(No Model.)

S. REID.

LUBRICATOR.

No. 294,153. Patented Feb. 26, 1884.

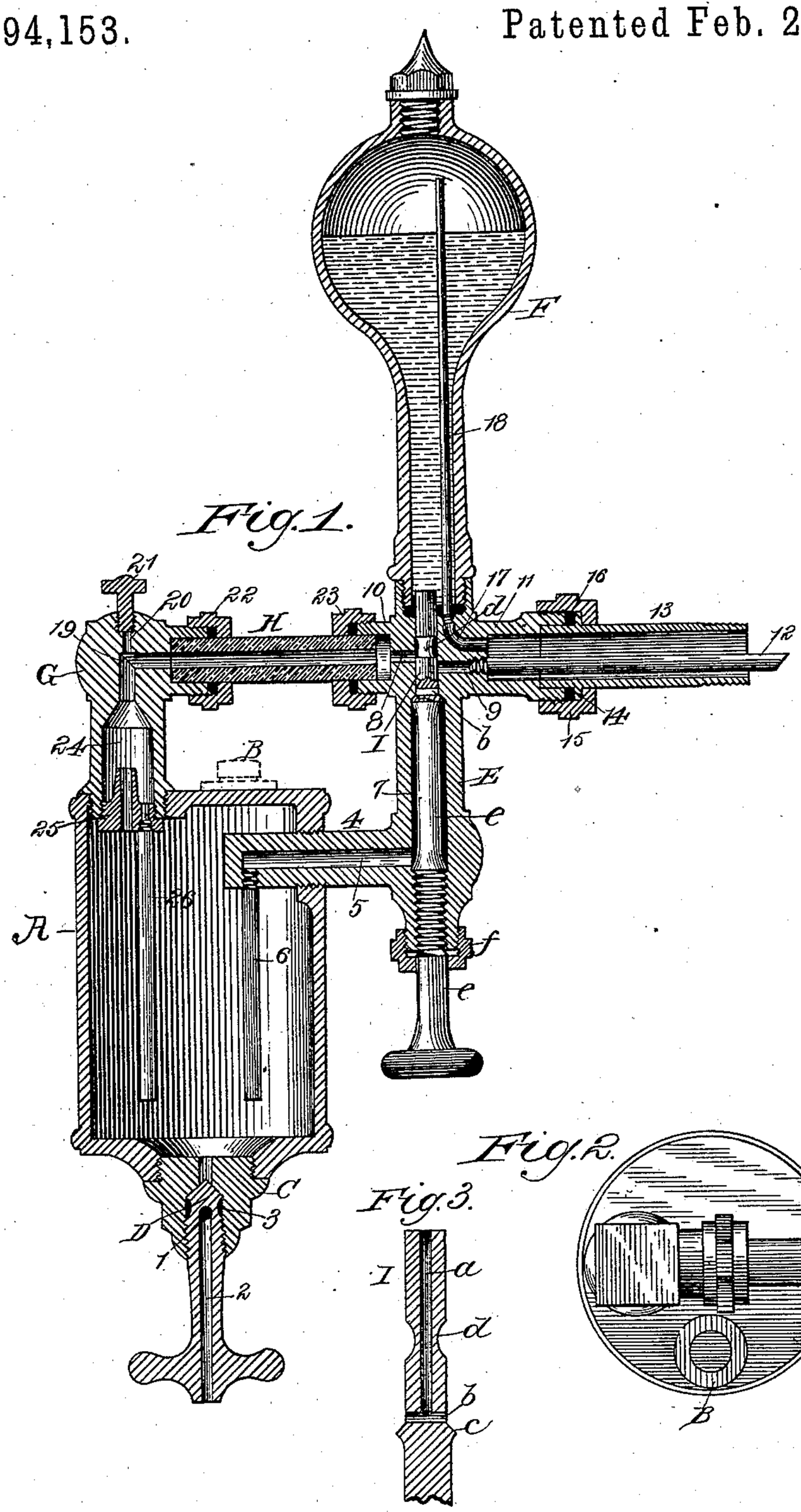

Fig. 1.

Fig. 2.

Fig. 3.

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LUBRICATOR.

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Application filed July 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL REID, a subject of the Queen of Great Britain, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to that class of lubricators in which the oil is displaced by water conducted from a condenser or other suitable receptacle to the oil-reservoir, from which there is a simultaneous feed of particles of water and globules of oil through a sight-tube of the device to be operated.

The objects of this invention are to simplify the construction of such lubricators in parts and arrangement, and principally to provide means for regulating the feed of oil and water, and simultaneously, by a single operation, turn on, cut off, and regulate the flow of water to the oil-reservoir and the feed of oil and water therefrom. I attain these objects by devices illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical section of a lubricator embodying my invention. Fig. 2 is a plan view of the top of the reservoir; and Fig. 3, a detail longitudinal section, on an enlarged scale, of the valve controlling the flow of the water to the reservoir and the feed of the oil and water from the reservoir.

Similar letters of reference indicate the same parts in the several figures of the drawings.

A represents a cylindrical oil-reservoir, constructed of suitable material adapted to withstand the required pressure, and provided at its top with a filling-plug, B. (See Fig. 2, and dotted lines, Fig. 1.) Tapped in the bottom is a centrally-perforated plug, C, in which works on an inclined seat formed in the plug a valve, D, the stem of which is transversely perforated at 1, and is also provided with a longitudinal perforation, 2, intersecting with the transverse perforation, and affording an outlet for water escaping from the oil-reservoir when the valve is loosened upon its seat, communication of the water with the outlet-perforations being provided by means of an annular groove, 3, on the valve-stem. The purpose of this valve is to provide means for drawing off water at any time before or after the oil in the reservoir is exhausted, while the plug serves to afford a communication with the reservoir for removing sediment and other accumulations.

Projecting through the side and near the top of the reservoir is a right-angular arm, 4, branching from the bottom of a stem, E, and provided with a longitudinal passage, 5, entering which at a right angle and near the projecting end of the arm is a pipe, 6, which extends nearly to the bottom of the reservoir. Passage 5 communicates with a longitudinal passage, 7, which in turn opens at its upper end in a bulb-condenser, F, and is intersected just below the condenser by passages 8 and 9, formed, respectively, in arms 10 and 11, branching from the stem E. Passage 8 extends in the same direction as passage 9, but is in a plane substantially above the latter.

Forming a continuation of the passage 9, and screwed into the arm 11, is a feed-tube, 12, projecting beyond the end of a joint, 13, to be tapped into a steam-pipe for connecting the lubricator therewith, said joint being socketed in the arm 11 and provided with an annular flange, 14, forming a seat for a cap, 15, screw-threaded upon the arm, a packing, 16, serving to form a tight joint when the cap is tightened; but any other desired means may be employed for uniting the joint with the arm.

Communication between the condenser and the steam-pipe is provided by a curved passage, 17, formed in the stem E and its branch 11, and by a pipe, 18, extending therefrom to near the top of the condenser, and, if desired, a second similar passage but shorter pipe may be used for an overflow for the condenser, as described in my former application.

Tapped in the top of the reservoir is a stem, G, provided with a right-angular passage, 19, a vertical passage, 20, closed by a plug, 21, providing access to the passage 19, for removing obstructions therefrom.

Socketed in the stem G and in the arm 10 of the stem E is a glass or sight tube, H, the bore of which forms a continuation of the passages 8 and 19, said tube being held in place by screw-threaded caps 22 and 23, respectively, secured on stem G and arm 10, the usual packing being employed to form tight joints. The

lower end of the passage 19 opens into a large chamber, 24, formed in the stem G, the bottom of which chamber has tapped therein a nipple, 25, projecting up into the chamber, and affording an outlet for the oil in the reservoir.

Tapped in the base of and at one side of the nipple is a pipe, 26, the lower end of which opens near the bottom of the oil-reservoir, said pipe affording an outlet for the water accumulating in the bottom of the reservoir.

It now remains to describe the valve I by which the flow of water from the condenser to the reservoir and the oil from the latter to the device to be fed is regulated and simultaneously controlled by operating a single valve-stem. Valve I, as shown in Fig. 3, is provided with a longitudinal passage, *a*, intersecting with a horizontal passage, *b*, arranged just above a shoulder, *c*, and with an annular groove, *d*, arranged between the passage *b* and the upper end of the valve, said valve being controlled by a rod, *e*, of less diameter than passage 7, and screw-threaded toward its lower end in the stem E, between which and the rod a tight joint is formed by a cap, *f*, and suitable packing.

As shown in Fig. 1, the valve is closed, in which position the shoulder *c* is close against the corresponding shoulder in the stem E, thereby closing the passage *b*, while communication is also shut off between the passages 8 and 9, owing to the annular groove *d* being elevated above passage 9, this being the position of the valve before the lubricator is put in operation and after the reservoir is filled with oil and condensations accumulated in the condenser.

In operating the lubricator it will now be seen that by lowering and thus opening the valve water will flow through passages *a b* of the valve, and, entering passage, 7 will flow thence to the bottom of the lubricator, and, forcing the oil up through nipple 25, will at the same time be forced into the chamber 24 through the pipe 26, and, continuing thence, will feed with the oil-globules through the sight-feed around the annular groove *d* in the valve to passage 9, and thence through the tube 12. The simultaneous rising of water in chamber 24 with the feed of oil through nozzle 25 causes the water to serve as a vehicle for the oil-globules which tend to rise above the water; but as the water continuously fed to the chamber is subject to the same pressure from the condenser as the oil, every globule of oil entering the passage 19 and the sight-feed will be followed by water; hence there is a continuous feed of oil and water, the oil-globules passing through the sight-feed having the appearance of a traveling string of beads, and the flowing water serving to keep the sight-feed tube clean by carrying off any sediment or gummy substance in the oil, which would otherwise adhere to it. The chamber 24, owing to its enlarged diameter as compared with the oil-passages, forms a reservoir filled with constantly-flowing water, and hence provides for the oil assuming a definite and measured globular form. Projecting the nozzle 25 above the bottom of the chamber 24 permits the water to rise and flow up through the chamber around the nozzle in such manner as to get under the oil-globules and lift them, as it were, off the end of the nozzle and to creep in between each globule of oil as it escapes from the nozzle.

In conclusion, it may be stated that the farther the nozzle projects up in the chamber the smaller the globules and the less quantity of water between each globule of oil.

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

1. A hydrostatic lubricator provided with a single valve adapted to control both the flow of the oil and water, substantially as described.

2. A hydrostatic lubricator in which feed-passages bisect each other, and which is provided with a valve working in and controlling both of said passages, substantially as described.

3. A hydrostatic lubricator in which feed-passages bisect each other, and which is provided with a tubular valve working in and adapted to control both of said passages, substantially as described.

4. The combination, with the oil reservoir and condenser, of a valve, I, provided with passages *a b*, annular groove *d*, and shoulder *c*, substantially as described.

5. A sight-feed lubricator provided with a water-supply chamber arranged in the path of the oil being fed to and through the sight-feed, substantially as described.

6. A hydrostatic lubricator provided with a water-supply chamber communicating with the oil-reservoir and hydrostatic column, substantially as described.

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