

S. N. HARTWELL.

GREASE CONDENSER FOR PURIFYING EXHAUST STEAM.

No. 177,713.

Patented May 23, 1876.

Fig: 1.

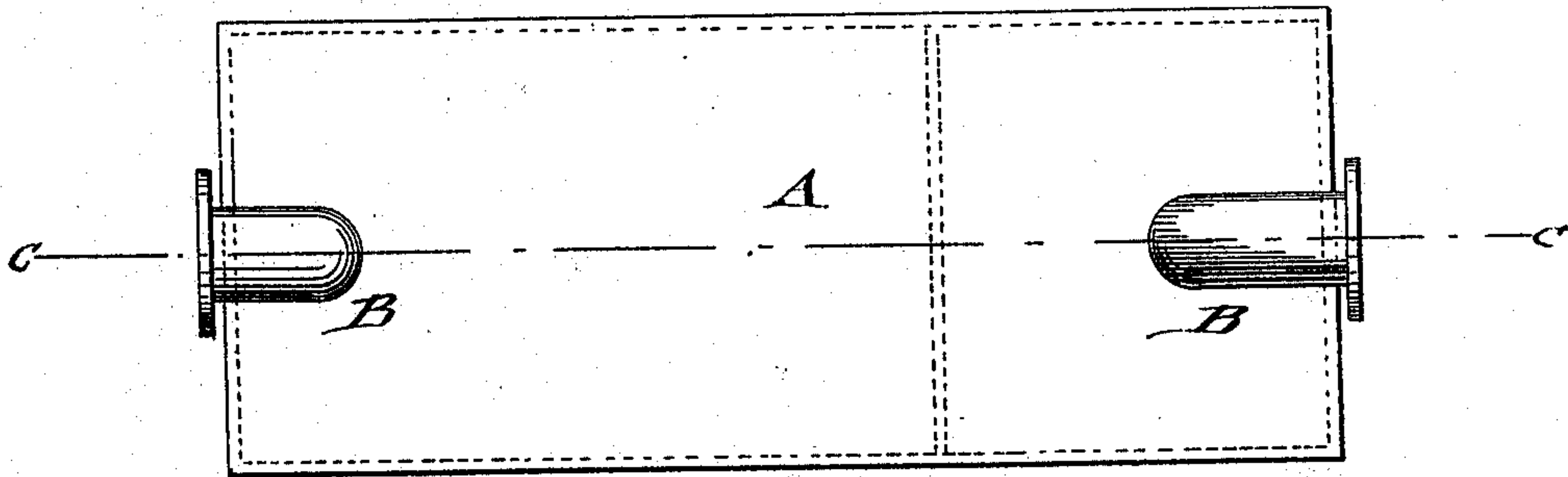
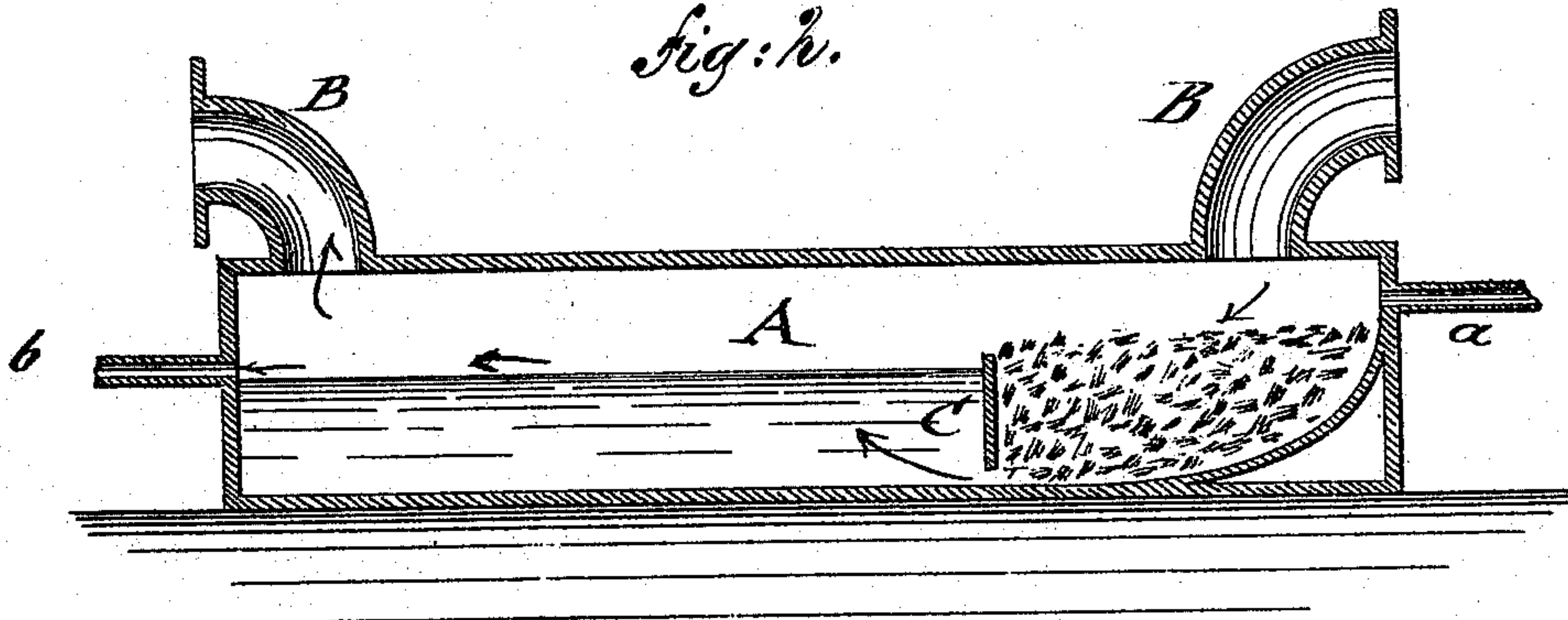


Fig: 2.



WITNESSES:

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IMPROVEMENT IN GREASE-CONDENSERS FOR PURIFYING EXHAUST STEAM.

Specification forming part of Letters Patent No. 177,713, dated May 23, 1876; application filed February 21, 1876.

To all whom it may concern:

Be it known that I, SAMUEL N. HARTWELL, of Wollaston Heights, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Grease-Condenser for Purifying Exhaust Steam, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view, and Fig. 2 a vertical longitudinal section on the line *c c*, Fig. 1 of my improved grease-condenser for purifying exhaust steam.

Similar letters of reference indicate corresponding parts.

My invention relates to a grease-condenser for purifying exhaust steam by which the dangerous and annoying deposits formed by the return of the grease or oil with the feed-water, heated up by the exhaust steam, are prevented, and the exhaust steam be made available for other purposes.

The invention consists of a grease-condenser, into which the exhaust steam is conveyed by an entrance-pipe, and brought into contact with a condensing-fluid, or with a suitable filtering material, to be mechanically purified by the impact of the oil globules with the fluid or filtering material.

In the drawing, A represents a box or receptacle, of suitable size and material, that is provided with top entrance and exit tubes B for the exhaust steam of the engine. The condensing-chamber formed in box A is filled with a quantity of water or other fluid through a pipe, *a*, at one end, and drawn off by an overflow-pipe, *b'*, at the opposite end, at a level below that of pipe *a*.

The exhaust steam, charged with oil or grease, is so directed on the fluid as to cause the minute globules of grease or oil, by reason of their greater density, and consequent momentum, to penetrate the fluid to some extent, and be arrested and condensed by the same, while the steam moves toward the outlet-pipe and imparts to the floating grease collecting at the surface of the fluid a motion in the direction of the overflow-pipe *b*, when the oil is drawn off.

The overflow-pipe is located at such height that a retarded motion of the steam is ob-

tained, and thereby time given to any particles of grease that have escaped at the first impact with the fluid to settle upon the surface of the same.

Whenever the exhaust steam enters the grease-condensing chamber at a rapid rate, as it does from a locomotive-cylinder, or where a low grade of expansion is used, the water or other condensing-fluid is agitated in such a manner that the retention of the grease would not be fully obtained. In such cases the steam is first passed through a fibrous or porous body of any filtering material—as wool, flax, cotton fibers, sticks, sponge, powdered charcoal, sand, &c.—which is placed below the entrance-tube B, and retained by a partition, C, placed transversely across box A. The partition C has a narrow opening at the bottom of the box, and a wider one above the same, forming a compartment for the filtering substance, upon which the entering steam dashes, driving the oil or grease through the substance and out at the narrow bottom opening, whence it rises to the surface of the fluid, and is impelled by the current of steam toward the overflow-opening *b*.

The bottom of the filtering-compartment is made curved or inclined toward the narrow exit-opening of the partition, to facilitate the flow of the grease in the right direction.

The oil or grease is thus condensed and retained, and the purified exhaust steam made available in a higher degree for heating up feed-water, and other purposes, without being objectionable on account of the oil or grease carried along.

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

1. A grease-condenser for purifying exhaust steam, in order that it may be used for boiling, dyeing, or heating feed-water, consisting of a water-chamber, having a top inlet for steam near one end, and an outlet near the other end for the egress of steam, as shown and described, whereby the steam may be impinged upon the water, relieved of its grease, and passed off in a purified state to some suitable receptacle.

2. A grease-condensing chamber, having in-

let and outlet tubes B B and a lateral partition with bottom slot to form a filtering and fluid chamber, as shown and described.

3. In a condensing-chamber, having inlet and outlet tubes B B and separated by a bottom-slotted partition, a bottom to the filtering-chamber made on a curve or incline to-

ward the slot, as and for the purpose specified.

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Witnesses:

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