

(No Model.)

C. GROHMAN.
STEAM CONDENSER.

No. 479,271.

Patented July 19, 1892.

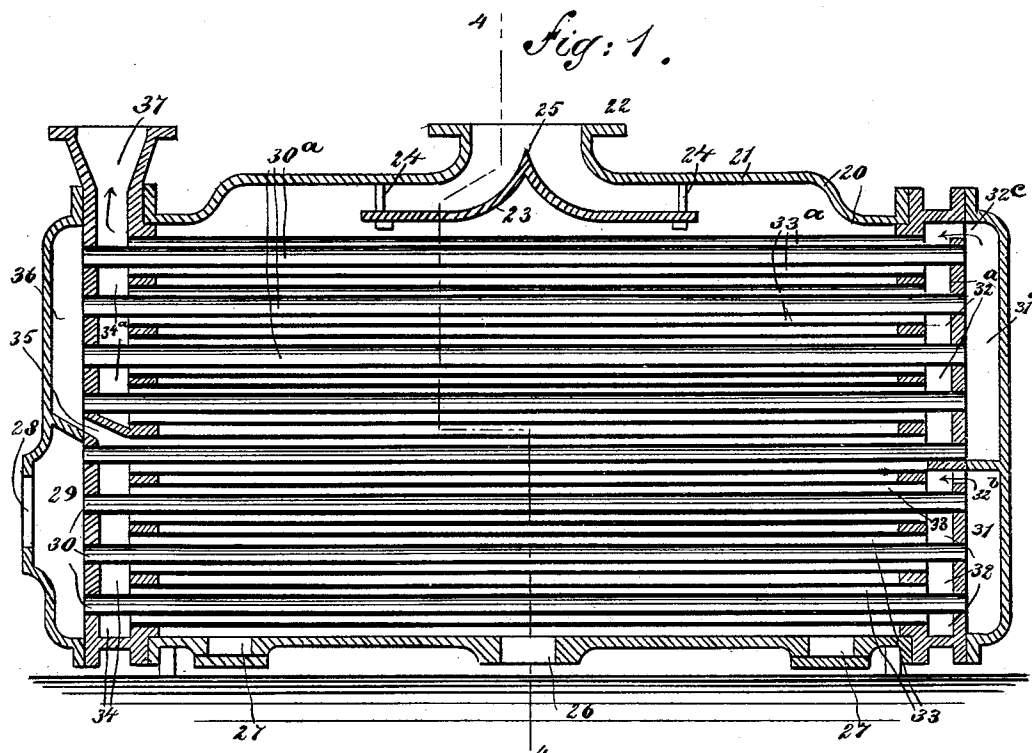
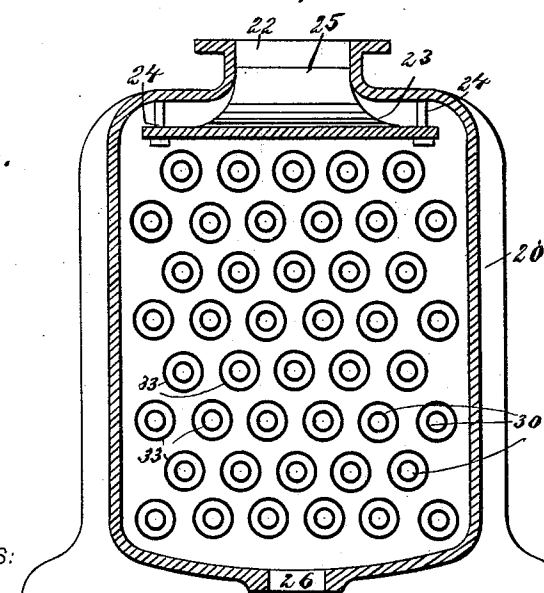


Fig: 2.



WITNESSES:

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CHARLES GROHMAN, OF LINOLEUMVILLE, NEW YORK.

STEAM-CONDENSER.

SPECIFICATION forming part of Letters Patent No. 479,271, dated July 19, 1892.

Application filed March 3, 1892. Serial No. 423,667. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GROHMAN, of Linoleumville, in the county of Richmond and State of New York, have invented a new and Improved Steam-Condenser, of which the following is a full, clear, and exact description.

My invention relates to improvements in surface steam-condensers; and the object of my invention is to improve the construction of this class of condensers, so as to increase their efficiency, quickness, and means of cleaning, and also to construct the condenser so that it will be durable, little likely to rust, and adapted to produce pure water.

To this end my invention consists in certain features of construction and combinations of parts, as will be hereinafter described and claimed.

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

Figure 1 is a vertical longitudinal section of the condenser embodying my invention.

Fig. 2 is a vertical cross-section of the same on the line 4 4 in Fig. 1.

The condenser is provided with a main case 20, having a raised middle portion 21, in the center of which and at the top of the case is a steam-inlet 22. Beneath this inlet is a deflector-plate 23, which is supported by means of bolts 24 and the center of which is bent upward centrally into the inlet 22, as shown at 25, thus providing two passages, through which the steam passes to opposite ends of the case, and it is thus evenly distributed through the case. The case is provided with a water-outlet 26 for the water condensed from the steam, and it has also suitable hand-holes 27, which enable it and the tubes to be conveniently cleaned. The case 20 is provided at one end and near the bottom with a cold-water inlet 28, which enters a chamber 29 at one end of the case and in the lower part thereof, and leading from this chamber are tubes 30, which open into a similar chamber 31 at the opposite end and on the lower part of the case. This chamber 31 has in its inner wall an opening 32^b, leading into a vertical inner chamber 32, and opening from this

chamber are pipes 33, which are larger than the pipes 30 and which inclose said pipes, and the pipes 33 lead longitudinally through the lower portion of the case and open into a vertical inner chamber 34, which is similar to the chamber 32 and which has an opening 35 at the top leading into the chamber 36, which chamber is located above the chamber 29 and at one end of the case, and pipes 30^a, similar to the pipes 30, described above, lead longitudinally from this chamber 36 through the case to a chamber 31^a in the opposite end thereof, this chamber being similar to the chamber 31 and being arranged above the same. An opening 32^c opens from the chamber 31^a into a vertical inner chamber 32^a, which is located immediately above the chamber 32 and is similar thereto, and pipes 33^a lead from this chamber to a similar chamber 34^a at the opposite end of the case, the pipes 33^a being similar to the pipes 33 and being made to inclose the pipes 30^a. The cold-water outlet 37 is arranged at one end of the case and at the top, the outlet leading from the chamber 34^a.

The operation of the condenser is as follows: The cold water enters the inlet 28 and passes through the tubes 30 to the chamber 31, thence through the opening 32^b to the chamber 32, thence through the tubes 33 to the chamber 34, thence through the passage 35 to the chamber 36, thence through the tubes 30^a to the chamber 31^a, thence through the opening 32^c to the chamber 32^a, thence through the tubes 33^a to the chamber 34^a, and thence through the outlet 37. The steam enters the inlet 22, is deflected by the plate 23, and passes downward among the tubes 33 and out in the form of water through the outlet 26.

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

A condenser comprising the main case 20, provided with a top inlet and a bottom outlet, upper and lower series of tubes 33 33^a, extending through the case and its heads, opposite inner lower chambers 34 32, connected by the lower series of tubes 33, and outer lower inlet chamber 29, separate from chamber 34 and connected with an opposite lower

outer chamber 31 by a series of tubes 30, passing through the tubes 33 and chambers 34 32, a passage 32^b, connecting the chambers 31 32, opposite upper inner chambers 34^a 32^a, separate from the lower chambers and connected by the upper series of tubes 33^a, the chamber 34^a, having an outlet 37, an upper outer chamber 36, having a passage 35, connecting it with the lower inner chamber 34, an upper outer

opposite chamber 31^a, having a passage 32^c, leading into upper inner chamber 32^a, and the upper inner series of tubes 30^a, extending through the tubes 33^a and connecting chambers 31^a and 36, substantially as set forth.

CHARLES GROHMAN.

Witnesses:

PAUL HOLDER EGGERS,
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