No. 834,464. PATENTED OCT. 30, 1906.

H. E. FERCHEN.

FEED WATER FILTER.

APPLICATION FILED JUNE 5, 1906.

Fig. 1.

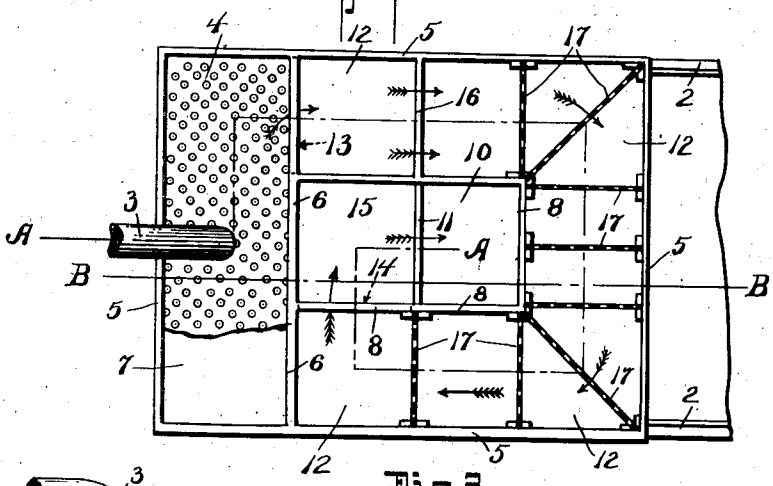


Fig. 2.

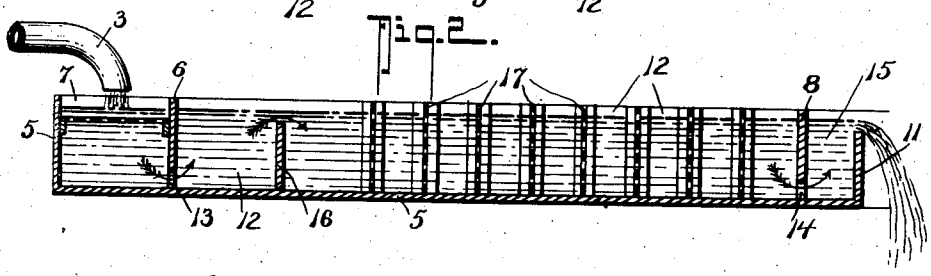
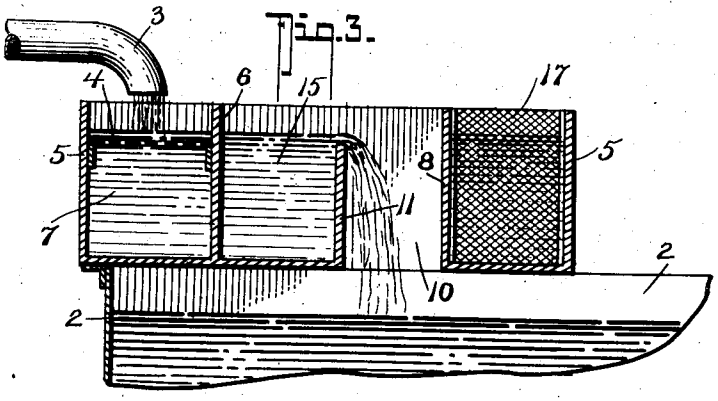


Fig. 3.



WITNESSES:

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HENRY E. FERCHEN, OF VANCOUVER, BRITISH COLUMBIA, CANADA, ASSIGNOR OF ONE-HALF TO ALEXANDER EASLER, OF VANCOUVER, CANADA.

FEED-WATER FILTER.

No. 834,464. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed June 5, 1906. Serial No. 320,349.

To all whom it may concern:

Be it known that I, HENRY E. FERCHEN, a citizen of the United States of America, residing at the city of Vancouver, in the Province of British Columbia, Canada, have invented a new and useful Feed-Water Filter, of which the following is a specification.

This invention relates to an improved means for freeing the water of condensation of a marine or other condensing engine from suspended oil or grease before such water is passed into the hot-well for return to the boiler through the feed-pump. There are many feed-water filters designed to effect this purpose, but in the generality of them the water is passed through a filtering-chamber charged with sponge, toweling, or the like, which charge requires to be periodically removed when foul and necessitates either the shutting down of the condenser or the passage of unfiltered water into the boiler during the time of such recharging.

The manner in which I effect the desired purpose is at once simple and efficient and comprises an open trough into which the water from the pump is delivered and within which a sufficient head of water is retained to arrest violent flow and to afford opportunity to the suspended particles of oil and grease to rise to the surface and aggregate, which natural tendency is assisted by the introduction of partitions under and over which the water is constrained to flow and by the introduction of removable gauze screens which will retain the collected particles, while allowing the water to pass.

I also construct the trough to surround the overflow-downtake to the hot-well, by which means I not only economize space, but the changing direction of the flow of water causes a series of eddies to be formed which further facilitate the aggregation of the oil particles and gives them better opportunity to rise to the surface. With this arrangement the screens may successively be removed for cleansing without interruption of the service or spare screens may be kept and the foul ones replaced at intervals.

The particular construction and operation of the filter are described in the following specification and illustrated in the drawings by which it is accompanied, Figure 1 being a plan of the device; Fig. 2, a cross-section to a smaller scale developed on the line A A in Fig. 1, which indicates the course of the water from inlet to overflow; and Fig. 3, a cross-section on the line B B in Fig. 1.

Resting upon the upper edge of the walls of the hot-well, which are represented by 2, is a rectangular box 5, across one end of which is divided off by a partition 6 a receiving-compartment 7, into which the water from the pump is delivered through a pipe 3 upon a horizontal perforated screen 4, the object of which screen is to distribute the flow and prevent violent agitation by the inflow of the water in the receiving-compartment 7.

From the partition 6 a partition 8 extends round a rectangular opening 10 in the bottom of the box 5 and back to the partition 6, forming a wall round three sides of the outlet 10, the fourth side (that toward the receiving-compartment) having an overflow-wall 11, the height of which is such as will retain the desired head of water within the trough 12 thus formed round the overflow-outlet 10.

The trough 12 is connected to the receiving-compartment 7 by a passage 13 through the partition 6 in the level of the bottom, and a similar under passage 14 through the inner wall 8 connects the other end of the trough 12 with the overflow division 15.

In the end of the trough adjacent to the inlet-passage 13 is a partition 16, the depth of which is about the same as that of the outlet-overflow 11, and at intervals throughout the length of the trough 12 are gauze cross-screens 17. These screens 17 are removable for purposes of cleansing, being vertically slidable in grooves provided in the walls.

In operation the height of the partition 16 and of the overflow-wall 11 will preserve a head of water in the receiving-compartment 7 and in the trough 12, and as the passage 14 from the compartment 7 to the trough is in the lower level and violent agitation due to the inflow is checked by the perforated screen 4, which is removable, the purer water only will pass to the trough. The upward flow from the passage 13 over the upper edge of the partition 16 will bring the oil particles toward the surface, where many will contact and aggregate and will not, in opposition to their specific gravity, again sink.

As the water flows on through the trough the screens will intercept the aggregated particles of oil and grease and permit the purer water to pass through the screens, and at the

corners where the direction of the flow is changed slight eddies are formed, which are favorable to the aggregation and flotation of the oil particles.

At the end of the trough the partition 8 holds back the upper strata, which may still carry oil particles, while the purer water flows through the passage 14 and is delivered over the retaining overflow-wall 11 to the hot-well.

I claim—

1. As a filter for the removal of grease and oil from feed-water; an elongated open trough having at the end in which the water is delivered a receiving-compartment with a horizontal removable perforated distributing-plate and at the other end an overflow-wall that will retain the trough practically full of water, a passage from the receiving-compartment to the trough in the level of the bottom, a partition adjacent over which the water may flow, a partition at the other end adjacent to the overflow having an under passage, and a series of removable gauze screens throughout the length of the trough.

2. As a filter for the removal of oil or grease from feed-water; an open trough surrounding a rectangular downward aperture, one of the end walls of which aperture is lower than the other walls of the trough to form an overflow into the central aperture, a partition produced from one of the sides of the aperture terminating the trough beyond the overflow, a receiving-compartment across the end of the trough adjacent to such termination, a passage in the level of the bottom from the receiving-compartment to the beginning of the trough, an overflow-partition across the trough adjacent to such entering passage, an underflow-partition across the box adjacent to the outlet-overflow, and a series of removable gauze screens across the trough.

3. As a filter for the removal of oil or grease from feed-water; the receiving-receptacle 7 having the perforated screen 4, the passage 13 communicating with the open trough 7 surrounding the downward aperture 10, the overflow-partition 16 adjacent to the inlet-passage, the overflow-partition 11 adjacent to the outlet 10, the underflow-partition 8 adjacent to the overflow 11 and the removable gauze screens 17.

4. A filter of the class described comprising an open trough, having a receiving-compartment at one end and an overflow-wall at the other end, and an intermediate compartment between the overflow-wall and the receiving-compartment, a perforated distributing-plate within the receiving-compartment, said trough having a passage from the receiving-compartment to the intermediate compartment in the level of the bottom, a partition in the intermediate compartment adjacent the passage between the receiving-compartment and the intermediate compartment over which the water may flow, a partition adjacent the overflow-wall at the other end of the trough having an under passage, and a series of screens throughout the intermediate chamber of the trough, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY E. FERCHEN.

Witnesses:
ALEX EASLER,
ROLAND BRITTAIN.