

No. 826,907.

PATENTED JULY 24, 1906.

F. E. STILWELL.  
HEATER.

APPLICATION FILED MAR. 29, 1905.

Fig. 1.

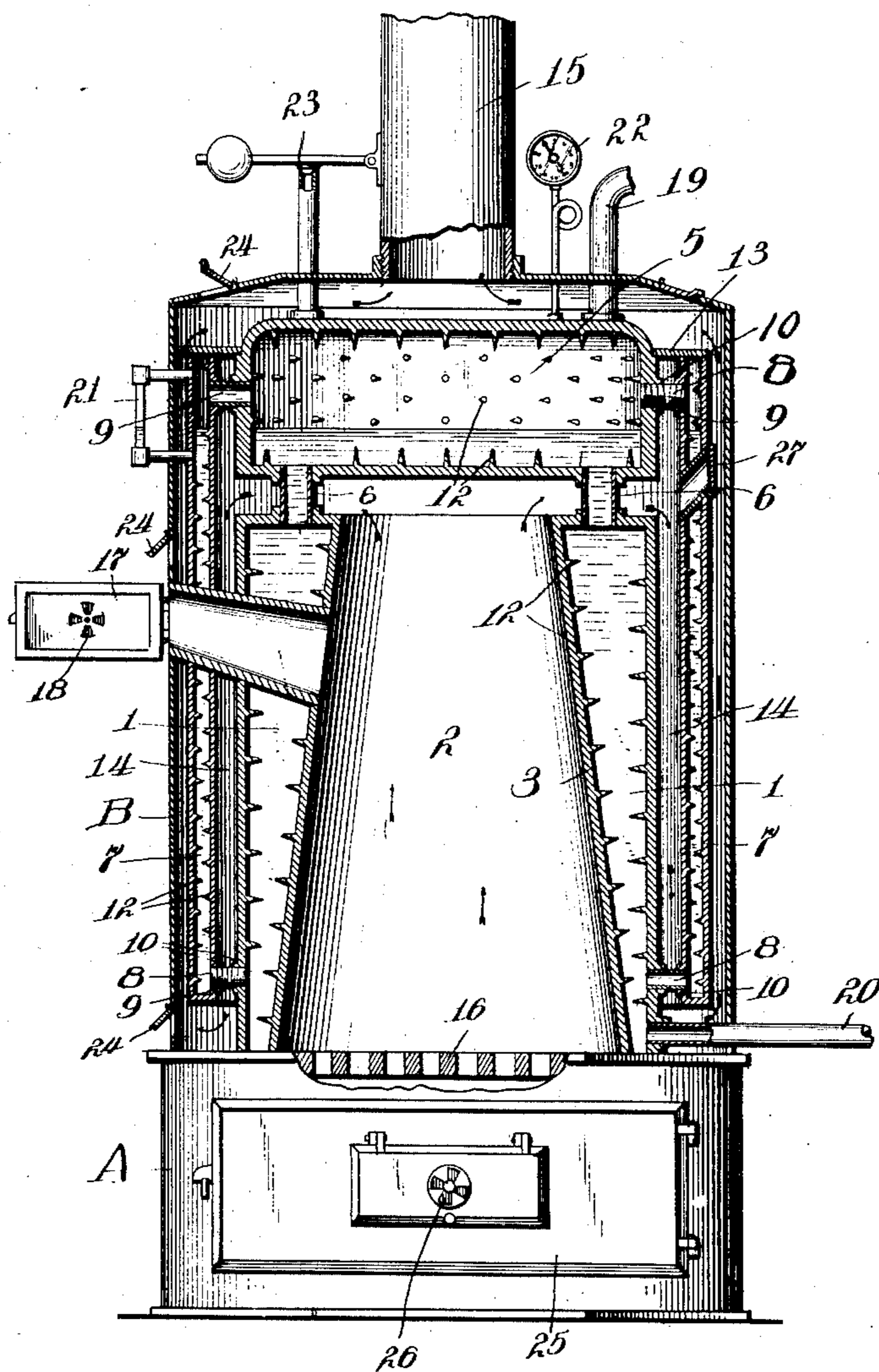
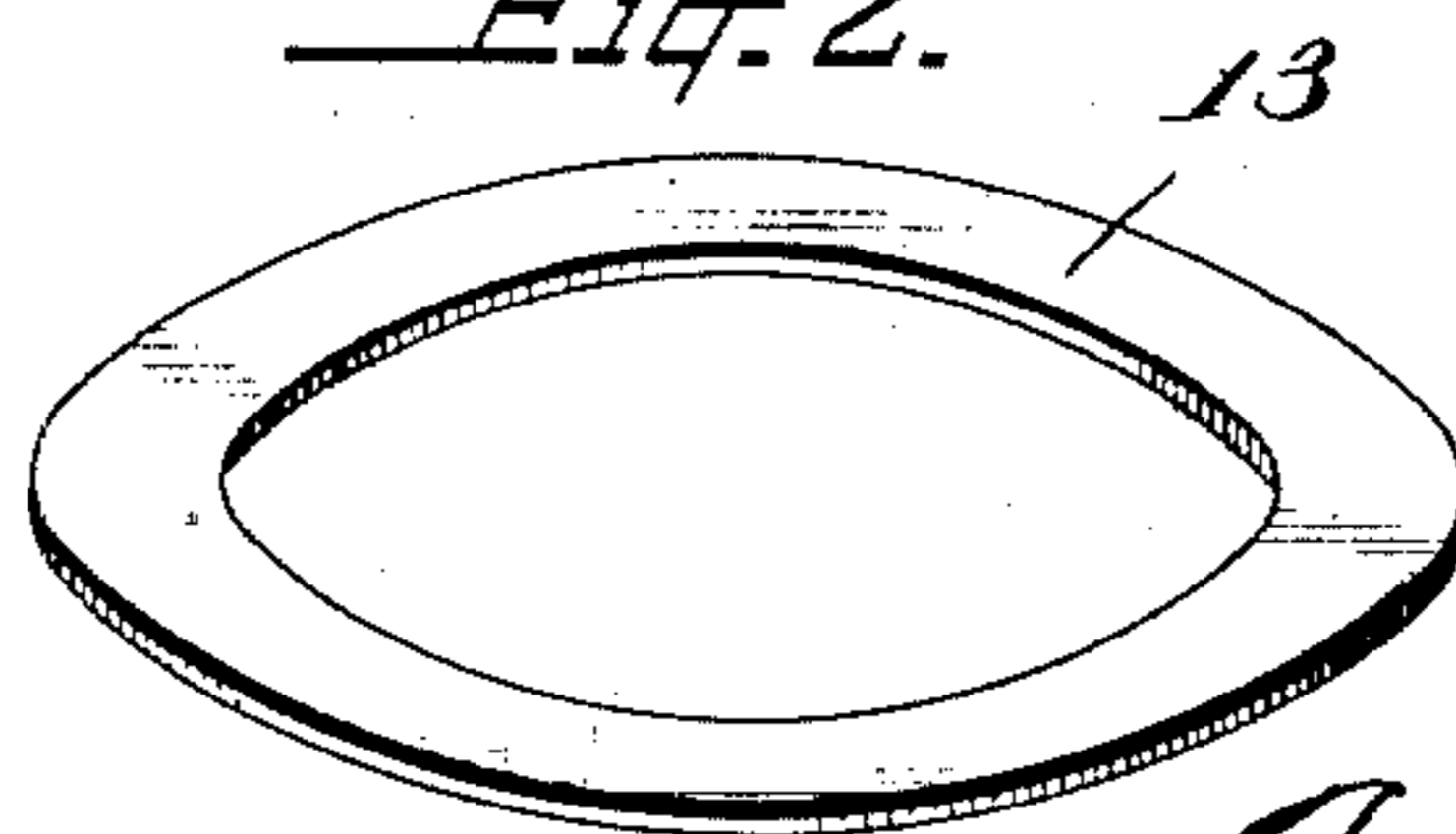


Fig. 3.



Fig. 2.



Witnesses  
Milton L. Lenoir.

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# UNITED STATES PATENT OFFICE.

FENTON E. STILWELL, OF GENEVA, NEW YORK.

## HEATER.

No. 826,907.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed March 29, 1905. Serial No. 252,707.

*To all whom it may concern:*

Be it known that I, FENTON E. STILWELL, a citizen of the United States, residing at Geneva, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

My invention relates to an improvement in heaters for hot water or steam, it being adapted for either heating water or generating steam and for circulating the same for house-heating purposes; and the object is to provide a simple form of furnace which may be manufactured and sold at a reasonable cost and which is arranged for a judicious distribution of the water in and around the heating-space, whereby a minimum amount of fuel will create a maximum of heat, thereby making my invention efficient and effectual in the performance of its functions.

With these objects in view my present invention consists in certain novel features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view through the furnace, and Figs. 2 and 3 are details.

A represents the base of the furnace, and B is the outside jacket, of sheet metal, erected upon the base. Arranged inside of this outside jacket are the heating or generating chambers, of which there are, in effect, three, all in communication with each other. The inner chamber 1 forms the wall of the combustion-chamber 2, its inner wall 3 preferably sloping in the shape of a truncated cone and its outer wall preferably cylindrical in form. Immediately above generating-chamber 1 is located the top generator or generating chamber 5, which forms the top of the combustion-chamber and communicates with the main generating-chamber 1 by means of connecting pipes or tubes 6 6. Surrounding the two chambers 1 and 5 is the jacket heater or generator 7, which may be in the form of a single cylindrical double-walled chamber or it may be made in sections, one of which is indicated in Fig. 3. This surrounding jacket generator or chamber 7, which is preferably made in sections, is connected with and in communication with the two chambers 1 and 5 by means of short tubes or pipes 8 8 at the top and bottom ends. These tubes or pipes 8 8 preferably have right-and-left threads 9 9 at their ends, which screw into correspond-

ingly-threaded nipples 10 10, this being a simple and convenient method of assembling and connecting the parts together. The inner walls of the several chambers are preferably of the porcupine type—that is to say, they are provided with projections 12 12, which increase the heating and radiating area, whereby to facilitate and accelerate the heating of the water contained in the heating chambers or generators. The outer shell or jacket B incloses all of these parts. A ring 13 reaches from the jacket generator-chamber to the upper generator-chamber 5, covering the annular space intervening, so that the products of combustion first pass upward through the combustion-chamber, as indicated by the arrows, heating the walls thereof, as well as the bottom of the top generator-chamber 5, after which these products are deflected downward into and through the annular space 14 between the chambers 1 and 7, thence the products pass beneath the lower ends of the jacket generator-chamber and upward around the latter and between it and the jacket B, and finally out at the top through the smoke-pipe 15. Thus the contents of the jacket become superheated,

The usual grate 16 is located at the bottom of the combustion-chamber. A door 17 for coal is provided, and this door may have a cold-air draft 18. The steam or hot-water outlet 19 preferably extends from the top of the chamber 5, and the return-pipe 20 enters the lower end of chamber 1. A water-gage 21 indicates the height of the water, steam-gage 22, the pressure of steam, and a safety-valve 23 is provided. The hand-holes or doors 24 24 are provided for cleaning out soot and ashes. The usual ash-pan door 25 is provided at the bottom, and this has a lower draft 26 for admitting air beneath the grate. A damper or direct air-draft 27 is provided for checking the draft and deflecting the products of combustion more directly to the smoke-pipe.

From the foregoing it will be observed that I have provided a simple hot-water heater or steam-generator composed of few parts, easy to manufacture and assemble, effectual in the performance of its functions, and economical in the consumption of fuel, while rapidly heating the water or generating steam as the case may be.

Slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit

and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth; but,

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

1. The combination with a main chamber surrounding a combustion-chamber, a top chamber in communication therewith and forming the top of the combustion-chamber, and a jacket-chamber surrounding the sides of the other two chambers and in communication with both, of a jacket surrounding the sides and top of said chambers, and means for closing the upper end of the annular space between the top and jacket-generators, whereby the products of combustion extend in a zigzag direction, first upward in the main combustion-chamber, thence downward and finally upward around the outer surface of the jacket-chamber and means for discharging the products of combustion at some convenient point from the heater or generator.

2. The combination with a main chamber, a top chamber in communication therewith and a surrounding jacket-chamber in com-

munication with both, and an annular space between the main and top chambers and the jacket-chamber, means for circulating steam or hot water, a water-gage, pressure-gage and safety-valve, of an outer jacket, means for covering the upper end of the annular space and jacket-chambers, drafts and dampers for regulating the heat, and doors whereby the dust and soot may be removed from the heater.

3. A heater comprising an inner or main chamber which forms the side walls of a combustion-chamber, a top chamber in communication with the main chamber, a jacket-chambers surrounding the main and top chambers and forming an annular space therebetween, and means for closing the upper end of the annular space between the top and jacket chambers.

In testimony whereof I affix my signature in presence of two witnesses.

FENTON E. STILWELL.

Witnesses:

L. D. BALES,

B. M. CONDIT.