

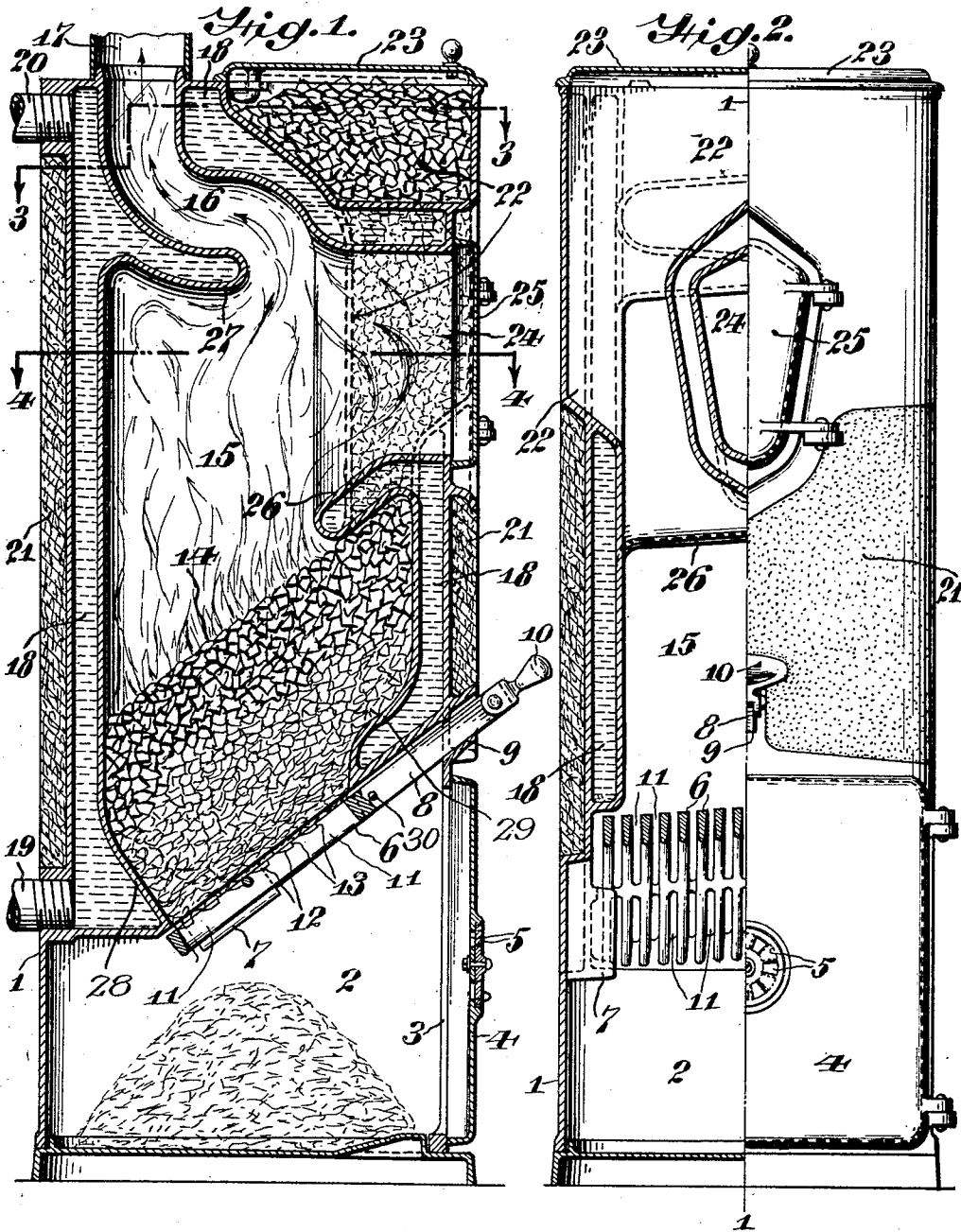
May 3, 1932.

E. A. CORBIN, JR

1,856,623

HOT WATER STOVE

Filed June 19, 1928 2 Sheets-Sheet 1



Inventor

Elbert A. Corbin Jr.

By Herbert S. Fairbanks
Attorney

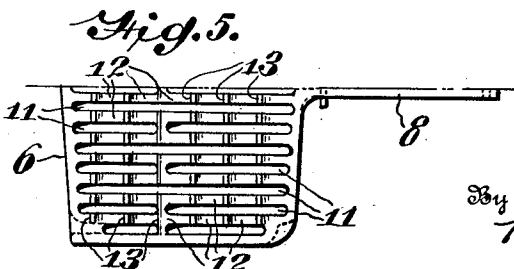
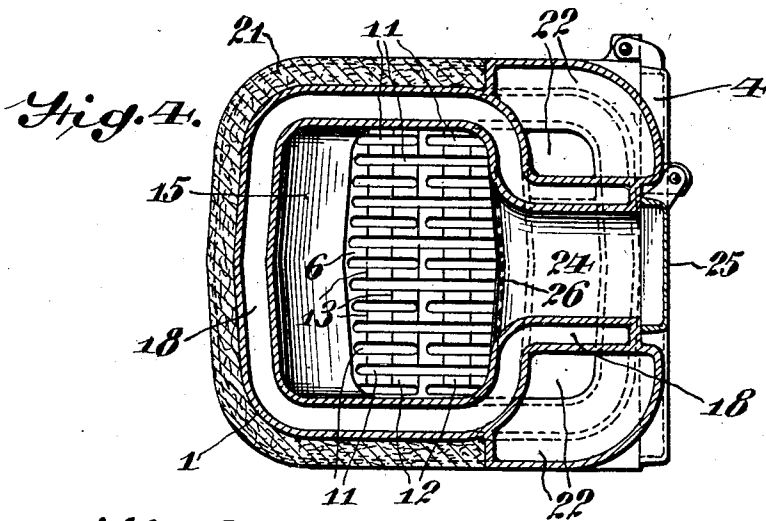
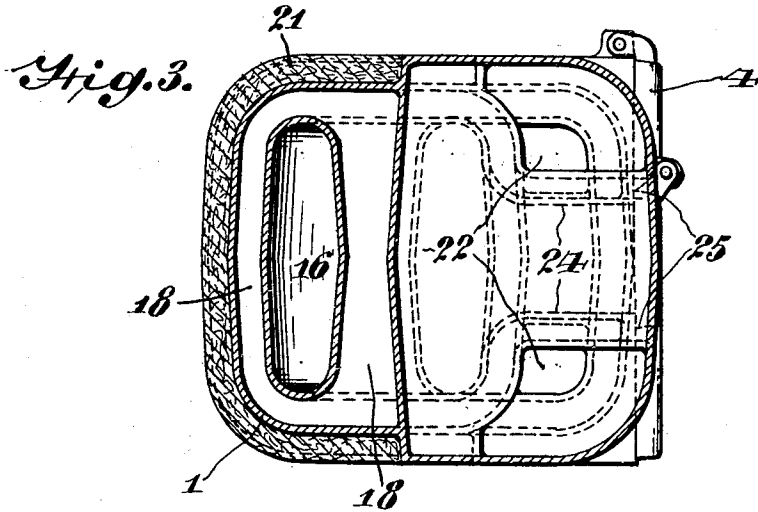
May 3, 1932.

E. A. CORBIN, JR

1,856,623

HOT WATER STOVE

Filed June 19, 1928 2 Sheets-Sheet 2



Inventor

Elbert A. Corbin, Jr.

By Herbert S. Fairbanks
Attorney

UNITED STATES PATENT OFFICE

ELBERT A. CORBIN, JR., OF SWARTHMORE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
WILLIAM C. BIDDLE, OF LANSDOWNE, PENNSYLVANIA

HOT WATER STOVE

Application filed June 19, 1928. Serial No. 286,631.

The object of this invention is to devise a novel construction and arrangement of a hot water stove which will be very efficient in operation and which will require a minimum amount of attention.

A further object is to devise a novel hot water stove wherein a supply of coal can be maintained in a storage space, the construction being such that the coal will feed by gravity as needed to a downwardly inclined fuel bed.

A further object of this invention is to devise a novel construction and arrangement of a downwardly inclined grate mechanism wherein the grate can be shaken by rectilinear movement of the grate bars.

A further object of the invention is to devise a novel construction and arrangement of a grate wherein the water contact with the heated surfaces is increased to a maximum and wherein the walls surrounding the water in the stove are insulated to prevent the loss of heat by radiation.

With the above and other objects in view as will more clearly hereinafter appear, my invention comprehends a novel construction and arrangement of a hot water stove, which is especially adapted for heating hot water for household purposes.

It further comprehends a novel hot water stove wherein a supply of coal is fed from a magazine by gravity to a downwardly inclined fuel bed which, with the combustion space, is surrounded by the water which is to be heated.

It further comprehends a novel construction and arrangement of a casing.

It further comprehends a novel construction and arrangement of a grate mechanism which is downwardly inclined and which is adapted to be shaken by a rectilinear movement of the grate.

It further comprehends a novel construction of a grate having pockets or depressions

in its top surface which facilitate the breaking up of the ash.

Other novel features of construction and advantage will hereinafter more clearly appear in the detailed description and the appended claims.

For the purpose of illustrating the invention, I have shown in the accompanying drawings a typical embodiment of it, which, in practice, will give reliable and satisfactory results. It is, however, to be understood that this embodiment is typical only and that the various instrumentalities of which my invention consists can be variously arranged and organized, and that the invention is not limited to the precise arrangement and organization of these instrumentalities as herein set forth.

Figure 1 is a vertical section of a hot water stove embodying my invention, the section being taken substantially on line 1—1 of Figure 2.

Figure 2 is a front elevation partly in section of the hot water stove.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a top plan view of a grate section.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:—

1 designates the casing of a hot water stove embodying my invention. The bottom portion of the casing forms an ash pit 2 having an opening 3 which is closed by a door 4 of any desired or conventional type. The door is preferably provided with controllable air openings 5.

6 designates the grate which is movably mounted on the grate support 7. The grate is provided with a bar 8 guided in a downwardly inclined aperture 9 in the casing 1 and at its outer end it is provided with an ac-

tuating handle 10. The grate is provided with the slots 11 and on opposite sides of these slots the grate is provided with the recesses 12 in its top face said recesses preferably forming straight walls 13 at one end

of such recesses. It will be noted that the grate is supported in such a manner that it is downwardly inclined so that the bed of fuel 14 is also downwardly inclined. 15 designates the combustion chamber which communicates by means of the circuitous passage 16 with the exit flue 17. 18 designates the water chamber to which the cold water is introduced by a conduit 19 leading from a source of water supply and the hot water is discharged through the hot water pipe 20.

The water chamber 18 substantially surrounds the bed of fuel and the combustion chamber and also the passage 16 leading to the exit flue 17. The casing 1 forming the outer wall of the water chamber is provided with an external layer of insulation material 21. The casing 1 at its upper front portion is provided with a coal magazine 22 having its upper end closed by means of a hinged door 23. The front of the stove is provided with the opening 24 which is closed by means of a hinged door 25. This door opening 24 is surrounded by the water chamber 18 and the wall forming the door opening 24 is curved downwardly and then rearwardly to form a portion 26 which overhangs the upper portion of the bed of fuel 14.

The inner wall of the water chamber is looped inwardly as at 27 so that a restricted throat is formed for the passage of the products of combustion to the exit flue. The water chamber is extended over and around this throat as will be clear from the showing in Figure 1.

The grate is shaken by rectilinear movement and the recesses 12 tend to break up the ash and any clinkers which might form, by withdrawing the grate as far as possible.

By my novel construction one is enabled to provide a magazine of large storage capacity with an unobstructed feed of the coal by gravity to a downwardly inclined bed of fuel so that the volatile gases from the coking operation will be consumed, such action being facilitated by the formation of the combustion chamber and its exit. The inner wall of the water jacket is intumed as at 28 and 29 to extend beneath the bed of fuel. The grate bar has a removable cotter pin 30 which by contact with the wall surrounding the aperture 9, prevents the lower end of the grate bar from passing out of the grate support 7.

The shaking of the grate opens a space at its lower end next to the wall of the heater back and cuts off large clinkers which drop down into the open space thus formed. In this way the old fire is cleaned out by cutting

the large clinkers which fall by gravity and are passed into the ash pit.

This feature is of great importance as the grate openings are very narrow to enable the heater to burn buckwheat and rice coal sizes, and unless the grate was able to open at its lower end and disgorge the large clinkers and cut off sections of these clinkers, when of large size, the grate area would soon be choked up and the heater become inoperative. The clinkers always form at the lower end of tilted grate bars while the coal pouring out of the magazine at the high end of the grate is always the last to ignite and become clinkers. This form of construction enables the operator to leave the boiler without attention of any kind, on full draught for ten hours while an ordinary tank heater usually burns out in two or three hours and needs constant stoking and raking to keep it in operation.

It will be apparent from the foregoing that in accordance with my present invention I provide a downwardly inclined fuel bed and the casing is provided with a magazine divided around the fire door to feed coal by gravity to the inclined bed of fuel. The casing is also water jacketed over all direct radiating surfaces so that the stove will be very efficient in practice as the maximum amount of water will be heated.

It will now be apparent that I have devised a new and useful hot water stove which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that this embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In a hot water stove, a casing having a double wall forming a water jacket and provided with a combustion chamber, the inner wall of said water jacket at its upper end being looped laterally inwardly to form a restricted circuitous throat for the passage of products of combustion with the water jacket extending over and around such throat, an inclined grate at the bottom of such combustion chamber, a coal magazine opening through the top of the stove and extending over the combustion chamber and over the water jacket of said throat, and means to support said grate for rectilinear shaking movement.

2. In a hot water stove, a casing having a double wall forming a water jacket surrounding a combustion chamber, a coal magazine

above the water jacket and within the stove
and having its bottom wall formed by the
water jacket, a grate inclining downwardly
and rearwardly to which the coal is fed to
5 form a bed of fuel and mounted for recti-
linear shaking movement, the inner wall of
said water jacket being looped inwardly to
cover the greater portion of the upper end
of the combustion chamber and to form a
10 circuitous exit passage for the products of
combustion, said passage being surrounded
by the water jacket as is also said fuel bed.

ELBERT A. CORBIN, JR.

15

20

25

30

35

40

45

50

55

60

65