

(No Model.)

G. I. ROBERTS.
STEAM SEPARATOR.

No. 587,560.

Patented Aug. 3, 1897.

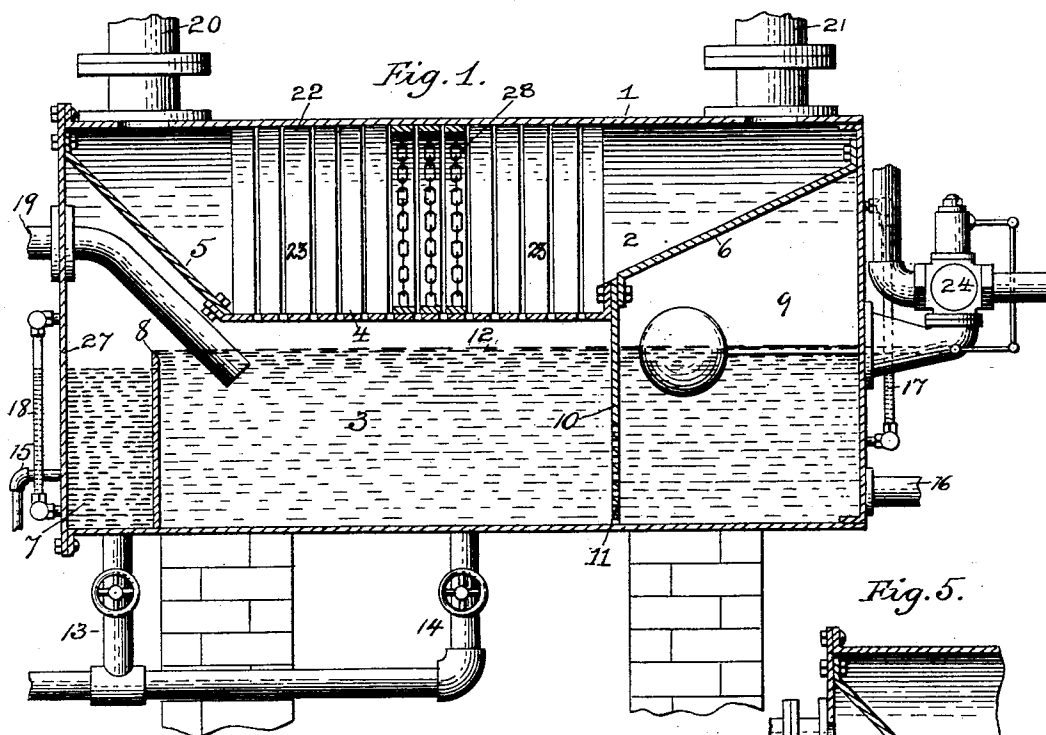


Fig. 4.

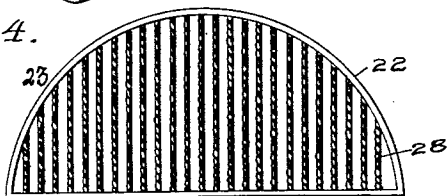


Fig. 2.

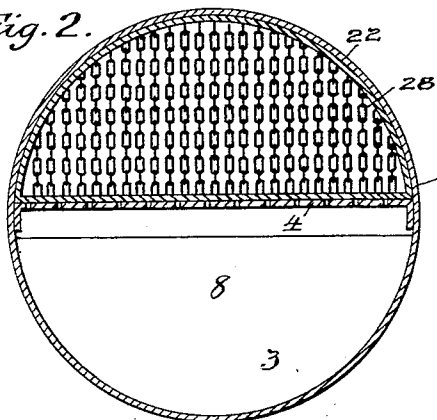


Fig. 3.

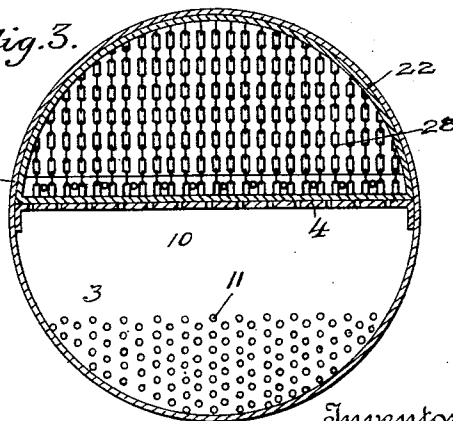
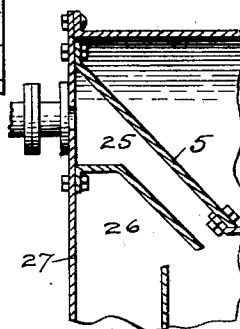


Fig. 5.



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GEORGE I. ROBERTS, OF NEW ROCHELLE, NEW YORK.

STEAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 587,560, dated August 3, 1897.

Application filed April 13, 1897. Serial No. 631,988. (No model.)

To all whom it may concern:

Be it known that I, GEORGE I. ROBERTS, of New Rochelle, county of Westchester, and State of New York, have invented a new and
5 useful Improvement in Steam or Water Traps or Separators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use
10 the same, reference being had to the figures marked on the accompanying drawings, which form a part of this specification.

Figure 1 is a central vertical section, showing parts in elevation, of an apparatus to which
15 I have applied my improvements. Fig. 2 is a transverse section of the same, looking toward wall 8. Fig. 3 is a transverse section of the same, looking toward wall 10. Fig. 4 is a detail view of one of the baffle devices.
20 Fig. 5 is a detail section of a modification hereinafter referred to.

My invention relates to steam or water traps or separators.

More particularly stated, my invention has
25 for its object the separation of grease, oil, or other impurities from the steam or water house-heating and power plants.

The improvements consist in the following construction and combination of parts, the details of which will first be fully described and
30 the features of novelty then set forth in the claims.

In the drawings, 1 represents the main shell of the trap or separator, which may be made
35 in any suitable shape or of any suitable material. In this instance I have shown it of cylindrical form.

2 is the upper or steam compartment, and 3 the lower or water compartment. Both compartments are divided by a central perforated
40 plate 4, permitting communication between them.

5 and 6 are partitions or walls which separate or isolate the upper or steam compartment from the other compartments of the separator. These walls are inclined, as shown,
45 and are secured at either end of the perforated plate 4 and to the opposite heads of the separator by suitable fastenings; but it is ob-

vious that their shape and disposition may be 50 modified.

The lower main compartment 3 has, preferably at one side, a secondary compartment 7 for grease, oil, or other extraneous matter, and 8 is a division-wall between the compart- 55 ments 3 and 7, the upper edge of which constitutes an overflow for the contents of the compartment 3 and which edge determines the height of the fluid-level in said compartment.

Preferably at the opposite side of the main 60 lower compartment 3 is another compartment 9 for the purified water received from compartment 3. 10 is the division-wall between these latter compartments, which wall is provided with a series of perforations 11, disposed 65 below the fluid-level 12 of compartment 3. In practice they extend from or near the bottom up into the neighborhood of the central vertical depth of the compartment 3.

13 is a waste-pipe leading from compartment 7, and 14 a waste-pipe leading from compartment 3, for the discharge of any sediment 70 accumulating therein, and these pipes may be, if desired, connected together.

15 represents a discharge-pipe from the oil 75 or grease collecting chamber 7, and preferably enters that compartment near the middle of the same or at any desired intermediate point.

16 is the discharge-pipe leading from the 80 clear-water compartment 9. I may provide compartment 9 with a water-gage 17 and the compartment 7 with a similar gage 18 to show the height of the grease or oil therein.

19 is the inlet-pipe for the conveyance to 85 the lower water-compartment 3 of any returns, greasy or impure water, which it is desired to cleanse.

20 is the inlet of the upper steam-compartment 2, and 21 is the outlet-port thereof. 90

22 represents a baffle or sediment-collecting device for the interception of grease and other impurities conveyed thereto by the inlet-port. This baffle device I prefer to make of a series of removable frames 23, corresponding to the 95 cross-section of the contour of the compartment, from which are suspended in any suitable way a series of ropes or chains 28. In

the drawings I have shown these baffle-plate frames of semicircular shape to conform to the particular form of separator herein shown. The ropes or chains are suspended vertically;

5 but they may be disposed horizontally, or they may cross each other in any suitable way. I may use any suitable number of these frames. The drawings show twelve.

The baffle-frame device may be in one piece, 10 if desired, instead of being in separate sections.

In the use for which I have designed this separator in this particular instance I contemplate connecting inlet-port 20 with the ex- 15 haust from a steam-engine and the outlet-port 21 to the outgoing pipes to a steam-heating system, or said port may be connected with an exhaust direct or any exhaust indirectly connected with a steam-heating system.

20 24 is a pump governor or starter device, which need not be particularly here described. This device serves to start and govern the action of the pump which I prefer to connect with the clear-water pipe 16, which pipe is 25 designed to feed a boiler. The governor device 24 may, however, be dispensed with and the pipe 16 may be connected in any other way.

In the particular use of my separator, as above described, the pipe 19 is connected with 30 the house-returns pipe of the heating system. This pipe 19 extends inwardly and discharges into the compartment 3, and all grease and other impurities are intercepted at this point.

In the modification shown in Fig. 5 the pipe 35 19 is substituted by an inclined channel 25, formed by the partition 5 and the partition 26, whereby the house returns may be discharged into the compartment 3.

I prefer to provide the head 27 of the separator with a flange and bolts, whereby access 40 to the interior of the separator may be had for the purpose of renewal, repair, or the like.

The impurities in the steam entering the 45 port 20 are interrupted by the baffle device and precipitated, together with the accumulated moisture, through the perforations in the plate 4 into the compartment 3. In like manner the impurities from the house-returns 50 pipe are discharged through the pipe 19 into the compartment 3. All the grease and other impurities which are lighter than water accumulate at the surface at the water-level in this compartment and overflow the top of the 55 division-wall 8 into the oil or grease compartment 7, where they are drawn off, as desired, through the pipe 15. The clear or separated water passes through the perforations 11 below the water-level into the clear-water com- 60 partment 9, from whence they are pumped back through the feeding system into the boiler.

In Fig. 4 is shown one of the baffle-frames 22, having a series of ropes suspended there- 65 in, while the baffle-plate frames shown in

Figs. 1, 2, and 3 are provided with a series of suspended chains.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, in a steam-separator, of 70 an upper compartment having inlet and exit ports, a lower compartment having an inlet and outlet, a partition between said compartments having perforations therein, and a partition in the lower compartment forming a 75 surface overflow.

2. The combination, in a steam-separator, of an upper and lower compartment having a perforated division-wall, a transversely-disposed baffle device in the upper compartment, 80 inlet and outlet ports for the same, and an inlet and exit port or ports for the lower compartment.

3. The combination, in a steam-separator, of an upper compartment and a lower compart- 85 ment having a common division-wall, a baffle device and inlet and outlet ports in the upper compartment, an inlet-port for the lower compartment, an overflow-exit therefor and a second exit-opening below the water-level 90 thereof.

4. The combination, in a steam-separator, of an upper and lower compartment having a communication between the same, a baffle device for the upper compartment, an overflow- 95 exit for the lower compartment, a secondary compartment communicating with said overflow, and suitable ports for said compartments.

5. The combination, in a steam-separator, of 100 an upper and lower compartment having communication between the same, a baffle device for the upper compartment, an overflow-exit, and a second exit below the water-level of said compartment, a secondary compartment 105 in communication with the exit below the water-level and suitable ports for said compartments.

6. The combination, in a steam-separator, of an upper and lower compartment, having a 110 perforated division-wall between the same, an overflow-exit for the lower compartment, a secondary compartment communicating with said overflow, another secondary compartment, communicating means between said 115 lower compartment and the latter below the water-level, and suitable ports for said compartments.

7. The combination of a steam-separator, with a baffle device comprising a curved up- 120 per and a straight lower frame having a series of separate chains or ropes independently suspended therein.

8. The combination of a steam-separator having a series of baffle-plate frames located 125 therein, said frames having a series of separate independently-suspended ropes or chains suspended therefrom.

9. The combination, in a steam-separator, of an upper and a lower compartment having a 130

perforated division-wall, baffle devices in the upper compartment, a secondary chamber connected with the lower compartment by an overflow-exit, a discharge-pipe for said secondary compartment, an inlet-pipe for the lower compartment, another secondary compartment connected with said lower compartment below the water-level, a discharge-pipe

from the latter compartment, and ports for the upper compartment.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE I. ROBERTS.

Witnesses:

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WM. H. WEIGHTMAN.