

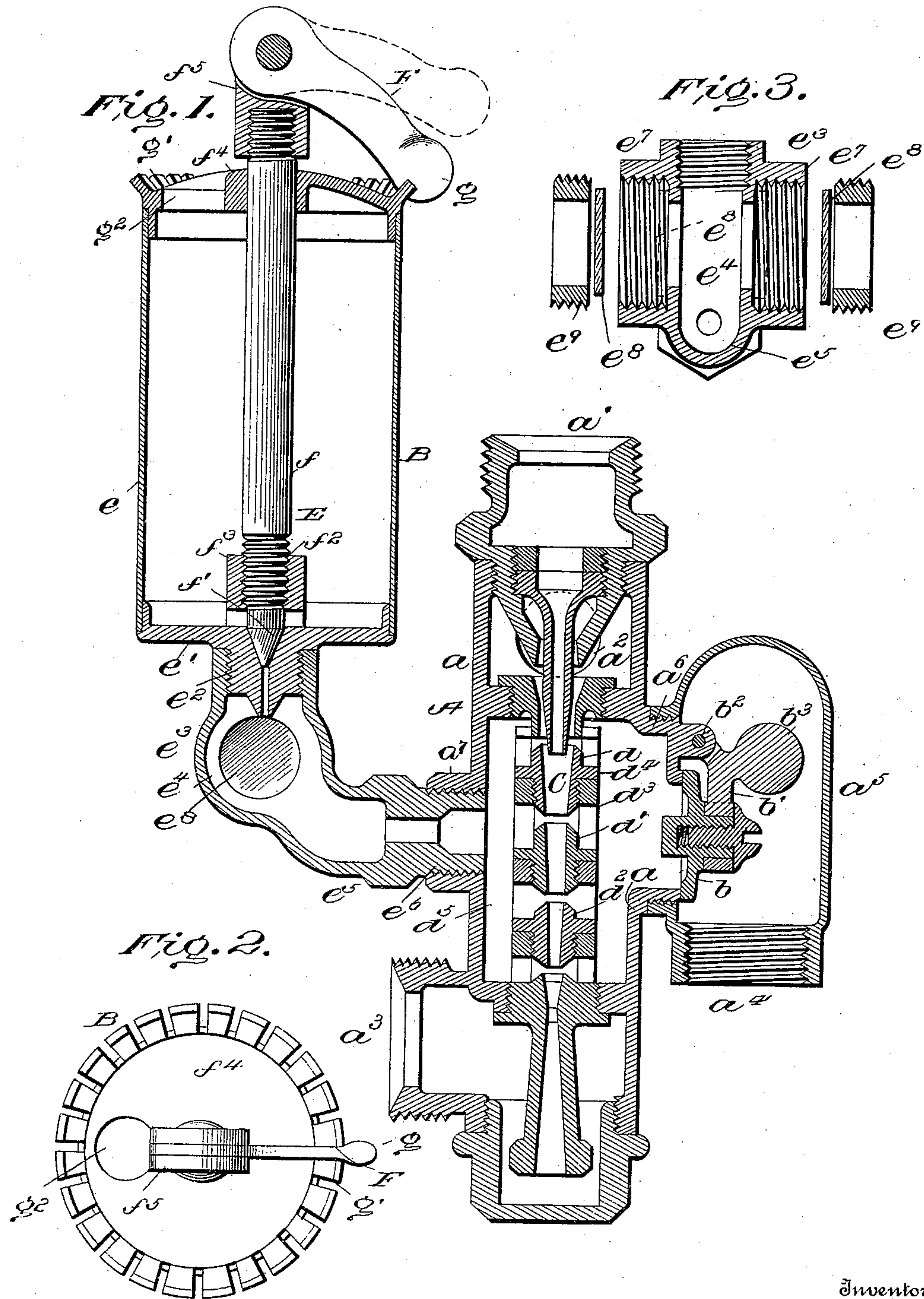
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J. DESMOND.
LUBRICATOR FOR STEAM BOILERS.

(Application filed Jan. 15, 1898.)

(No Model.)



Witnesses

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LUBRICATOR FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 619,677, dated February 14, 1899.

Application filed January 15, 1898. Serial No. 666,799. (No model.)

To all whom it may concern:

Be it known that I, JOHN DESMOND, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Lubricators for Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in lubricators for steam-boilers.

The object of the invention is to provide improved means for feeding or supplying a lubricant to the interior of a boiler. This I accomplish by combining an injector and lubricator, the latter having its discharge-outlet opening into one of the chambers of the former, so that the oil will be entrained by the jet of combined steam and water and thus fed to the boiler. The lubricator is provided with sight-openings and suitable means for regulating the discharge of the lubricant. The injector is specially designed for this purpose. The combining-tube is made up of a series of sections, forming intermediate spill-openings, through any of which the oil may be taken up by the jet, thus insuring the feeding of the lubricant under various pressures of steam.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of the combined injector and lubricator. Fig. 2 is a top plan view of the lubricator. Fig. 3 is a cross-sectional view of the connection between the lubricator and injector.

Referring to the drawings, A designates an injector, and B a lubricator. The injector is provided with a shell or casing a and the ordinary inlets for steam and water a' a^2 , respectively, an outlet to the boiler a^3 , and an outlet a^4 for the overflow. This overflow is through a supplemental casing a^5 , having an interiorly-threaded opening which fits on a threaded boss a^6 of casing a . A valve b normally closes the passage of the overflow. This valve is fitted on an arm b' , pivoted at its up-

per end at b^3 and formed with a weight b^3 , which tends to normally hold the valve to its seat. The casing a is provided, preferably, at about the center of the vacuum-chamber with an interiorly-threaded nipple a^7 , communicating directly with said chamber.

The injector is provided with suitable steam, lifting, and delivery tubes, which may be of any preferred form of construction. The combining-tube C is made up of a series of sections d d' d^2 , formed with coincident openings, each having a gradual conical taper toward the delivery-tube, preserving the conical bore requisite in combining-tubes of steam-injectors. These several sections are supported within an open-work shell d^3 , having horizontal partitions formed with threaded openings to accommodate the exterior threads on said sections, lateral flanges d^4 of the latter being designed to fit against said partitions. It will be observed that a small space is left between these various sections composing the combining-tube and also between the upper and lower sections and the adjacent tubes of the injector. Thus I provide four openings to accommodate the spill and also to allow the oil or lubricant to be taken up through any one of these openings. As is well known in the art, in the operation of a steam-injector the amount of water in what is commonly called the "vacuum-chamber" d^5 depends upon the steam-pressure. Under certain pressure this chamber will be nearly filled with water, while under a heavier head of steam the chamber will be practically empty of water by virtue of the increased vacuum. Hence it becomes necessary to provide various points at which the lubricant fed into the vacuum-chamber may be taken up by the jet in its passage through the combining-tube.

The lubricator B comprises a casing e , having a bottom e' , formed with a central tapered opening and an exteriorly-threaded boss e^2 , which is designed to be screwed into the upper end of a coupling e^3 . This coupling is formed with an approximately cylindrical portion e^4 , having an elongation e^5 , terminating in an exteriorly-threaded horizontal portion e^6 , which is designed to be screwed into the threaded nipple a^7 . The cylindrical portion e^4 has threaded extensions e^7 , in which

two glass disks e^8 are held by threaded rings e^9 . In this way sight-openings are provided for constant inspection of the lubricant as it is discharged from casing e .

5 E is a regulator for controlling the outflow of the oil or lubricant. It consists of a rod f , extended vertically within casing e and having its lower end tapered at f' to correspond to the tapered opening in the bottom e' . A
10 thread f^2 on the exterior of this rod engages an interiorly-threaded ring f^3 , supported within casing e . The upper end of this rod projects above the cover f^4 , and to a slotted head f^5 , secured thereon, is pivoted the inner
15 end of a pawl-like arm F. This arm is slightly weighted at its outer end g and is designed to fit between teeth g' , formed in a circular flange extending from the outer edge of cover f^4 . By raising this arm from engagement
20 with these teeth the rod f can be readily turned to regulate the discharge of the lubricant, and when the desired discharge is obtained the rod will be secured as against further turning by the lowering of the arm F
25 into engagement with said teeth. The lubricant is supplied through an opening g^2 in cover f^4 .

In practice after the regulator of the lubricator has been adjusted to the desired point
30 (which is ascertainable by view through either sight-opening) the lubricant will flow into the vacuum-chamber of the injector and there will be taken up by the jet in the combining-tube, the oil passing through any one
35 of the several spill-openings formed in the latter. It will be understood that in first starting the injector the valve b is unseated by the overflow-steam, which passes out through the overflow-opening a^4 , and that upon the
40 same reaching the outside atmosphere a vacuum or partial vacuum is created within the shell or casing of the injector, whereupon the water is lifted, and that when the jet of combined steam and water is once established the
45 valve b is drawn to its seat, against which it is securely held under the weighted supporting-arm thereof. In the vacuum-chamber of the injector a vacuum ranging between that represented by from ten to twelve inches of
50 mercury is always maintained. It is this that insures the discharge of the lubricant even under conditions that would render the lubricator inoperative should the injector cease working. For instance, if the lubri-
55 cator is feeding at the rate of, say, four drops to the minute while the injector is operating should such operation of the latter be cut off the lubricant will cease to flow, for with its discharge-outlet throttled to this extent
60 it will not discharge save when a partial vacuum exists in the chamber of the injector. With the discharge-outlet of the lubricator thus throttled, making the outflow dependent upon the existence of a partial vacuum
65 in the injector, there is no danger of pressure from the latter backing up into the lubricator

and forcing the oil out of the latter, for the instant such back pressure should take place the automatic overflow-valve would at once open and relieve the same.

I claim as my invention—

1. The combination of a steam-injector and a lubricator, said injector having its combining-tube, located within its vacuum-chamber, provided with spaced-apart lateral inlets
75 throughout its length, said lubricator having its discharge-outlet connected direct with said vacuum-chamber, and means for controlling the outlet from said lubricator to the injector, as set forth.

2. The combination with a steam-injector having its vacuum-chamber provided with an interiorly-threaded nipple, of a lubricator comprising a casing, having a lower central tapered opening, a rod mounted in said casing
85 and having a lower tapered end fitting in said opening, means for adjusting said rod, and a coupling connecting said casing and said nipple, said coupling having cylindrical extensions in which sight-openings are formed, 90 substantially as set forth.

3. The combination with a steam-injector having its vacuum-chamber provided with an interiorly-threaded nipple, of a lubricator comprising a casing, a cylindrical boss projecting therefrom and provided with a central bore having an upper tapered portion, a
95 threaded rod mounted in said casing and having a lower tapered end fitting in the tapered portion of said bore, means for effecting the adjustment of said rod, a coupling connecting said boss and said nipple, said coupling having an approximately cylindrical chamber provided with lateral interiorly-threaded
100 extensions, glass disks located within said extensions, and threaded plugs designed to retain said disks in position, substantially as set forth.

4. The herein-described lubricator comprising a casing, a cylindrical boss extending from
110 the lower end thereof provided with a central bore having a tapered or flared portion, an interiorly-threaded ring supported within said casing, a cover for said casing provided with a peripheral flange having teeth formed there-
115 in, said cover having an inlet hole or opening therein, a rod projected through said cover and having a threaded portion engaging said threaded ring, the lower end of said rod being tapered to fit within the tapered or flared por-
120 tion of said bore, and an arm pivoted to the upper end of said rod and having an outer weighted end designed to engage said teeth, substantially as set forth.

In testimony whereof I have signed this
125 specification in the presence of two subscribing witnesses.

JOHN DESMOND.

Witnesses:

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