(No Model.)

DE WITT C. HILL.

BOILER.

No. 263,701. Patented Sept. 5, 1882.

Fig. 1.

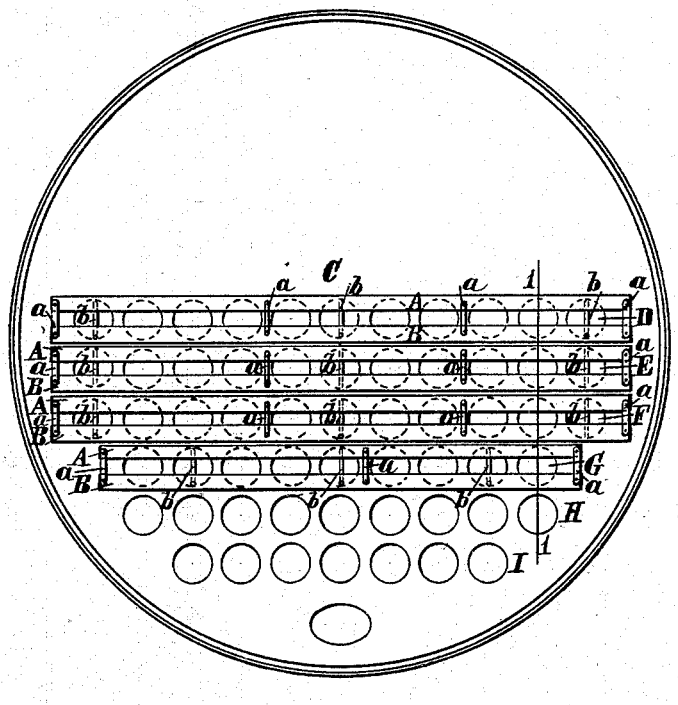
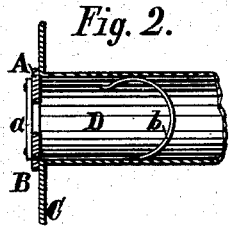


Fig. 2.



Attest;

H. G. Manning,

A. B. Doggett.

Inventor;

DeWitt Clinton Hill,

per Edw. Dimmer,

Atty.

UNITED STATES PATENT OFFICE.

DE WITT C. HILL, OF WILLIMANTIC, CONNECTICUT, ASSIGNOR OF TWO-THIRDS TO JOHN SCOTT, OF SAME PLACE, AND WILLIAM E. BARROWS, OF HARTFORD, CONNECTICUT.

BOILER.

SPECIFICATION forming part of Letters Patent No. 263,701, dated September 5, 1882.

Application filed September 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, DE WITT CLINTON HILL, a citizen of the United States, residing at Willimantic, in the county of Windham and State of Connecticut, have invented a new and useful Improvement in Tubular Boilers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a device for obtaining a desirable relative degree of heat in the tubes of a tubular boiler; and it consists in an arrangement of plates or bars projecting over the ends of said tubes, together with means for conveniently adjusting said plates or bars.

In the drawings, Figure 1 shows the end of a return tubular boiler having my device attached; and Fig. 2 is a section on the line 1 1 in Fig. 1 of part of a tube and of the adjustable plates or bars, drawn on a larger scale than Fig. 1.

I have found that in return tubular boilers, as they are now constructed and located in the furnace, the heat is greater in the upper than in the lower tubes, and that there is a gradation from a higher to a lower temperature from the higher to the lower tubes. It is desirable, for obvious reasons, that the heat should be more evenly distributed through all the tubes—that is, that part of the heat which exists in or passes through the upper tubes should be taken therefrom and caused to exist in or pass through those lower down. In order to accomplish this result I decrease the size of the openings at the ends of the upper tubes in suitable proportion to get the proper or desired relative amount of heat through all the tubes. I prefer to regulate the size of said openings at the forward end of the boiler—that is, the end where the smoke and gases make their exit from the tubes.

I place two plates or bars, A and B, against the end of the boiler C, so as to project over the ends of the tubes in a series or row, and thus for as many series or rows as is desirable. These plates or bars are of the suitable width—properly wider for the upper than for the lower tubes—to be most readily adjusted to project over the tubes to that extent which will give the best result. Each pair of plates or bars has links *a* pivoted to the plates or bars, whereby the two are hinged together, as shown. One of the plates or bars, B, has springs *b* attached thereto, which, being pressed into the tubes, as shown, will hold the pair of plates or bars in position against the end of the boiler. The slight change of heat to be effected in the lowest one or more of the series or rows of tubes might make it undesirable to have the plates or bars for them. Thus in the drawings I have shown plates or bars for the series or rows of tubes D, E, F, and G, and none for the series or rows of tubes H and I.

With my construction and arrangement the required size of the openings at the ends of the tubes may be secured, and the said size may be regulated at will by sliding the bar A of any set endwise.

The plates or bars may be readily removed for cleaning the tubes, &c., by pulling them outward from the end of the boiler in the direction to draw the springs *b* from the tubes.

I claim as my invention—

1. In combination with a tubular boiler, plates or bars placed in relation to the boiler and the tubes and arranged in pairs, as specified, the two of each pair being so hinged together that one may be moved parallel to the other by sliding it endwise, substantially as and for the purpose specified.

2. In combination with a tubular boiler, two plates or bars, one having springs *b* to enter the tubes and keep the plates or bars in position and the other being hinged to the former in such a manner that it may be slid parallel to it, substantially as and for the purpose specified.

DE WITT CLINTON HILL.

Witnesses:

JOHN M. HALL,

S. T. WALINGER.