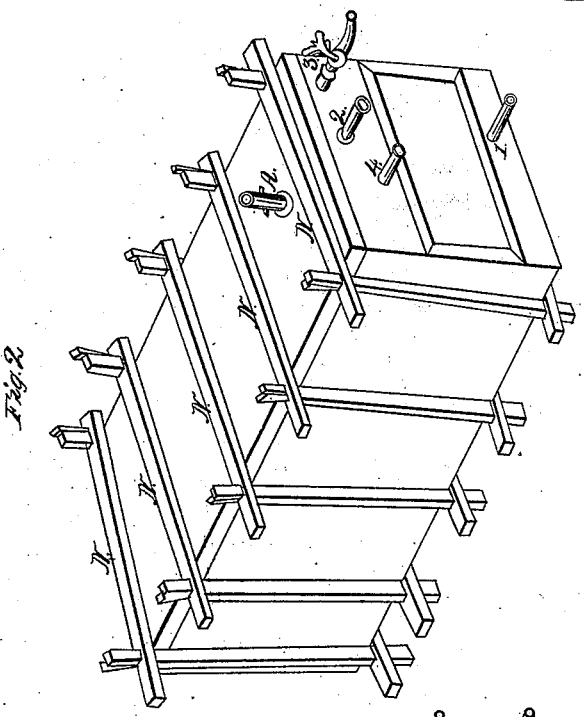
W. Brown,

Removing Incrustation in Steam Boilers.

No. 51,775. Patented Dec. 26, 1865.

Fig. 2.



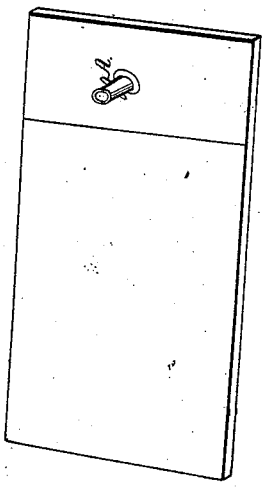
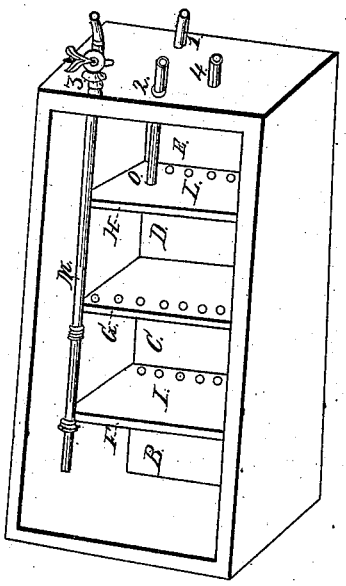


Fig. 1.



Witnesses:

A. J. Jackson

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UNITED STATES PATENT OFFICE.

WILLIAM BROWN, OF MORRISON, ILLINOIS, ASSIGNOR TO M. G. JACOBS AND F. H. JACOBS, OF SAME PLACE.

IMPROVED METHOD OF PREVENTING INCRUSTATION IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **51,775**, dated December 26, 1865.

To all whom it may concern:

Be it known that I, WILLIAM BROWN, of Morrison, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in the Mode of Preventing Incrustation in Steam-Boilers; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and the letters of reference marked thereon.

The nature of my invention consists in the construction of a filter with compartments to be filled with hay, as hereinafter described, into which the water to be used for generating steam is filtered, and the exhaust-steam from the cylinder is received, and as it comes in contact with and operates upon the water during the whole process of filtering from the time the water enters the filter until it leaves it, it keeps up the required temperature of heat, which precipitates the lime, and as the hay furnishes a surface which every drop of water comes in contact with, the lime adheres to it as it passes through the filters to the compartment where the boiler-pump receives it, so that there is no lime or other substance in the water that will cause incrustation in a steam-boiler.

I construct my filter out of wood, iron, or any other materials of sufficient strength and durability for a boiler of sixty-horse power. I construct my filter twelve feet long, two feet wide, and two feet high. I increase the length and number of filtering compartments according to the nature of the water to be used. I put in three partitions sixteen inches high at equal distance from each other and the ends of the filter, making four compartments of equal size, and leaving a space of eight inches from the top of the partitions to the cover, for the free passage of steam to all parts of the filter. I bore a line of holes one-half inch large through partition F, at the bottom, the same through partition G, at the top, the same through partition H, at the bottom, as seen at I, K, and L, in Figure 1. Pipe M passes through the front end on a level with the top of the filtering compartments, and rests on the partitions secured to the side at partition F, and reaches midway of compartment B, connecting, with cock at 3, with pipe from well or reservoir of cold water. The exhaust-pipe from the cylinder is inserted, at 2, a little above the level of the partitions F, G, and H. The pipe from the boiler-pump is inserted at 1. Close to the bottom of the front end pipe, 4, is the waste-water pipe, and is inserted a little below the level of the tops of the partitions F, G, and H, so that the water may not rise above the partitions should more run into the filter than the boiler used out. The cover is made to fit snugly, and is secured by any method preferred, either by hinges at one side and hasps at the other, or clamps framed to fit snugly wedged and keyed on, as shown at N in Fig. 2, which represents my filter set up for use.

Letter A in Fig. 2 represents the exhaust-pipe, which I insert in the cover directly over compartment E. The size of this pipe should be sufficiently large to permit the free exit of steam, as the amount of steam used some days may be more than others. A fly-valve is used in this pipe to regulate the opening for the exit of steam, so that the degree of heat may be obtained, which should be as near 112° as can be pumped. Compartments B, C, and D are filled with hay for the heated water to filter through, and my filter is ready for use.

The operation of my filter is as follows: The water is received from the well or reservoir at No. 3, and conveyed into compartment B through pipe M, as shown in Fig. 1. The water is heated by the escape-steam from the cylinder, which comes in at No. 2 through pipe O, and as the water is filtered through the hay in compartment B it runs through the holes at the bottom of partition F, as seen at I; then rises through the hay in compartment C, and runs through the holes in the top of partition G into compartment D, as shown at K; filters through the hay to the bottom of the compartment and runs through the holes at the bottom of partition H, as shown at L, into compartment E, which has no filtering material, being used as a reservoir for the collection of water that has deposited its lime, and for the insertion of pipes Nos. 1, 2, and 4. The pump from the boiler receives the water from compartment E through pipe No. 1, and forces it into the boiler. Should there be too much water it finds an exit at the waste-water pipe

The cover of the filter must be taken off once a week, and the hay with the lime adhering to the stalks or spears must be removed, the compartments cleaned out, and clean hay put in. It will be seen that as lime when precipitated will not adhere to wood it will adhere to hay, as it is allowed to pass (when heated to the right temperature) through the hay in the compartments, as herein set forth and described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In the construction of the filter, the space left above the tops of the partitions F, G, and H and the cover, for the free passage of steam from the cylinder into the filtering-compartments B, C, and D, for the purpose of heating the water, as herein set forth and described.

2. The application of hay as filtering material, to be put into compartments B, C, and D for the precipitated lime to adhere to, as and for the purposes herein set forth and described.

WM. BROWN.

Witnesses:
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