

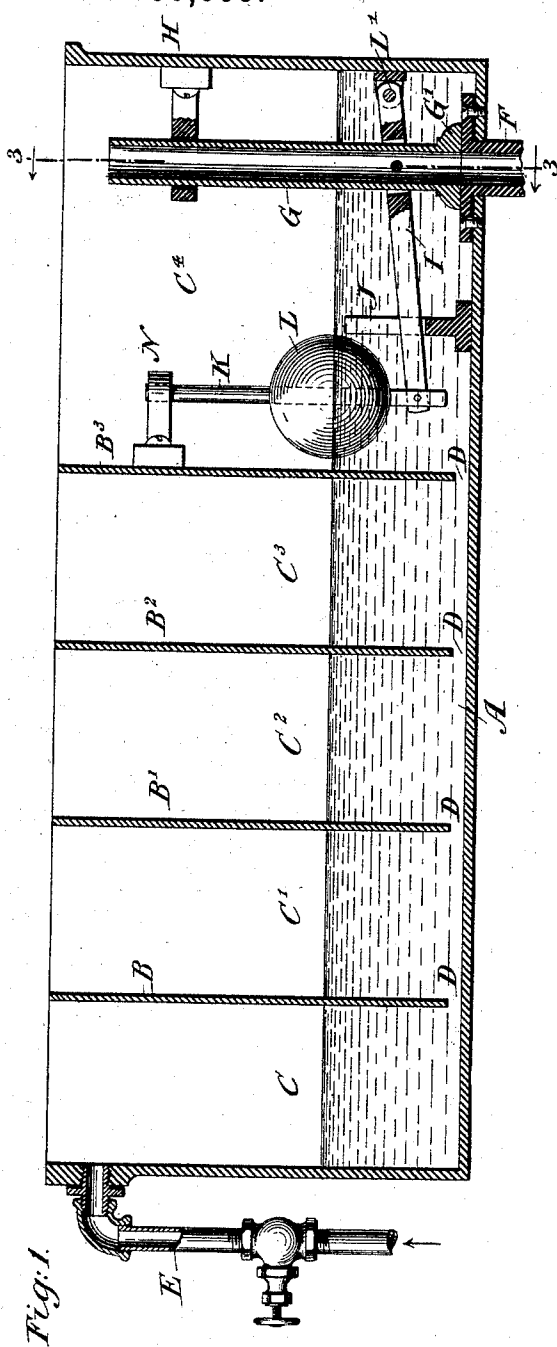
(No Model.)

J. F. TRAVER.

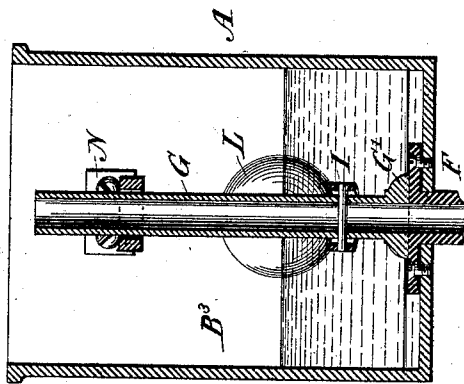
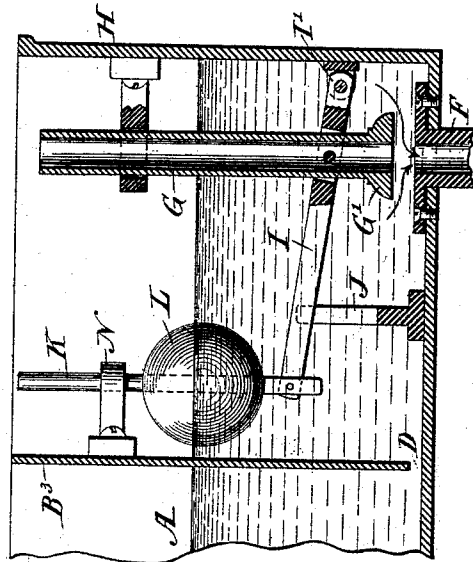
GREASE ARRESTER FOR STEAM ENGINES OR BOILERS.

No. 499,059.

Patented June 6, 1893.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JEREMIAH FRANKIS TRAVER, OF NEWBURG, NEW YORK.

GREASE-ARRESTER FOR STEAM ENGINES OR BOILERS.

SPECIFICATION forming part of Letters Patent No. 499,059, dated June 6, 1893.

Application filed October 4, 1892. Serial No. 447,773. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH FRANKIS TRAVER, of Newburg, in the county of Orange and State of New York, have invented a new and Improved Grease-Arrester for Use in Connection with Steam Engines or Boilers, of which the following is a full, clear, and exact description.

The invention relates to grease arresters, otherwise called filter boxes, commonly used in connection with condensing steam engines.

In the ordinary operation of condensing steam engines, the steam, in passing through the engine to the condenser, becomes more or less charged with oil, grease and other foreign substances, and these impurities make their appearance in the water of condensation, which is commonly collected within a filter box or grease arrester, whence, after filtration, it is, by means of a pump, forced back into the boiler. This pump generally forms a part of the engine, and when the latter is in motion, the pump is constantly drawing water from the filter box and discharging it into the boiler. The filtering materials ordinarily employed to filter the water in the filter boxes, are more or less defective, and difficulty is found to prevent the grease, scum and other impurities from finding their way with the water of condensation back into the boiler and engine.

The object of this invention is to provide a means whereby the grease, scum and other impurities may be effectively separated in the filter box from the water of condensation and held in the filter box for convenient removal, while the water of condensation, in a comparatively pure state, is returned to the boiler.

The invention consists of a pipe valve adapted to be seated on the outlet pipe of the filter box, said valve being actuated by a float and arranged to extend from its seat to a point above the highest level of the water in the filter box.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claim.

Reference is to be had to the accompanying

drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of a filter box containing my improvements showing the water at low level and my valve in closed position. Fig. 2 is a transverse section of the same; and Fig. 3 is sectional side elevation of a portion of the filter box, showing the water at high level and my valve in open position.

A suitably constructed tank or filter box A is provided, having arranged therein a series of transverse partitions B, B', B², and B³, forming within the filter box a series of compartments, C, C', C², C³, C⁴, connected with each other at their lower ends by passageways D, formed by not carrying the partitions entirely down to the bottom of the tank A, as will be readily understood by reference to Figs. 1 and 2. This form of filter box is more especially intended for use on ship-board in connection with marine steam engines or boilers, and the object of the above partitions is to prevent the swash of the water in the filter box, under motion of the ship. The water of condensation enters filter box A through the pipe E into the compartment C, and thence flows into the several compartments. In the last compartment C⁴, and at the bottom thereof, is arranged the outlet pipe F, which connects with the engine pump, by which the water of condensation is pumped back into the boiler. The upper end of this pipe F, within the compartment C⁴, is flanged and forms a seat G', which receives the lower end of a vertically disposed hollow pipe valve G, the upper end of which rises to within a short distance of the upper edge of the tank A.

The pipe valve G is mounted to rise and fall vertically, and is guided for this purpose in a suitable loop H, extending from the inner wall of the tank A. The pipe G is pivotally connected near its lower end with a lever I fulcrumed at I' on the bracket attached to the wall of the tank A, as shown. The lever I is mounted to swing vertically and is guided near its free end in a keeper J. The free end of the lever I is pivotally connected

with a float rod K carrying a float L, the rod K being mounted to slide at its upper end through a loop N, as shown.

The operation is as follows: When the several parts are in position, and the water in the filter box at low level, as shown in Fig. 1, the outlet pipe F is closed by the pipe valve G being seated on the flange of said pipe F, so that the water entering the inlet pipe E accumulates in the several compartments C, C', C², C³, C⁴, within which the water rises simultaneously in all the compartments, as the latter are connected with each other by the passageways D. When the water in the compartment C⁴ rises sufficiently it lifts the float L so that the lever I is moved upward, whereby the pipe valve G is lifted off its seat on the pipe F, and the latter is thus opened so that the engine pump can suck water from the compartment C⁴. As soon as the water falls in the filter box below the predetermined level, the float L moves downward and the valve pipe G becomes seated again on the pipe F, thus closing the latter, thereby preventing a further outflow of water from the several compartments of the tank A, but the working of the pump will not be impeded, as the pump will now suck air through the pipe valve G, the upper end of which rises above the water level in the filter box.

Any lubricant, grease, scum or other impurities will float on the water within the filter box, and will be arrested and held therein to be finally removed by any suitable means, whenever a sufficient quantity has accumulated.

It will be seen that the construction and arrangement of my pipe valve are such that only the lower strata of water, which is purest and freest from impurities, can be drawn off by the pump from the filter box through the pipe F, for as soon as the water level in the filter box falls sufficiently, thus bringing down the floating strata of impurities, the pipe valve G closes, leaving the impurities in the filter box. In the ordinary filter box, all the water and all the impurities in the water may be drawn out of the box by the pump,

which then sucks air at the bottom of the filter box.

The pipe valve G, instead of being operated by lever and float rod as shown, may be operated by having the float L directly attached, in a suitable manner, to the pipe valve G. The especial advantage of my hollow pipe valve G is that it opens and closes easily at all levels of the water in the filter box. If the valve G were solid instead of hollow, the continued suction of the pump when the valve was closed would render it difficult for the float to lift the valve into open position, and the operation of the pump would be hindered. But by having the valve made hollow, as here described, the suction of the pump does not interfere with the easy movement of the valve, for when the valve closes the pump takes air through the hollow pipe valve G and the pump exerts no suction or pressure upon the valve.

I do not limit or confine myself to the exact size or arrangement of any of the parts herein described, as they may be varied in sundry ways by the constructor without departing from my invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

In combination with the outlet pipe of a grease arresting tank or filter box, a float operated pipe valve, arranged to extend from the outlet pipe to a point above the highest level of the water in the tank, substantially as shown and described; whereby when the water level falls to the determined lowest level the said valve will close and the engine will then suck air through the whole length of said valve, so long as the valve remains closed, and when the valve opens the engine will suck water from the lower strata of water in the tank until the valve again closes, as herein set forth.

JEREMIAH FRANKIS TRAVER.

Witnesses:

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F. W. HANAFORD.