No. 828,494.

PATENTED AUG. 14, 1906.

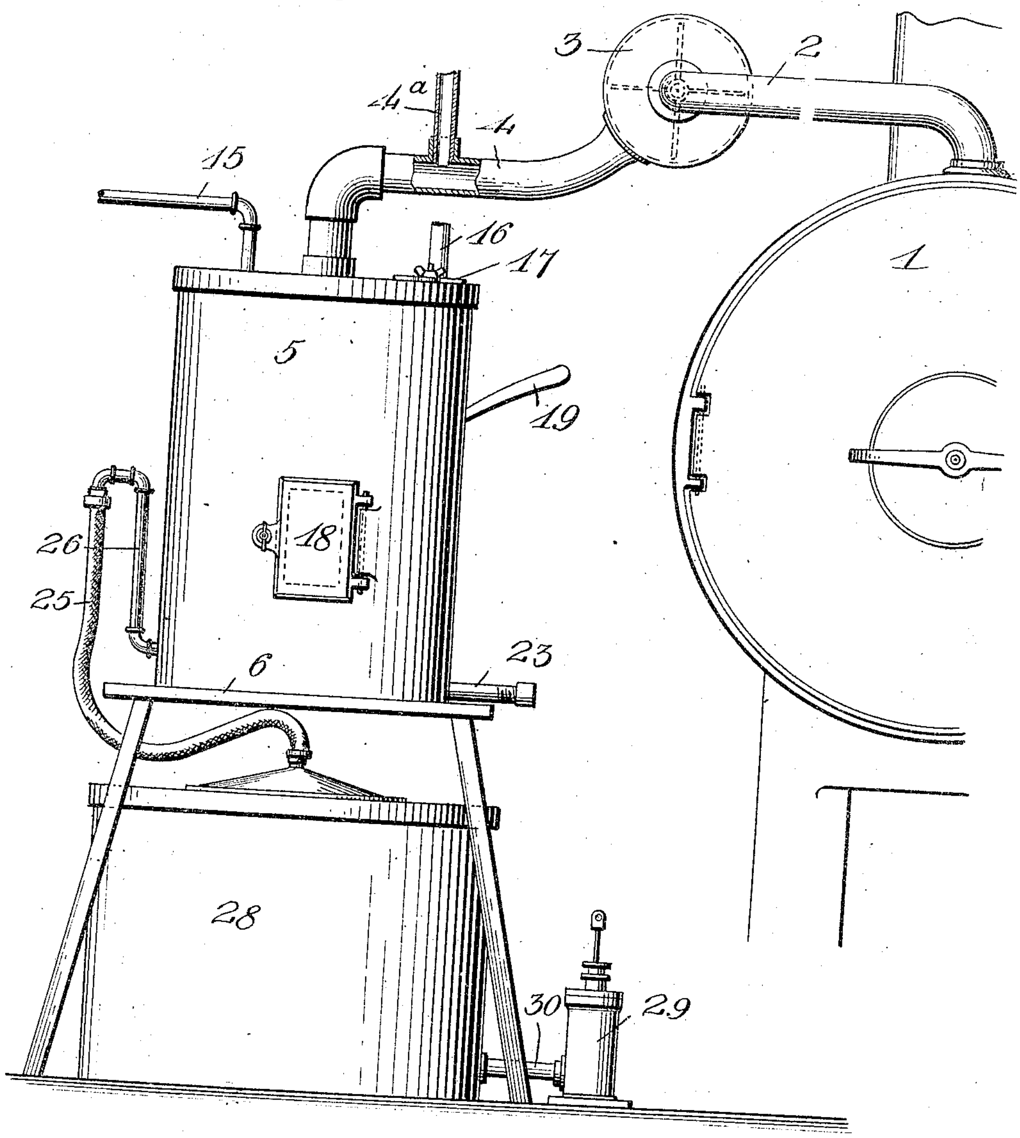
J. F. MILES.

COMBINED WATER HEATER AND SMOKE CONSUMER.

APPLICATION FILED NOV. 20, 1905.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

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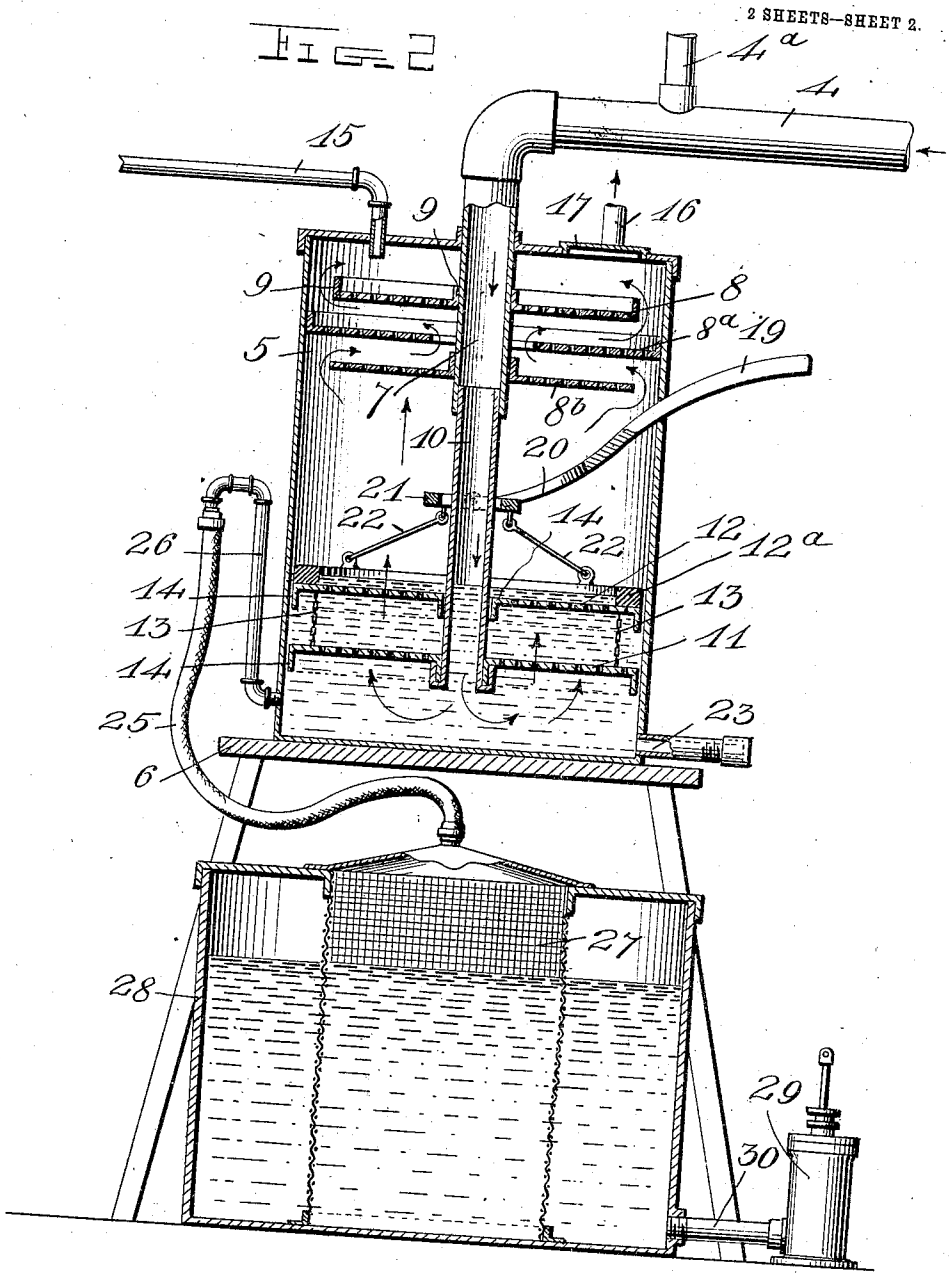
2 SHEETS—SHEET 2.

FIG. 2



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COMBINED WATER-HEATER AND SMOKE-CONSUMER.

No. 828,494. Specification of Letters Patent. Patented Aug. 14, 1906.

Application filed November 20, 1905. Serial No. 288,261.

To all whom it may concern:

Be it known that I, JOSEPH FURNAS MILES, a citizen of the United States, residing at Paris, in the county of Lamar and State of Texas, have invented certain new and useful Improvements in a Combined Water-Heater and Smoke-Consumer; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved combined water-heater and smoke-consumer for use in connection with furnaces of all kinds, but particularly steam-boiler furnaces.

The object of the invention is to improve and simplify the construction and operation of devices of this character, and thereby render the same more efficient and less expensive.

The above and other objects, which will appear as the nature of my invention is better understood, are accomplished by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved combination water-heater and smoke-consumer, and Fig. 2 is a vertical sectional view through the same.

Referring to the drawings by numeral, 1 denotes a portion of a steam-boiler or other furnace, which has leading therefrom a smoke pipe or flue 2. The latter leads to a rotary fan, blower, pump, or the like 3, which forces the smoke, gases, or other products of combustion through a pipe 4 and into the body 5 of my improved water-heater and smoke-consumer. The body or casing 5, which may be of any suitable size and shape, is, as shown, of cylindrical form and is mounted upon a suitable support 6. The discharge end 7 of the pipe 4 projects downwardly through the center of the body or casing 5 and also through a series of perforated or reticulate partitions 8 and 8^b, which are fixed horizontally in the upper portion of the body 5. The upper and lower partitions 8 and 8^b are secured upon the pipe 7 and have their outer edges spaced from the side wall of the body 5, and the intermediate partition 8^a is secured upon the side wall of said body and is spaced from the pipe 7, so that the smoke and gases passing upwardly through the body circulate between these partitions and come in contact with the water which drops through the perforations in the partitions. Telescopically mounted in the lower end of the pipe 7 is a pipe-section 10, which has mounted upon its lower portion one or more perforated or reticulate plates or flanges which are adapted to be submerged in the water in the bottom of the body 5. As shown, but two of these flanges 11 12 are provided, the lowermost one being fixed to the lower end of the sliding pipe-section 10 and connected by short chains or the like 13 to the upper one, 12, which is loosely mounted upon the pipe 10 and carries upon its top an annular band of buoyant material 12^a, which is adapted to float said plates or flanges and the pipe 10, the latter thus moving into and out of the pipe 7 as the level of the water in the body 5 rises and falls. Each of these flanges has downturned edges, as shown at 14. Projecting through the top of the body 5 is a water inlet or supply pipe 15, which discharges water upon the perforated partitions 8 8^a 8^b, so that the latter sprays it upon the smoke, gases, or other products of combustion which enter through the pipes 4, 7, and 10 and pass upwardly first through the water in the bottom of the body 5 and then through the perforated partitions or flanges 11, 12, and 8 8^a 8^b, and finally are discharged through an outlet-pipe 16, provided in the top of the body 5. The smoke and products of combustion in thus passing through the device heat the water which is in the bottom of the body and which falls through the perforated partitions 8 8^a 8^b, and the water coming in contact with the smoke and products of combustion removes the cinders, dust, soot, and the like from the same.

A suitable water-tight door or closure 17 is provided in the top of the body 5 to permit the partitions 8 8^a 8^b to be cleaned, and a similar door or closure 18 is provided at a suitable point in the side of the body 5 to permit of the cleaning of the plates or flanges 11 12. When this cleaning is done, said plates 11 12 are adapted to be elevated by operating a lever 19, which extends through an opening in the side of the body 5 and has a bifurcated inner end 20, which is pivotally connected to an annular band or collar 21. The latter is loosely mounted upon the pipes 7 and 10 and is connected by links 22 to the uppermost plate of flange 12.

It will be seen that when the outer end of the lever 19 is depressed the plates or flanges 11 12 will be elevated to bring them into position to be readily cleaned.

Adjacent to the bottom of the body 5 is provided a valve outlet or discharge connection 23, through which the cinders and soot upon the bottom of the body may be removed. The hot water in the body 5 is drawn off from the same through an outlet-pipe 25, in which is provided a trap 26, so that the water will be maintained at a constant level in the body. The pipe 25 discharges into the upper portion of a filter 27, which is mounted centrally in a water-tank 28. The latter is disposed beneath the support 6 and may be of any suitable form and construction. The water within said tank is adapted to be pumped out of the same by means of a pump 29 of any form and construction, which draws it through a discharge-pipe 30. If desired, a suitable damper may be provided in the pipe 2, and a direct-draft outlet may be provided in advance of said damper, so that the draft may be either direct or through the water-heating and smoke-consuming device.

If desired, I may provide an exhaust-steam pipe 4^a, which opens into the pipe 4 and which may lead from the exhaust of an engine or from the top valve of the boiler. In large heating plants the fan 3 and the pump 29, which latter is adapted to pump the heated water through circulating-pipes, radiators, and the like, may be operated by a suitable engine, and the pipe 4^a may be connected with the exhaust of such engine.

The construction, operation, and advantages of the invention will be readily understood upon reference to the drawings.

It will be seen that the smoke as it is discharged from the lower end of the pipe-section 10 will enter the water beneath the perforated or apertured plates 11 12, which latter will break it up into small bubbles, which work their way upward through said plates, the latter thus straining and distributing the smoke, gases, and products of combustion, so that a greater amount of heat will be obtained from them.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. A device of the character described comprising a body having a smoke-discharge pipe projecting downwardly into the same, means for spraying water downwardly through said body, and a buoyant strainer and distributer slidably engaged with said smoke-pipe.

2. A device of the character described comprising a body having a smoke-discharge pipe projecting downwardly into the same, means for spraying water downwardly through said body, a pipe-section telescopically engaged with said smoke-pipe, a straining and distributing plate carried by said pipe-section, and means for floating said plate and pipe-section.

3. A device of the character described comprising a body, a smoke-discharge pipe projecting downwardly into the same, a gas-outlet for said body, a water-inlet, an apertured partition in the upper portion of said body beneath said water-inlet, a pipe-section telescopically engaged with said smoke-pipe, an apertured plate secured upon the lower end of said pipe-section, a second apertured plate surrounding said pipe-section, a float carried by one of said apertured plates, and a water-outlet in the lower portion of said body.

4. A device of the character described comprising a body, a smoke-discharge pipe projecting downwardly into the same, a gas-outlet for said body, a water-inlet, an apertured partition in the upper portion of said body beneath said water-inlet, a pipe-section telescopically engaged with said smoke-pipe, an apertured plate secured upon the lower end of said pipe-section, a second apertured plate surrounding said pipe-section, a float carried by one of said apertured plates, a clean-out door in said body, means for elevating said apertured plates and pipe-section, a valve-controlled drain connection in the lower portion of said body, and a hot-water-discharge outlet in the lower portion of said body.

5. A device of the character described comprising a body, a smoke-discharge pipe projecting downwardly therein, means for spraying water into the upper portion of said body, a clean-out door in the side of said body, a pipe-section telescopically engaged with said smoke-pipe, a strainer carried by said pipe-section, a collar upon the latter, links connecting said collar and said strainer, and a lever connected to said collar, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH FURNAS MILES.

Witnesses:
W. L. BURDETT,
J. I. BALL.