

(No Model.)

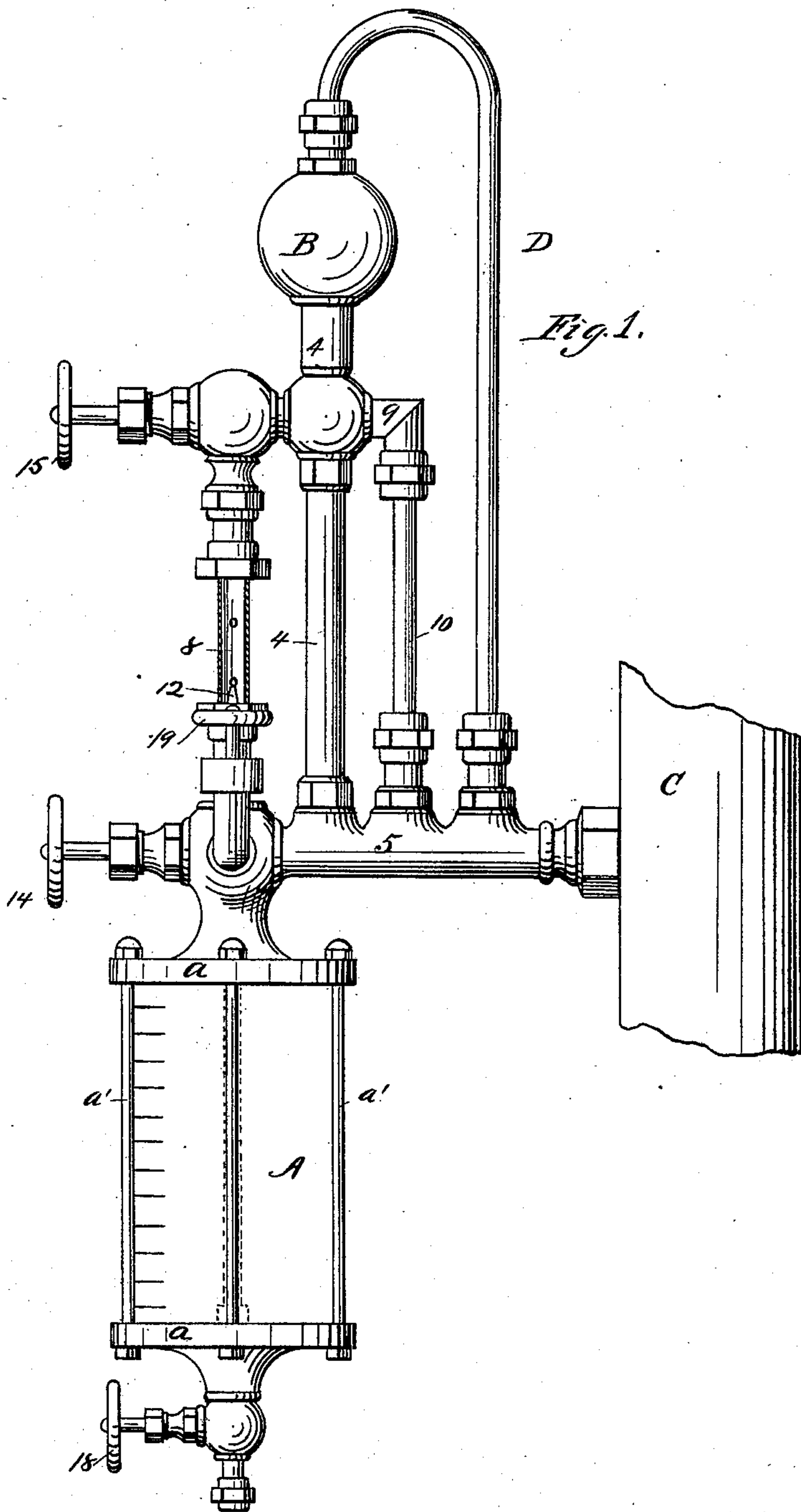
2 Sheets—Sheet 1.

G. W. BAKER.

Automatic Lubricating Apparatus.

No. 237,800.

Patented Feb. 15, 1881.



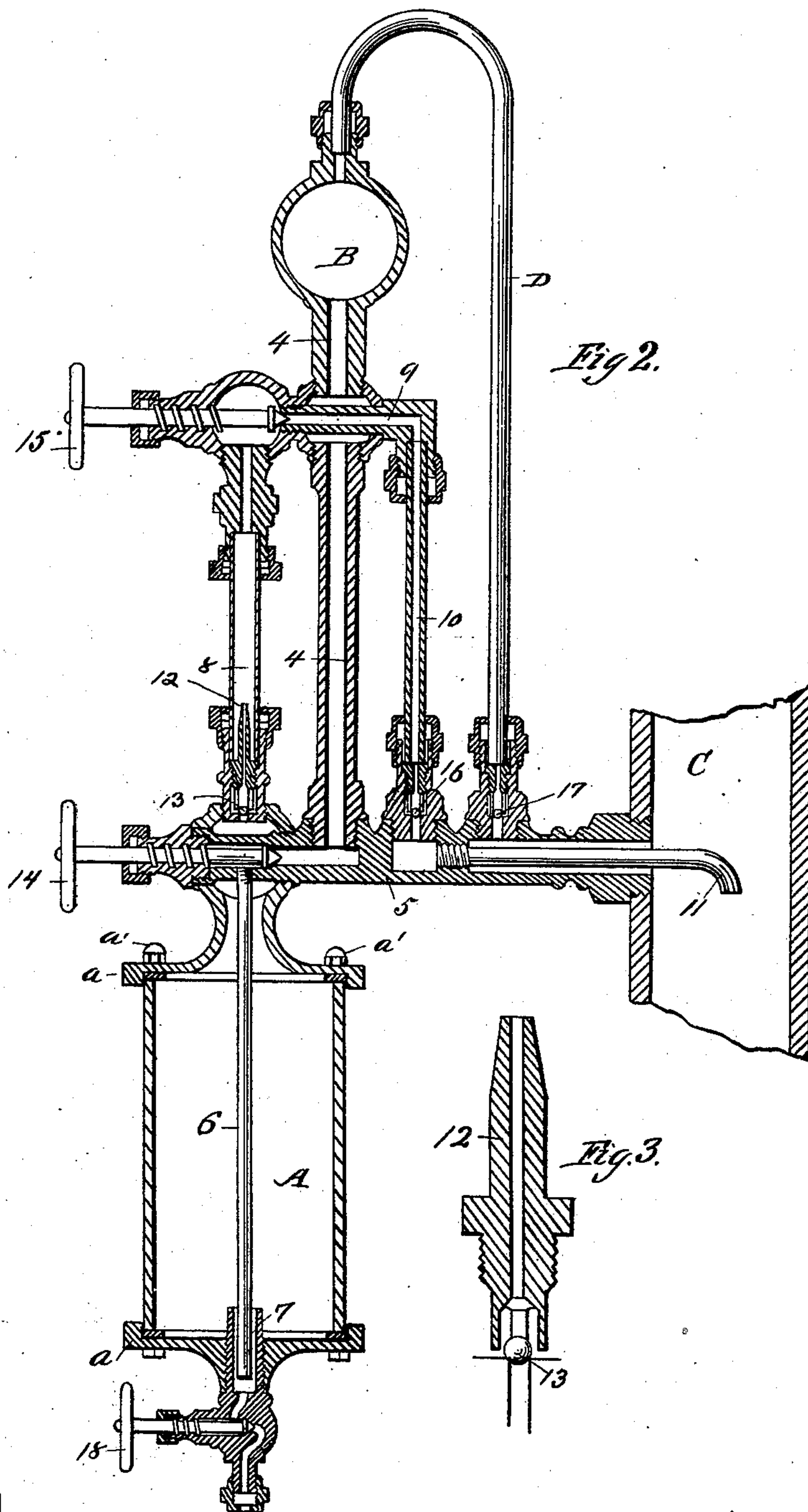
WITNESSES—
L. B. Leonard
L. A. Bunting.

INVENTOR—
Geo. W. Baker
By L. B. Coupland & Co
attys.

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UNITED STATES PATENT OFFICE.

GEORGE W. BAKER, OF CHICAGO, ILLINOIS.

AUTOMATIC LUBRICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 237,800, dated February 15, 1881.

Application filed October 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BAKER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in an Automatic Lubricating Apparatus; and I hereby declare the following to be a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to construct and
10 make use of the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, forming a part of this specification.

This invention relates to that class of lubricators which are employed to lubricate the interior working parts of a steam-engine, and is adapted to be used in connection with all classes of steam-engines, the operative functions being hydrostatic pressure, the exact
15 construction and operation of which will be hereinafter more fully set forth in detail.

Figure 1 is a side elevation, in perspective, of my lubricating apparatus. Fig. 2 is a vertical section of the same, and Fig. 3 is a detached detail of construction.
25

Referring to the drawings, A represents a transparent oil-receptacle, cylindrical in form, the ends being closed by means of the metallic flanged ends *a a*, which are secured in position relative to the receptacle A by the clamping-bolts *a' a'*, the general construction of the oil-receptacle being the same as that already described in connection with former patents issued to me.
30

The condensing-chamber B receives the steam for condensation from the steam-pipe C through the pipe D, and the water from the condensing-chamber passes down through the vertical stand-pipe 4 into the horizontal
35 part or connection 5, from thence into the drop-pipe 6, arranged on the interior of the oil-receptacle A, and discharged into the lower end of the oil-receptacle. The lower open end of the drop-pipe 6 extends down into and is
40 inclosed by the open vertical tube 7, which serves to trap a portion of the water in the oil-receptacle for the purpose of preventing the oil passing into the passage leading to the condensing-chamber, as shown in Fig. 2 of the
45 drawings. The oil passes from the receptacle

A up through the transparent tube 8, into the horizontal part 9, drops down through the vertical connection 10, and passes into the horizontal pipe 11, which has the open or discharge end inserted in the steam-pipe C turned
55 down, as shown in Fig. 2 of the drawings, so as to discharge the oil into the steam at a point below the steam-passage communicating with the condensing-chamber, thereby preventing any portion of the oil passing with
60 the steam into the condensing-chamber. The pipe 11 is somewhat smaller in diameter than the passage inclosing the same, which form of construction permits of a free passage for the steam to the condensing-chamber around the
65 pipe 11, and requires but one connection to be made in order to attach the lubricator to the steam-pipe, as shown in the drawings.

Between the oil-receptacle A and the transparent tube 8 is placed the tapering nozzle 12, 70 the upper end of which extends far enough into the glass tube 8 to show plainly the drop of oil forming on the end of the same. The drop of oil, when it has grown to a certain size, breaks away and passes upward into the oil-
75 passage leading to the steam-pipe or other point to which the lubricator may be attached. This tapering nozzle is of the form shown in Fig. 3 of the drawings. The interior passage for the oil is not contracted as it approaches
80 the upper end of the nozzle, but is of the same size the entire length of the nozzle, the outer dimensions of the nozzle being reduced on a straight line, instead of being oval or rounding near the end. The upper end of the nozzle
85 is not drawn to a thin or sharp edge, but sufficient material is left to provide a seating capacity for the drop of oil to rest on while forming.

Practical working has proven that a nozzle 90 that is oval on the tapering end and reduced to a thin or sharp edge gives no seating area for the drop of oil, and a portion of the oil will adhere to and pass down the outside of the nozzle and be caused to break away in small
95 particles by the action of the water floating off through the same and adhering to the glass tube 8, thereby quickly destroying the transparency of the glass tube and preventing the observation of the drops of oil while feeding. 100

The form of nozzle herein shown and described is found to obviate this evil, and prevents any of the oil from reaching the glass tube.

The ball-valve 13, placed in the oil-passage between the oil-receptacle and the lower end of the nozzle, prevents the water in the glass tube 8 from escaping.

The globe-valve 14 closes the passage between the oil-receptacle and the condensing-chamber, and the globe-valve 15 closes the oil-passage, these valves serving to regulate and control the operations of the apparatus.

The part 5 is formed of one piece, and has connections with the steam, water, and oil passages. The ball-valve 16, placed in the oil-passage, is back-seated by the pressure of the steam when the lubricator is in operation; but when the throttle-valve of the engine is closed the ball-valve gravitates to its seat, completely closing the passage and preventing the vacuum formed in the steam chest and cylinder of the engine from having an effect on the lubricator or drawing the water out of the glass tube 8.

The ball-valve 17, placed in the passage leading from the steam-pipe to the condensing-chamber, closes the passage in the same manner, and prevents a vacuum from affecting the condenser. These ball-valves move in a cage, and when back-seated lodge against a shoulder, which prevents the passage from being closed by the valve when it is forced back out of its seat proper, the general construction and operation being the same as that shown and described in former patents issued to me.

After the lubricator is attached to the engine the oil-receptacle should be slowly filled with water from the condensing-chamber and allowed to pass up into and fill the glass tube 8. When this is accomplished the waste-valve 18 should be opened, when the water in the oil-receptacle will run out on a level with the vertical tube 7, the water in the glass tube 8 being retained there by the ball-valve 13. The receptacle may now be filled with oil by removing the screw-cap 19, which will open a passage communicating with the interior of the oil-receptacle. The valve 14, controlling the water-column from the condenser, should now be opened a little, and as the water is discharged into the bottom of the receptacle the oil is fed out through the top of the same and drops off from the end of the nozzle 12, and passes up through the water in the glass tube 8, as shown in Fig. 1 of the drawings, and passes on until discharged into and mingled with the steam to be lubricated.

By means of the globe-valves 14 and 15 the operation of the apparatus is regulated to

feed slow or fast, as may be required, and they need not be closed each time the engine is stopped, the ball-valves automatically opening and closing the oil and water passage.

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

1. In a lubricating apparatus, the combination, with the central part, 5, of the ball-valve 16, and an oil-conducting pipe consisting of the vertical part 10 and the horizontal part 9, substantially as herein shown and described.

2. In a lubricating apparatus, the combination, with the transparent oil-receptacle A, of the supporting part 5, having a single passage through the interior thereof, as described, of the stand-pipe 4, the condensing-chamber B, and the pipe D, substantially as and for the purpose set forth.

3. In a lubricating apparatus, the combination, with the transparent oil-receptacle A, of the ball-valve 13, the tapering nozzle 12, the glass tube 8, the globe-valve 15, the oil-conducting pipe consisting of the parts 9 and 10, the ball-valve 16, the main supporting part 5, and the horizontal pipe 11, substantially as herein shown and described.

4. A lubricating apparatus adapted to be automatically operated by means of a hydrostatic column or pressure, consisting, essentially, of a transparent oil-receptacle having a trapping device arranged on the interior thereof, for the purpose of retaining a portion of the product of condensation therein, and having proper communication with a condensing-chamber, connected with a central supporting part, provided with a single cored passage through the interior thereof, said passage inclosing an oil-conducting pipe of a somewhat smaller diameter, whereby steam for condensation and the oil for lubricating purposes are received and discharged through one and the same opening into the steam-pipe or other part to which the apparatus may be attached, said oil and steam passages being closed by a system of ball-valves adapted to be back-seated by the pressure of steam when the lubricator is in operation, and automatically closed by the combined action of the vacuum and the force of gravity when the steam is shut off, for the purpose of preventing the vacuum formed in the steam chest and cylinder from acting on the lubricator when the engine is running dry, all constructed and arranged to operate as herein described.

GEORGE W. BAKER.

Witnesses:

L. A. BUNTING,
W. A. SCHONFELD.