Jan. 4, 1927. 1,612,931

F. J. LOCHEN

BAFFLE PLATE FOR BOILER FLUES

Original Filed Sept. 11, 1925

Fig. 1

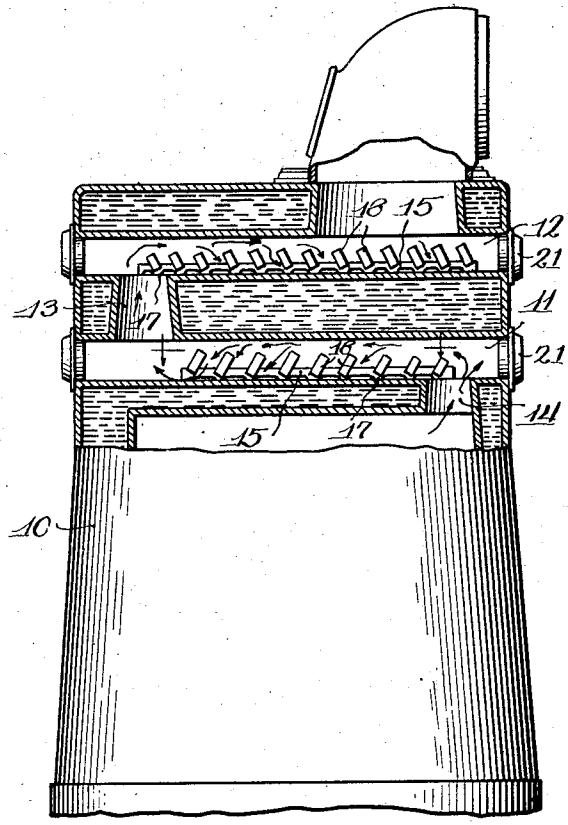
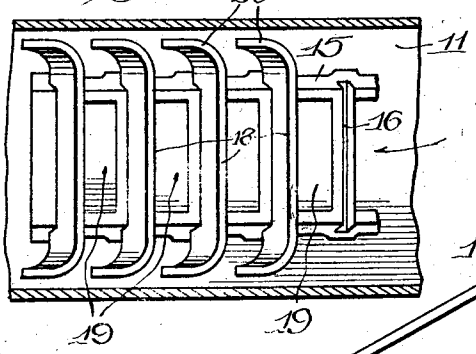


Fig. 2



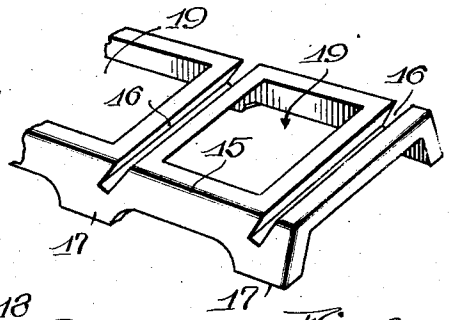


Fig. 3

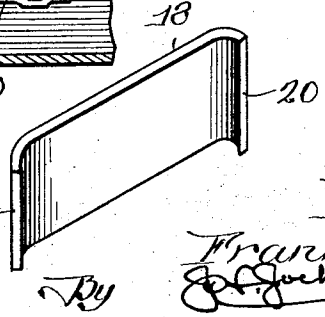


Fig. 4

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Patented Jan. 4, 1927. 1,612,931

UNITED STATES PATENT OFFICE.

FRANK J. LOCHEN, OF CHICAGO, ILLINOIS.

BAFFLE PLATE FOR BOILER FLUES.

Original application filed September 11, 1925, Serial No. 55,644. Divided and this application filed January 21, 1926. Serial No. 82,746.

This application is a division of my application Serial Number 55,644.

This invention relates to improvements in baffle plates adapted to be removably inserted in the flues of boilers for interrupting the flow of hot gases therethrough and for distributing the gases in the flue so that all of the available heat units will be distributed throughout the heating surfaces of the flues thereby increasing the heating efficiency of the boiler with a material reduction in fuel consumption.

It has been found that as the heated gases pass through the flue, and especially in oil burning furnaces and coal burning boilers that have been converted into oil burning boilers, the heating units in their passage through the flue do not all contact with the heating surfaces with the result that a great amount of heat is lost and passes out of the stack.

The heated gases have a free passage through the flue and only some of them hug some of the surfaces of the flues while other portions of the flue surfaces are not contacted by the heated gases.

It is one of the objects of the present invention to provide improved baffles which are separate from and independent of the flues and are adapted to be inserted into the flues to interrupt the flow of the heated gases therein and to cause the gases to flow in a tortuous passage so that all of the surfaces of the flues will be contacted by the hot gases and thereby utilize all of the heat units in the gases and prevent them from escaping from the flue.

A further object is to provide improved baffles of this character which may be readily inserted into the flues of boilers now on the market without in any manner altering the construction of such boilers and which will effectively break up the gases and distribute them throughout the entire area of the flue and at the same time the baffles may be readily removed from the flue.

A further object is to provide improved baffles of this character which will provide a minimum amount of contacting surface with the wall of the flue into which they are inserted.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts as hereinafter more fully described and claimed and as shown in the accompanying drawings illustrating the invention and in which,

Figure 1 is a diagrammatic view partly in elevation, partly in section, and partly broken away, of a round form of boiler having baffles constructed in accordance with the principles of this invention arranged in the flues.

Figure 2 is a detail horizontal sectional view taken on line 2—2 Figure 1 and with one of the baffle members or elements omitted.

Figure 3 is a detail perspective view of a portion of the supporting member for the baffles.

Figure 4 is a detail perspective view of one of the baffle members or elements.

Referring more particularly to the drawings the numeral 10 designates generally a boiler of any construction and configuration having flues 11 and 12 which are connected by means of a flue 13. A flue 14 forms communication between the boiler 10 and the flue 11.

The baffle is of a knock down or sectional construction and embodies a supporting base 15 of any desired size and configuration and is provided with grooves 16 opening through the upper face thereof and inclined to the horizontal axis of the support.

The support is preferably provided with reduced portions 17 to form feet to reduce the contact surface thereof with the wall of the flue.

A plurality of baffles 18 are inserted into the grooves by one edge and will be held by the grooves in inclined positions with respect to the support 15. They will be spaced from each other in directions lengthwise of the support.

The support is provided with openings 19 therethrough so that the heated gases will flow between the baffle members 18 and also through the support 15.

The support 15 is placed in a flue 11, so that the baffle members 18 will incline in a direction opposed to the direction of flow of the heated gases through the flue and the baffle members are of such a length that they will extend substantially across the flue, the extremities of the baffle members being deflected forwardly as at 20 in directions op-

posed to the direction of inclination of the baffle for directing the heated gases against the sides of the flue.

The baffle members 18 preferably increase in height from the point where the heated gases first contact therewith toward the other end of the series of baffles for directing the gases against the top of the flue.

The baffle members 18 in the flue 12, are arranged to incline in a direction opposed to the direction of inclination of the baffle members in the flue 11.

Closures 21 are provided for the flues 11 and 12 and are adapted to be opened to facilitate the insertion and removal of the baffle elements.

With this invention it will be manifest that the hot gases will be interrupted in their passage through the flues and will be directed against the walls of the flue, at the same time they will flow in a tortuous passage through the flues with the result that all the heating units will be utilized and the "stack heat" will be reduced to a minimum with the further result that the efficiency of the boiler will be increased and the fuel consumption materially reduced, at the same time the baffles may be readily inserted in the flue and as readily removed therefrom.

Obviously these baffle elements may be employed in the flues in any form or type of boilers or boiler construction.

While the preferred form of the invention has been herein shown and described it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts within the scope of the claims without departing from the spirit of this invention.

What is claimed as new is:

1. In combination, a flue, a removable support within the flue, and a plurality of baffle elements carried by and each supported by its lower edge by the said support said baffle elements being freely detachable from the support.

2. In combination, a flue, a removable support within the flue, and a series of baffle elements carried by and each supported by its lower edge by the support, said elements being inclined and increasing in height from one end to the other end of the series.

3. In combination, a flue, a removable support within the flue, and a plurality of baffle elements carried by the support, said elements being inclined, the extremities of the said elements being deflected rearwardly and in a direction opposed to the direction of inclination of the elements with respect to the support.

4. In combination, a flue, a removable support within the flue, and a plurality of baffle elements carried by the support for free removal therefrom and terminating short of the top of the flue, the said elements being spaced from each other, there being openings through the support whereby heated gases will flow between and across the tops and bottoms of the said elements.

5. In combination, a flue, a removable support within the flue, a plurality of baffle elements carried by and being separate from the support and terminating short of the top of the flue, the said elements being spaced from each other, there being openings through the support whereby heated gases will flow between and across the tops and bottoms of the said elements, the said elements being inclined in a direction opposed to the direction of flow of the heated gases through the flue.

6. In combination, a flue, a removable support within the flue, and baffle elements mounted upon the support and spaced from each other, each of the baffles being freely removable from the support independent of the others.

7. In combination, a flue, a removable support within the flue, and baffle elements mounted upon and each supported by its lower edge by the said support said baffles being freely and independently mounted upon the support and spaced from each other, said elements being spaced from the top and bottom of the flue and being inclined in a direction opposed to the direction of flow of the heated gases through the flue.

8. In combination, a flue, a removable support within the flue, and baffle elements removably mounted upon the support and spaced from each other, said elements being spaced from the top and bottom of the flue and being inclined in a direction opposed to the direction of the flow of heated gases through the flue, there being openings through the support for the passage of the heated gases therethrough.

9. In combination, a flue, a removable support within the flue, a plurality of baffle elements carried by the support and adapted for independent removal from the support, the extremities of the baffles being deflected forwardly beyond the body portion of the baffle and in the same general direction as the flow of the products of combustion through the flue each of the baffles being removable from the said support independent of the other baffles.

10. In combination, a flue, a series of inclined baffles removably supported in the flue, the extremities of each of the baffles being in alinement and deflected forwardly beyond the body portion of the respective baffles to form passages between said extremities and the adjacent portions of the wall of the flue.

11. In combination, a flue, a plurality of alined inclined baffles spaced from each other and inclining in a direction opposed to the direction of the flow of products of combustion through the flue, the extremities of the baffles being detached from the flue and deflected forwardly beyond the body portion of the respective baffles and in directions in opposition to the direction of inclination of the baffles.

In testimony whereof I have signed my name to this specification, on this 19th day of January, A. D. 1926.

FRANK J. LOCHEN.