(No Model.)

L. SCHUTTE.

JET CONDENSER.

No. 387,261. Patented Aug. 7, 1888.

Fig. 1

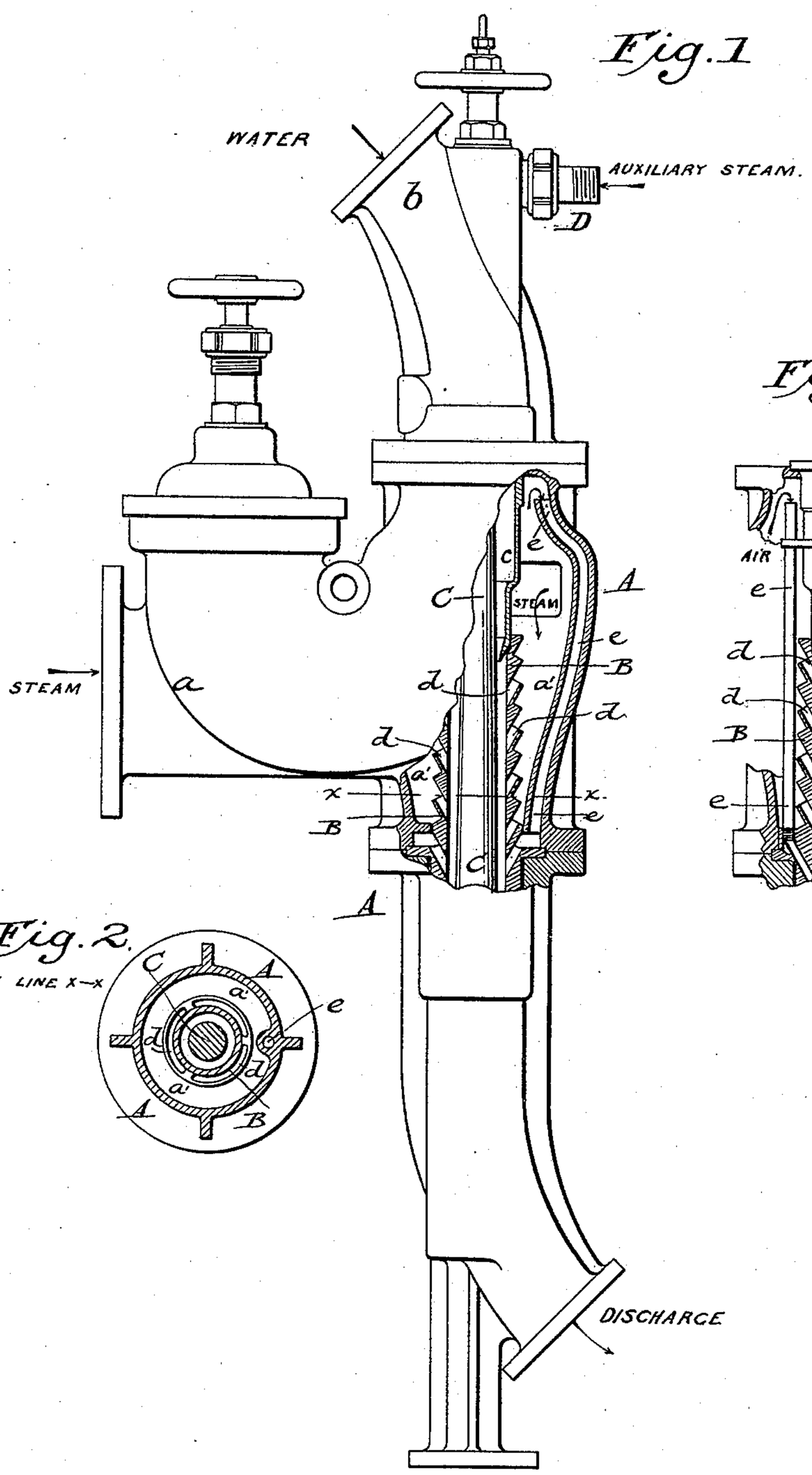

Fig. 3.

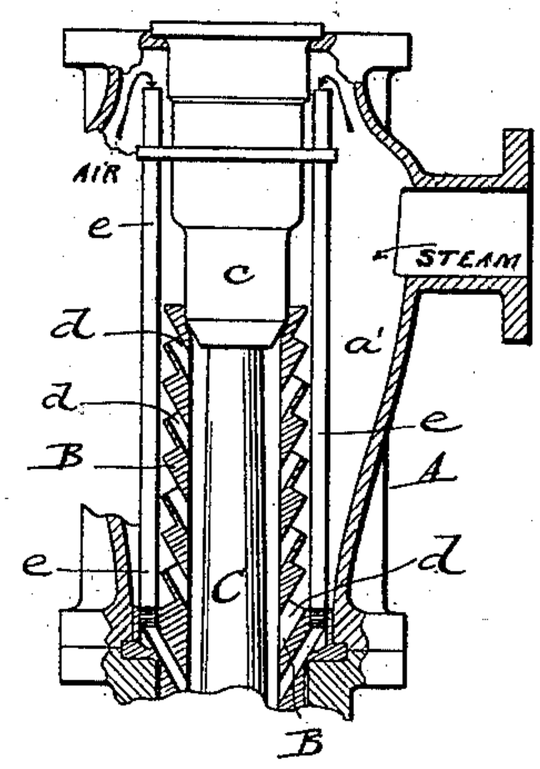

Fig. 2.

ON LINE X—X

WITNESSES.

H. R. Kennedy.
J. G. Jones.

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UNITED STATES PATENT OFFICE.

LOUIS SCHUTTE, OF PHILADELPHIA, PENNSYLVANIA.

JET-CONDENSER.

SPECIFICATION forming part of Letters Patent No. 387,261, dated August 7, 1888.

Application filed April 3, 1888. Serial No. 269,493. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHUTTE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Condensers, of which the following is a specification.

This invention relates more particularly to that class of jet apparatus employed for condensing the exhaust-steam from steam-engines and the vapors from vacuum-pans for the purpose of creating and maintaining a vacuum; and the object of the invention is to maintain a uniform and uninterrupted working of the apparatus, and this by preventing the usual accumulation of air in the upper or receiving end of the condensing-chamber. To this end I provide the apparatus—which may be in all other respects of ordinary construction—with one or more isolated passages or conduits leading from the upper part of the condensing-chamber to the lower part of the condensing-tube or other adjacent part of the apparatus where a strong suction exists, the effect being to cause the air which may be set free from the steam or water in the condensing-chamber to pass downward through my supplemental passage to the delivery end of the apparatus.

The apparatus represented in the drawings, with the exception of its auxiliary passage, may be identical or substantially identical in construction and operation with those represented in Letters Patent of the United States issued to Corting October 2, 1883, No. 285,022, and to Schutte November 10, 1885, No. 330,157.

In the accompanying drawings, Figure 1 represents an elevation of a condenser having my improvement embodied therein, a portion of the body being shown in section through its middle. Fig. 2 represents a cross-section of the same on the line *x x*. Fig. 3 is a central sectional elevation of the apparatus in modified form.

Referring to the drawings, A represents the tubular body of the apparatus provided on one side with a throat or neck, *a*, through which the exhaust-steam is admitted to the interior space or chamber, *a'*, commonly known as the "condensing" or "steam-receiving" chamber. At its upper end the body is provided with the neck *b*, through which the water for condensing purposes is admitted to the central water-nozzle, *c*.

B represents the combining-tube located centrally within the body, its axis coincident with that of the water-nozzle. This combining-tube is constructed as heretofore with a smooth central bore of uniform or practically uniform diameter from end to end, and with a series of inwardly and forwardly extending slits or passages, *d*, through which the exhaust-steam is admitted from the condensing-chamber into the combining-tube, where it encounters the water.

C represents a central tapered ram or spindle adjustable endwise for the purpose of regulating the area of the passages through the combining-tube.

D represents a pipe for the admission of live steam when required to inaugurate the action of the instrument, or when under special circumstances it may be required to maintain the proper action.

The foregoing parts are substantially identical with those presented in Patent No. 330,157 above referred to, and are not claimed as of the present invention.

When the apparatus containing only the above-named parts is operated, the exhaust-steam, entering the chamber *a'*, rushes in a forward direction through the slits or passages *d*, and encountering the water is condensed thereby, its impingement against the water serving to maintain the velocity of the jet. Under the ordinary construction the air set free from the steam accumulates in the upper end of the condensing-chamber *a'* until its volume is such that it is carried along by impact of the exhaust-steam into the condensing-tube, the effect of which is to destroy the continuity of the current and momentarily disturb the action of the apparatus. I therefore provide the apparatus with a passage tube or conduit, *e*, leading from the upper end of the condensing-chamber into the lower end of the combining-tube or into this discharge-tube at any point where there is a strong suction, so that the air, as fast as it is set free and rises to the upper end of the condensing-chamber, will be drawn downward through the passage *e* and carried with the outgoing current at the delivery end of the apparatus.

It will be observed that my conductor is entirely isolated from the condensing or steam-receiving chamber, except at the upper end,

and that its effect is to prevent the air from passing into the combining-tube, except at the lower or delivery end.

In Figs. I and 2 I have represented the passage *e* as cast within the body A; but it may be applied externally or in any other desired manner, and instead of a single passage there may be two or more passages of limited area.

In Fig. 3 I have represented two tubes, *e*, screwed into the mouths of openings into the lower end of the combining-tube and extending thence upward within the apparatus to the upper end of the condensing-chamber.

Having thus described my invention, what I claim is—

In a condenser of the type herein described, an isolated passage or passages leading from the upper part of the condensing or steam-receiving chamber to the lower part of the combining tube or chamber at or near the mouth of the discharge-passage.

In testimony whereof I hereunto set my hand, this 6th day of March, 1888, in the presence of two attesting witnesses.

LOUIS SCHUTTE.

Witnesses:
DANIEL HILDRETH,
FRANK SPILLIN.