting fire-pot and

from which the products of combustion pass upward into the combustion-chamber 25 between the casing and the magazine and thence to the top smoke-pipe. The inner walls of the trough-ring also have apertures 26, Fig. 4, which open into the fire above the fire-zone space, so that the air passes into the fire from the chamber of the ring at its bottom and at its sides, while the downward top draft aids combustion in the magazine and the upward draft through the grate is used in starting and maintaining the fire and is controlled by a register 27.

In order to distribute the flame and the heat products equally over the interior radiating-wall of the casing, I provide a heat-deflecting plate 28, riveted to the outer wall of the magazine and preferably flaring downward, leaving a clear passage 29 between its edge and the inner wall of the casing, so that the heat products rising from the fire-zone space around the outside of the ring will strike the flaring walls and be deflected downward, giving thereby the advantage of greater radiation of the heat through the casing. I prefer to make this heat-deflecting plate of two semiring parts and bolt them together over the air-feeding pipes, as in Fig. 7. In feeding fuel the opening of the lid may cause, by poor draft-flues, the gases and the smoke to pass out into the room, and to prevent this I provide the top feed-lid with an arm 30, depending in position against the inner vertical side of the smoke-damper 31, pivoted in the wall of the magazine, so that the weight of the lid when closed keeps the smoke-damper closed against the tendency of a weighted arm 32ª, Fig. 2, on the damper to keep it open. Therefore the opening of the feed-lid causes its depending arm 30 to be lifted free of the smoke-damper, allowing it thereby to open, so that the gases and smoke will pass out from the magazine into the smoke-pipe. I prefer to arrange the air-feeding pipes so that the wall of the magazine will form one side of the pipes, as in Fig. 5; but obviously the pipes may be set out from the magazine. To relieve the pressure of the gases in the upper part of the magazine, apertures 32, Fig. 1, are provided in the upper part of the magazine to allow the gases to pass out into the air-feeding pipes and with the air down into the trough-ring and to the fire, and thereby render the stove satisfactory in caring for the accumulation of gases in the magazine. These apertures may be provided with flap-valves 33, which are caused to open by any undue pressure of gas in the magazine, but prevent a constant escape or updraft of gases.

A convenient means of suspending the air-feeding pipes is by pieces of iron 34, Fig. 1, bolted to the inner wall of the casting and terminating the outer wall of each air-feeding pipe in an angle end 35, which rests upon the edge of each piece of iron as a ledge, the upper open ends of said pipes being made to fit the under side of the top casting and fastened to it.

The bolting of the air heating and feeding ring to the lower end of the magazine, as in Fig. 2, and to the lower ends of the air-feeding pipes, as in Fig. 1, and the fastening of the pipes and the magazine to the top casting and the fastening of the heat-deflector to the magazine gives the advantage of setting these parts into and suspending them within the casing as an entirety and fastening the top casting in place, so that it can be easily lifted out of the casing when it may be necessary to renew the air heating and feeding ring or for repairs.

I claim—

1. In a stove, a casing, a magazine, a ring formed of an open-top trough part and a cover for said trough part formed of two segmental plates, a pair of air-feeding pipes opening into said trough part, one on each side of the magazine fitted and secured upon its walls and against the sides of which pipes the ends of the segmental plates abut, and means for securing the segmental plates to the trough part and to the magazine.

2. In a stove, a casing, a magazine having valved apertures in its walls at its upper end, a hollow ring at the base of the magazine, a pair of air-inlet pipes open at the top of the stove and opening into said ring and having communication with the magazine by its top wall valved apertures whereby the pressure of gases in the upper part of the magazine is relieved and the gases caused to pass into and down the air-feeding pipes into the ring thereby charging the air with gas before it is delivered into the fire.

3. In a magazine-stove, a casing, a top casting, a magazine, a grate, a ring formed of a trough part and segmental covering-plates therefor, each plate bolted to the magazine, the trough part having delivering-openings and bolted to the covering-plates, and air-inlet pipes opening into the top of the trough-ring and bolted to the outer wall thereof.

4. In a stove, a casing, a suspended magazine, a grate, a hollow ring at the lower edge of the magazine, the outer wall of said ring having offsets at opposite sides of its diameter and rims rising from the vertical walls of said offsets, segmental plates forming covers for the hollow ring, air-feeding pipes forming joints with the offset rims, the said segmental plates secured to the magazine, and the said hollow ring secured to the said segmental plates.

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

CORNELIS F. A. RÖELL.

Witnesses:

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W. O. SKINNER.