

No. 773,545.

PATENTED NOV. 1, 1904.

J. V. CLARK & H. S. BLYNT.
LUBRICATOR.

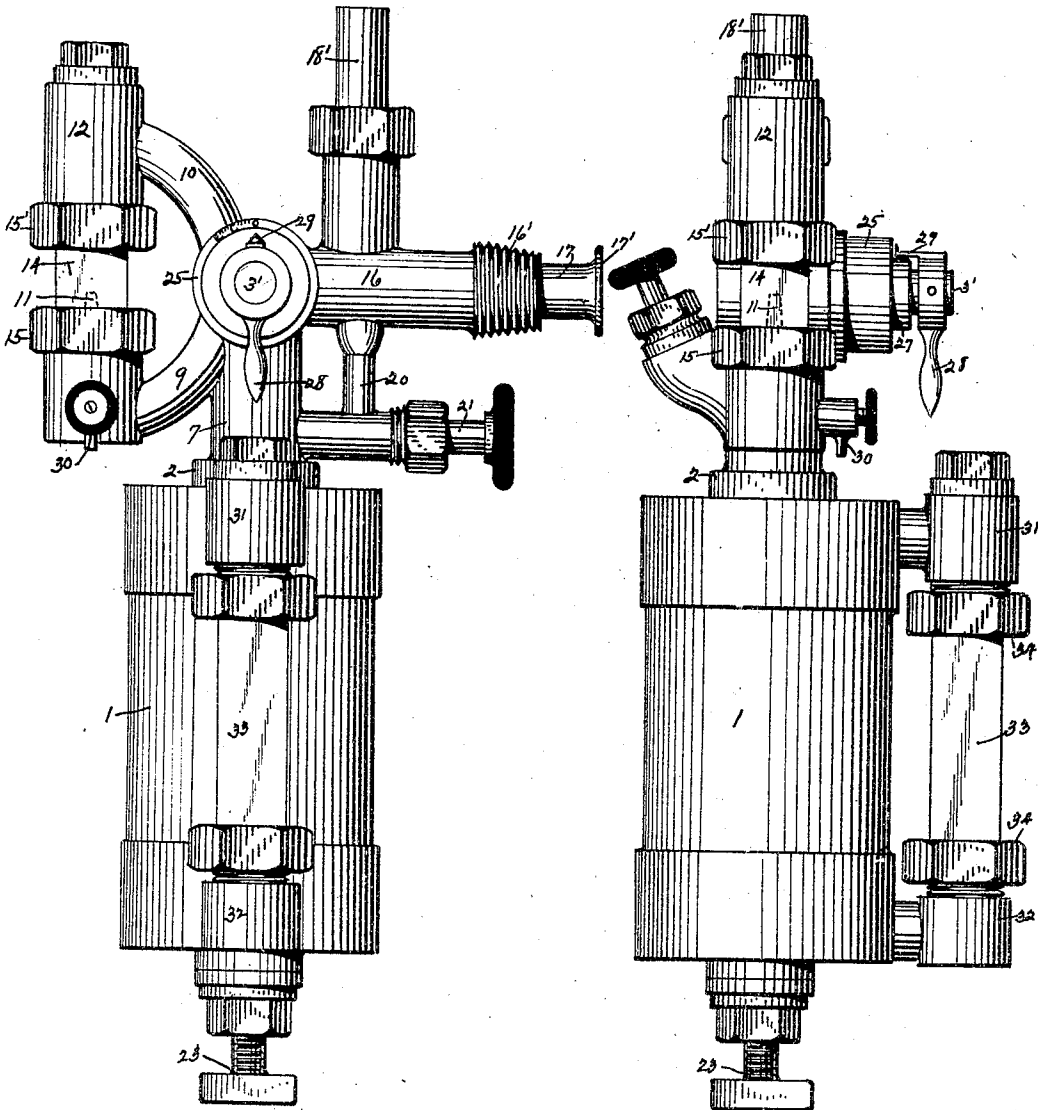
APPLICATION FILED JUNE 21, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

FIG. 1.

FIG. 2.



Witnesses:

J. P. Hoffman
H. W. Stevenson

Inventors

Joseph V. Clark and
Herbert S. Blynt
by J. H. Stevenson
Attorney

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3 SHEETS—SHEET 2.

FIG. 5.

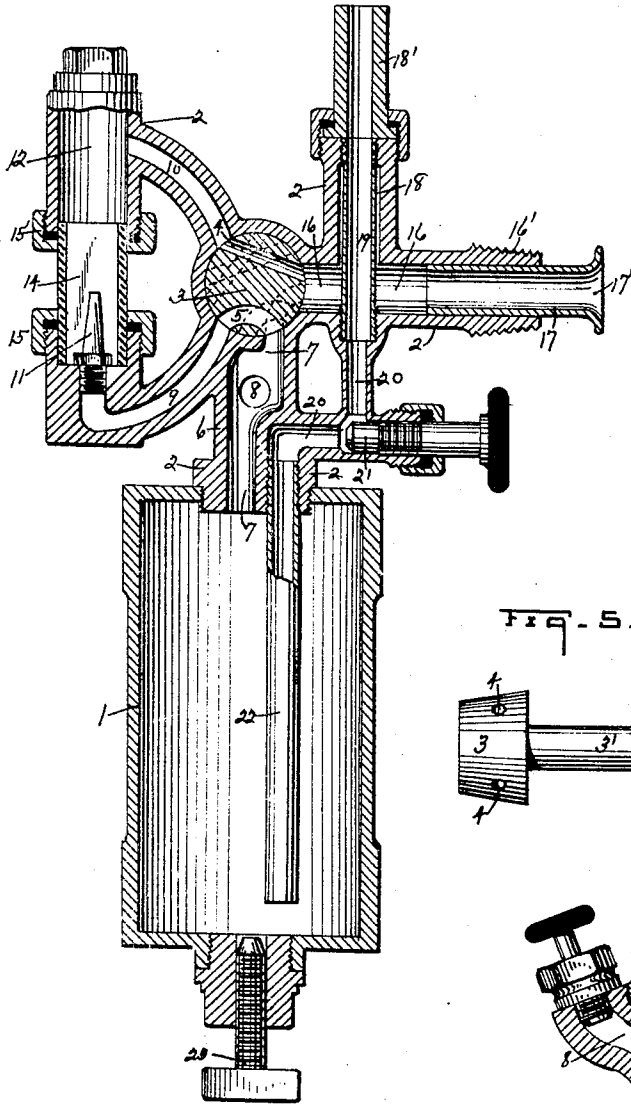


FIG. 4.

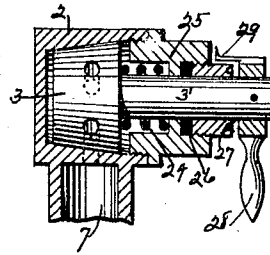


FIG. 5.

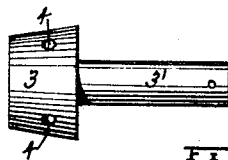


FIG. 6.

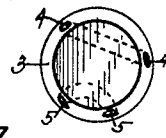
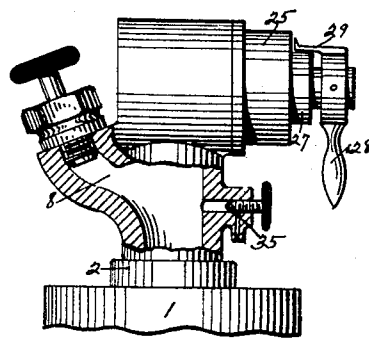


FIG. 7.



Witnesses:

J. S. Appleman,
H. W. Stevenson

Inventors

Joseph V. Clark and
Herbert S. Blynt
by *J. N. Stevenson*

Attorney

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3 SHEETS—SHEET 3.

FIG. 8.

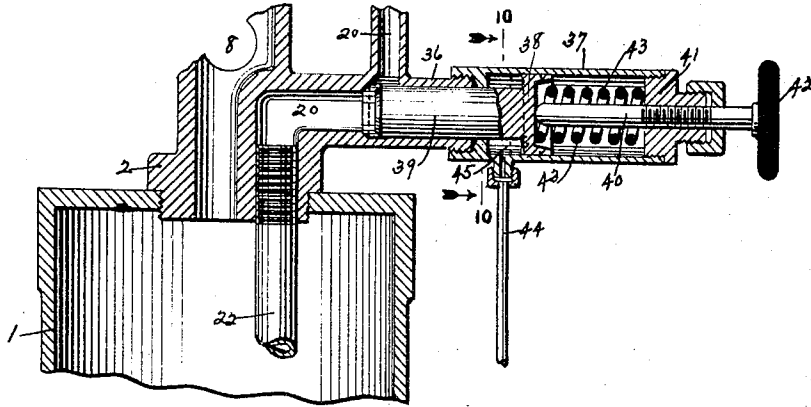


FIG. 10.

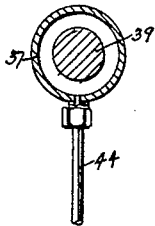
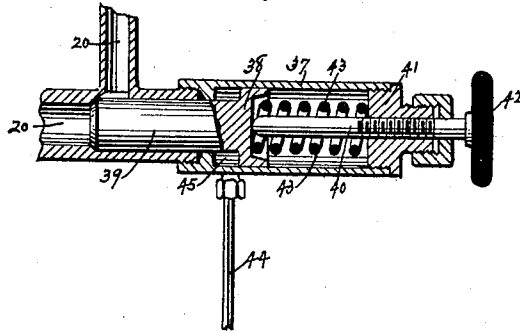


FIG. 9.



Witnesses:

P. P. Appelman,
H. W. Stevenson

Inventors

Joseph V. Clark & Co.
Herbert S. Blynt
by J. H. Stevenson
Attorney

UNITED STATES PATENT OFFICE.

JOSEPH V. CLARK AND HERBERT S. BLYNT, OF STEUBENVILLE, OHIO,
ASSIGNORS TO THE KING LUBRICATOR AND BRASS SUPPLY COM-
PANY.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 773,545, dated November 1, 1904.

Application filed June 21, 1904. Serial No. 213,448. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH V. CLARK and HERBERT S. BLYNT, citizens of the United States, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Lubricators; and we do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to a new and useful improvement in an oil lubricating device designed and constructed with a view of automatically feeding the lubricant to any desired portion of the engine, utilizing the condensation of steam to force the oil contained in the reservoir into the steam-line supplying the steam chest and cylinder on the engine.

In the accompanying drawings, forming a part of this specification, we have illustrated our invention by several views, in which—

Figure 1, Sheet 1, is a vertical front view of our lubricator. Fig. 2, Sheet 1, is a vertical side view of the same. Fig. 3, Sheet 2, is a sectional view of our invention, showing the passages formed in the head portion with a regulating-valve seated in said head portion. Fig. 4, Sheet 2, is a side sectional view of the valve and registering device employed in regulating the flow of oil from the reservoir. Fig. 5 is a side view of the regulating-valve and stem. Fig. 6 is an end view of the same, showing ports located therein. Fig. 7 is a side and part sectional view of the head portion of the lubricator, showing inlet-orifice to the oil-reservoir. Fig. 8, Sheet 3, is a sectional view of the top of the oil-reservoir and neck of the head portion, showing sectional view of an automatic steam-actuated valve attached thereto. Fig. 9 is a sectional view of the automatic valve, showing the valve-stem seated by means of hand-operated screw-stem. Fig. 10 is a cross-sectional view of the automatic valve, taken on the line 10 10 of Fig. 8.

Numerals of reference designate like parts throughout the several views, in which—

The numeral 1 represents the oil-reservoir, and 2 a removable head portion affixed to the top of said reservoir. Seated in said head portion is a regulating-valve 3, having a straightway channel 4 and a curved channel 5 formed therein. Leading upward through the neck portion 6 of the head is a passage-way 7, its upper end communicating with the valve 3 and its lower portion opening into the oil-reservoir. 8 is a port in said neck portion through which oil is supplied to the reservoir. Communicating with the valve-seat are the curved passages 9 and 10, the outer end of the passage-way 9 being connected with a jet 11 and the outer end of the passage-way 10 entering a condensing-head 12.

Seated between the condensing-head 12 and jet-supporting portion is a sight-feed glass 14, surrounding said jet and being held in position by packing-nuts 15 and 15'. This sight-feed glass is so arranged that it may be easily removed in case of breakage. Only a sufficient portion of the sight-feed tube is exposed to permit of seeing the amount of oil being fed to the engine, while the surrounding metal will protect the glass from breakage.

Leading at right angles with the valve-seat is a straightway passage 16, having an outside threaded portion 16' formed thereon, the latter being connected with the steam-line leading to the engine. Entering this passage 16 from the outside is a tube 17, having a bell-shaped end 17', the use of which will be hereinafter described. Formed at right angles and communicating with said passage 16 is a chamber 18, through which passes a tube 19, the lower end of the same being connected with a curved passage-way 20 and the upper end engaging a nipple 18', which is connected with a pipe leading to the steam-line. This passage-way 20 continues on down through the neck portion 2 and has located therein a valve-stem 21. Connected with the lower end of said passage-way 20 is a tube 22, which enters the oil-reservoir, extending down through the same nearly to the bottom portion thereof. Inserted through a plug in the bottom of the reservoir is a drain-valve 23.

The regulating-valve 3 is held in position by a spring 24, seated around the valve-stem

3', the ends of said spring engaging the valve and box 25. Seated around the valve-stem 3' is a packing-ring 26, held in position by a lock-nut key 27. Secured to the outer end of the valve-stem 3' is a handle 28, having an indicator-hand 29 affixed to the same. The spring 24 serves to keep the valve firmly in position in its seat and at the same time allows for the expansion and contraction of the surrounding metal.

On the outer face of the box 25 are graduated spaces indicating when the valve is in certain positions. The position of the valve shown in the sectional view of Fig. 3 would be indicated by the first sign, "Open," meaning that the oil was being forced through the curved passage 5 in the valve into the concave-shaped passage 9, up through the jet 11 and sight-glass 14 into the condensing-chamber 12, down through the convex-shaped passage 10, and through the straightway passage 4 in the valve into the passage 16. In case anything should go wrong with the sight-feed line or the sight-glass become broken the supply of oil to the engine need not be stopped or interfered with; but by simply turning the valve to where the indicator-hand will point to "Emergency" the oil will immediately flow through the curved passage 5 in the valve (shown by dotted lines) direct into the passage-way 16, where it mixes with the steam, and from there is carried to the engine. Midway between the "Open" and "Emergency" points is the indication "Closed," and when the valve is turned to this point the supply of oil is entirely shut off, the position of the ports in the valve being shown by a second series of dotted lines. (Seen in Fig. 3.) The graduations formed between the "Open" and "Emergency" points will permit of the valve 3 being regulated to feed oil through the same in any desired amount, according to the needs of the engine. When it is desired to entirely cut off the steam condensing in the passage 20 from the reservoir, the valve 21 is closed. This action would immediately stop the flow of oil through the head portion by shutting off the pressure of water in the tube 22.

To remove the water from the sight-glass 14 and condensing-head 12, we provide a drain-valve 30.

Seated between a hollow head portion 31, secured to and communicating with the oil-reservoir, and a foot portion 32, also communicating with the reservoir, is an indicator-glass 33, leakage being prevented by packing-rings and nuts 34 34.

A vent-valve 35, located in the neck of the head portion near the filling-plug, is intended to be opened when the reservoir is being filled for escapement of air or gas contained therein.

In place of the ordinary hand-valve seated in the curved passage-way 20, forming part of the condensing-line, we have shown in Fig.

8, Sheet 3, an automatic steam-actuated valve, which controls the condensation of steam through the tube 22, and hence regulates the supply of oil through the regulating-valve 3 and communicating passage-ways in the head portion. This automatic valve consists of the following combination of parts, and its use in connection with our head and reservoir portions will perfect a lubricator entirely independent of adjustment by means of the ordinary hand-valve. Connected to the extension 36, in which the ordinary hand-valve operates, is a steam-cylinder 37, having a sliding piston-head 38 operatively adjusted therein. Integral with this head portion is the valve-stem 39, which passes through the inner end of the steam-cylinder 37 and enters into the curved passage-way 20, finding its seat therein. Entering the steam-cylinder from the outer end is a stem 40, threadably seated in a plug portion 41, its inner end engaging the piston-head 38 and on the outer end being formed an operating-wheel 42. Seated around the inner portion of said stem 40 is a spring 43, the ends thereof engaging the piston-head and plug portions. Communicating with the inner end of the steam-cylinder is a steam-supply pipe 44, leading to and connected below the throttle-valve in the steam-line. When the throttle-valve is opened, steam is immediately introduced into the chamber 45 in the cylinder of our automatic valve and forces the piston-head forward, thus compressing the spring 43 and drawing the end of the valve-stem 39 away from its seat in the condensing passage-way 20 and immediately starts our lubricator into action. The instant steam is cut off at the throttle of the engine the supply of steam to our automatic valve ceases, and the pressure on the piston-head being released the spring 43 will expand to its normal position and force the valve-stem 39 back into its seat, thus shutting off condensation. When it is desired to close the valve while the throttle is open, it may be done independent of the steam-pressure back of the piston-head 38 by simply turning the hand-operated stem 40, thus forcing the valve-stem 39 into its seat in the condensing-line 20.

In the operation of our improved lubricating device oil is first introduced through the inlet-orifice 8 to the reservoir. The passage-way 16 and nipple 18' being connected to the steam-line and the valve 21 being open, the condensation of steam in the tubes 19 and 22 and in the passage-way 20 by the weight of gravity over and above the equalization of boiler-pressure forces the oil contained in the reservoir through the passage-way 7 and ports in the valve 3 either to the sight-feed or emergency lines, according to the position of said valve, and from there into the passage-way 16, where it is carried outward to the end of the tube 17 and by means of its bell-shaped end dropped into the midst of the

steam and from there caught up and carried to any part of the engine to be lubricated.

The tube 17 being adjustable in the passage-way 16 can be arranged so that the bell-shaped portion will always be in the center of the steam-line. Without this tube 17 the tendency of the oil would be to run down the inside of the steam-line, clinging to the metal; but by utilizing this tube a material saving in the amount of oil used is effected in that steam catches up and evaporates the drops of oil as they form on the bell-shaped portion 17'. Thus every particle of oil is carried to the parts of the engine to be lubricated. The steam surrounding the pipe 19 will keep the condensation of steam therein in a heated state, and as this water passes into the passage-way 20 to the tube 22 and from there into the oil-reservoir it serves to keep the oil in a workable or liquid state, thus preventing freezing or thickening of the same.

By this system of preheating the oil contained in the reservoir of our lubricator we are able to use the heaviest and thickest of oils or greases as lubricants, as they become thin and easily introduced through the valve and into the steam-line under the method employed in our device.

Having thus fully shown and described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an oil lubricating device, the combination with an oil-reservoir having a removable head portion, condensing means communicating with the steam-line and with said reservoir, a registering box-valve seated within said head portion having a curved passage adapted to register with passage-ways leading to the oil-reservoir, steam-line and sight-feed line, a sight-feed line, and a straightway passage in said valve adapted to register with the sight-feed and steam lines formed in said head portion, substantially as described.

2. An oil lubricating device comprising an oil-reservoir, a removable head portion mounted thereon, a condensing means mounted in the head portion adapted to communicate with the steam-line and with the oil-reservoir, a registering box-valve seated within the said head portion having a curved passage therein adapted to register with passage-ways leading to the oil-reservoir, steam-line and sight-feed line, a sight-feed line, a straightway passage adapted to register with the sight-feed and steam line, and means mounted within said straightway passage adapted to project into the steam-line, substantially as described.

3. In an oil lubricating device, the combination with an oil-reservoir having a removable head portion, steam-condensing means in communication with the steam-line and with the reservoir mounted within the head; a registering box-valve seated in said head portion having a curved and straightway passage formed therein; there being a straightway passage in

the neck of said head portion, the lower end communicating with the oil-reservoir, and the upper end with the valve-seat; a concave-shaped passage leading from said valve-seat, an oil-jet mounted at the outer end of said passage; a convex-shaped passage leading from said valve-seat the outer end communicating with a condensing-chamber; a sight-glass seated over said oil-jet its upper end entering the condensing-chamber; and a straightway passage leading at right angles from said valve-seat; substantially as described and shown.

4. An oil lubricating device, comprising an oil-reservoir, steam-condensing means connected with the steam-line and with the reservoir for forcing the oil therefrom, a removable head portion mounted on said reservoir, a registering box-valve seated in said head portion having a curved and straightway passage formed therein; there being a straightway passage in the neck of said head portion, the lower end communicating with the oil-reservoir, and the upper end with the valve-seat; a concave-shaped passage leading from said valve-seat, an oil-jet mounted upon the outer end of said passage; a convex-shaped passage leading from said valve-seat the outer end communicating with a condensing-chamber; a sight-glass seated over said oil-jet its upper end entering the condensing-chamber; a straightway passage leading at right angles from said valve-seat and an adjustable tube, having a bell-shaped outer end, entering said straightway passage; substantially as described and shown.

5. In an oil lubricating device the combination with an oil-reservoir of a removable head portion; a registering box-valve seated in said head portion having a curved and straightway passage formed therein; there being a straightway passage in the neck of said head portion, the lower end communicating with the oil-reservoir, and the upper end with the valve-seat; a concave-shaped passage leading from said valve-seat, an oil-jet mounted in the outer end of said passage; a convex-shaped passage leading from said valve-seat the outer end communicating with a condensing-chamber; a sight-glass seated over said oil-jet its upper end entering the condensing-chamber; a straightway passage leading at right angles from said valve-seat; an adjustable tube, having a bell-shaped outer end, entering said straightway passage; a communicating chamber formed at right angles with said straightway passage; a tube connected to the upper end of said chamber passing down through the straightway passage its lower end being connected to a curved passage-way leading through the neck of the head portion to the oil-reservoir; and a regulating-valve seated in said latter passage-way; substantially as described and shown.

6. In an oil lubricating device the combina-

tion with an oil-reservoir of a removable head portion; a registering box-valve seated in said head portion having a curved and straightway passage formed therein; there being a straightway passage in the neck of said head portion, the lower end communicating with the oil-reservoir, and the upper end with the valve-seat; a concave-shaped passage leading from said valve-seat, an oil-jet mounted at the outer end of said passage; a convex-shaped passage leading from said valve-seat, a condensing-chamber communicating with the outer end of said passage; a sight-glass seated over said oil-jet its upper end entering the condensing-chamber; a straightway passage leading at right angles from said valve-seat; an adjustable tube, having a bell-shaped outer end, entering said straightway passage; a communicating chamber formed at right angles with said straightway passage; a tube connected to the upper end of said chamber passing down through the straightway passage its lower end being connected to a curved passage-way leading through the neck of the head portion to the oil-reservoir; a regulating-valve seated in said latter passage-way; a condensing-tube connected to the lower end of said curved passage-way entering the oil-reservoir nearly to the bottom thereof; and a drain-valve in the bottom of said reservoir; substantially as described and shown.

7. In an oil lubricating device the combination with an oil-reservoir of a removable head portion; a registering box-valve seated in said head; there being a straightway passage in the neck of said head portion, the lower end communicating with the oil-reservoir and the upper end with the valve-seat, a concave-shaped passage leading from said valve-seat, an oil-jet mounted at the outer end of said passage; a convex-shaped passage leading from said valve-seat, a condensing-chamber communicating with the outer end of said passage; a sight-glass seated over said oil-jet its upper end entering the condensing-chamber; a straightway passage leading at right angles from said valve-seat; an adjustable tube having a bell-shaped outer end entering said straightway passage; a communicating chamber formed at right angles with said straightway passage; a tube connected to the upper end of said chamber passing down through the straightway passage its lower end being connected to a curved passage-way leading through the neck of the head portion to the reservoir; a steam-actuated valve connected to an extension on the neck portion consisting of a steam-cylinder having a piston-head operatively adjusted therein; a valve-stem integral with said piston-head passing through the end of the steam-cylinder, its inner end seated in the curved passage-way; a hand-operated stem entering the cylinder from the opposite end; a spring seated around said stem its ends en-

gaging the piston-head and plug portion; a steam-supply pipe communicating with the inner end of the cylinder and a condensing-tube connected to the lower end of the curved passage-way entering the oil-reservoir nearly to the bottom thereof; substantially as described and shown.

8. In a device of the character described, an oil-reservoir, a removable head portion mounted thereon, steam-condensing means mounted in said head portion communicating with the oil-reservoir and with the steam-supply, an oil-condensing chamber having a curved passage communicating therewith, an oil-jet disposed beneath said chamber, there being a curved passage communicating with the jet, a valve seated within the head portion controlling the passages leading to the condensing-chamber and the oil-jet, there being oil-conducting means controlled by said valve adapted to supply oil to the oil-jet, and means for conducting oil to the steam-line from the condensing-chamber, substantially as described.

9. In a device of the character described, the combination of an oil-reservoir, of a steam-condensing means in communication with the steam-supply and with said reservoir, a removable head portion carrying said steam-condensing means having a valve-seat therein and straight passages leading from the oil-reservoir to the valve-seat and from the valve-seat to the steam-line respectively, a valve mounted in the seat of the head portion adapted to register with said passages, there being curved passages leading from the valve-seat, a condensing-chamber in communication with one of said passages, an oil-jet disposed beneath said chamber in communication with the other of said passages, said valve being adapted to place in communication the last-named passages and the straightway passages of the head, substantially as described.

10. In combination with an oil-reservoir, a removable head mounted thereon, a steam-condensing means in communication with the oil-reservoir, a valve controlling the same, a valve disposed within the head having a curved passage adapted to register with the passage-ways leading to the oil-reservoir, steam-line and sight-feed line, and being further provided with a straightway passage adapted to register with the sight-feed and steam line, a sight-feed line, and adjustable means mounted within the head portion adapted to enter the steam-line and to receive the oil from the sight-feed line, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH V. CLARK,
HERBERT S. BLYNT.

Witnesses:

H. W. STEVENSON,
E. C. YOST.