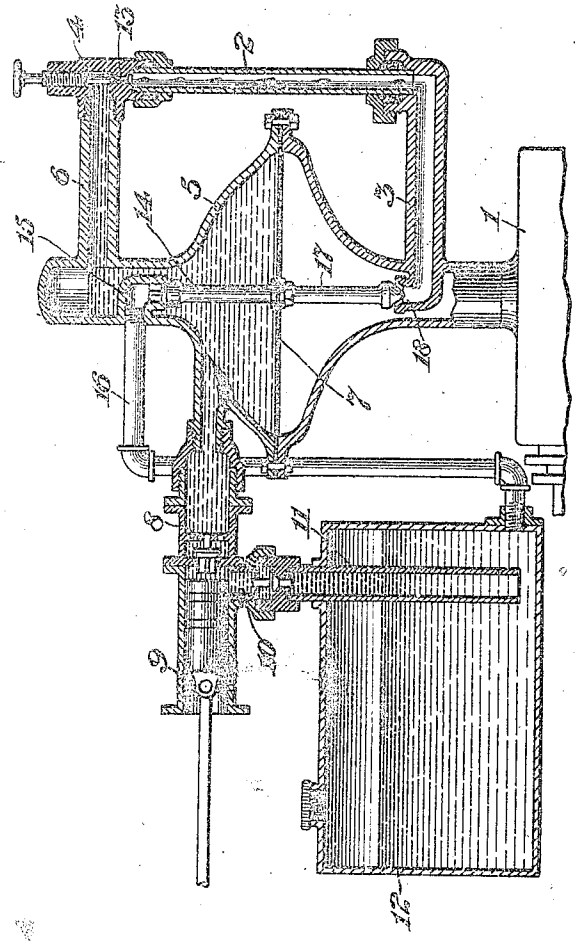
No. 783,159. PATENTED FEB. 21, 1905.

J. TROTTER.

LUBRICATOR.

APPLICATION FILED MAY 9, 1902.



Witnesses:
J. E. Weir
C. W. Hazlett

Inventor:
James Trotter
by Elliott & Hopkins Attys

No. 783,159. Patented February 21, 1905.

UNITED STATES PATENT OFFICE.

JAMES TROTTER, OF SYCAMORE, ILLINOIS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 783,159, dated February 21, 1905.

Application filed May 9, 1902. Serial No. 106,559.

To all whom it may concern:

Be it known that I, JAMES TROTTER, a citizen of the United States, residing at Sycamore, in the county of Dekalb and State of Illinois, have invented certain new and useful Improvements in Lubricators, of which the following is a full, clear, and exact specification.

My invention relates to lubricators, and more particularly to that class of automatic-feed lubricators especially designed for injecting the lubricant into a chamber containing pressure—such, for example, as the steam chest or cylinder of a steam-engine, and particularly locomotive-engines, in which especial difficulty in lubricating the cylinder and valve is experienced at times by the suction or vacuum in the cylinder resulting from the action of the piston during the drifting of the locomotive, causing the lubricant to feed too fast, and at other times by the clogging of the oil-pipe, due to the hardening of the oil as a result of the high temperature of the steam to which it is subjected for balancing the pressure above the column. Hence the common practice of locomotive-engineers of "shutting off" to create the vacuum below the column to aid the steam-pressure above in blowing out the oil-pipe.

The primary object of this invention is to avoid these defects and provide improved means for causing the oil to feed automatically and uniformly without subjecting the supply to the steam, so that no portion of the oil will come in contact with the steam excepting that which is being fed through the feed contraction or other passage that may be provided for dripping the oil from the supply or feed valve to the place of consumption or use.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawing and more particularly pointed out in the claims.

The said drawing is a vertical sectional view of my improved lubricator.

I may be regarded as the steam-chest of a steam-engine or any other chamber to which the lubricant is to be supplied containing steam or other fluid under pressure, and 2 is a lubricator sight-feed or any other suitable feed-passage connected at its lower end by a pipe or passage 3 with the chest 1 and having its upper end provided with any suitable needle-valve or other feed-valve 4 and connected with one side of a diaphragm-chamber 5 by means of a pipe or passage 6, while the other side of this diaphragm-chamber is connected directly to the steam-chest 1, so that one side of a diaphragm 7 in such diaphragm-chamber will be subjected to the direct action of the steam-pressure or other fluid-pressure in the steam-chest 1, while the upper side of the diaphragm is subjected to such pressure through the intermediary of the connections 2, 3, and 6.

The upper side of the diaphragm-chamber is connected to the eduction-port 8 of a pump 9, whose induction-port 10 is connected by a pipe 11 or any other suitable means with an oil-supply tank 12.

The action of the pump 9, which may be connected in any suitable way with some moving part of the machinery, is to force the oil continuously into the diaphragm-chamber at the side thereof above the diaphragm, so as to continually force the same through the feed contraction 13, controlled by the valve 4, and any oil in excess of that which may pass the valve 4 is automatically returned to the oil-tank 12 when the pressure of the oil above the diaphragm, induced by the action of the pump, exceeds the resistance of the diaphragm 7. This may be accomplished by providing the upper side of the diaphragm with a suitable valve 14, which, with diaphragm 7, constitutes a pressure-regulator and which under normal conditions closes an outlet 15, communicating by pipe or passage 16 with the supply-tank 12, but under abnormal conditions, or when the supply of oil exceeds the consumption, is drawn away from the outlet or relief passage 15, permitting the surplus oil to automatically escape back into the supply-tank.

In order that the suction induced below the diaphragm 7 when the engine is drifting or when a partial vacuum is produced in the chest or chamber 1 by any other cause may

not siphon the oil out of the lubricator into the chest or chamber 1 too rapidly, the under side of the diaphragm is also provided with a valve 17 and the inner or discharge end of the passage 3 with a valve-seat 18, which is closed by the valve 17 as soon as the pressure below the diaphragm becomes less than that above it, thereby shutting off further discharge of the oil from the passage 3 into the chest or chamber 1.

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

1. In a device for the purpose described the combination of means for forcing a supply of lubricant, a lubricant-passage communicating therewith and connected with the part to be lubricated, an oil-relief in said passage between the supply and the part to be lubricated, a pressure-regulator actuated by the pressure in said passage for opening said relief and a direct connection between a source of fluid-pressure and said pressure-regulator for closing said relief, substantially as set forth.

2. In a device for the purpose described the combination of means for forcing a supply of lubricant, a lubricant-passage for conducting the lubricant from said forcing means to a chamber containing fluid-pressure, an oil-relief in said passage, and a pressure-regulator for controlling said oil-relief, actuated on one side by the pressure of the oil, and on the other side directly by the pressure within said chamber, substantially as set forth.

3. In a device for the purpose described the combination of means for forcing a supply of lubricant, a passage communicating therewith and connected to the part to be lubricated, an oil-relief in said passage between the supply and the part to be lubricated, a pressure-regulator for controlling said relief, there being a direct connection between a source of fluid-pressure and said pressure-regulator, and means interposed in said passage between the part to be lubricated and said oil-relief for controlling the supply to said part to be lubricated, said means being operatively connected with said pressure-regulator, substantially as set forth.

4. In a device for the purpose described, the combination of a lubricant-passage for supplying lubricant to a chamber to be lubricated, an oil-relief in said passage, a pressure-regulator communicating with said passage and also with said chamber for controlling said relief and a valve connected with said pressure-regulator for controlling the discharge from said passage to said chamber.

5. In a device for the purpose described the combination of means for forcing a supply of lubricant, a lubricant-passage for connecting the chamber to be lubricated with said forcing means, a feed contraction in said lubricant-passage, an oil-relief in said lubricant-passage between said forcing means and feed contraction, means located between said feed contraction and the chamber to be lubricated for controlling the passage of lubricant to said chamber, and means for opening said relief and closing said controlling means when the pressure in said passage between the forcing means and feed contraction becomes excessive or when the pressure in said passage between the feed contraction and said chamber decreases, substantially as set forth.

6. In a device for the purpose described the combination of means for forcing a supply of lubricant, a lubricant-delivery passage connected therewith, a feed contraction in said passage, an oil-relief in said passage in advance of said contraction, a diaphragm-chamber communicating with said passage, a diaphragm in said chamber, a valve connected to said diaphragm for closing said oil-relief, and a passage connecting the opposite side of said diaphragm-chamber with the chamber to be lubricated and also with said delivery-passage at a point beyond said feed contraction, substantially as set forth.

JAMES TROTTER.

Witnesses:
N. MADDEN,
M. T. BRISTOF.