

(No Model.)

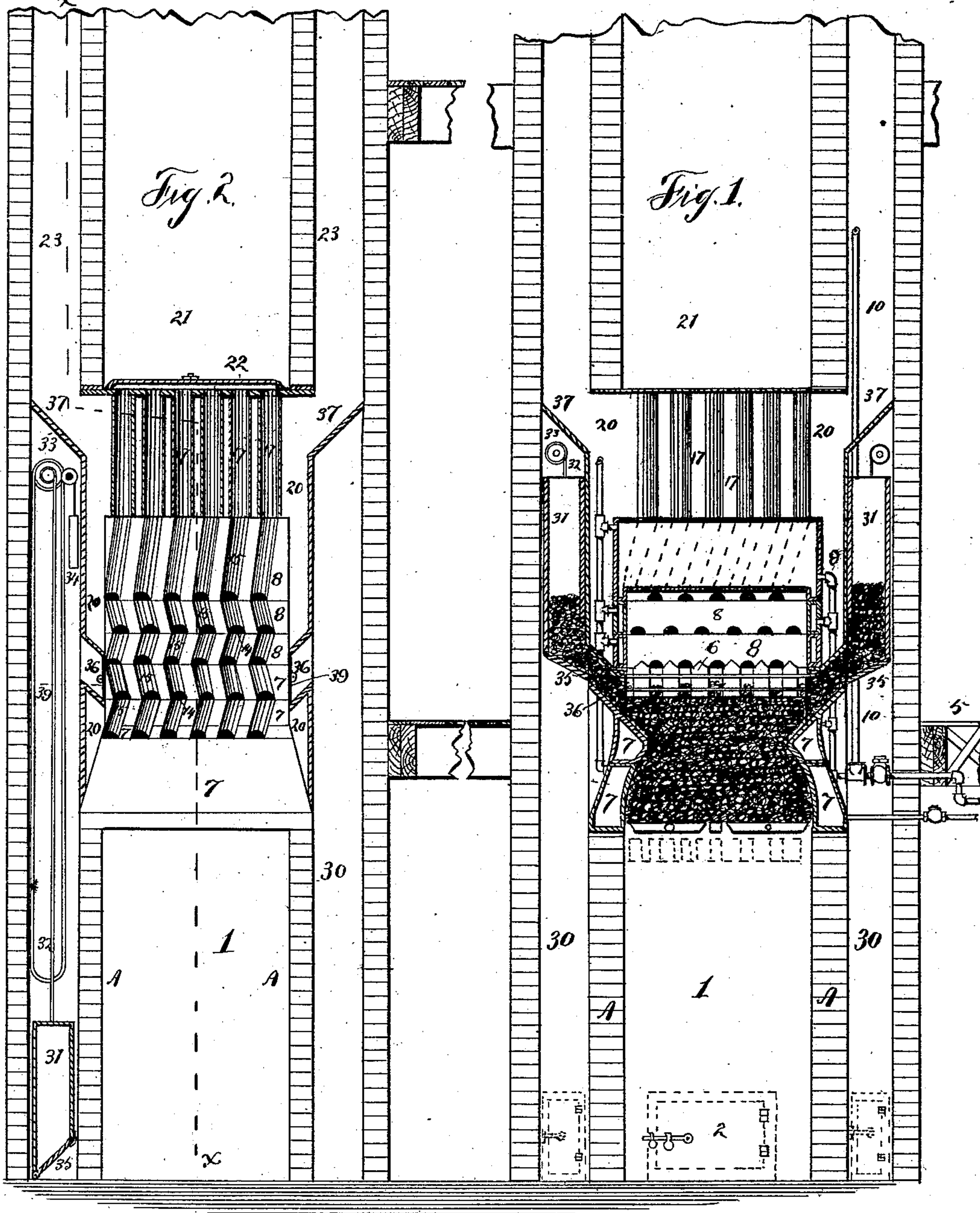
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H. B. GLEASON & W. H. H. CLAGUE.

FIRE PLACE HEATER.

No. 357,079.

Patented Feb. 1, 1887.



Witnesses

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J. F. Bawner,

Inventors

Harry B. Gleason
Wm. H. H. Clague

By their Attorney

Wallace A. Bartlett

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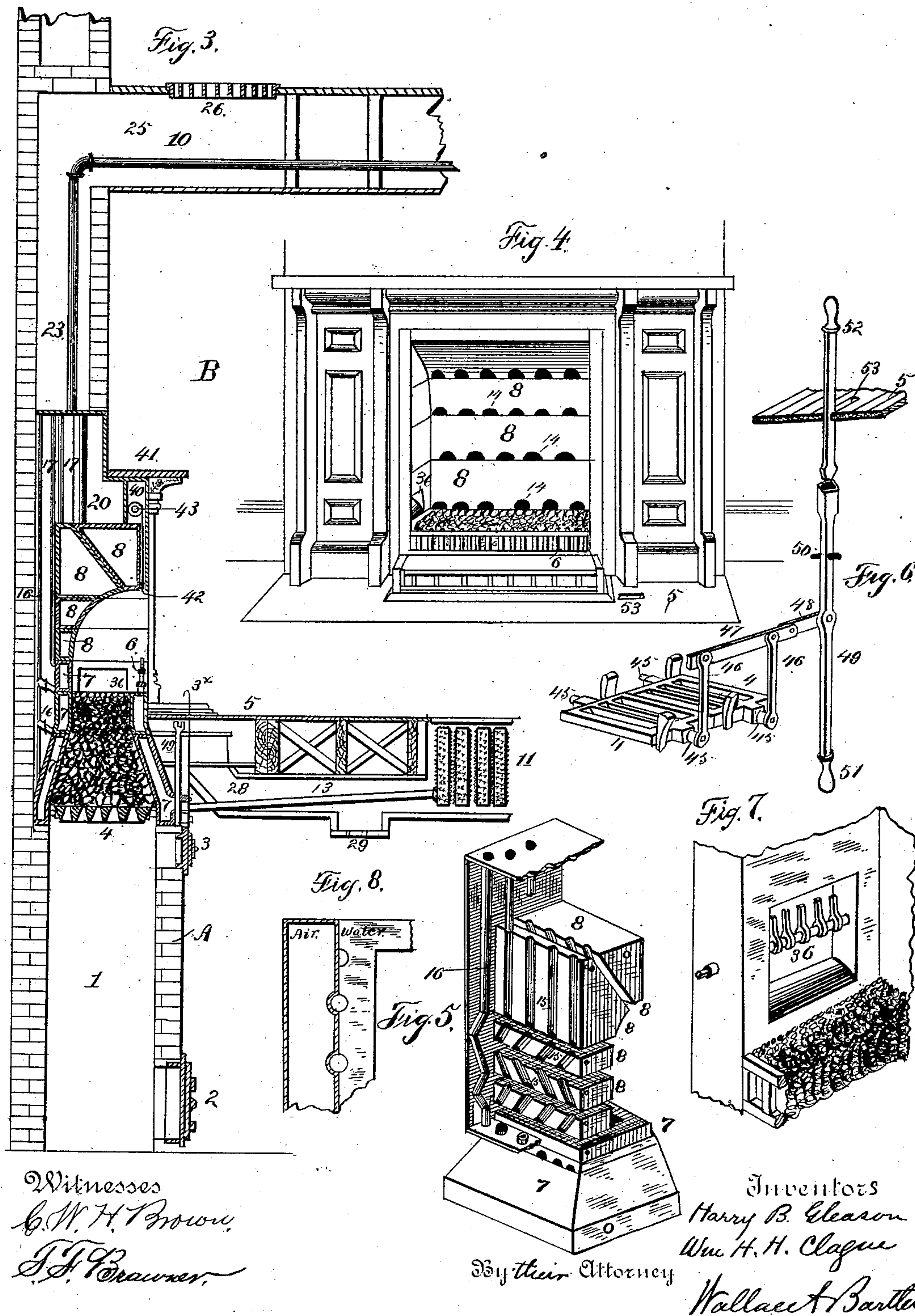
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UNITED STATES PATENT OFFICE.

HARRY B. GLEASON AND WILLIAM H. H. CLAGUE, OF ROCHESTER, N. Y.,
ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO SAID CLAGUE
AND ANDREW J. WEGMAN, OF SAME PLACE.

FIRE-PLACE HEATER.

SPECIFICATION forming part of Letters Patent No. 357,079, dated February 1, 1887.

Application filed January 16, 1886. Serial No. 188,725. (No model.)

To all whom it may concern:

Be it known that we, HARRY B. GLEASON and WILLIAM H. H. CLAGUE, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Fire-Place Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to fire-place heaters intended for dwelling-houses, school-buildings, public halls, stores, offices, &c.

The invention consists in a fire-place having a depressed fire-pot and grate, a fuel-feeding apparatus and ash-pit extending below the floor of the room, and special connections by which steam and hot air may be used in heating, all substantially as hereinafter pointed out and claimed.

20 In the drawings, Figure 1 is a vertical longitudinal section about midway, looking from the front to rear of the fire-place, showing the general level of the parts with relation to the floors of the building, the lifts, the flues, and the tubing system for the water-heater. Fig. 2 is a rear view with parts of the hot-air apparatus removed and part in section, showing rear of water-back and the general arrangement of parts, as in Fig. 1. Fig. 3 is a vertical cross-section on broken line *xx*, Fig. 2, showing the fire-place and water and air heating apparatus and connections to the various rooms or floors, and showing also the ash-pit and draft-regulator. Fig. 4 is a front perspective of the fire-place proper. Fig. 5 is a rear perspective of the water-sections with parts broken away and thrown apart to show the flue-passages through and in rear of the water-back, the lower fire-pot sections being in contact. Fig. 6 is a perspective showing the grate and its operating mechanism detached. Fig. 7 is an enlarged perspective showing the mouth of the chute, hereinafter referred to, and the agitator. Fig. 8 is a detail plan showing how the air-flues are completed.

45 The numeral 1 indicates the ash-pit, which is preferably in the cellar or basement of the house, and is inclosed, so as to be free from danger and to prevent the escape of dust and
5c ashes. A door, 2, provides for the removal

of ashes. The ash-pit may be provided with a screen for the ashes.

A damper-door, 3, just below the grate 4 4 serves to admit air to support combustion, and is manipulated by rod 3^x, or from below. 55 The grate 4 4 is supported below the level of the main floor 5, and is connected with shaking apparatus above and below said floor.

The fire-pot 7 7 is preferably in horizontal sections, as shown, each section being a complete water-box and connected with hot-water or steam radiators, and also preferably with the water-back sections 8 8, &c., by a manifold, 9, and pipes, as 10, leading to radiators in various parts of the house. The main floor 65 may be heated by a radiator or stack, 11, conveniently arranged under floor 5 and connected with the water fire-box by pipe 13. The usual arrangements for securing water-supply and hot-water or steam circulation may 70 be adopted, the same forming no part of the present invention. A shield or grating, 6, prevents the escape of coal at the front of the fire-place.

The water-sections 8 8 are hollow, preferably of cast metal, and form the back and sides of the fire-place proper. The face toward the fire forms a parabolic radiator or reflector provided with flues or passages 14 14, &c., through which the smoke and products 80 of combustion pass. These passages 14 are simply arched recesses in the shell of the various sections forming the water-back, and the shell of the sections thus presents an enlarged or corrugated surface to the contained fluid. 85

The passages 14 are continued up the back of the water-sections 8 8, &c., the back passages 15 15 being preferably inclined alternately toward the sides, so that the rear flues are not vertical, but staggered. These flues 90 are largest in cross-section at the bottom, so as to be self-cleaning. These passages, preferably arched, as stated, may be completed into cylindrical flues by the application of a correspondingly-corrugated rear plate, or each 95 flue may be completed separately, or a flat plate applied in the rear of the water-back to inclose and complete the flues in half-round form. The flues are continued upward at 17 through the hot-air chamber 20 to the chim- 100

ney-flue 21, and the flues 16 16, &c., from the fire-pot sections 7 7 are carried in rear of chamber 20, which chamber 20 is thus made a hot-air chamber surrounding the water fire-box and water-back, and being itself nearly or quite inclosed by smoke-flues, as well as being traversed in its upper portion by smoke-flues.

A damper, 22, over the smoke-flues may be shifted so as to regulate the draft in usual manner.

The hot-air chamber 20 has passages or hot-air flues 23 leading upward at the sides of the smoke-flue 21, and these flues are provided with side passages, as 25, and registers, as 26, at such points in the upper rooms as may be desirable. The hot-air flues also conveniently contain the hot-water or steam pipes 10.

Air to supply the hot-air system enters from the cold-air box 28, or from the outside of the building, and passes around the water fire-box and water-back, receiving its heat by radiation from the hot water rather than from the burning coal. A damper, 29, serves to regulate the supply of cold air which can be introduced to be heated and passed upward.

The lower fire-pot section, 7, resting on the masonry A, forming the inclosure of the ash-pit, is firmly supported, and makes a solid foundation for the remaining fire-pot and water-back sections. The sections are each complete, and the corrugated walls of the sections form the smoke-passages, so that there is no necessity for the insertion of tubes through any section, yet a large heating-surface is provided.

The fire-pot being sunken below the floor, may have a grate of any convenient size without encroaching on the available space in the room to be heated. The fire-pot is preferably enlarged at its lower end, giving enlarged grate-surface and insuring a steady downward feed of coal in the fire-pot.

The air to support combustion is furnished from the cellar or basement, or from the outside of the building, and is not withdrawn from the room B above floor 5. So the air in cold-air box 28 is preferably furnished from the basement, as at 29, or from outside, and may be partly warmed by contact with hot-water pipes before entering the hot-air chamber 20.

The passages 30 30 at each side of the ash-pit serve for the reception of coal-lifts 31, which are hung on chains or cables 32, passing over pulleys, as 33, and counterweighted, as shown at 34; or the coal-lifts 31 may be raised in any other manner common to dumb-waiters.

The bottom 35 of the lift 31 is hinged, and when the lift is on a level with the inclined passage 36, leading into the fire-pot, the bottom may be tripped, so that the coal in the lift will feed down the inclined passage 36 into the fire-pot. The bottom of the coal-lift being a little wider than the passage 30, will not open, except when the lower end of the lift is above

the passage 36, when the edge of the bottom piece, 35, will rest on the plate forming the bottom of said passage, thus making a chute. The bottom 35 should be held closed by gravity-catch when the lift is lowered, which catch will be unclashed when the lift is raised into position to feed down the chute 36.

An agitator or stop, 39, at the mouth of chute 36 serves to cut off or increase the supply of coal through said chute. This agitator may be simply a swiveled bar with teeth thereon, and may be turned by a handle or key.

Partitions 37 cover the top of passages 30, so as to prevent the upward passage of cold air to flues 23.

Suitable doors at the bottom of passages 30 provide for the filling of the hods or lifts 31.

A recess, 40, just below the mantel 41, forms a receptacle for a curtain, 42, of asbestos or flexible metal. This curtain winds on roll 43, and may drop down in front of the fire to serve as a "blower," or draft-regulator.

The grate-sections 4 4 rock on journals 45, and levers 46 from said journals are joined by rod 47, and a pitman, 48, connects the rod with lever 49, which has its fulcrum at 50, and can be moved by handle 51, or the removable handle 52, working through a slot, 53, in the floor 5.

As has been explained, this fire-place heater derives its air for the support of combustion and for heating the chambers from a source outside the room in which the open fire is located. Consequently the air in that room is not rarefied or vitiated by overheating, while by means of the water system the distant portions of the room may be heated, thus producing an equal and healthful temperature throughout the room. The products of combustion pass first through the passages in the water-sections, thus imparting the first fierce heat of the fire to the water, so that the heat may be utilized to best advantage. After the smoke and gases have thus passed through the water-sections they come in contact with the walls of the air-heater and heat the air therein without exposing it to such an intense heat as to deprive it of its oxygen. The radiation from the water-sections also helps to heat the air, which is thus tempered to better advantage than is usual with hot-air heating apparatus.

The mechanism for feeding coal to the grate admits of the utmost cleanliness, as no coal need be carried through the room in which the mantel and the fire-place are located.

The sunken fire-pot secures a heating of the air strata near the floor of the room, and the parabolic face of the water-sections tends also to direct radiation of heat forward and well down in the room.

The fire-pot, being entirely below the level of the floor, can be quite surrounded by the water-chamber without closing the open front of the fire-place. All the surplus heat of the fire-pot can thus be absorbed, and the build-

ing at the same time protected from danger of fire.

We claim—

1. A water fire-box for a fire-place heater, 5 said fire-box mainly below the level of the floor of the room in which the fire-place is located, and surrounding the fire-pot on all sides.
2. An open fire-place heater having its walls composed of hollow sections to contain water, 10 said sections being connected by exterior pipes and having passages between them for smoke, &c., substantially as described.
3. The combination, in a fire-place heater, of a series of horizontal water-sections, each 15 section having smoke-passages formed by depressions in its shell, and having depressions in its rear surface, which, in connection with the inclosing-casing, constitute smoke-flues, as set forth.
4. The combination, in an open fire-place 20 heater, of a water fire-box and water-sections constituting the sides and back of the heater, said fire-box and back-sections being connected together by a system of circulating-pipes, substantially as described. 25
5. An open fire-place heater having a parabolic water-back composed of independent sections having smoke-passages between the same, substantially as described.
6. A fire-place heater having a water-back 30 and an air-heating chamber, and smoke-flues which pass first through the water-back and are continued in contact with the air-chamber, the combination being and operating substantially as described. 35
7. The water-back sections having depressions in their rear surfaces, in combination with the air-heating chamber bearing against said sections, so that the depressions form smoke-flues, substantially as described. 40
8. The combination, with a fire-place heater having a chute leading into the fire-pot, of a lift in proximity to and opening into said chute.
9. The combination, with an open fire-place 45 heater having a side chute, of an elevator-passage leading from a lower floor to the level

of the fire-place, a coal-lift, and mechanism, substantially as described, by which the lift may be raised and lowered, as set forth. 50

10. In combination with a fire-place heater having a chute leading to the fire-pot, an elevator-passage in proximity thereto, a lift in the passage, and a hinged piece on the lift, which piece forms a continuation of the chute 55 when open, as set forth.

11. In combination with a fire-place heater having an ash-pit below the floor of the room in which the heater is located, a coal-elevator in proximity to said ash-pit, both elevator 60 and ash-pit opening into the lower room, so that the coal may be supplied and ashes removed from the basement or lower floor, as set forth.

12. In combination with a fire-place heater 65 having a chute and a coal-elevator communicating therewith, an agitator in the chute by which the coal-supply may be regulated.

13. The combination, with a fire-place heater having sunken fire-pot, of a grate, and 70 levers connected with the grate, extending both above and below the floor.

14. In combination with the fire-pot, the cast sections constituting the water-back, each section having arched passages through its 75 bottom and flat on top, whereby the flat top of one section forms the bottom or floor of the arched passages in the next higher section, the sections being connected by external pipes, substantially as shown and described. 80

15. The cast sections constituting the water-back, the sections having arched passages from front to rear, as set forth, and having depressed flues in the rear portion, the depressions in adjacent sections alternately inclined 85 from right to left and from left to right, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HARRY B. GLEASON.

WILLIAM H. H. CLAGUE.

Witnesses:

SHERMAN D. RICHARDSON,
JACOB SPAHN.