

No. 625,417.

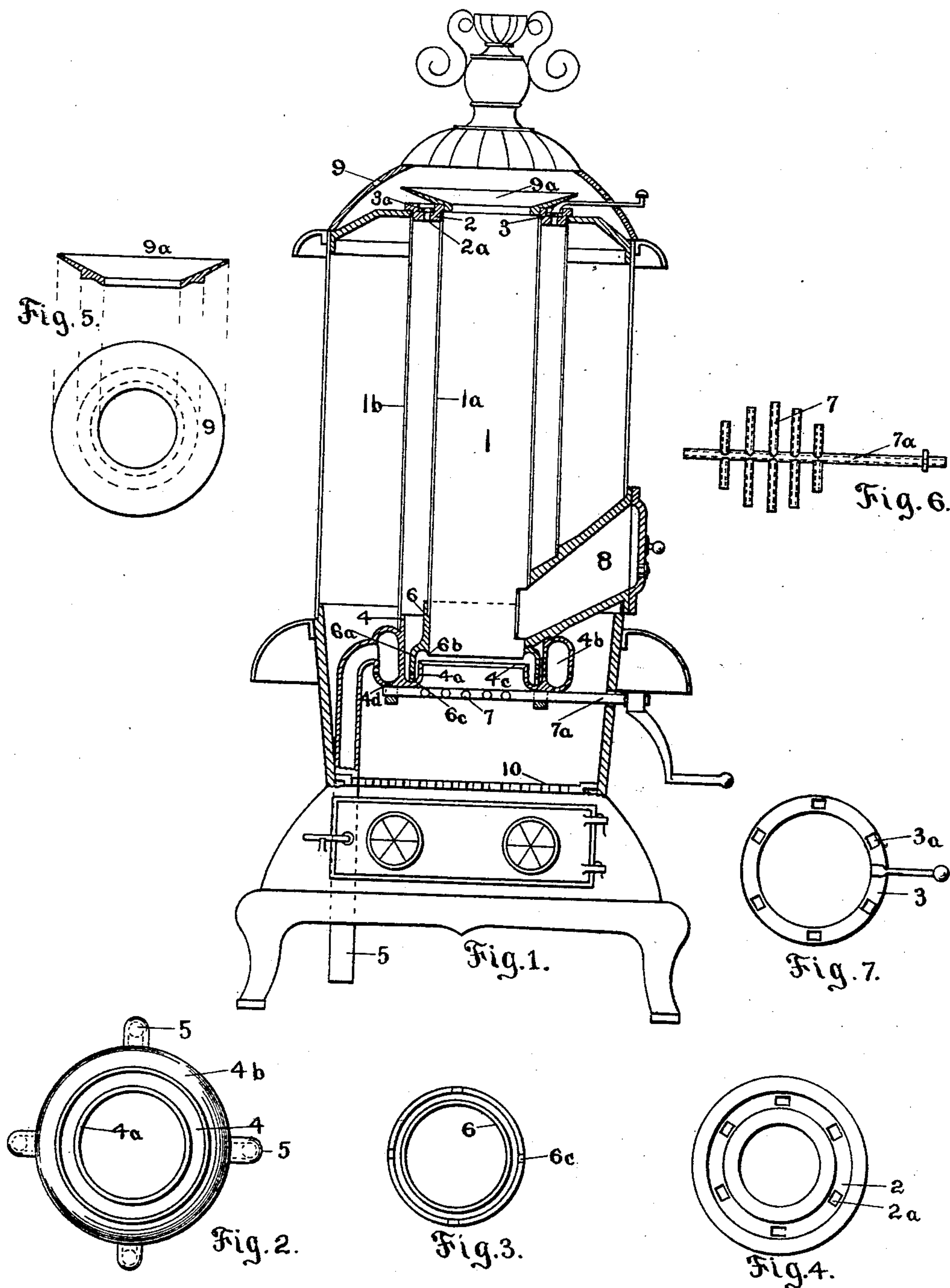
Patented May 23, 1899.

E. W. RIDER.

MAGAZINE ATTACHMENT FOR STOVES OR FURNACES.

(Application filed Dec. 8, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

EBENEZER W. RIDER, OF BAY CITY, MICHIGAN.

MAGAZINE ATTACHMENT FOR STOVES OR FURNACES.

SPECIFICATION forming part of Letters Patent No. 625,417, dated May 23, 1899.

Application filed December 8, 1898. Serial No. 698,650. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER W. RIDER, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Magazine Attachments for Stoves or Furnaces; 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 invention pertains to improvements in stoves and furnaces, and relates more particularly to that class in which the fuel is stored in a magazine and fed by gravity to the fire.

The improvement consists in certain constructions and arrangements of the magazine parts and appliances by means of which I accomplish the objects of my invention, which are, first, to produce a magazine that can be attached to a stove or furnace as ordinarily constructed in which fine coal or "slack" can be used as fuel without producing smoke or soot; second, to provide a magazine-stove of the downdraft type in which the air for combustion can be preheated by the waste gases before it comes in contact with the coal, thus producing a hot blast; third, to provide means for mixing the cold air near the floor of the room with the partly-consumed gases from the grate, thus both producing efficient ventilation and entirely consuming the volatile matter in the heated gases, and consequently producing smokeless combustion.

My improvement is shown in the accompanying drawings, throughout the several views of which similar characters of reference designate similar parts and devices.

Figure 1 is a front elevation, partly in section, of a stove, showing the arrangement of the magazine and its accessories. Fig. 2 is a top view of the outer magazine-casting. Fig. 3 is a view of the inner magazine-casting from below. Fig. 4 is a top view of the upper magazine-ring. Fig. 5 is a detail of the conical flange at the top of the magazine. Fig. 6 is top view of the hollow grate. Fig. 7 is a top view of the annular draft-regulator.

As is plainly shown in the drawings, the device consists of a vertical coal-magazine 1, consisting of an inner cylinder 1^a and an outer cylinder 1^b, attached at the top to the

inner and outer peripheries, respectively, of an annular ring 2 of channel-section, which forms the top of the annular shell between the cylinders 1^a and 1^b. Draft-holes 2^a admit air to the space between the cylinders. An annular ring 3, Fig. 7, provided with openings 3^a, registering with the draft-holes 2^a and having a handle extending out from the stove, serves as a regulator or draft for gagging the inflow of air.

At the lower end of the magazine and attached to the outer shell is a cylindrical casting 4, having its bottom end flanged inwardly and upwardly to form an annular trough 4^a of J-section. Around this casting and preferably formed in one piece with it is a hollow belt 4^b. Downwardly-extending ventilating-pipes 5 enter the annular belt 4^b at one or more points on its circumference, as shown in Figs. 1 and 2.

To the inner shell of the magazine at its lower end is attached a cylindrical casting 6, the lower portion of which is enlarged or offset to form a cylinder 6^a of larger diameter than the upper portion. The upper part projects a short distance below the offset and forms beveled edge 6^b, which projects over and protects the upwardly-extending point 4^c of the casting 4 from the coal as it descends in the magazine 1. The lower end of the part 6^a is provided with lugs 6^c, which rest on the casting 4, thus allowing air to pass from the annular space between the cylinders 1^a and 1^b, through the opening between the edges 4^c and 6^b, and into the magazine.

A circular grate 7, Fig. 6, adapted to rotate about its diameter, is supported below the opening of the magazine. This grate is preferably made with hollow fingers communicating with the outside air through a hollow handle 7^a for the purpose of preventing burning of the grate-bars.

A hopper 8, preferably of rectangular cross-section, gives access to the interior of the magazine for lighting the fire or cleaning.

The main air-supply for the fire is obtained through the holes 9 in the stove-body or by other suitable means and passes downwardly below a conical flange 9^a, Fig. 5, which prevents coal from entering the draft-openings 2^a into the space between the cylinders 1^a and 1^b, where the air is heated.

The hot air escapes through the opening between the castings 4 and 6 and is drawn by the force of the chimney-draft down through the coal-bed. As the gases of combustion
 5 leave the coal-bed they are met by jets of air discharged from openings 4^d in the belt 4^b and the volatile matter still remaining in them is thoroughly consumed.

The office of the revolving grate is twofold.
 10 It serves when starting the fire as a receptacle for the kindling, which is introduced through the hopper 8, and after the fire is started the grate is turned to a vertical position. The coal-bed then drops to the stove-
 15 grate 10. As the volatile matter distils from the coal under the action of the fire and the hot draft from the magazine-shell the resulting coke is deposited around the lower end of the magazine. It is readily then dislodged
 20 at intervals by partially revolving the grate 7, the fingers of which remove the accumulated coke.

I am aware that the principle of downdraft-furnaces is old, and I do not claim this broadly
 25 as my invention; but

What I do claim, and desire to secure by Letters Patent, is—

1. In a downdraft magazine attachment for stoves and furnaces, the combination of a
 30 magazine consisting of an inner and outer shell, draft-openings communicating with the space between the shells, a ring of J-section attached to the lower end of the outer shell; a ring attached to the lower end of the inner

shell, the two rings being so placed as to permit
 35 the passage between them of air from the space between the magazine-shells to the fire; a hollow belt surrounding the outer ring; one or more inlet-pipes communicating with said
 40 belt, and air-outlets from the belt for the purpose of mixing air with the unburned gases; substantially as described.

2. In a downdraft magazine attachment for stoves and furnaces, the combination of a
 45 magazine consisting of an inner and outer shell, a ring of channel section between said shells at their top, said ring having draft-holes communicating with the space between the shells, and means for opening or closing
 50 said holes; a ring of J-section attached to the lower end of the outer shell, a second ring attached to the lower end of the inner shell and resting on the ring of J-section, the two rings
 55 being so placed as to permit the passage between them of air from the space between the magazine-shells to the magazine above the fire-bed; a hollow grate revoluble in the lower
 60 end of the magazine for dislodging accumulated coke, and means, substantially as described for taking air from near the floor of the room, mixing it with the unconsumed volatile gases and burning them.

In testimony whereof I affix my signature in presence of two witnesses.

EBENEZER W. RIDER.

Witnesses:

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