

J. N. MIDDENDORF.
WATER HEATER.
APPLICATION FILED APR. 30, 1910.

973,536.

Patented Oct. 25, 1910.

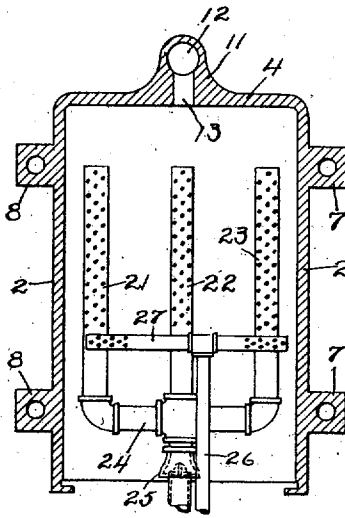


Fig. 2

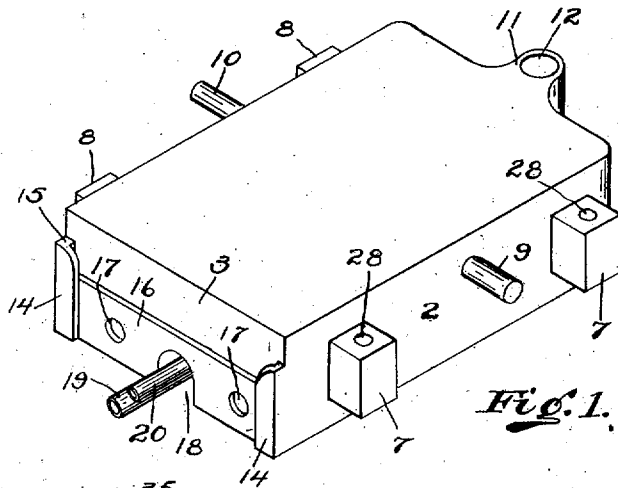


Fig. 1.

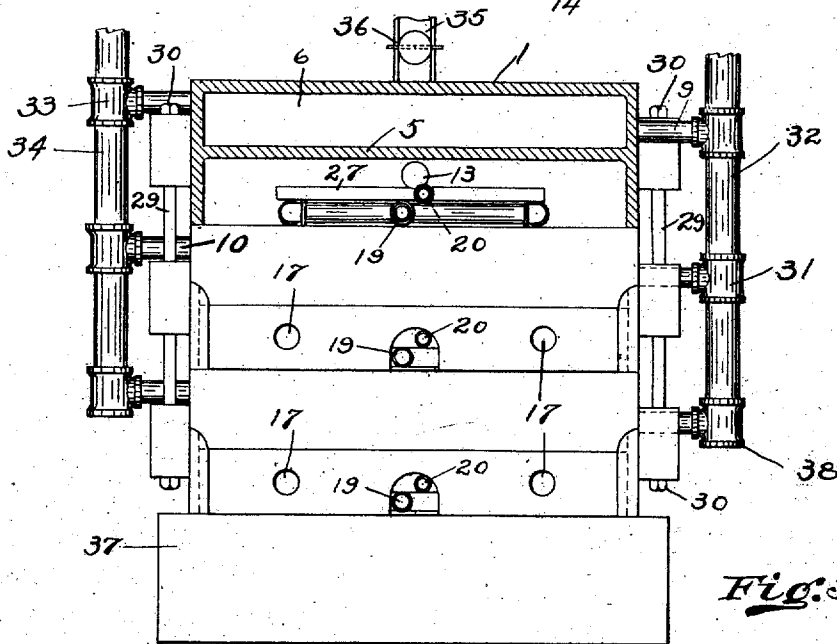


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN N. MIDDENDORF, OF COVINGTON, KENTUCKY.

WATER-HEATER.

973,536.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed April 30, 1910. Serial No. 558,603.

To all whom it may concern:

Be it known that I, JOHN N. MIDDENDORF, a citizen of the United States, and a resident of the city of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Water-Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The object of my invention is to provide a simple, cheap and economical heater for heating water by the direct gas flame for use in hot water circulating systems for the heating of houses and the like, and the invention consists of that certain novel construction to be hereinafter more particularly pointed out and claimed, in which the heater is made up of similar sections or units, so that as many sections as may be required for any desired system may be readily and easily furnished and connected together,—each unit being provided with a gas burner for the direct separate heating of each section.

The several features of my invention and the various advantages resulting from their use conjointly or otherwise will be apparent from the following description and claims.

In the drawings,—Figure 1 is a perspective view of one of the complete heater sections. Fig. 2 is a horizontal section taken just below the water compartment of one of the units. Fig. 3 is a front elevation, partly in vertical section, of three of the heating units united together to form a complete heater.

Each heating unit is constructed of metal, preferably formed in a single piece and preferably rectangular in shape, in which 1 is the top; 2, 2, the side walls; 3, the front wall, and 4, the rear wall of the section. Each section is also provided with the central partition 5, forming with the other walls a water compartment 6. The lower portion of the section is open at the bottom. Four lugs 7, 7, and 8, 8, are formed integral with the side walls 2, and apertures are formed through each side wall into the water compartment 6 for securing the inlet pipe 9 and the outlet pipe 10 for each water compartment. The rear wall is also provided with a boss 11 integral with the rear wall, and an opening 12 is formed through the boss opening at 13 into the lower half

of the heater section. The side walls of each section for the lower half thereof are extended forward and formed with the flange 14, 14, at each side, leaving a groove 15, 15, at each side edge in front for the reception and holding of a metal slide plate 16. This slide plate is intended to cover the lower compartment in front of which the burner is located. Suitable openings 17, 17, are provided for this plate in which the usual damper is mounted for regulating the size of the opening, and the middle portion of the slide is cut away at 18, to allow for the passage of the gas supply pipe 19 and the pilot pipe 20 for the gas burner. The gas burner is located directly underneath the bottom plate of the water compartment, and any of the usual forms of gas burners may be provided. The one which I have by preference illustrated consists of three sections of gas pipe 21, 22 and 23, connected together at the front by a header 24 and suitable couplings, and provided with the air mixer 25.

26 is a small gas supply pipe with the section 27 leading to each of the burner sections to serve as a pilot for maintaining a low flame when the main burner is turned off, and each section of the burner and the pilot is provided with suitable openings for the passage of the gas.

All of the sections are made entirely alike, and it will be evident from the foregoing description that as many sections as desired may be readily and easily put together to form a complete heater of the desired capacity.

The lugs 7, 7, and 8, 8, are provided with vertical openings 28, which register with each other when one section is placed on top of another section, 29, 29, are tie rods which are passed through these openings, and the sections are clamped tightly together by the tightening nuts 30, 30, on each end of each tie rod. The inlet pipes 9 of each section are connected by tees 31 with the headers 32, and on the opposite sides the outlet pipes 10 are connected by the tees 33 with the header 34. At the back or rear of the header sections, the bosses 11 with the openings 12 therethrough register with each other, so that through the openings 13 there will be a vent pipe for each burner, and to the uppermost section the ordinary vent pipe will be secured, this pipe carrying if desired a damper 36.

It will be preferable to provide a suitable foundation block 37 for the complete heater, and the return pipe from the hot water circulating system will by preference be connected to the lowermost tee 38 on the inlet pipe side, and the outlet to the hot water system will be connected to the uppermost tee on the outlet side of the heater.

With this construction, as many of the heating units as desired may be readily put together, and each unit will be furnished with its own burner with direct flame onto its individual water compartment.

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

1. A water heater formed from a plurality of similar unit sections, each section forming a complete heater comprising a water compartment and a gas burner compartment underneath the water compartment, inlet and outlet pipes for each water compartment with pipe couplings for connecting together the inlet pipes and for connecting together the outlet pipes, lugs on each section with openings registering with each other and tie rods to pass through said lugs to bind the sections together.

2. A water heater formed from a plurality of similar sections, each section comprising a water compartment and a gas burner compartment underneath the water compartment, inlet and outlet pipes for each water compartment with headers for connecting together the inlet pipes and for connecting together the outlet pipes, each burner compartment having a vent opening with vertical passageway therethrough at the rear, and

with the vertical passages of each section registering with each other when the sections are assembled together to form a continuous vent pipe for the series of burners.

3. A water heater formed from a plurality of similar sections, each section comprising a hollow rectangular member to form a water compartment with depending lugs to form a burner compartment, each burner compartment having a vent opening with vertical passageway therethrough at the rear, and with the vertical passages of each section registering with each other when the sections are assembled to form a continuous vent pipe for the series of burners.

4. A water heater formed from a plurality of similar unit sections, each section forming a complete heater comprising a water compartment and a gas burner compartment underneath the water compartment, inlet and outlet pipes for each water compartment with pipe couplings for connecting together the inlet pipes and for connecting together the outlet pipes, lugs on each section with openings registering with each other and tie rods to pass through said lugs to bind the sections together, each burner compartment having a vent opening with vertical passageway therethrough at the rear, and with the vertical passages of each section registering with each other when the sections are assembled to form a continuous vent pipe for the series of burners.

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Attest:

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