

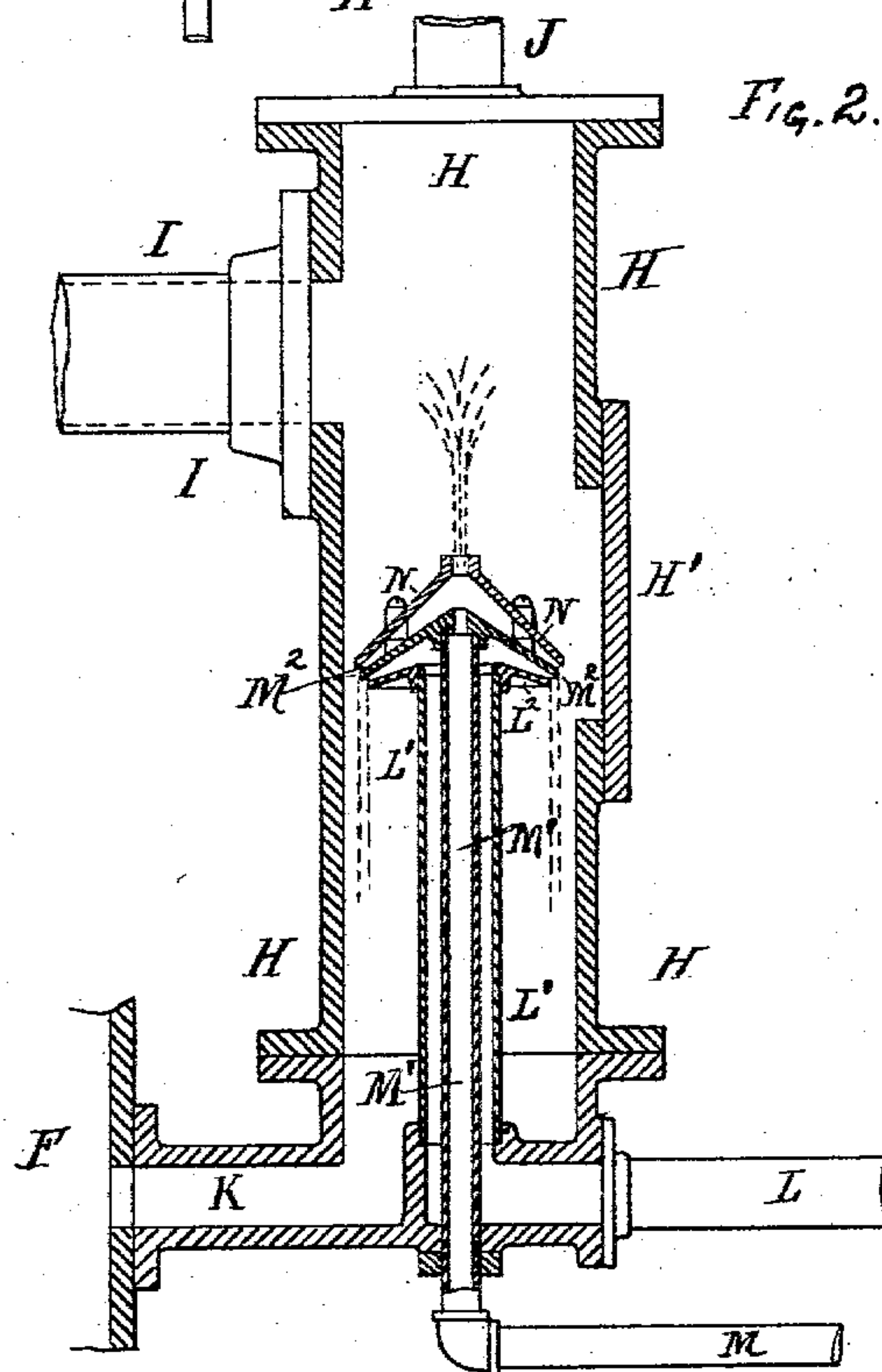
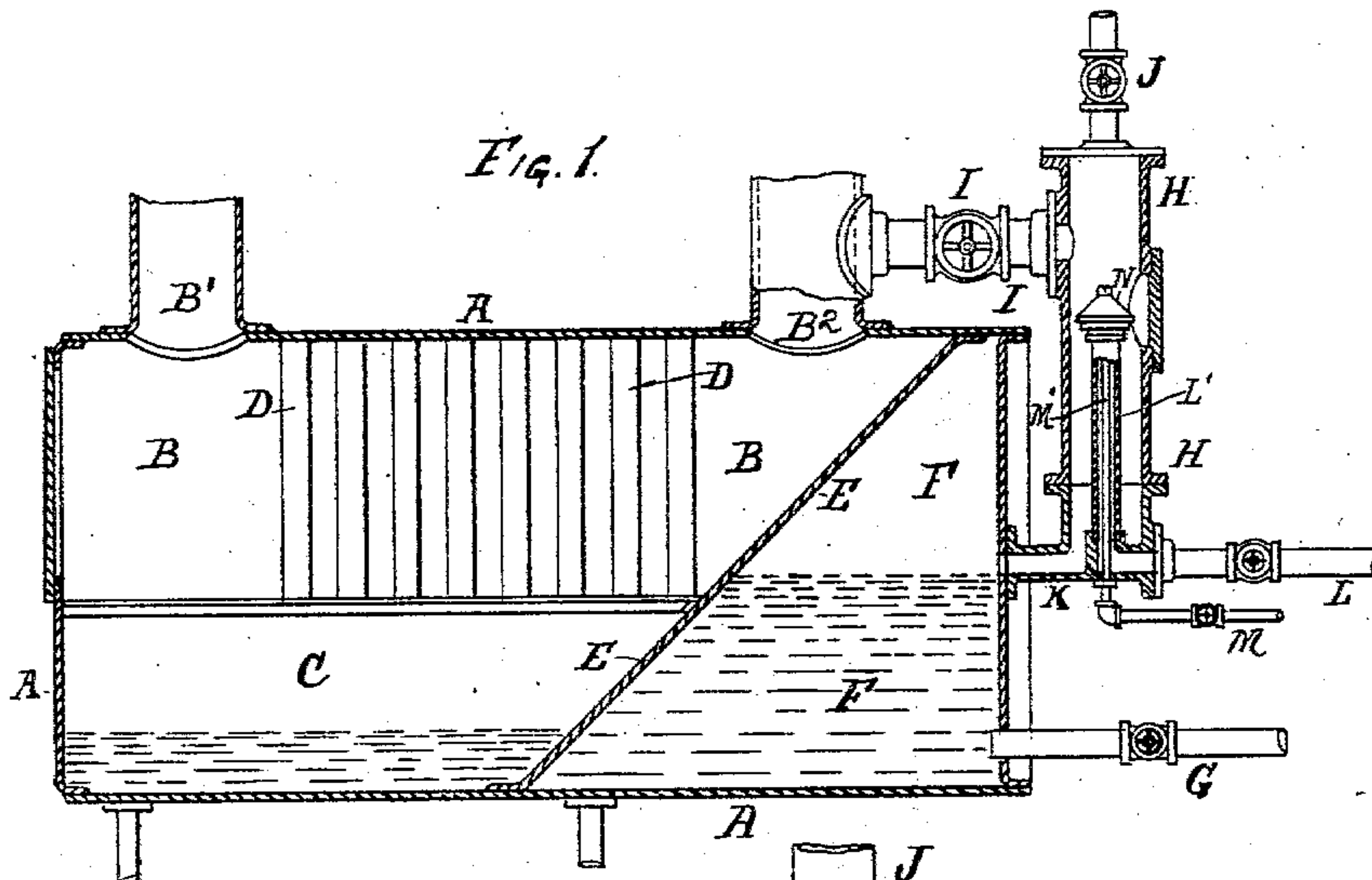
No. 720,740.

PATENTED FEB. 17, 1903.

G. I. ROBERTS.  
FEED WATER HEATER.

APPLICATION FILED JULY 9, 1902.

NO MODEL.



WITNESSES:-

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# UNITED - STATES - PATENT - OFFICE.

GEORGE ILSLEY ROBERTS, OF NEW ROCHELLE, NEW YORK.

## FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 720,740, dated February 17, 1903.

Application filed July 9, 1902. Serial No. 114,891. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE ILSLEY ROBERTS, a citizen of the United States, residing in New Rochelle, Westchester county, and State of New York, have invented certain new and useful Improvements in Feed-Water Heaters, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to the improvement of that style of steam or water traps or separators shown and described in Letters Patent of the United States granted to me under dates of August 3, 1897, May 31, 1898, and July 1, 1902, and numbered 587,560, 604,844, and 703,610, and has for its object an increase in the efficiency and scope of the apparatus, as well as a special and reliable economy in the usefulness of steam and heat that might otherwise be wasted or thrown away.

My improvements consist in the special construction, arrangement, and combination of the several parts, portions, and details comprising the apparatus, as hereinafter shown, described, and claimed.

In the accompanying drawings, Figure 1 represents a central longitudinal section of an apparatus embodying my improvements. Fig. 2 represents an enlarged sectional view of a new and improved water-heating compartment or attachment wherein are located special means for effecting the mingling of the returns from house-heating, condensation, or any reinforce-water with a steam-supply coming from the grease-extracting portion of the apparatus or with admitted live steam of higher pressure.

Similar letters of reference designate like parts, portions, or details in both figures.

Letter A designates a shell made of any desired form, shape, or configuration, within which are inclosed the grease-extracting, the grease receiving or collecting compartment, and the water-collecting compartment.

Letter B designates an upper or steam-receiving compartment into which all surplus, exhaust, unused, or refuse steam or vapor is delivered and from which grease, oil, lubricant, or other foreign matter or material are to be separated and extracted.

Letters B' and B<sup>2</sup> designate admission and discharge passages for the steam or vapor

passing through compartment B, the cleansed steam passing regularly out at B<sup>2</sup> for use in house-heating or like purposes.

Letter C designates a lower or drip-receiving compartment for the reception of extraneous oil, water, grease, foreign material, or matter sifted, separated, or taken from the steam while passing through compartment B.

Letter D designates the usual baffling devices for separating and extracting purposes.

Letter E designates a transverse angular partition extending, as shown, from beneath the steam or vapor outlet B<sup>2</sup> downwardly to the bottom of the main shell A.

Letter F designates a receiving or storage compartment set off to receive all the return waters and condensations.

Letter G designates a pipe connection through which compartment F is emptied.

Letter H designates a special water-heating compartment or chamber of improved construction and operation, within which the several returns, drips, and condensations or any reinforce-water may be heated as required.

Letter I designates a pipe-and-valve connection for effecting and controlling the admission of steam from compartment B and its outlet branch B<sup>2</sup> to compartment H. A special live-steam branch and valve J provides for the admission of high-pressure steam to compartment H when desired.

Letter K designates an outlet connection through which all the water entering the heating-compartment H passes out to the receiving-compartment F.

Letter L designates a pipe-and-valve connection through which the returns, drips, and water of condensation enter the heating-compartment H.

Letter M designates a pipe-and-valve connection through which the reinforce-water enters the heating-compartment H.

To provide for and secure a thorough mingling of the admitted steam and its heat with the admitted waters within compartment H a fountain stand-pipe is raised within said compartment, consisting of one or more upright pipes L' and M', preferably one within the other, through which the returns and the reinforce cold water are admitted. These pipes are capped with guide-plates L<sup>2</sup> and M<sup>2</sup> and an additional guide-plate N as a means



for effectively scattering the waters radially and to shower and rain in proportion to the narrowness of the space between the peripheries of the guide-plates sheets of the water  
5 into the mass of steam supplied to the chamber by either one or both of pipes I and J.

The center of guide-plate N is preferably perforated to permit of an upward ejection of the water from the inner pipe M' into the upper steam-space of compartment H, as illustrated by dotted lines in Fig. 2.  
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The water passing through the annular space between pipes L' and M' overflows guide-plate L<sup>2</sup>, reacts from plate M<sup>2</sup>, and is spurted  
15 radially and downwardly to pass through the steam and heat of compartment H. The water passing through the inner pipe M' overflows guide-plate M<sup>2</sup>, reacts from plate N, and is spurted radially and downwardly to come  
20 in contact with the steam and heat of compartment H.

A central portion of the water of pipe M' spurts upward through the perforated center of guide-plate N into the upper steam mass  
25 of compartment H and drops to the top surface of plate N and rains from its periphery to pass down through the lower steam or heat compartment H. The guide-plates are preferably made of varying diameters, as  
30 shown, to secure separate waterfalls from each. The waters having passed through the compartment pass to compartment F through outlet connection K.

A hand-hole and plate are provided at H' to secure access to the guide-plates L', M',  
35 and N for examination and adjustment.

The outlet for heating-compartment H is necessarily and preferably located at a level above that of the contained water of compartment F to provide against the flooding of  
40 compartment H.

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

1. In combination with a water-heating  
45 compartment, a steam-admission nozzle, an inlet-water riser projecting into said heating-compartment and capped with guide-plates

for controlling the discharge and distribution of the admitted water, and an outlet-nozzle at the bottom of said heating-compartment, 50 substantially as and for the purposes set forth.

2. In combination with a water-heating compartment, a steam-admission nozzle, a plurality of inlet-water risers projecting into said heating-compartment, guide-plates at  
55 the top of said risers for controlling the distribution of the heated water from each of said risers, and an outlet-nozzle at the bottom of said heating-compartment, substantially as and for the purposes set forth. 60

3. The combination in a steam and water trap, of a grease-extracting compartment provided with steam inlet and outlet openings, a drip-receiving compartment, a return-water compartment, a water-heating compartment, a steam-admission nozzle to said water-heating compartment, an inlet-water riser projecting into said heating-compartment and capped with guide-plates for controlling the  
70 discharge and distribution of the admitted water, and an outlet-nozzle at the bottom of said heating-compartment communicating with said return-water compartment, substantially as and for the purposes set forth.

4. The combination in a steam and water  
75 trap, of a grease-extracting compartment provided with steam inlet and outlet openings, a drip-receiving compartment, a return-water compartment, a water-heating compartment, a steam-admission nozzle for said heating-compartment, a plurality of water-inlet  
80 risers projecting into said heating-compartment, guide-plates at the top of each of said risers for controlling the distribution of the water passing through each of said risers, 85 and an outlet-nozzle at the bottom of said heating-compartment communicating with said return-water compartment, substantially as and for the purposes set forth.

GEORGE ILSLEY ROBERTS.

Witnesses:

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