J. J. NEWTON.

WATER HEATER,

APPLICATION FILED MAY 13, 1910.

983,753.

Patented Feb. 7, 1911.

3 SHEETS—SHEET 1.

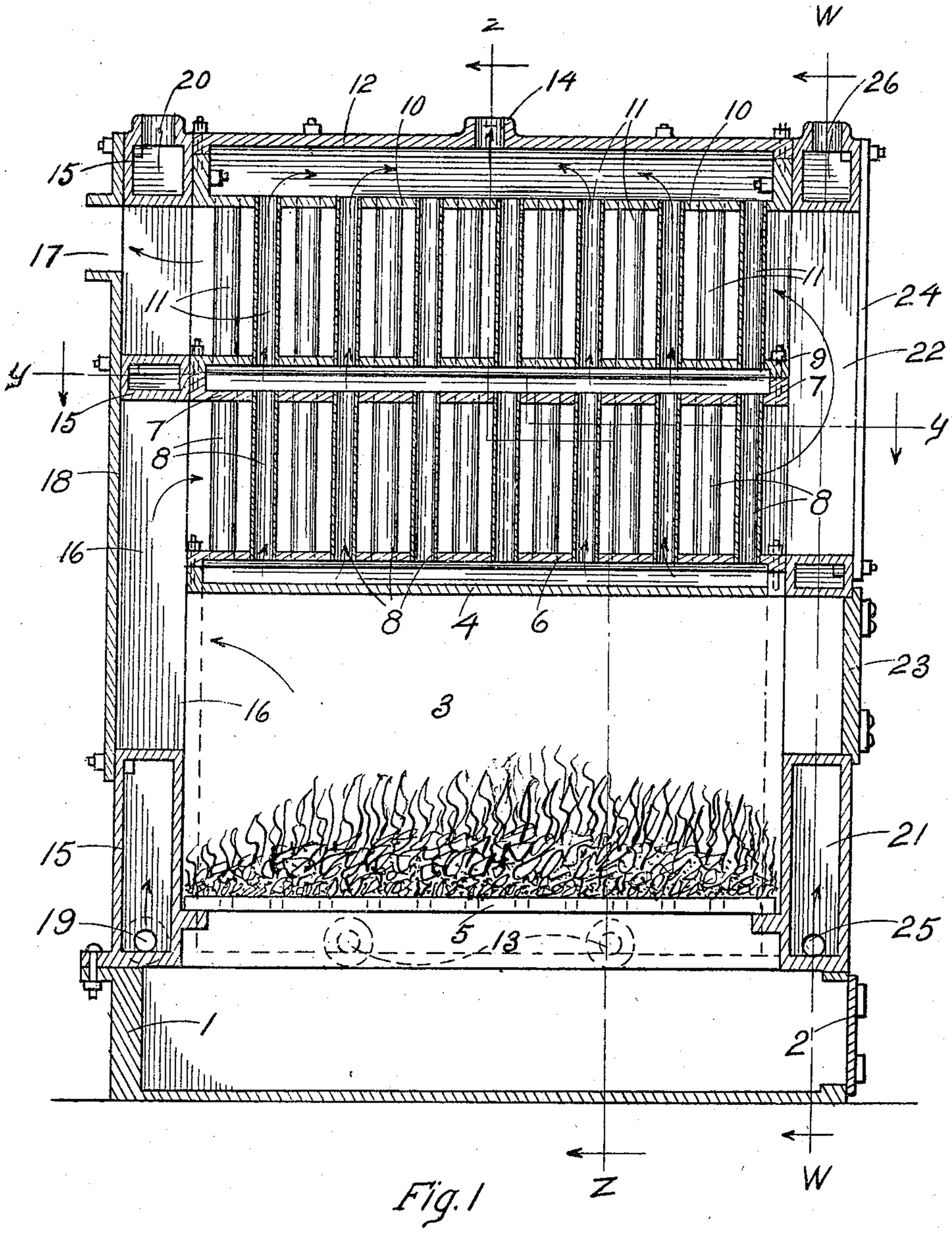

Fig. 1

Witnesses

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3 SHEETS—SHEET 2.

Fig. 3

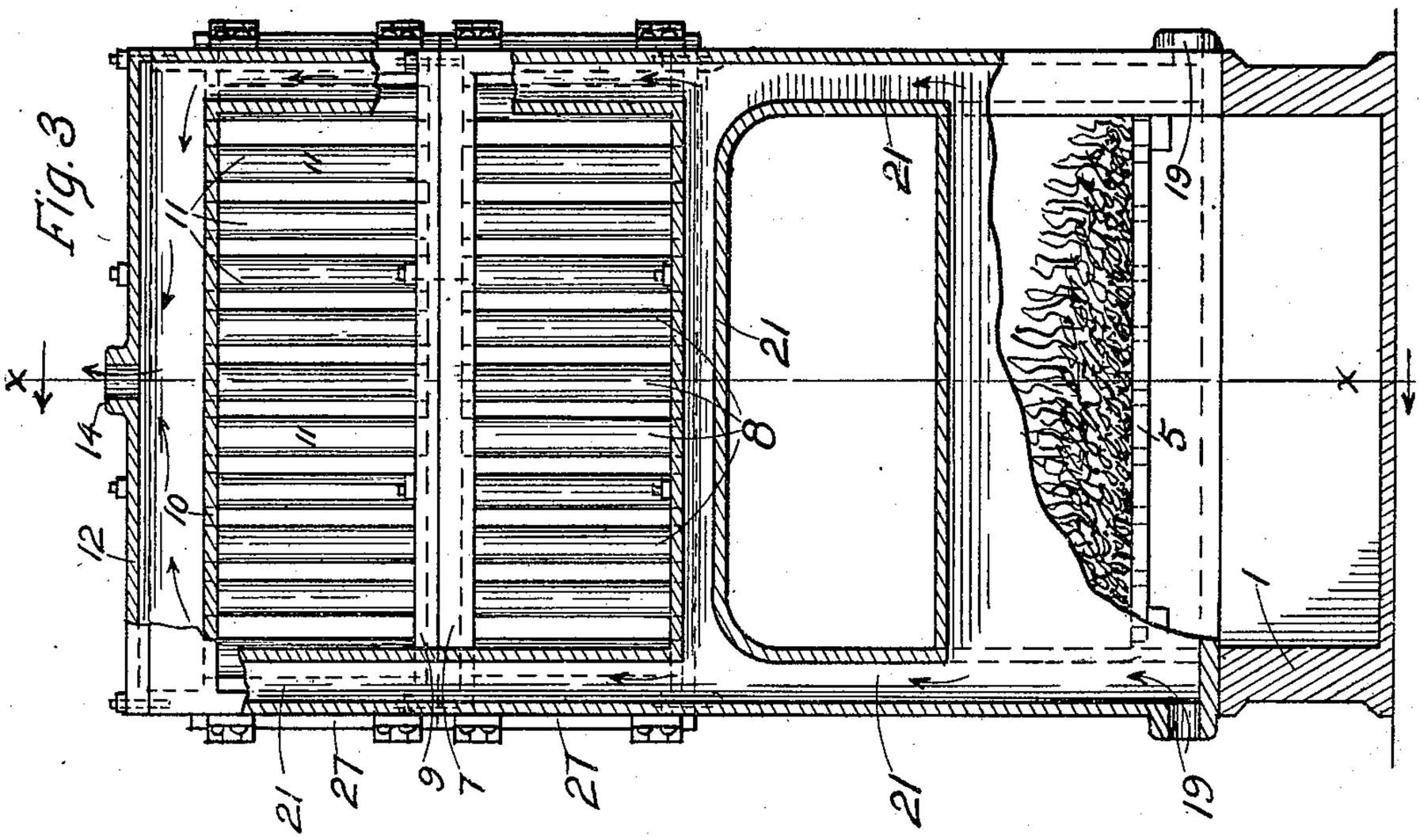
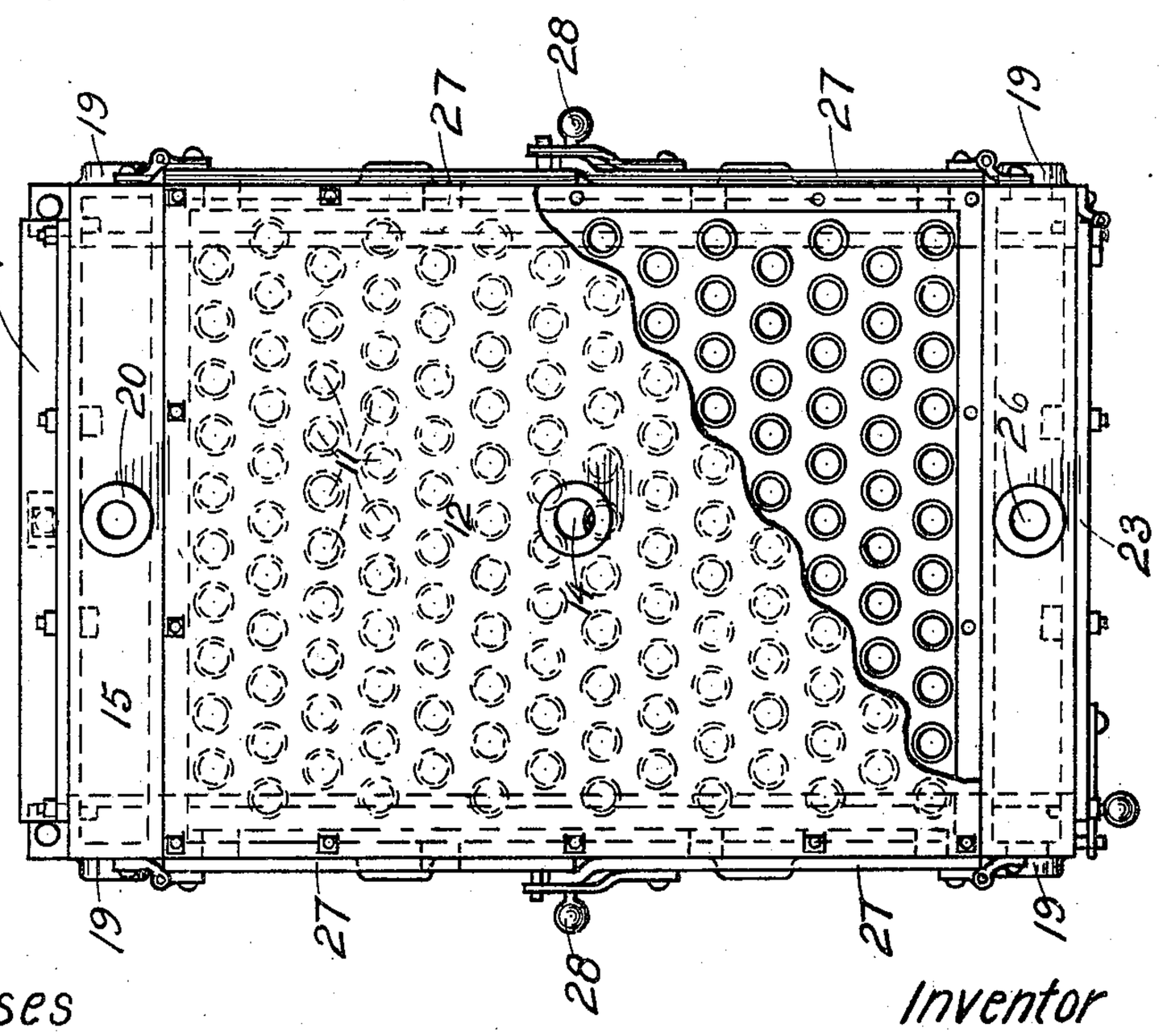


Fig. 2



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3 SHEETS—SHEET 3.

Fig. 5

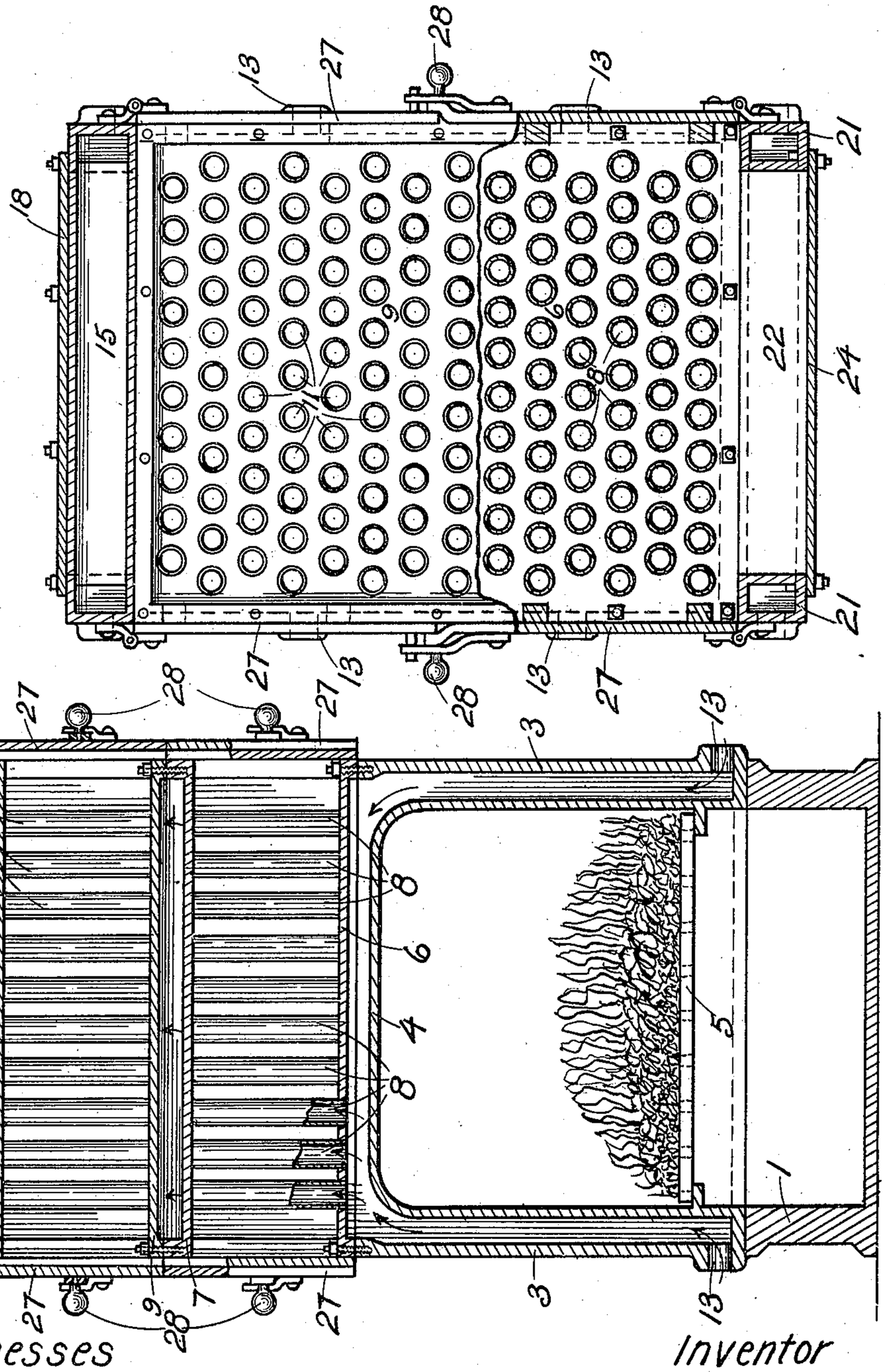

Fig. 4

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN J. NEWTON, OF ELIZABETH, ILLINOIS.

WATER-HEATER.

983,753. Specification of Letters Patent. Patented Feb. 7, 1911.

Application filed May 13, 1910. Serial No. 561,208.

To all whom it may concern:

Be it known that I, JOHN J. NEWTON, a citizen of the United States, residing at Elizabeth, county of Jo Daviess, and State of Illinois, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

My invention relates to improvements in hot water heaters and has for its object the provision of an improved hot water heater which shall be of simple construction and efficient in operation.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a vertical section of a heater embodying my invention, Fig. 2, a top plan view of the same with a portion of the cover plate broken away, Fig. 3, a section on line *w—w* of Fig. 1 with portions broken away, Fig. 4, a section on line *z—z* of Fig. 1 with portions broken away, and Fig. 5, a horizontal section on line *y—y* of Fig. 1.

The preferred form of construction as illustrated in the drawings comprises a lower ash-pit chamber 1 open at the top and provided with a hinged front door 2 for access thereto. Secured above chamber 1 is a member substantially U-shaped in cross section and having its sides 3 hollow and its top portion 4 recessed and in open communication with said hollow sides, the whole constituting the side walls and top of the combustion chamber, which contains a suitable grate 5 for the combustion of fuel. Secured above said combustion chamber member is a lower gas chamber member consisting of a lower recessed plate 6 and an upper recessed plate 7 having their recesses connected by vertical thin copper water tubes 8. The parts are secured together with the recess in the lower plate 6 registering with the recess in the top plate 4 thus forming a horizontal hollow partition in communication with the hollow sides of and constituting the top of the combustion chamber. Secured above said lower gas chamber member is an upper gas chamber member consisting of a lower recessed plate 9 and an upper recessed plate 10 having their respective recesses connected together by means of vertical thin copper water tubes 11. Said members are secured together with the recess in the lower plate 9 registering with the recess in the upper plate 7 thus forming a hollow partition intermediate the lower and upper gas chambers. Upper plate 10 is closed by a recessed cover plate 12 thus forming a hollow top for the heater. Side walls 3 are provided with water supply openings 13 for the accommodation of water supply connections and cover plate 12 is provided with a central opening 14 for the accommodation of water discharge connections. By this construction it will be observed that the combustion chamber is formed with hollow water filled side walls and top having open and free connection with the hollow top of the heater through the medium of tubes 8, the intermediate partition and tubes 11.

The rear of the heater consists of a hollow wall member 15 having a passage 16 connecting the rear of the combustion chamber with the lower gas chamber and a draft connection 17 for connecting the rear of the upper gas chamber with a chimney or other source of draft. Access is given to passage 16 and the rear of the upper gas chamber by means of a removable plate 18. The said rear wall is provided at its lower portion with water supply openings 19 and at its upper portion with water discharge openings 20.

The front of the heater is formed by a hollow front wall member 21 having a passage 22 connecting the front ends of the lower and upper gas chambers and a hinged fuel door for access to the combustion chamber. The said front wall member is provided at its lower portion with water supply openings 25 and at its upper portion with a water supply opening 26. The sides of the upper and lower gas chambers are closed by doors 27 hinged to said rear and front walls and provided with latching 28 at their meeting ends. Water discharge openings 14, 20 and 26 may all be connected with a single heating system or, if desired, with separate systems.

By the construction as above set forth it will be observed that the gaseous products of combustion will be drawn forwardly through the lower gas chamber and rearwardly through the upper gas chamber thus subjecting water tubes 8 and 11 to thorough contact with said gases. The said water tubes being of thin copper, which is a good conductor of heat, will extract the maxi-

mum quantity of heat from the products of combustion during their passage and the vertical disposition of said tubes will induce rapid circulation of the water. Ready access to the parts for cleaning is given through the removable plates and hinged side doors.

While I have illustrated and described the preferred form for carrying my invention into effect this is capable of variation or modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the exact details set forth but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A hot water heater having a lower ash-pit chamber open at the top and provided with a front door; an integral member, substantially inverted-U-shaped in cross section, having hollow sides and a recessed top in communication with said hollow sides, secured on top of said ash-pit chamber and constituting the sides and top of a combustion chamber; a suitable grate in said combustion chamber; a cover plate for the top of said U-shaped member; a gas chamber above said combustion chamber; draft connections with said gas chamber; and water connections for said sides and top of said combustion chamber, substantially as described.

2. A hot water heater having a lower ash-pit chamber open at the top and provided with a front door; an integral member, substantially inverted-U-shaped in cross section, having hollow sides and a recessed top in communication with said hollow sides, secured on top of said ash-pit chamber and constituting the sides and top of a combustion chamber; a suitable grate in said combustion chamber; a cover plate for the top of said U-shaped member; a gas chamber above said combustion chamber; draft connections with said gas chamber; a hollow top for said gas chamber; and water connections with the sides of said combustion chamber and with the top of said gas chamber, substantially as described.

3. A hot water heater having a lower ash-pit chamber, open at the top and provided with a front door; an integral member, substantially inverted-U-shaped in cross section, having hollow sides and a recessed top in communication with said hollow sides, secured on top of said ash-pit chamber and constituting the sides and top of a combustion chamber; a suitable grate in said combustion chamber; a lower gas chamber member comprising lower and upper recessed plates having their recesses connected by vertical tubes and mounted on top of said combustion chamber forming a hollow horizontal partition at the top of the combustion chamber; an upper gas chamber member comprising lower and upper recessed plates having their recesses connected by vertical tubes and mounted on top of said lower gas chamber member forming a hollow horizontal intermediate partition; a cover plate secured over the top of said upper gas chamber member to form a hollow top; water supply connections for the lower portion of the combustion chamber walls; a water discharge connection for the heater top; a rear heater wall having a passage connecting the lower gas chamber member and the combustion chamber and a draft connection for the upper gas chamber; a front wall having a passage connecting said gas chambers and a fuel door for the combustion chamber; and hinged side doors for said gas chambers, substantially as described.

4. A hot water heater having a lower ash-pit chamber, open at the top and provided with a front door; an integral member, substantially inverted-U-shaped in cross section, having hollow sides and a recessed top in communication with said hollow sides, secured on top of said ash-pit chamber and constituting the sides and top of a combustion chamber; a suitable grate in said combustion chamber; a lower gas chamber member comprising lower and upper recessed plates having their recesses connected by vertical tubes and mounted on top of said combustion chamber forming a hollow horizontal partition at the top of the combustion chamber; an upper gas chamber member comprising lower and upper recessed plates having their recesses connected by vertical tubes and mounted on top of said lower gas chamber member forming a hollow horizontal intermediate partition; a cover plate secured over the top of said upper gas chamber member to form a hollow top; water supply connections for the lower portion of the combustion chamber walls; a water discharge connection for the heater top; a hollow rear heater wall having a passage connecting the lower gas chamber member and the combustion chamber and a draft connection for the upper gas chamber; a hollow front heater wall having a passage connecting said gas chambers and a fuel door for the combustion chamber; water supply connections with the lower portions of said rear and front walls; water discharge connections with the upper portions of said rear and front walls; and hinged side doors for said gas chambers, substantially as described.

5. A hot water heater having a lower ash-pit chamber, open at the top and provided with a front door; a member, substantially U-shaped in cross section, having hollow sides and a recessed top in communication with said hollow sides, secured on top of said

ash-pit chamber and constituting the sides and top of a combustion chamber; a suitable grate in said combustion chamber; a lower gas chamber member comprising lower and upper recessed plates having their recesses connected by vertical tubes and mounted on top of said combustion chamber forming a hollow horizontal partition at the top of the combustion chamber; an upper gas chamber member comprising lower and upper recessed plates having their recesses connected by vertical tubes and mounted on top of said lower gas chamber member forming a hollow horizontal intermediate partition; a cover plate secured over the top of said upper gas chamber member to form a hollow top; water supply connections for the lower portion of the combustion chamber walls; a water discharge connection for the heater top; a hollow rear heater wall having a passage connecting the lower gas chamber member and the combustion chamber and a draft connection for the upper gas chamber; a hollow front heater wall having a passage connecting said gas chambers and a fuel door for the combustion chamber; water supply connections with the lower portions of said rear and front walls; water discharge connections with the upper portions of said rear and front walls; a pair of hinged doors constituting each of the sides of said gas chambers, said doors being hinged to said rear and front walls and meeting at the center; and a latch for the meeting ends of said doors, substantially as described.

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

JOHN J. NEWTON.

Witnesses:
DAVID HITT,
G. H. WILLIAMS.