G. W. WADE

BOILER AND SUPERHEATER.

APPLICATION FILED AUG. 28, 1909.

996,302. Patented June 27, 1911.

Fig. 1.

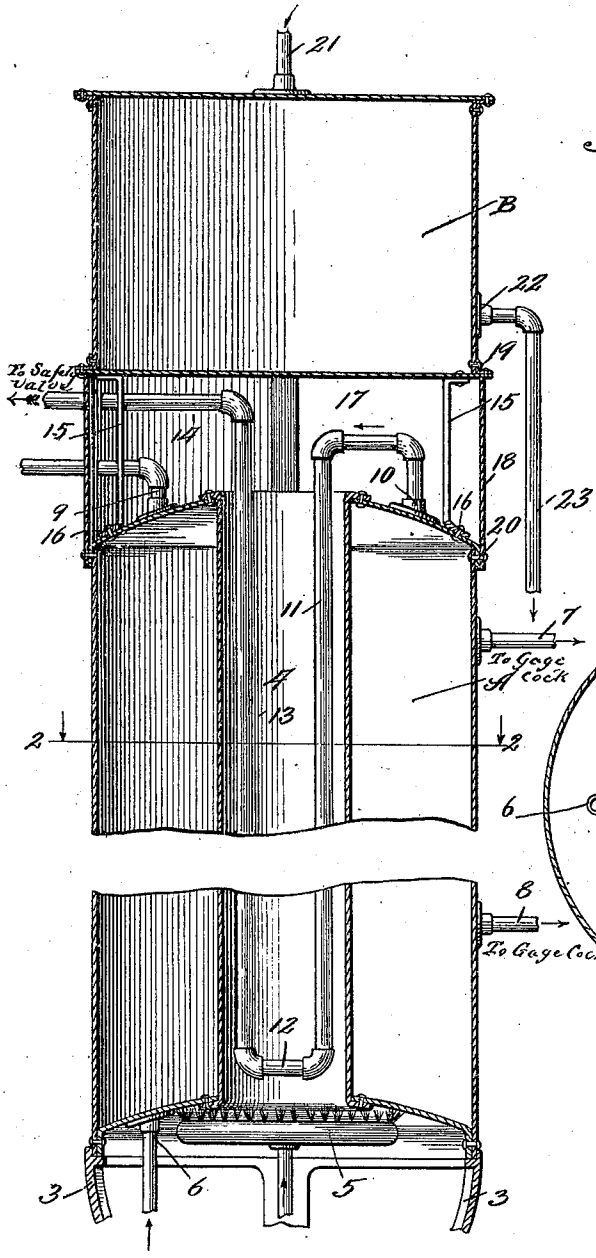
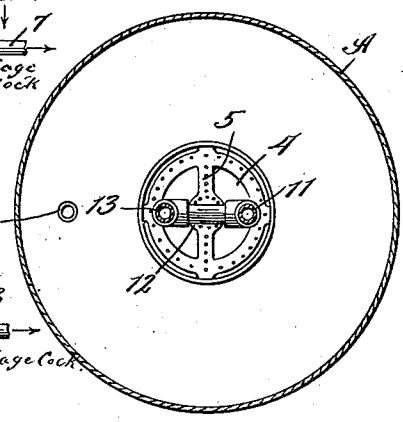


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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BOILER AND SUPERHEATER.

996,302. Specification of Letters Patent. **Patented June 27, 1911.**

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To all whom it may concern:

Be it known that I, GEORGE W. WADE, a citizen of the United States of America, and resident of Chicago, Illinois, have invented a certain new and useful Improvement in Boilers and Superheaters, of which the following is a specification.

My invention relates to improvements in steam boilers and superheaters, and has for its object the production of a device in which provision is made for utilizing a portion of the waste heat for superheating the steam, and also to heat the feed water prior to its introduction into the boiler.

A further object is the combination of the boiler and feed tank in a unitary structure.

A further object is the production of a cheap and efficient device, and one that is not liable to get out of order.

These and such other objects as may hereinafter appear are attained by my device, an embodiment of which is illustrated in the accompanying drawing, in which—

Figure 1 represents a vertical sectional view of my device. Fig. 2 represents a horizontal sectional view on line 2—2 of Fig. 1, looking in the direction indicated by the arrows.

Like numerals of reference indicate like parts in the several figures of the drawings.

Referring now to the drawings: A represents an upright cylindrical boiler on the top of which is mounted a feed water tank B. The cylindrical boiler A rests on a frame or legs 3, and a vertical flue 4 extends through the center. An ordinary burner 5 is mounted below the boiler. The feed inlet 6 is located in the bottom of the shell and a pair of water outlets 7, 8, are positioned between the top and bottom of the shell, and connected with a water and pressure gage (not shown). A tube or pipe 9 in the top of the shell leads to the safety valve (not shown). The steam outlet 10 is connected to a pipe 11 passing down within the flue, turned at 12 and running upwardly at 13 and communicating through the pipe 14 with a machine (not shown).

The feed water tank B is mounted on supports or legs 15 mounted on the top of the boiler at 16. The space 17 between the boiler and tank is inclosed by means of a cylindrical metal shell 18 riveted to the tank at 19 and the boiler at 20. The feed water inlet 21 is located at the top of the tank, and the outlet 22 is connected by a pipe 23 with the boiler inlet 6.

Referring now to the operation of my device: The steam as soon as generated is passed through the pipes 11, 12, 13, in the flue, and as the pipes are in direct contact with the heated air and products of combustion passing upwardly through the flue, the steam is discharged through the pipe 14 in a highly superheated condition. The waste heat passing upwardly through the flue fills the chamber 17 and impinges against the bottom of the tank B, thus preheating the water therein prior to delivery to the boiler A.

It is understood, of course, that suitable draft means (not shown) are provided to insure the proper movements of the currents of heated air.

It will thus be seen that I have provided a simple device by the use of which the feed water may be delivered to the boiler at a comparatively high degree of temperature, and at the same time the steam generated may be superheated without in the least impairing the efficiency of the boiler.

This device is especially valuable for use in laundries in connection with pressing machines where it is essential that the steam used be as hot as possible, and where economy of space as well as cost of apparatus are important elements.

The device is exceedingly compact, taking up a space of about four feet in height by one in width, and is easily operated by unskilled help.

I claim:

1. An apparatus of the class described, comprising a boiler, heating means, a flue passing through said boiler, and a steam pipe passing from said boiler through said flue and in open communication with said heating means, and a feed water heater mounted above said boiler likewise in open communication with said heating means through said flue.

2. An apparatus of the class described, comprising a boiler, heating means, a vertical flue passing through said boiler, and a steam pipe passing from said boiler through said flue and in open communication with said heating means, and a feed water heater mounted above said boiler, likewise in open

communication with said heating means through said flue.

3. An apparatus of the class described, comprising a boiler, heating means, a vertical flue passing through said boiler, and a steam pipe passing from said boiler downwardly and upwardly throughout the entire length of said flue, a feed water tank mounted on the top of said boiler and in open communication with said heating means through said flue.

Signed by me at Chicago, Illinois, this 25th day of August, 1909.

GEORGE W. WADE.

Witnesses:
F. H. DRURY,
E. H. CLEGG.