

(No Model.)

2 Sheets—Sheet 1.

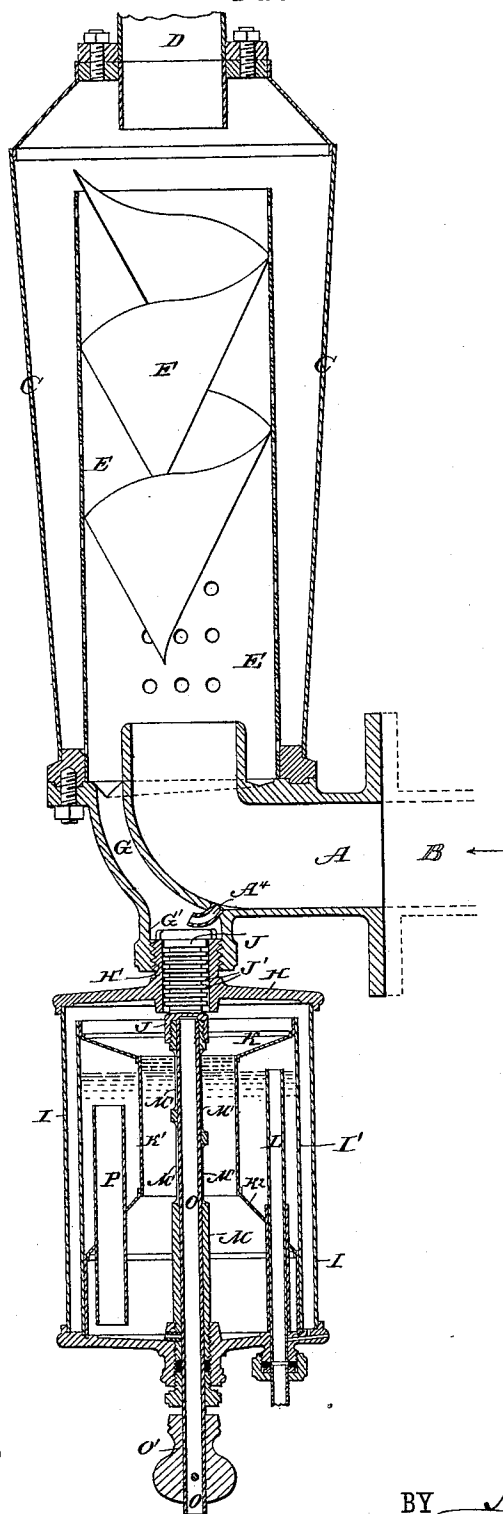
E. POLTE.

OIL SEPARATOR FOR STEAM AND WATER.

No. 338,772.

Patented Mar. 30, 1886.

Fig. 1.



WITNESSES:

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Fig. 2.

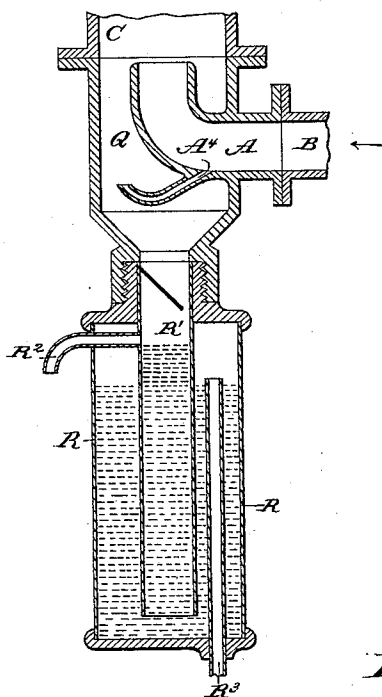


Fig. 3.

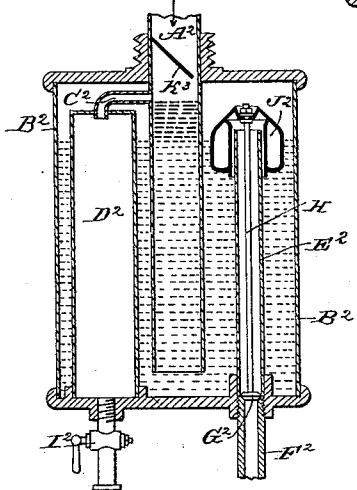
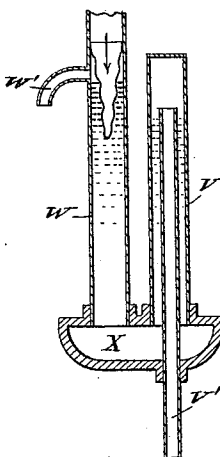


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EUGEN POLTE, OF MAGDEBURG, GERMANY.

OIL-SEPARATOR FOR STEAM AND WATER.

SPECIFICATION forming part of Letters Patent No. 338,772, dated March 30, 1886.

Application filed December 7, 1885. Serial No. 184,932. (No model.) Patented in Germany July 5, 1885, No. 34,090.

To all whom it may concern:

Be it known that I, EUGEN POLTE, of Magdeburg, Germany, have invented a new and Improved Oil-Separator for Steam and Water, of which the following is a full, clear, and exact description.

It is well known that the water obtained by condensing steam from steam-engines, &c., contains considerable quantities of oil and grease, and consequently said water cannot be used for feeding boilers, and the oils and fats in the same are lost. The oils and fats in the exhaust-steam from engines, &c., are also lost.

The object of my invention is to provide a new and improved apparatus for separating said oils and fats from the water of condensation and from the exhaust-steam, so that said oils and fats can be used again.

The invention consists in the construction and combination of parts and details, as will be fully described and set forth hereinafter, and pointed out particularly in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a cross sectional elevation of my improved apparatus for collecting oils and fats from exhaust-steam. Figs. 2, 3, and 4 are cross-sections of modified construction.

The nozzle A is secured on the end of the exhaust-pipe B, and projects into a cylindrical sheet-metal casing, C, in the top of which the outlet D is provided. In the casing C an upright perforated cylindrical casing, E, is held, in which a spiral track-plate, F, is provided, which throws the steam issuing from the nozzle A outward. At one side of the nozzle A a channel, G, is formed, which conducts the water of condensation collected in the casing C to the neck G', into which the neck H' is screwed, which projects from the top plate, H, of a cylindrical casing, I. In said neck H' a plug, J, is placed, which is provided on its outer surface with annular ridges J', between the outer edges of which and the bore of the neck H' a very minute space is formed, through which the oil and water can flow down into the cylindrical chamber I', formed within the outer casing, I, so as to leave an

annular space between them, acting as an air-jacent to prevent the cooling of the inner casing and the solidification of the oils and fats therein. In the upper part of said cylinder I' a pan, K, is placed, which is formed on the upper part of a cylinder, K', on the broader base part K², resting on the upper surface of the bottom of the cylinder I'. An outlet-pipe, L, for water, extends up through the bottom of the cylinder I' and through the space between said cylinder and the cylinder K'. A tube, M, is screwed on the lower end of the plug J and into the bottom of the cylinder I', and is provided with a series of slots, M'. A sliding tube, O, is contained within the tube M, and is provided at its lower end with a handle, O', through which the lower end of the tube O passes, and to which it is secured.

The operation is as follows: The steam issuing from the nozzle A strikes the spiral track F and is given a rotary motion, throwing out water and oil, which is condensed to a certain extent. The greater part of the fats and oils are condensed and run down through the channel G with some of the water into the pan K. The annular ridges J' on the plug J prevent the steam from passing freely into the cylinder I' and disturbing the surface of the oil and water. The oil remains in the cylinder K', and the water passes through a pipe, P, up into the space between the cylinders K' and I', and then flows off through the outlet-pipe L. When the oil is to be withdrawn, the pipe O is pulled down a greater or less distance, and the oil and grease that have collected on the top of the water within the cylinder K' pass through the slots M' and into the upper end of the tube O, and then run down through said tube. The oil and water that condense in the nozzle A pass through the branch tube A¹ into the neck G'.

In the device shown in Fig. 2 the exhaust-pipe B is also provided with a nozzle, A, which is in the casing or cylinder Q, to the lower end of which the cylindrical casing R is attached, down into which the tube R' projects from the casing R. R² is the outlet-nozzle for the oil in the tube R', and R³ is the outlet-pipe for the water.

In the construction shown in Fig. 3 the pipe A² projects through the top of the vessel B²

down to within a short distance from the bottom of said vessel B², and near the top of the vessel B² the pipe A² is provided with the spout C², which projects over the open top of the vessel D² in the vessel B², the said vessel D² being provided at its lower end with the outlet-cock I², which is below the bottom of the vessel B². The tube E projects upward from the bottom of the vessel B², and has its lower end connected with the water-outlet pipe F², and in the bottom of the said tube E² a seat is formed for the valve G² on the lower end of the rod H in the tube E², on the upper end of which rod the float J² is secured. A semicircular plate, K², is held inclined in the pipe A², in the top of the vessel B², to prevent agitation of the water in the vessel B², so that the oil and fats can separate perfectly from the water. The oil collects on the top of the water in the pipe A², on account of the different specific gravity of water and oil, and flows through the spout C² into the vessel D², from which it can be drawn at suitable intervals through the cock I². As the water rises in the vessel B², it raises the valve G², and the water can then flow off through the pipe F².

In the construction shown in Fig. 4 the two pipes W and V are secured on a casing, X, and the steam is conducted to the top of the pipe W, which has a funnel in its upper end, to prevent agitation of the water, and is also provided at its upper end with an outlet-nozzle, W'. The oil flows off through said outlet-nozzle, and the clean water flows through the outlet-pipe V' in the pipe V.

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

1. The combination, with a vessel divided into two compartments in communication with each other at their lower ends, of an outlet

for each compartment, and of a float-valve for closing the outlet of one of the compartments, substantially as herein set forth.

2. In an apparatus for separating oils and fats from water, the combination, with a steam-nozzle, of a cylindrical vessel held below the same, which nozzle is provided with a channel for conducting the water of condensation and oil into the cylindrical vessel below it, and of an outlet-pipe for the water in the cylindrical vessel, which outlet-pipe extends up to the level of the water in said cylindrical vessel, substantially as herein shown and described.

3. In an apparatus for separating fats and oils from water, the combination, with a steam-nozzle, of a cylindrical vessel held below the same, into which vessel the water of condensation, fats, &c., are conducted, an outlet-pipe for the water in said cylindrical vessel, which outlet-pipe extends from the bottom up to the desired level of the water in said vessel, and of a sliding outlet-pipe within said cylindrical vessel, substantially as herein shown and described.

4. In an apparatus for separating fats and oils from water, the combination, with a steam-nozzle, of a cylindrical vessel held below the same, into which vessel the water of condensation, oils, fats, &c., can be conducted, an annular partition dividing the cylindrical vessel into two compartments, a water-outlet pipe in one compartment, a slotted pipe extending through the other compartment, and a sliding oil-outlet pipe in said slotted pipe, substantially as herein shown and described.

EUGEN POLTE.

Witnesses:

B. ROI,

M. W. MOORE.