June 14, 1932. G. W. FRANZHEIM 1,863,476

BOILER

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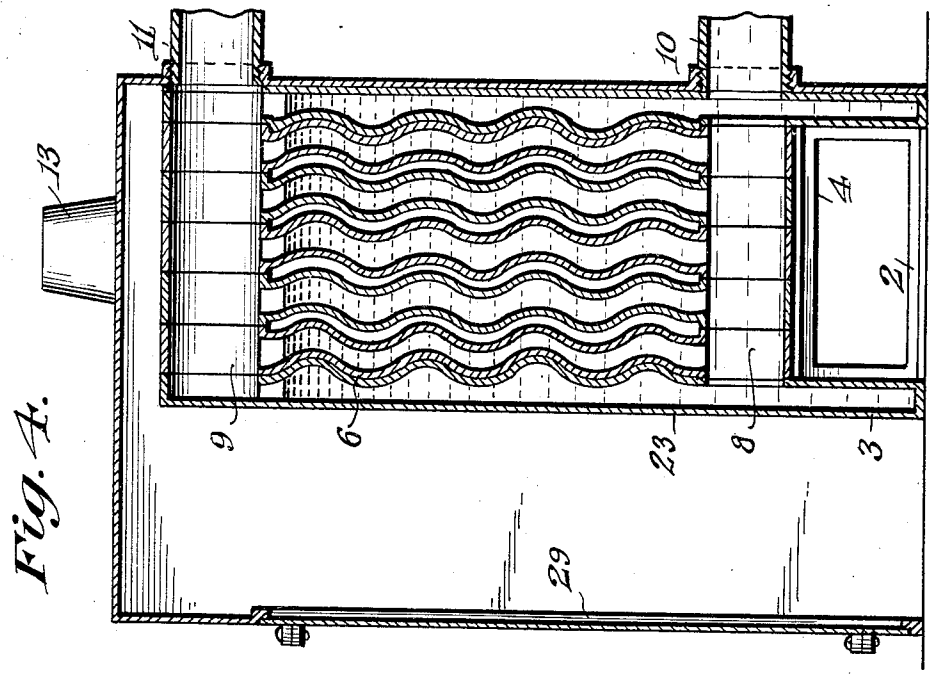


Fig. 4.

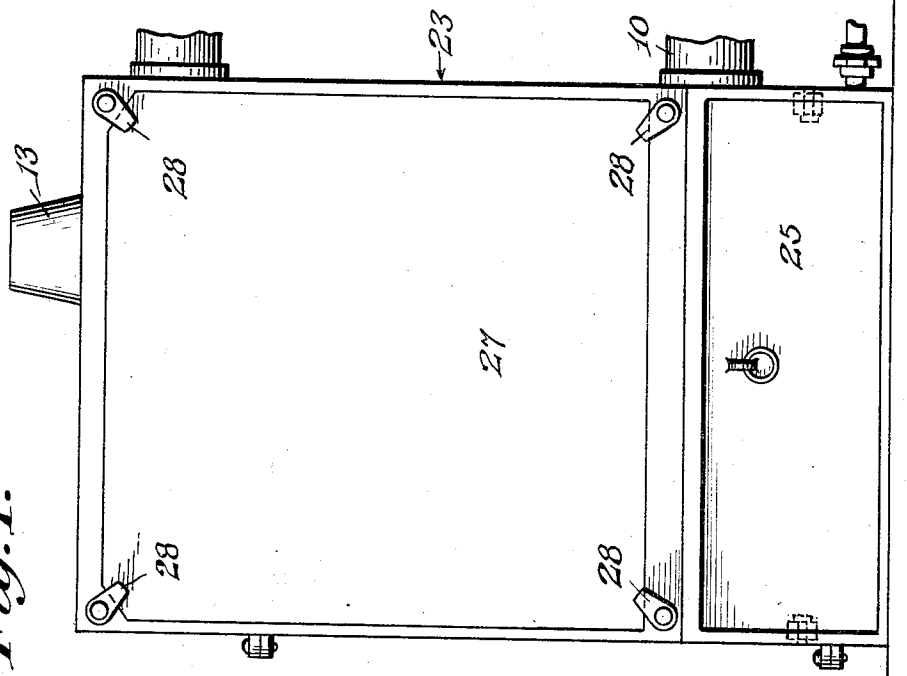


Fig. 1.

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Fig. 3.

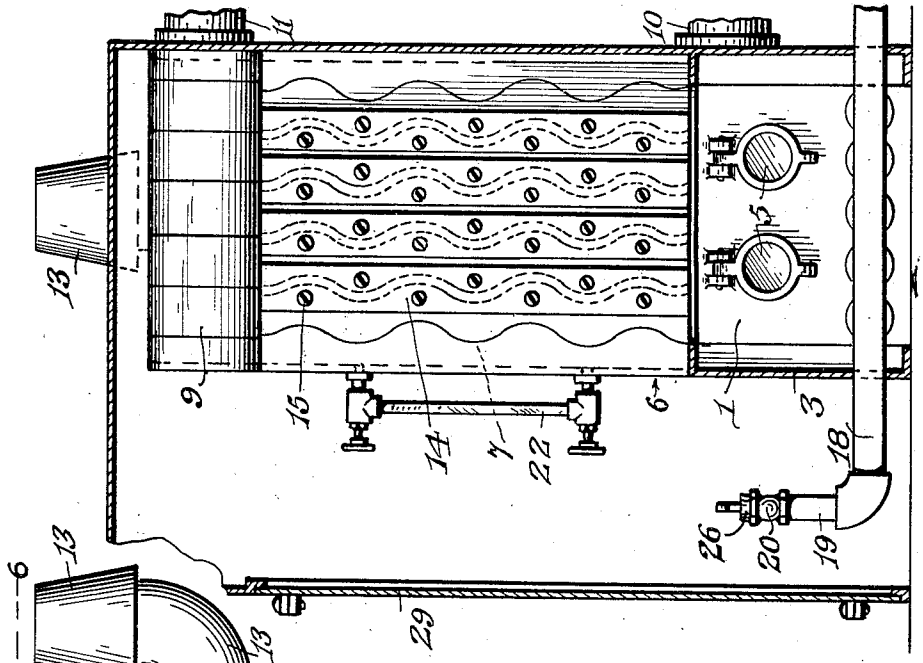
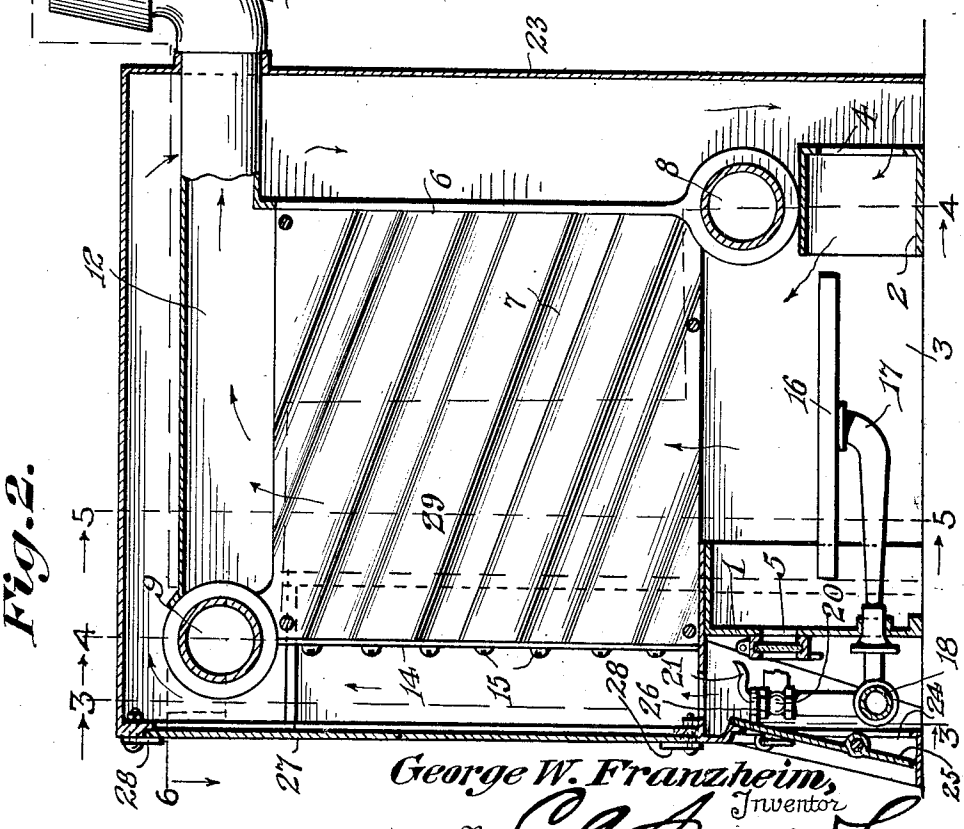


Fig. 2.



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Fig. 6.

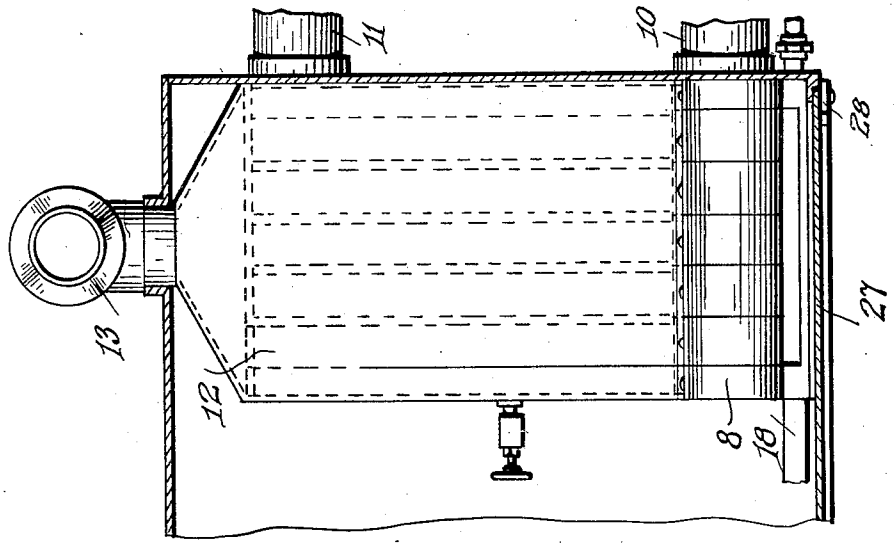
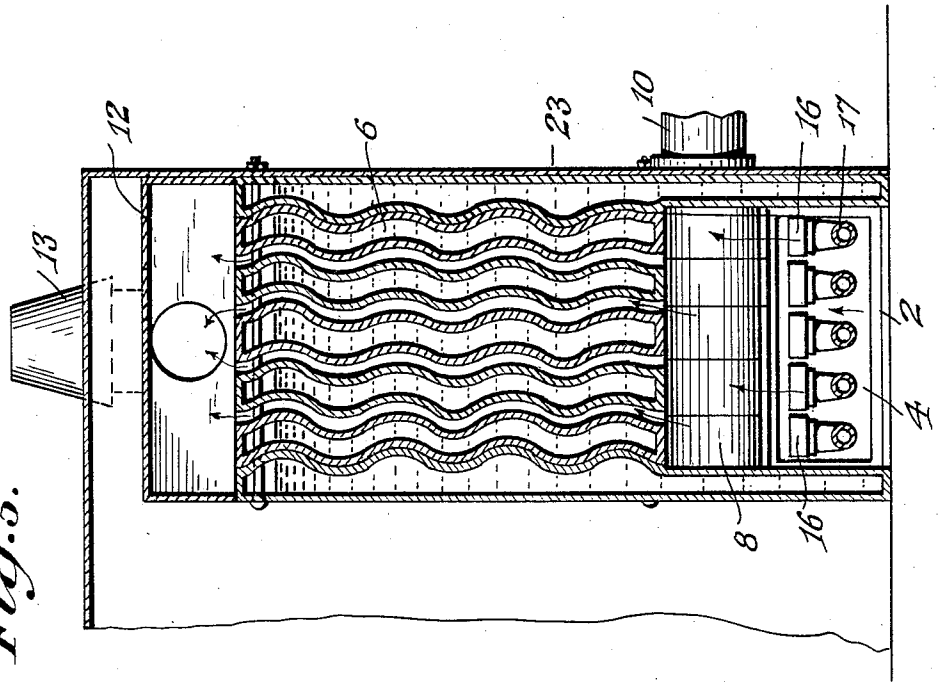


Fig. 5.



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Patented June 14, 1932 1,863,476

UNITED STATES PATENT OFFICE

GEORGE WILLIAM FRANZHEIM, OF CLEVELAND, OHIO

BOILER

Application filed February 27, 1930. Serial No. 431,866.

This invention relates to boilers and more especially to boilers adapted to utilize gas as a heating fuel.

It is an object of the invention to provide simple and efficient means whereby the air supplied to the fuel will be preheated and will, at the same time, act as a protecting jacket for preventing direct contact of the chill outer air with the sections of the boiler.

Another object is to provide a means whereby, when the supply of gas to the burners is reduced, the admission of air to the boiler will also be regulated with the result that when the gas is reduced or is cut off there will be no loss of heat due to the rapid flow of cold air through the boiler.

Another object is to so construct the boiler as to afford convenient access to the sections whereby they can be cleaned.

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 may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a front elevation of the device.

Figure 2 is a vertical section therethrough taken from front to rear.

Figure 3 is a section on line 3—3, Figure 2.

Figure 4 is a section on line 4—4, Figure 2.

Figure 5 is a section on line 5—5, Figure 2.

Figure 6 is a section on line 6—6, Figure 2.

Referring to the figures by characters of reference 1 designates the front plate of the firebox and 2 designates the back member, said member being connected to the front plate by side walls 3. The back member has an air inlet 4 and formed in the front plate 1 are windows 5 through which the interior of the firebox can be viewed.

The sections 6 of the boiler are erected on the front plate 1 and the back member 2 and can be provided with upwardly extending waved spaces 7 therebetween forming flues for the escape of the products of combustion. Each of the sections is provided with a water inlet 8 at one of its lower corners and with a water outlet 9 at the diametrically opposed corner. The inlets are all joined in the usual manner with a water supply pipe 10 while the outlets 9 are all connected to the outflow pipe of a heating system, this pipe being indicated at 11. A hood 12 is extended over the sections and is adapted to receive the products of combustion as they pass upwardly from the flues or spaces 7. This hood is adapted to be connected to a pipe 13 leading to a chimney or other outlet.

For the purpose of closing the flues 7 at the front of the boiler, strips 14 may be detachably fastened to the sections by means of screws 15 or the like.

A desired number of gas burners 16 are located in the firebox and are connected by pipes 17 to a manifold 18 located preferably in front of plate 1. A gas supply pipe 19 opens into the manifold and is provided with a valve 20 adapted to be actuated by any suitable means, such as a handle 21. A water gage 22 can be connected to one of the sections of the boiler.

If desired, and as shown in Figures 4 and 5, the side walls 3 can be made hollow and constitute continuations of the side sections of the boiler.

The boiler thus far described is adapted to be housed completely within a jacket 23 having a single inlet opening 24 located in front of the manifold 18 and adapted to be closed by a damper 25. This damper can be pivotally mounted or otherwise movably supported and in the structure illustrated the upper portion of the damper which is heavier than the lower portion, rests against a cam 26 carried by the stem of the valve 20. The parts are so proportioned that when the valve is turned for the purpose of admitting gas to the manifold, damper 25 will be free to swing so as to admit air through the opening 24. However when the valve is turned to reduce the quantity of gas or to shut off the supply, the cam 26 will act to press against the

damper and move it toward or into closed position.

The front portion of the jacket 23 can be formed of a plate or panel 27 removably held in position by means of buttons 28 or any other suitable means. By releasing the plate or panel it can be removed and access can thus be had to the sections of the boiler. A smaller closure in the form of a hinged door 29 can be located at one side of the jacket so that by opening the door access can be had readily to the valve handle 21 and to other parts of the apparatus.

Although the sections of the boiler have been shown and described as of a particular construction, it is to be understood that these sections can be tubular or of any other preferred form.

When the valve 20 is closed the damper 25 is closed and cold air cannot enter the jacket 23 and chill sections 6 and their contents. Consequently these sections can be used for storing heated water for a longer period than would otherwise be possible. When it is desired to use the structure the door 29 is opened, valve 21 is rotated and the burners lighted. When the valve is turned the damper will swing to open position. Fresh air will thus enter the jacket through the opening 24 and rise within said jacket so as to flow over the sections 6 and thence downwardly between the back portions of the sections and the back of the jacket.

After reaching the back portion of the boiler the air will flow into the opening 4 and thence into the firebox where it will support combustion. Products of combustion will travel upwardly into the hood 12 and to a chimney or other outlet. By providing for the circulation of air which has been described the air will be preheated with the result that the efficiency of the boiler will be greatly increased.

When it is desired to clean the boiler or to have access to various parts there, it becomes necessary solely to remove the plate or panel 27. By removing the strips 14 the flues between the sections can be cleaned.

It will be understood of course that when the sections are assembled the back ends of the flues are closed thereby.

The burners may be provided with the usual controlling means, pilot, etc., and it is not necessary to show or describe the same as they constitute no part of the present invention.

What is claimed is:

1. The combination with a boiler having flues, a burner thereunder, means for conducting products of combustion from the boiler flues, and a jacket extending over the boiler having an inlet at one end, said jacket constituting means for conducting fresh air to the burner, of a rotatable valve for controlling the flow of fuel to the burner, a tiltable damper in the inlet of the jacket normally held open by gravity, and means rotatable with the valve for engaging the damper when the valve is closed to close the damper, said damper being movable to closed position independently of the valve.

2. The combination with a boiler having upwardly extending flues, a combustion chamber thereunder having a rear inlet, and means extending over the flues for collecting and conveying products of combustion, of a jacket extending over the boiler and having a fresh air inlet at one end, the opposite portion of the jacket opening into the inlet of the combustion chamber, a burner in the combustion chamber, a valve for controlling the flow of fuel to the burner, a tiltable damper within the inlet of the jacket, said damper being normally held open by gravity, and a cam rotatable with the valve and against the damper to close said damper when the valve is closed, said damper being movable to closed position independently of the valve.

3. The combination with a boiler having flues, a burner thereunder, means for conducting products of combustion from the boiler flues, and a jacket extending over the boiler having an inlet at one end, said jacket constituting means for conducting fresh air to the burner, of a valve for controlling the flow of fuel to the burner, a damper in the inlet of the jacket normally open, and means movable with the valve for engaging the damper when the valve is closed to close the damper, said damper being movable to closed position independently of the valve.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

GEORGE WILLIAM FRANZHEIM.