

No. 17,675.

PATENTED JUNE 30, 1857.

R. HALE.
SEPARATING OILY PARTICLES FROM STEAM.

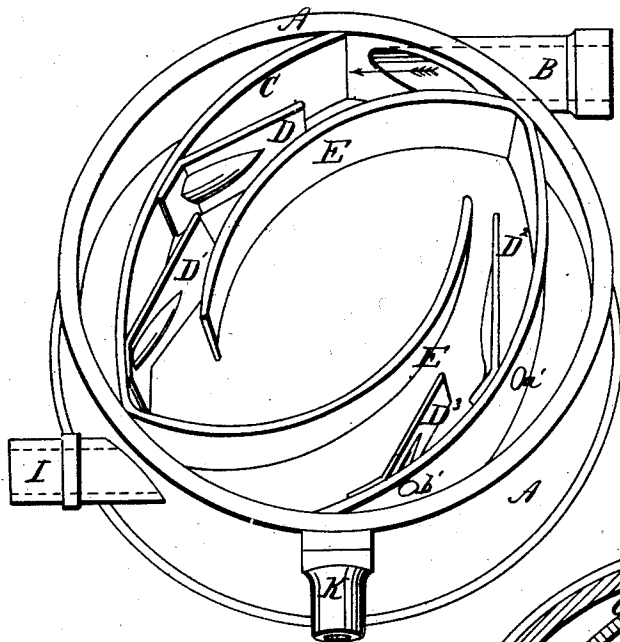


Fig. 2.

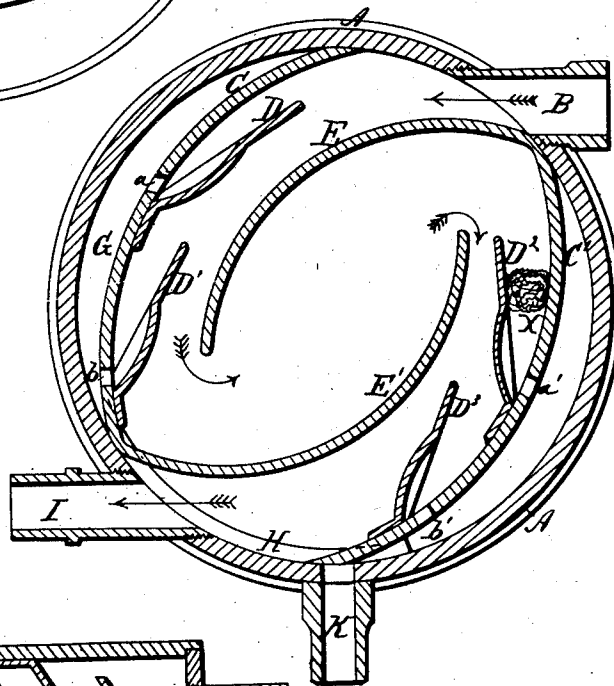
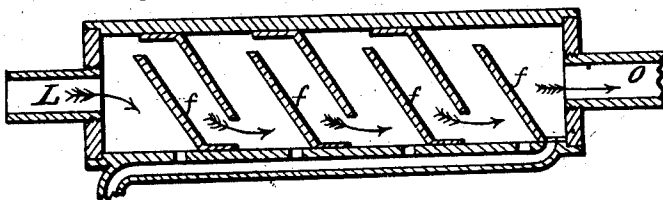


Fig. 3.



UNITED STATES PATENT OFFICE.

ROBERT HALE, OF ROXBURY, MASSACHUSETTS.

APPARATUS FOR SEPARATING THE OILY PARTICLES HELD IN SUSPENSION BY STEAM.

Specification of Letters Patent No. 17,675, dated June 30, 1857.

To all whom it may concern:

Be it known that I, ROBT. HALE, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented a new and
5 Improved Apparatus for the Purpose of Separating the Oily Particles Held in Suspension by Exhaust-Steam, of which the following is a full, clear, and exact description, reference being had to the accompanying
10 drawings, making part of this specification, in which—

Figure 1, is a perspective view of the device which I employ, one of the side plates being removed to show the parts within.
15 Fig. 2, a section through the same. Fig. 3 a modification which I propose sometimes to adopt.

Where exhaust steam has been used to heat the feed water of steam engine boilers, the oil which is carried over from the cylinder, and is held in suspension by the steam, causes the water in the boiler to foam to such a degree as to render this method of heating feed water in the majority of cases
25 impracticable. This is particularly the case with locomotives where the entire loss of the exhaust steam is suffered for want of some efficient method of separating the oil which is brought with it from the cylinders.

To enable me to economize the heat of the exhaust steam, and to employ it to heat the feed water, is the object of my present invention which consists in an apparatus for the purpose of separating the oily particles
35 from steam as it proceeds from the exhaust pipe which apparatus I will proceed to describe.

In Figs. 1 and 2 of the accompanying drawings A is a cylindrical case into which
40 the steam is admitted by the pipe B. C is a tight fitting partition from which project the shelves D, D'; and E, a partition which like the others reaches from head to head of the cylinder A.

45 The steam entering by the pipe B, as indicated by the arrows is thrown against the partition C, upon the surface of which the particles of oil which it contains are condensed, running down this partition the oil

passes through a small opening *a*, into a
50 chamber G, whence it passes by a passage H, through the outlet K, to a suitable reservoir. Any particles of oil that may have fallen below the shelf D will be impelled
55 against the partition C beneath this shelf and above the shelf D' and will pass through the opening *b*, into the chamber G. The steam being of far lighter specific gravity than the oil, passes into the center of the case from which it is caused to pass by a
60 duplicate arrangement of partitions and shelves E', C', D², D³ similar to the one just described, by which any remaining particles of oil that may be carried along with it are precipitated against the partition C',
65 and pass off by openings *a'*, *b'*, to the outlet K, as before.

In Fig. 3, is seen an arrangement which may sometimes be employed for the above purpose in which the steam entering by
70 the pipe L, is projected as indicated by the arrows against the partitions *f*. The oil being conducted off by suitable openings and channels as before and the steam issuing
75 by the outlet O.

The above apparatus may also be employed to separate water from steam previous to working it off through the engine for the purpose of working dry steam.

Under certain circumstances when this
80 apparatus is employed to separate oil from steam, the space between the partitions C, C', and the shelves D, D', D², D³ may be partially filled with sponge as at *x*, Fig. 2, for the purpose of more effectually absorb-
85 ing the oil and preventing it from being thrown out by the force of the steam.

Claim.

What I claim as my invention and desire to secured by Letters Patent is—

90 The within described apparatus for separating oil from steam operating in the manner substantially as set forth.

ROBERT HALE.

Witnesses:

THOS. R. ROACH,
SAM. COOPER.