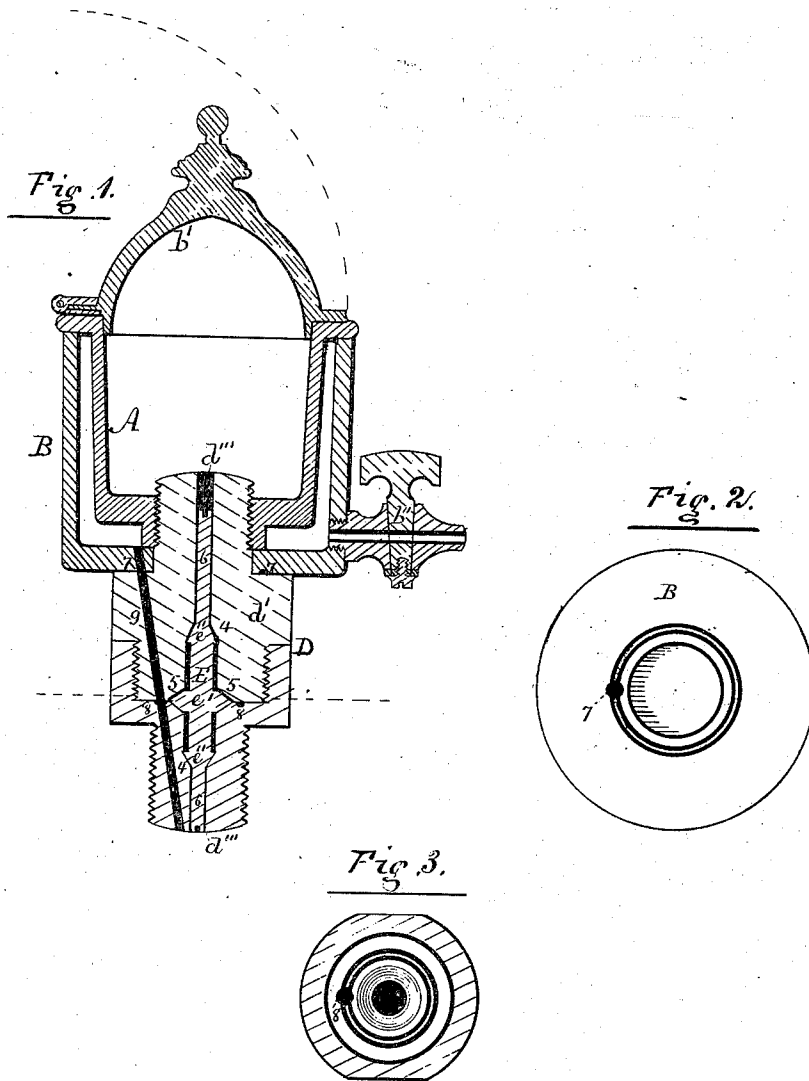


THOMAS SIMS.

Improvement in Automatic Oiler for Steam-Engines.

No. 126,651.

Patented May 14, 1872.



WITNESSES:

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IMPROVEMENT IN AUTOMATIC OILERS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 126,651, dated May 14, 1872.

Specification describing certain Improvements in Automatic Oilers for Steam-Engines, invented by THOMAS SIMS, a resident of the city of Philadelphia, in the State of Pennsylvania.

The first part of my invention relates to the construction and operation of the valve for alternately admitting and stopping the flow of the oil from the oil-cup above into the steam-cylinder of the engine below, by the alternate action of the plenum and exhaust of the said cylinder; the object of this part of my invention being the production of a reliable automatic oiler that will not be liable to get out of order in use. The second part of my invention relates to the arrangement of a close steam-chamber around and partly under the oil-cup, in combination with a hole and channel arranged in the supporting-body of the oiler so as to alternately permit steam to pass up into the said chamber from the plenum of the steam-cylinder and the resultant water of condensation to run down into the vacuum of the same; the object of this part of my invention being to keep the tallow in the oil-cup always in a properly melted or fluid state, especially in cold weather.

Figure 1 is a vertical central section of the oiler embodying my invention. Fig. 2 is a plan view of the under side of the bottom of the oil-cup steam-chamber. Fig. 3 is a horizontal section on the dotted line *v v* of Fig. 1.

The oil-cup A and the surrounding casing B which forms the outside of the steam-chamber C are screwed together firmly by the upper screw-end of the supporting-body D, which screw-end enters through corresponding openings in the centers of the respective bottoms of A and B, the flange *a'* around the upper edge of A fitting steam-tight down upon the upper edge of B, and thus producing the steam-chamber *c'*. The oil-cup has a common drop-lid, *b'*, which is hinged thereto so as to be readily raised and lowered. The supporting-body D is in two parts, *d' d''*, screwed together. The object of making the body in the two parts is to provide for the construction and application of the stem-valves and their seats. There is a through-hole, *d'''*, bored longitudinally through the center of each of the pieces *d' d''*, which holes are each enlarged from their inner ends to the depth of one-half inch, more

or less, so as to produce the beveled shoulder 4 around between the said enlargement and the small hole *d'''*, and also the outer corner of the enlarged part of the hole, beveled off or countersunk so as to produce the beveled shoulder 5, all of which bevels serve as respective seats for corresponding bevel-faces on the valve-stem E. The two bevels of the middle or large faces at *e'* correspond with the two respective bevel-seats 5 5, and the bevels above and below the middle faces *e'* correspond, respectively, with the beveled seats 4 4; and the distance apart of the said middle and respective end faces of the stem E correspond with the respective distances apart between the middle faces *e'* and the faces *e'' e''*. The length between the two bevel-faces *e'' e''* of the stem E is about a sixteenth of an inch, more or less, shorter than the distance between the two bevel-seats 4 4; and the thickness of the metal on which the two joined or middle bevel-faces *e'* of the said stem E is about a sixteenth of an inch less than the distance apart of their respective seats 5 5, so that when the stem E is pushed upward the bevel-face on the upper side of *e'* and the bevel-face *e''* above close against their respective seats 5 and 4; and when the said stem E falls the under side of *e'* and the bevel-face *e''* below close against their respective seats. The largest diameters of the respective beveled parts *e' e'' e''* and of the slender parts 6 6 of the stem are about the twentieth of an inch less than the diameters of the surrounding bore. There is a concentric groove, 7, in the under side of B, which forms a small channel between B and the upper shoulder of D, and also a like concentric groove, 8, in the upper side of the bottom piece *d''*, which forms a small channel between D and *d''* when the parts are screwed up tightly together, as shown in Fig. 1. A straight hole, 9, is bored through the bottom of B and longitudinally through the parts D and *d''*, which hole intersects both of the channels 7 and 8. The oiler is applied by screwing its lower end into the steam-cylinder.

The automatic operation is as follows: Melted tallow or the lubricant is poured into the cup A, and the movement of the piston of the engine alternately from the the plenum to the vacuum causes the valve-stem to rise and fall as the bore *d'''* communicates alternately with

the said plenum or vacuum, and when it falls a portion of the lubricant in the cup A passes *e''* into the annular space between *e''* and *e'*, where it is retained until the pressure of the steam in the plenum forces the stem E upward so as to allow the said portion of the lubricant to enter the steam-cylinder, and at the same time closes the valves above, and soon, at every complete revolution of the crank of the engine, the required quantity of the lubricant is admitted into the cylinder, and at the same time a small jet of the steam passes from the plenum, through the hole 9 and grooves 7 and 8, into the chambers C, and keeps the oil-cup warm, and consequently the lubricant fluid in cold weather, the condensed steam returning as water into the vacuum. A small stop-cock, *b''*, permits any surplus water to be readily drawn off, as occasion may require.

I claim as my invention—

1. The four beveled faces *e' e' e'' e''* on the valve-stem E, in combination with the corresponding bevel-seats 4 4 5 5 in the bore of the body D, constructed and arranged to be operated by the plenum and the vacuum of the steam-cylinder of an engine, substantially as and for the purpose hereinbefore set forth.

2. The steam-space C between the oil-cup A and the surrounding case B, in combination with the hole 9 and channels 7 and 8 in the body D of the oiler, the said parts being constructed and arranged to operate substantially as and for the purpose hereinbefore set forth.

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Witnesses:

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