W. J. ALLEN.

CONDENSERS FOR ENGINES.

No. 193,589. Patented July 31, 1877.

Fig. 1.

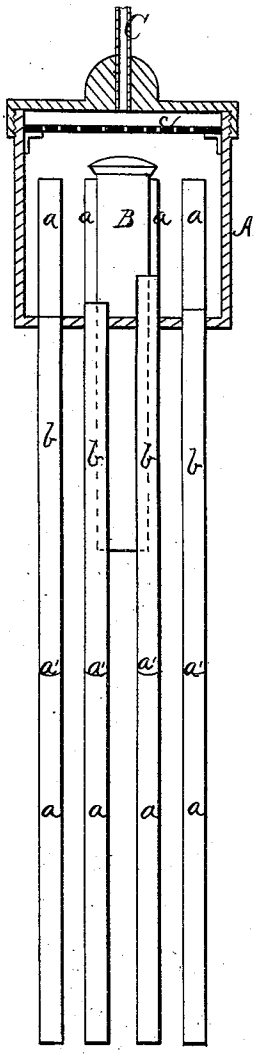
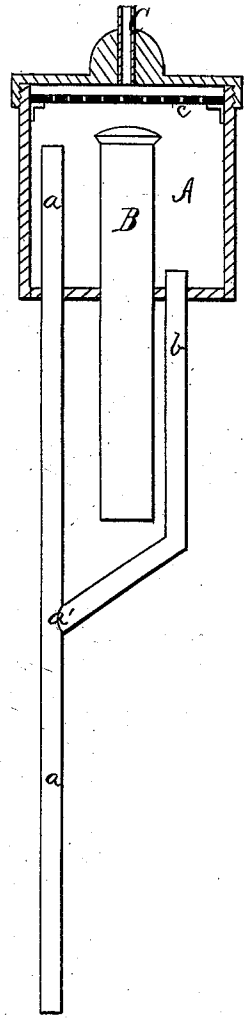


Fig. 2.



Witnesses:

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Inventor,

By

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UNITED STATES PATENT OFFICE.

WILLIAM J. ALLEN, OF BUFFALO, NEW YORK.

IMPROVEMENT IN CONDENSERS FOR ENGINES.

Specification forming part of Letters Patent No. **193,589**, dated July 31, 1877; application filed February 12, 1877.

To all whom it may concern:

Be it known that I, WILLIAM JOHN ALLEN, of Buffalo, in the county of Erie and State of New York, have made certain Improvements in Condensers for Engines, &c., of which the following is a specification:

This invention is intended for engines and vacuum-pans, the object being to get a better vacuum than is now obtained by siphon or other condensers, and which I accomplish by using a fall of water through small pipes leading from the condenser-head into the individual air-pipes, causing a greater flow of air, and, consequently, greater suction of the air above the point where the air and water meet, all as hereinafter fully explained.

In the drawings, Figure 1 is a front elevation with the condenser in half-section. Fig. 2 is a side elevation of the same, showing the bent or curved water-pipes, and their connection with the air-pipes.

A represents the condenser-head; B, the induction steam-pipe leading from the engine or vacuum-pan, and C the induction water pipe or joint to the condenser, which will be supplied with water from a tank above, or situated in any suitable place. *a a a* are the air-pipes, down which the air from the condenser-head passes. *b b b* are short (or long) water-pipes, their tops of uneven height inside the condenser, to get a greater or less flow of water, according to its height in the condenser. These pipes *b b*, outside, lead into the air-pipes *a a a* individually, as shown, the lower part of each being bent like a Y, or curved, as may be most convenient. This construction gives a special velocity to the water at the junction with the air-pipes at *a'*, and causes greater suction of air at that point and above it, giving a greater, and consequently a better, vacuum. *c* is the usual perforated spreading-plate.

It is obvious that if the condenser-head A be lengthened, and the pipes *b b* shortened, the same effect will be obtained, that being a matter of construction only.

One of the advantages of this construction is, that a less quantity of water will draw off a greater quantity of air than by any devices now used that I am acquainted with.

The operation is very simple. The force of the water through the pipes *b b b* strikes the air already in the pipes *a a*, forcing it down at an increased velocity, and causing a suction above in the air-pipes, which draws a greater amount of air than can be accomplished by single pipes, carrying air and water together.

This is not a siphon-condenser, but is intended as an improvement on them.

I claim—

The combination of the condenser-head A, the steam-pipe B, water-tube C, air-pipes *a a a*, and the water-pipes *b b b*, the latter leading from the condenser into the air-pipes *a a a*, respectively, to get greater velocity of water, and greater suction of air where the air and water meet, substantially as hereinbefore described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

W. J. ALLEN.

Witnesses:
J. R. DRAKE,
T. H. PARSONS.