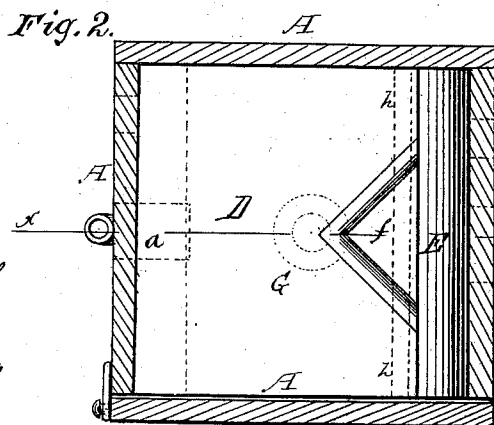
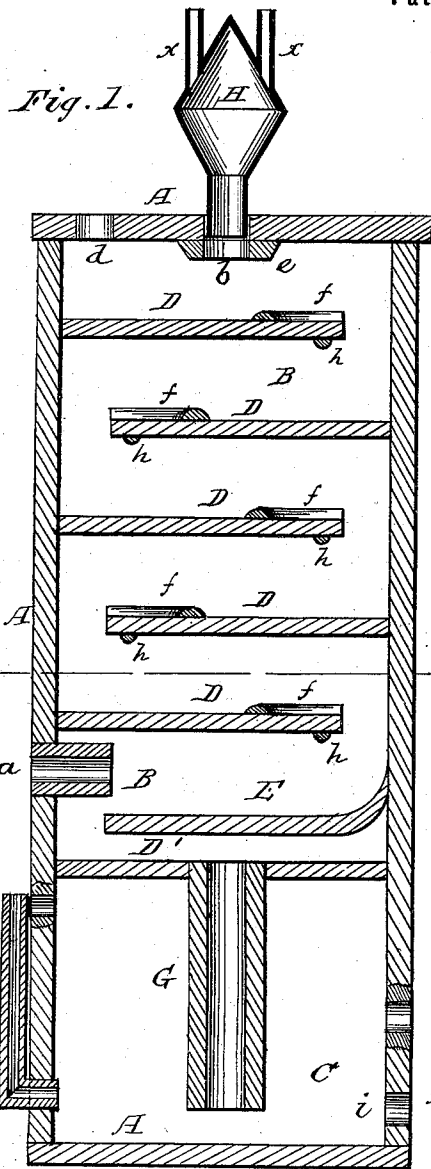


L. L. NEWMAN & A. VAN ORSDALE.

Condenser and Heater.

No. 166,132.

Patented July 27, 1875.



WITNESSES:

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LANE L. NEWMAN, OF CLEVELAND, OHIO, AND AUGUSTUS VAN ORSDALE,
OF PINE GROVE, PENNSYLVANIA.

IMPROVEMENT IN CONDENSERS AND HEATERS.

Specification forming part of Letters Patent No. **166,132**, dated July 27, 1875; application filed
January 16, 1875.

To all whom it may concern:

Be it known that we, L. L. NEWMAN, of Cleveland, Ohio, and A. VAN ORSDALE, of Pine Grove, in the county of Warren and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Condensers and Feed-Water Heaters; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of our invention consists in the construction and arrangement of a steam condenser and feed-water heater, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a central vertical section on line *x x*, Fig. 2. Fig. 2 is a cross-section on line *y y*, Fig. 1.

A represents the shell divided by a horizontal partition into the upper or condensing chamber B, and the lower chamber or tank C. Within the condensing-chamber B is a series of shelves, D D, arranged alternately from opposite sides, as shown. The steam enters the chamber B at *a*, a suitable distance above its bottom, and between said bottom and the steam-entrance is arranged a deflector, E. The steam escapes at *b*, in the top of the condenser. The water enters the condenser at *d*, in the top. Around the steam-escape pipe *b*, in the condensing-chamber, is a flange or shoulder, *e*, which prevents the water from being thrown out by the steam. On top of each shelf D, at the outer edge, is a flange, *f*, in V-form, to spread the water from the center evenly over the shelves, and by their action, in connection with the flange or shoulder *e*, what steam escapes is dry—that is, throws no spray. On the under side of each shelf, near the outer edge, is a steam drag or rib, *h*, which retains the steam, thereby heating the water to a great degree. The deflector E is curved

upward at the side opposite to where the steam enters, whereby the steam becomes more broken immediately after passing into the condenser. From the center of the bottom plate D' of the condenser, extends a conducting-pipe, G, to near the bottom of the tank C, through which pipe the water passes from the condenser to the tank, and said pipe is so arranged as to be always submerged, thereby keeping the water still and settling it more readily. The tank allows of all impurities being collected and more readily removed at the hand-hole *i*. On top of the condenser, in the exhaust-pipe *b*, is placed a double cone or vessel, H, arranged so as to condense a much larger quantity of steam and return it to the condenser, said cone or vessel being provided with two escape-pipes, *x x*.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The flange or shoulder *e*, formed around the lower end of the exhaust-pipe *b*, for the purposes herein set forth.

2. The V-flange *f*, on top of the shelves D at their front ends, for the purposes herein set forth.

3. The steam-drag or rib *h* on the under sides of the shelves D, for the purposes herein set forth.

4. The combination of the condensing-chamber B, bottom plate D', conducting-pipe G, and tank C, all substantially as and for the purposes herein set forth.

5. The deflector E, arranged between the steam-inlet *a* and bottom plate D', and curved upward at its inner end, as and for the purposes herein set forth.

In testimony that we claim the foregoing as our own, we affix our signatures in presence of witnesses.

LANE L. NEWMAN.
AUGUSTUS VAN ORSDALE.

Witnesses:

JOHN P. GREEN,
J. ANDRUSS,
D. B. GRANT.