T. GRIFFIN.

WATER HEATER.

APPLICATION FILED APR. 11, 1914.

1,113,003.

Patented Oct. 6, 1914.

Fig. 1.

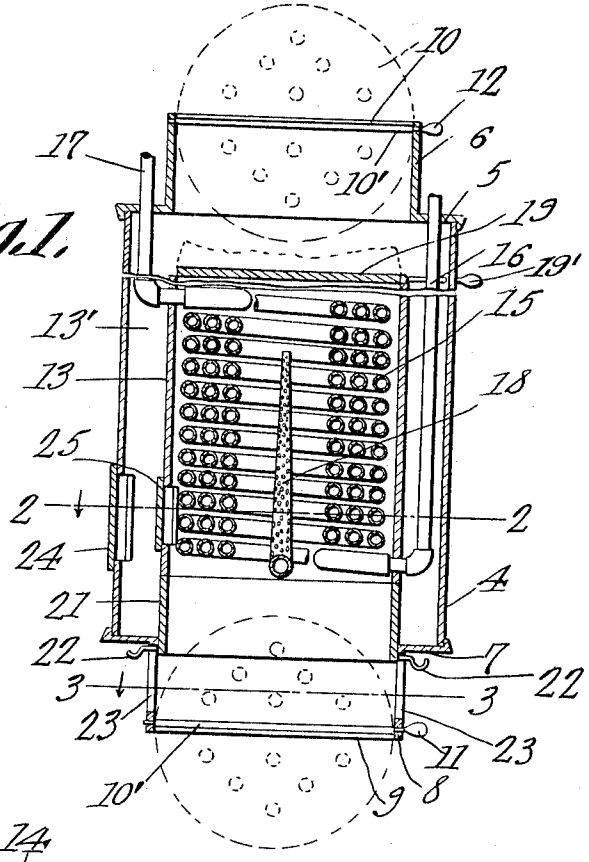


Fig. 2.

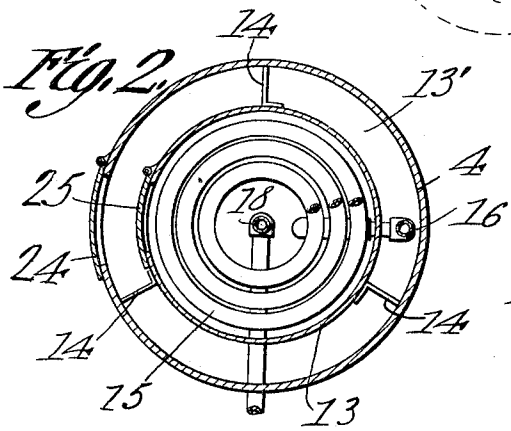
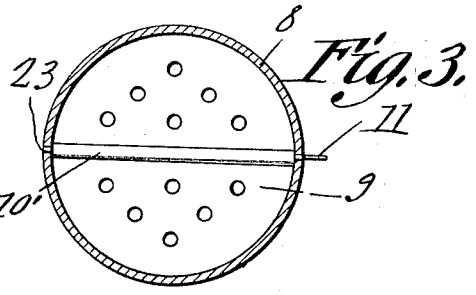


Fig. 3.



Witnesses

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WATER-HEATER.

1,113,003. Specification of Letters Patent. Patented Oct. 6, 1914.

Application filed April 11, 1914. Serial No. 831,249.

To all whom it may concern:

Be it known that I, THOMAS GRIFFIN, a citizen of the United States, residing at Fulton, in the county of Oswego and State of New York, have invented a new and useful Water-Heater, of which the following is a specification.

This invention relates to improvements in water heaters.

An object of the present invention is to provide a heater for water which will utilize such heat as usually escapes up the chimney.

A further object is to provide a water heater which is placed in the chimney, will not interfere with the draft thereof and will utilize the high temperature of the flue gases.

A further object is to provide a water heater adapted to utilize the waste heat as it escapes through the chimney and which heater is also equipped with a gas burner so that auxiliary heating means are had, should the escaping heat of the flue gases be insufficient or should the fire within the furnace be out.

A further object is to provide a water heater installed in the chimney of a furnace so as to utilize the waste heat thereof and which water heater is provided with a gas burner so that the water within the heater may be quickly raised to a high temperature by means of the gas burner or the water may be slowly and continuously heated by the flue gases.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings accompanying this specification and forming a part thereof, the preferred embodiment of my invention is illustrated, in which:—

Figure 1 is a view in vertical section of my improved water heater. Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 1.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several figures, the heater includes an outer drum 4 to the upper and open extremity of which is removably secured the annular plate 5. A sleeve or pipe 6 projects upwardly from the plate and is designed to communicate with a chimney flue. A somewhat similar annular plate 7 is rigidly secured to the lower extremity of the outer drum and supports the pipe 8 which projects therebeneath. The pipe 8 acts as an inlet for the flue gases while the pipe 6 serves as an outlet therefor. In order to properly control the draft of the chimney and at the same time to regulate the temperature of the water within the heater, the damper plates 9 and 10 are provided, each one being equipped with the sleeve 10′ through which extend the handled shafts 11 and 12. This construction allows the dampers to be readily manipulated, controlling the entrance to the heater and indirectly controlling the length of time required by the gases to traverse the same.

Located within the drum 4 is the inner drum 13 which is held in spaced relation thereto by the spacing arms 14. The inner drum is relatively smaller in diameter than the outer drum and thus provides an annular passage 13′ therewith. Also mention is made of the fact that the inner drum stops short of the ends of the outer drum so that suitable inlets and outlets will be had for the passageway 13′. A heating coil 15 is disposed within the inner drum and in the present drawings has been designed with three sets of concentric coils. It is to be noted, however, that the number of coils may be varied as circumstances may dictate. A water inlet pipe 16 communicates with the lower extremities of the coils and an outlet pipe 17 communicates with their upper extremities thus providing for the circulation of water through the coils. The pipes 16 and 17 may communicate with radiators, or may be provided with suitable spigots so that the hot water may be directly utilized.

A valve sleeve 21 is slidably positioned within the pipe 8 and has the handles 22 projecting through the slots 23 provided in the said pipe. The handles guide the valve sleeve in its movements and prevent the accidental displacement thereof. The sliding sleeve is of a diameter substantially equal

to the diameter of the inner drum and is adapted to move thereagainst, thus completely closing at its lower extremity, the passageway 13'. The gas burner 18 is positioned within and substantially centrally of the heating coils and provides auxiliary heating means for the water. A set of alined doors 24 and 25 are secured to the outer and inner drums and render the interior of the heater accessible and also provide an opening for the insertion of ignition means for the gas burner. The cover 19 is rotatably mounted upon the upper extremity of the inner drum 13 and is used to retain heat within the inner drum during such times as the gas burner is being used, or it may serve as means to prevent the excessive heating of the water within the coils by the flue gases by preventing the flue gases from passing directly through the inner drum. The said cover may be rotated to a perpendicular position as indicated in dotted lines, by means of the handle 19'.

The heater as thus constructed is placed within the flue of a chimney and utilizes the waste heat of the flue gases. When it is desired to continuously heat the water within the coils such as for the purpose of heating the feed water for a boiler, or for heating the water within a radiator heating system, the valve sleeve 21 is maintained in the raised position illustrated in Fig. 1 of the drawing and the cover 19 is rotated to an upstanding perpendicular position. The damper plates 9 and 10 are arranged so as to produce the proper and required draft for the fire. The escaping flue gases making their way up the chimney will encounter the coils and heat the water therein. When it is desired to increase the draft of the chimney, this may be accomplished by lowering the valve sleeve 21, thus providing an auxiliary passage around the coils and thus allowing a greater volume of gas to pass through the heater in the same time. If it is desired that the water within the coils be heated to a slight extent only, the cover 19 is rotated to close the upper extremity of the inner drum and the sleeve maintained in a lowered position. The cover will prevent the passage of the heated gases to the coils and the gases already within the inner drum will prevent the further admission of heated gases thereto. The auxiliary passage provides for a suitable exit of the flue gases. The cover 19 is also utilized when a rapid heating of the water within the coils is desired and this is accomplished by utilizing the gas burner 18 which extends axially through the inner drum. The cover 19 serves to maintain the heat of the burning gases within the drum and thus provides for a rapid and high heating of the water, such as may be of particular advantage at special times. However, it will be noted that the greatest economy is effected when the water is heated through the medium of the escaping gases as will be readily appreciated.

Having thus fully described my invention, what I claim is:—

1. A water heater comprising spaced inner and outer drums, a water coil disposed within the inner drum, a slidably mounted valve sleeve adapted to move against the inner drum and close the auxiliary passage extending between the said drums.

2. A water heater comprising an outer drum, an inner drum positioned therein of relatively smaller diameter and shorter length than the outer drum, means holding the said drums in spaced relation and defining an auxiliary passage extending therebetween, a heating coil positioned within the inner drum, inlet and outlet pipes communicating with said coil, a gas burner disposed within said inner drum and extending axially thereof, annular plates with outwardly extending pipes connected to the extremities of said outer drum, a valve sleeve slidably carried by the lower annular plate, said valve sleeve of substantially equal diameter to the diameter of the inner drum and adapted to contact therewith and close the said auxiliary passage.

3. A water heater comprising an outer drum, an inner drum positioned therein of relatively smaller diameter and shorter length than the outer drum, means holding the said drums in spaced relation and defining an auxiliary passage extending therebetween, a heating coil positioned within the inner drum, inlet and outlet pipes communicating with said coil, a gas burner disposed within said inner drum and extending axially thereof, annular plates with outwardly extending pipes connected to the extremities of said outer drum, a valve sleeve slidably carried by the lower annular plate, said valve sleeve of substantially equal diameter to the diameter of the inner drum and adapted to contact therewith and close the said auxiliary passage, and doors closing openings provided in the side walls of the said drums, rendering the interior of said drums accessible.

4. A water heater comprising an outer drum, an inner drum positioned therein of relatively smaller diameter and shorter length than the outer drum, means holding the said drums in spaced relation and defining an auxiliary passage extending therebetween, a heating coil positioned within the inner drum, inlet and outlet pipes communicating with said coil, a gas burner disposed within said inner drum and extending axially thereof, annular plates with outwardly extending pipes connected to the extremities of said outer drum, a valve sleeve slidably carried by the lower annular plate, said valve sleeve of substantially equal diameter to the

diameter of the inner drum and adapted to contact therewith and close the said auxiliary passage, doors closing openings provided in the side walls of the said drums, rendering the interior of said drums accessible, and a pair of dampers at the upper and lower extremities of the said annular plates.

5. A water heater comprising an outer drum, an annular plate with an inlet pipe communicating therewith rigidly secured to the lower extremity of said drum, an annular plate with an upstanding pipe detachably secured to the upper extremity of said drum, damper plates carried at the extremities of said pipes, an inner drum relatively smaller in diameter and length than the outer drum, spacing arms extending between the drums and holding the same in spaced relation, the space intermediate the drums defining an auxiliary passage, a pipe coil disposed within the inner drum, inlet and outlet pipes therefor communicating therewith, a gas burner extending axially of the said pipe coil, a cover detachably positioned upon the upper extremity of said inner drum, a valve sleeve slidably carried by the lower annular plate, handles secured to said valve sleeve extending through the said first mentioned pipe for the controlling of said valve sleeve, said valve sleeve substantially equal in diameter and adapted to abut with the said inner drum, and doors closing openings provided in the side walls of said inner and outer drums.

6. A water heater comprising an outer drum, an inner drum positioned therein defining an auxiliary passage therewith, a slidably mounted valve sleeve coacting with the said drums and adapted to close the said auxiliary passageway therebetween, a water coil disposed within the inner drum, and a valve disposed at the upper extremity of the inner drum for the closure thereof.

7. A water heater comprising an outer drum, an inner drum positioned therein defining an auxiliary passageway therewith, a slidably mounted valve sleeve co-acting with the said drums and adapted to close the said auxiliary passageway therebetween, a water coil disposed within the inner drum, and a gas burner disposed within the inner drum and extending axially thereof.

8. A water heater comprising an outer drum, an inner drum positioned therein defining an auxiliary passageway therewith, a slidably mounted valve sleeve co-acting with the said drums and adapted to close the said auxiliary passageway therebetween, a water coil disposed within the inner drum, a gas burner disposed within the inner drum and extending axially thereof, and a valve plate secured at the upper extremity of the inner drum for the closure thereof.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

THOMAS GRIFFIN.

Witnesses:

JAMES R. SOMERS,

WM. S. HILLICK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."