(No Model.) 4 Sheets—Sheet 1.

S. H. PAXTON.

HOT WATER HEATER.

No. 588,003. Patented Aug. 10, 1897.

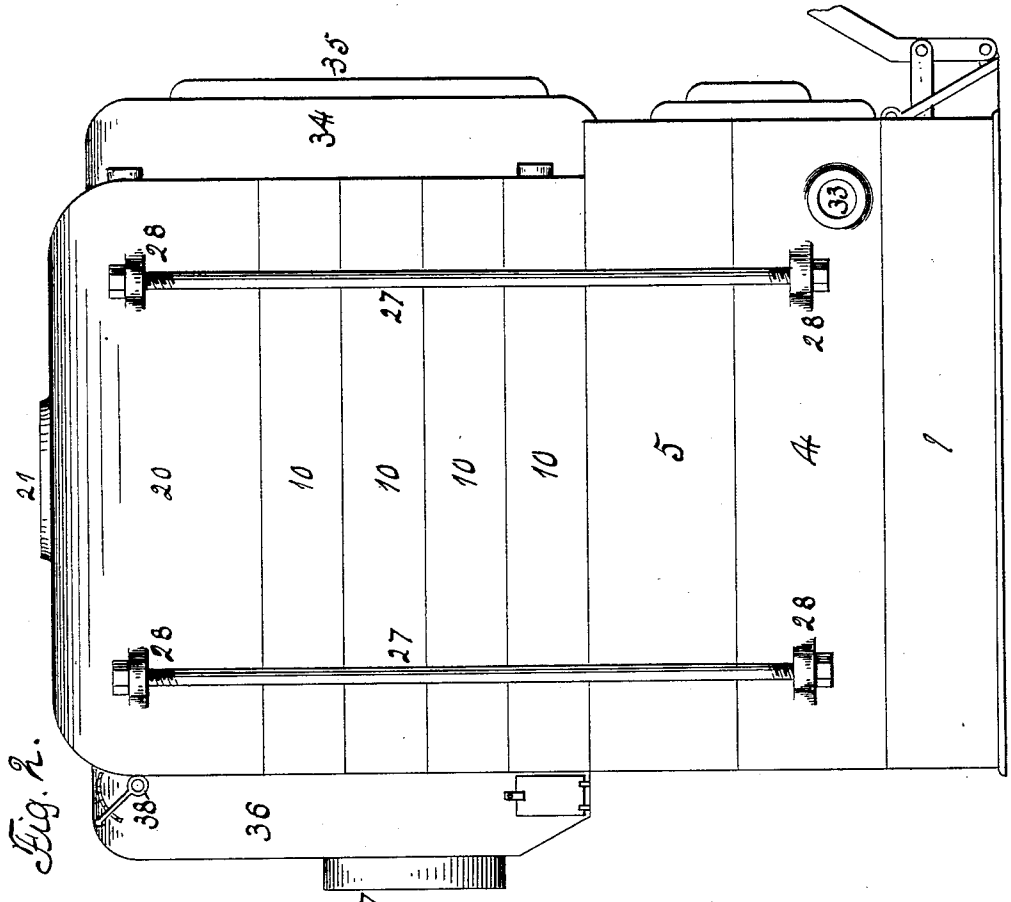


Fig. 2.

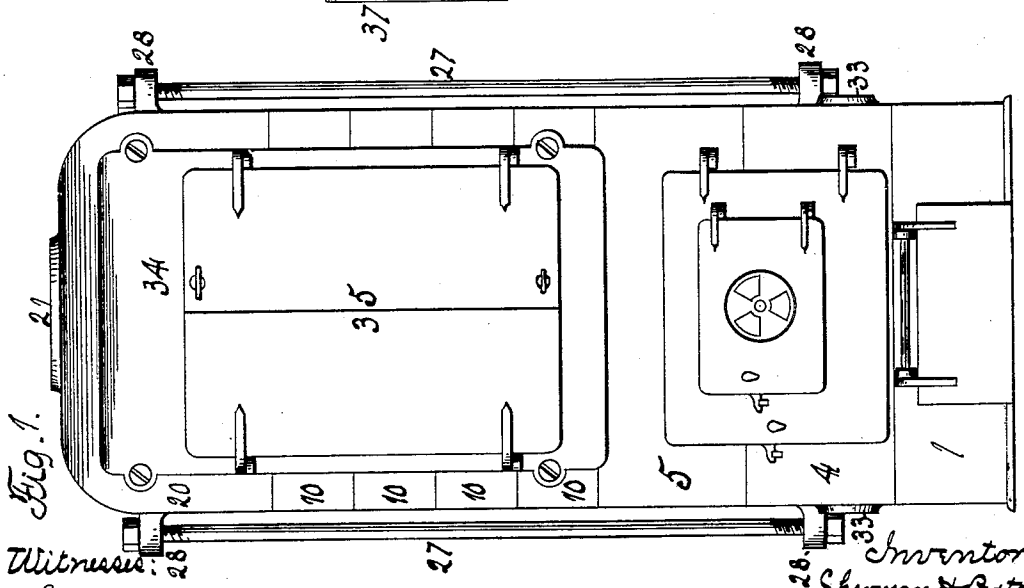


Fig. 1.

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S. H. PAXTON.

HOT WATER HEATER.

No. 588,003. Patented Aug. 10, 1897.

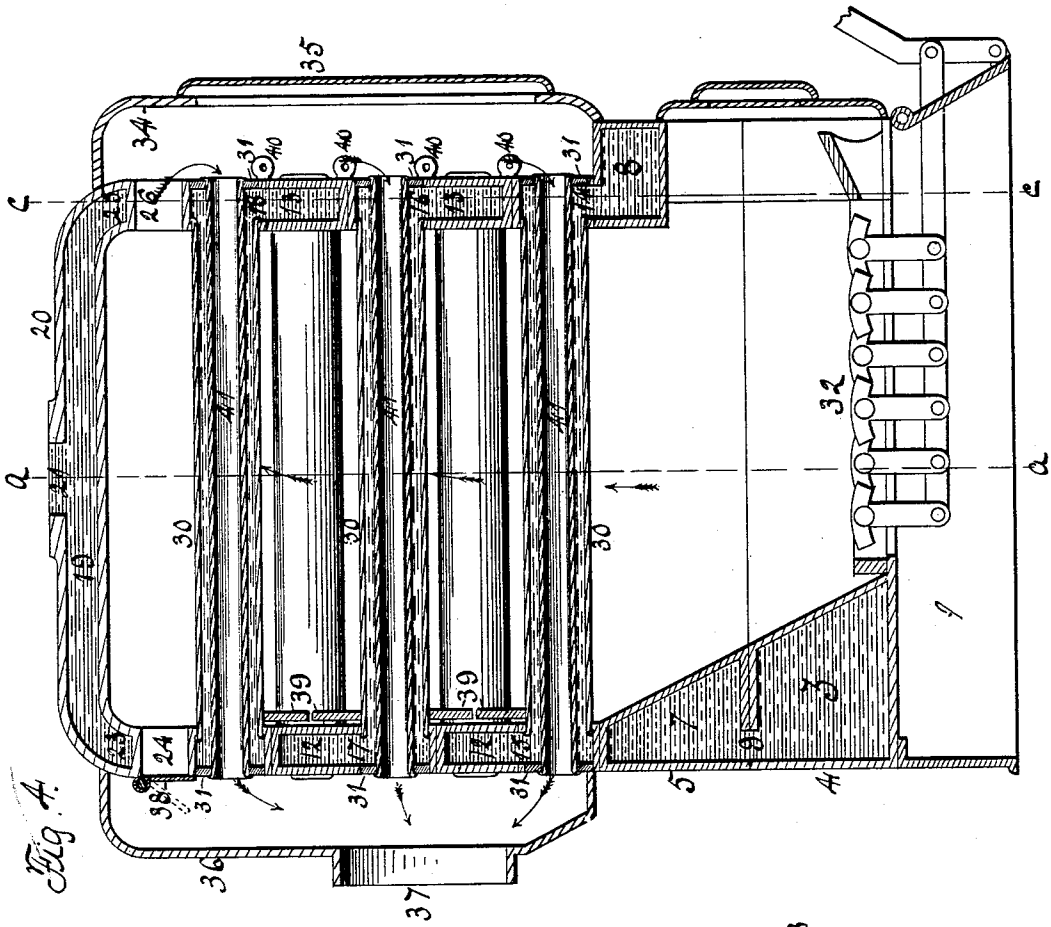


Fig. 4.

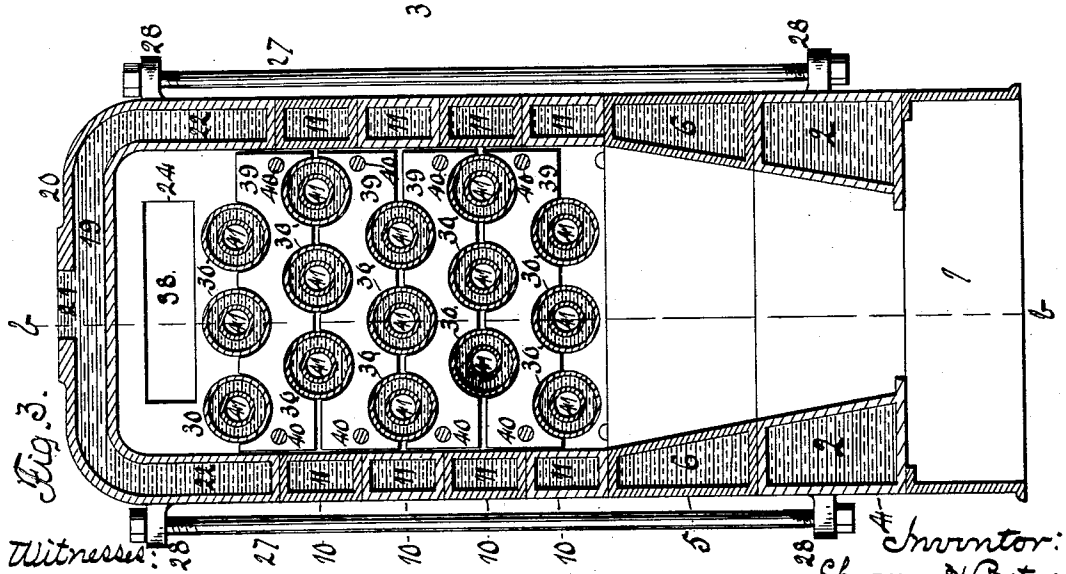


Fig. 3.

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S. H. PAXTON.

HOT WATER HEATER.

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Fig. 5.

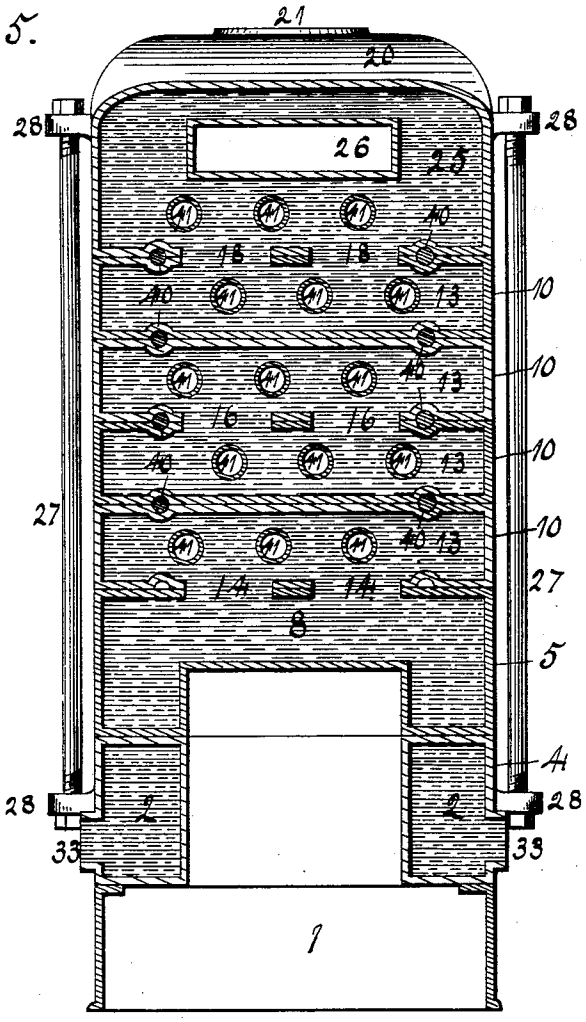
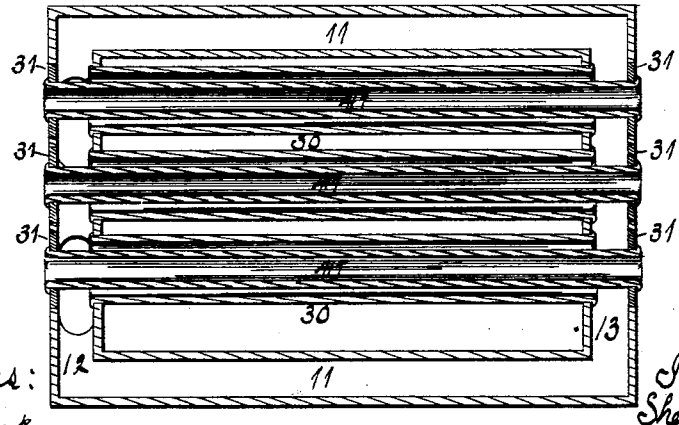


Fig. 6.



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S. H. PAXTON.

HOT WATER HEATER.

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Fig. 7.

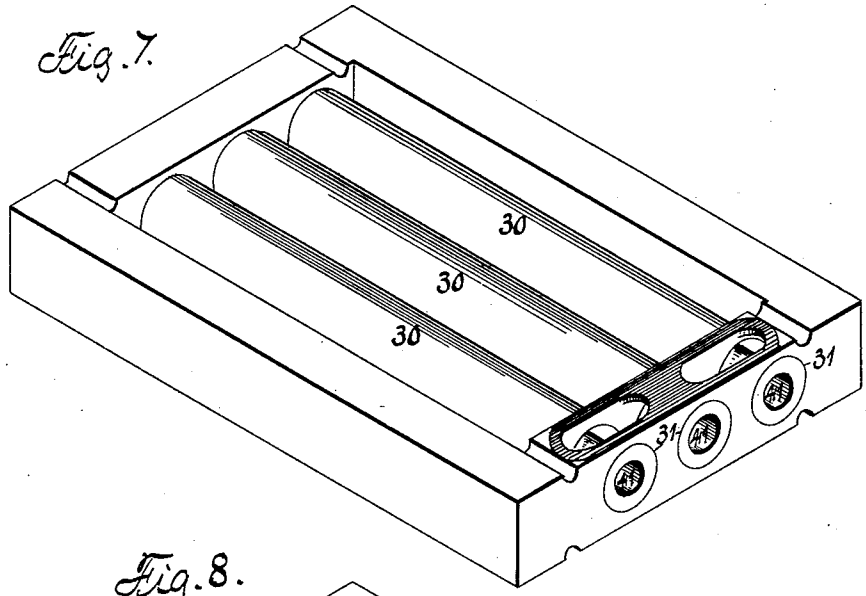


Fig. 8.

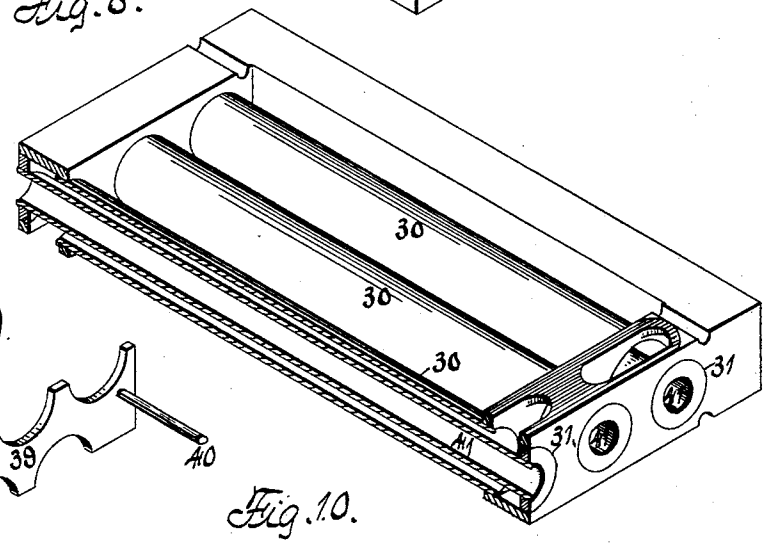


Fig. 9.

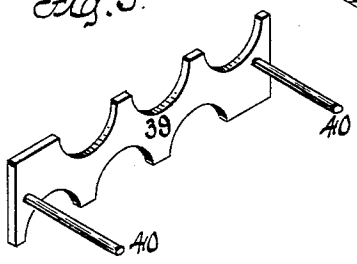
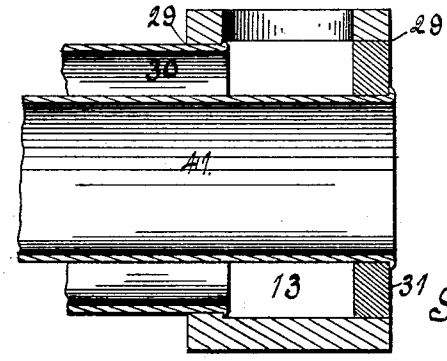


Fig. 10.



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UNITED STATES PATENT OFFICE.

SHERMAN H. PAXTON, OF ROCKFORD, ILLINOIS.

HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 588,003, dated August 10, 1897.

Application filed March 29, 1897. Serial No. 629,858. (No model.)

To all whom it may concern:

Be it known that I, SHERMAN H. PAXTON, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Hot-Water Heaters, of which the following is a specification.

This invention relates to that class of water-heaters in which horizontal sections are employed having a communication with each other in order that the water contained therein may traverse the various sections and be discharged at the highest and returned at the lowest point of the heater.

In the accompanying drawings, Figure 1 is a front elevation of my improved heater. Fig. 2 is a side elevation. Fig. 3 is a transverse vertical section on dotted line *a*, Fig. 4. Fig. 4 is a lengthwise vertical section on dotted line *b*, Fig. 3. Fig. 5 is a transverse vertical section on dotted line *c*, Fig. 4. Fig. 6 is a horizontal central section of one of the intermediate sections. Fig. 7 is an isometrical representation of one of the intermediate sections. Fig. 8 is an isometrical representation of one of the intermediate sections partially in section. Fig. 9 is an isometrical representation of the flue-scraper. Fig. 10 is an enlarged view of one end of an intermediate section, showing the connection of the flues therewith.

The heater is composed of a top section, two lower sections, and a series of intermediate sections suitably joined and held connected, each being of rectangular form.

The ash-receptacle 1 is of the same size and form as the upper section, and upon it rests a fire-chamber 4, composed of the side water-spaces 2, and rear end water-space 3. Upon this fire-chamber is located a combustion-chamber 5, composed of the side water-spaces 6, rear water-space 7, and front water-space 8. A communication is formed between these two chambers through the rear openings 9. Each of the intermediate sections 10 is composed of the side water-spaces 11, rear end water-space 12, and front water-space 13. A communication is formed between the combustion-chamber and first intermediate section through the opening 14 at the front end of the heater. A communication is formed between the first and second intermediate section through the rear opening 15, between the second and third intermediate section through the front opening 16, and between the third and fourth intermediate section through the rear opening 17.

The top 20 is composed of a top water-space 19 and outlet 21, side water-spaces 22, rear water-space 23, having an opening 24, and a front water-space 25, having an opening 26. A communication is formed between the top and top intermediate section through the openings 18 at the front end of the heater.

Rods 27, passing through ears 28, two on each side of the heater, receiving nuts upon their screw-threaded ends, bind the various sections of the heater together.

Each intermediate section and top is provided with a series of double flues extending in the lengthwise direction of the sections. One end of one of the intermediate sections is shown enlarged at Fig. 10, in which the end walls are provided with openings 29, one for each double flue. The outer flue 30 is passed through the opening at one end of the section and both ends expanded in position against the inner wall of the section. A ring 31 is driven and expanded into each opening, making a water-tight joint. An inner flue 41 is located centrally of the outer flue and of a length equal to the section having its ends expanded in connection with the outer walls of the rings, making a water-tight joint.

The water circulation is as follows: The heater and heating system being filled with water, fire is started in the fire-chamber, which supports a grate 32. As the water becomes heated it will pass out through the top outlet 21, and when cold it will enter the heater through the openings 33, located near the front of the fire-chamber, and as the cold water becomes heated it will traverse through the various sections from end to end, passing between the inner and outer flues, also through the side water-spaces of the various sections, the water being constantly on the rise. A front 34 is secured to the front end of the heater and supports doors 35. To the rear end of the heater is secured a hood 36, having a smoke-outlet 37. A damper 38 is provided for the opening 24 in the rear end of the top. In starting the fire the damper is held open, allowing a direct draft upward

between the outside flue of the series and through the opening 24 direct to the outlet 37, and after the fire is well under way the damper is closed and the products of combustion will pass through the opening 26 into the space formed by the front 34, and will pass through the inner flue of the double flues to the smoke-outlet, as shown by the arrows in Fig. 4. This arrangement allows the heat and smoke to come in contact with the inner walls of the various sections, to pass up between the outer flue of the double flues and through the inner flue, thereby imparting the greatest heat possible to the water.

The meeting faces of the sections at the openings between the sections are made water-tight by suitable packing. A scraper 39 (shown at Fig. 9) is located between each series of flues, having rods 40 extending into the space formed by the front, and by means of which the scrapers can be moved along the flues, removing the soot therefrom.

I claim as my invention—

In a heater, the combination of a series of sections of rectangular form, the walls of each of the intermediate sections forming water-spaces, the sections having a water communication with each other, an outer flue connecting two opposite walls and communicating with the water-spaces, an inner flue connecting the outer walls, the outer walls having openings within which are secured rings supporting the ends of the inner flue.

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