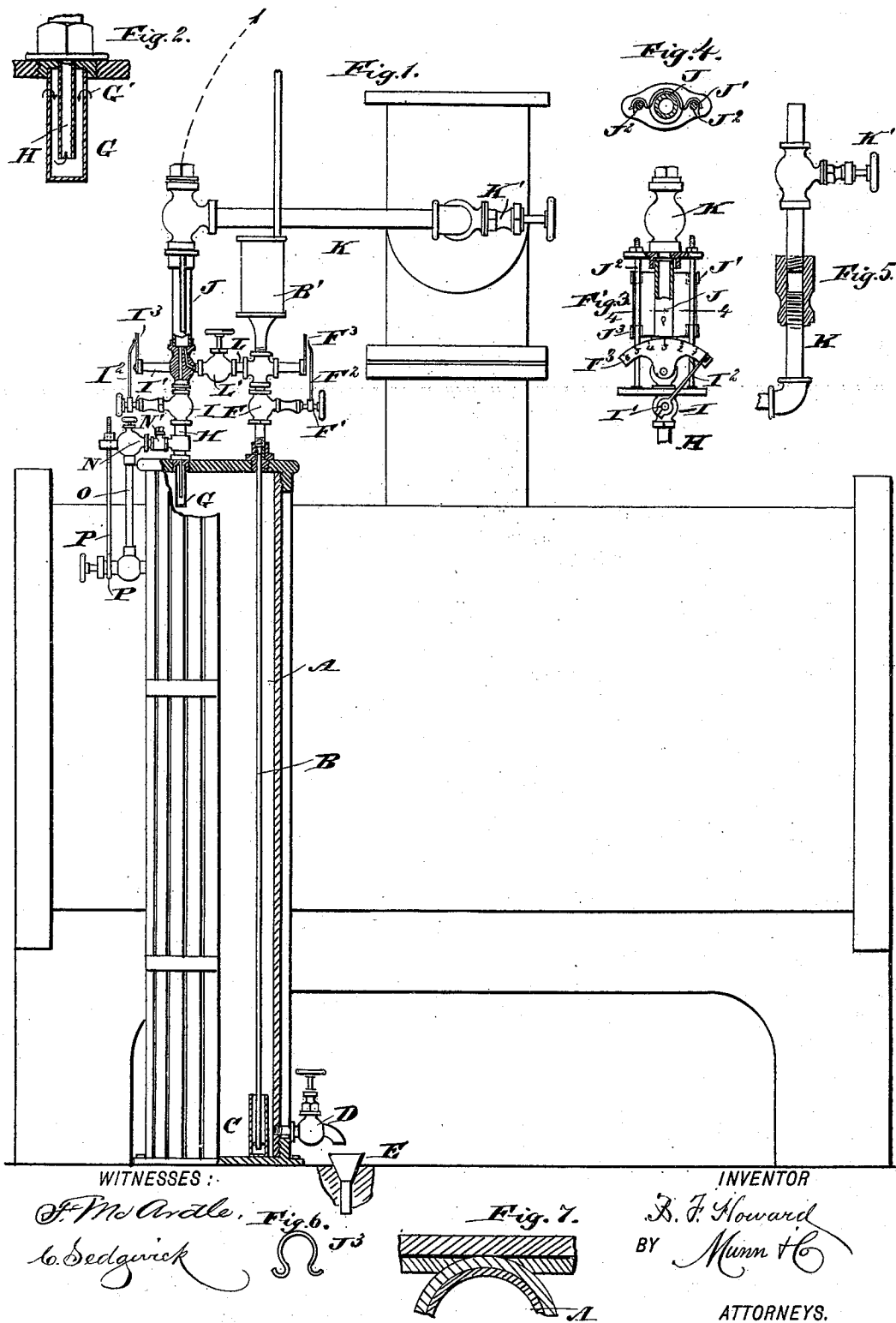


(No Model.)

B. F. HOWARD.
LUBRICATOR.

No. 496,262.

Patented Apr. 25, 1893.



UNITED STATES PATENT OFFICE.

BENJAMIN F. HOWARD, OF SHEEP RANCH, CALIFORNIA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 496,262, dated April 25, 1893.

Application filed April 27, 1892. Serial No. 430,861. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. HOWARD, of Sheep Ranch, in the county of Calaveras and State of California, have invented a new and Improved Lubricator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved lubricator, which is simple and durable in construction, and more especially designed for use on engine cylinders to automatically and positively feed the proper amount of lubricant into the cylinder.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as applied and with parts in section. Fig. 2 is an enlarged sectional side elevation of the oil outlet pipe. Fig. 3 is a front view of the sight feed tube and indicator, parts being shown in section. Fig. 4 is a sectional plan view of part of the same, on the line 4-4 of Fig. 3. Fig. 5 is a sectional plan view of the inlet pipe for the cylinder, with parts in section. Fig. 6 is an enlarged plan view of one of the clasps for holding the paper in place on the sight feed tube; and Fig. 7 is a sectional plan view of the improvement as applied directly to the cylinder.

The improved lubricator is provided with a large reservoir A arranged vertically in close proximity to the cylinder (see Fig. 1) and adapted to receive lubricant, and into which extends the pipe B, leading from the condenser B' and passing at its lower end into a small cylinder C, held in the bottom of the reservoir A. The upper end of the small cylinder C is above the outlet valve D attached to the side of the reservoir A, near the bottom of the same, as will be readily understood by reference to Fig. 1. The outlet valve D discharges into a funnel of a pipe E for carrying off the liquid discharged from the reservoir A when the valve D is opened.

In the upper end of the condenser pipe B, is arranged a valve F, for controlling the

amount of condensation water passing from the condenser B' through the pipe B into the reservoir A. The valve stem F' of this valve F carries a pointer F² indicating on a fixed dial F³, so that the amount of the water passing through the valve F into the pipe B can be readily gaged and regulated according to the position of the pointer F² on the dial F³.

In the cover or top of the reservoir A is secured a cylinder G extending a short distance into the said reservoir and provided near its upper end with openings G', so that the lubricant contained in the cylinder A can pass through the said openings G' into the cylinder G. Within the latter extends the outlet pipe H, the lower end of which is close to the bottom of the said cylinder G, see Fig. 2, so that the oil passing into the said cylinder can flow into the outlet pipe H, and from the same upward past the valve I through the sight-feed tube J connected by the pipe K with the inlet pipe for the cylinder. The pipe K contains a valve K' for regulating the amount of oil passing to the cylinder from the said feed tube J. The cylinder G serves to prevent the air from passing to the outlet pipe H when filling the vessel as the lower end of the said tube always remains sealed by the liquid in the cylinder G. This is absolutely necessary as otherwise air entering the outlet pipe H in conjunction with oil is liable to inflate the drop until it fouls the sight feed glass.

On the valve stem I' of the valve I is secured a pointer I² indicating on a graduated dial I³, see Figs. 1 and 3, so that the number of drops of the lubricant passing to the sight feed tube during a certain time can be regulated readily by the said valve I, and indicated on the graduated dial I³ by the pointer I². The device is preferably arranged so that the number of drops per minute passing through the sight feed tube is indicated on the dial I³.

A pipe L connects the condenser pipe B with the lower end of the sight feed tube J, and in this pipe L is arranged a valve L' for regulating the amount of water passing from the said pipe B into the sight feed tube J. The inlet of the pipe L into the sight feed tube J is upward alongside of the outlet pipe H, so that the oil bubble passing through the

said feed tube is not disturbed in its upward passage by the incoming water of condensation passing through the pipe L. It is understood that water is only let into the sight feed tube in case of any indication of fouling of the sight feed tube.

In order to clearly show the discharge of the bubble of oil at the time it passes through the sight feed tube J, I locate a sheet of paper J' on one side of the sight feed tube so as to form a background for said tube. This sheet of paper J' is held on vertically-extending rods J², by means of clamps J³, made of spring metal and fitting onto the said rods J² and over the ends of the paper J'.

From the outlet pipe H, between the valve I and the top of the reservoir A, leads a pipe N containing a check valve N', and connected with the gage O opening into the reservoir A at its lower end.

In order to hold the gage glass of the gage O in place, I provide a screw rod P formed at its lower end with an eye P' engaging the valve body arranged on the lower end of the gage. The upper end of the said rod P is held by means of a nut on the upper end of the gage, as will be readily understood by reference to Fig. 1.

It will be seen that the water of condensation can pass from the condenser B' through the pipe B into the short cylinder C arranged in the lower end of the reservoir A, so that the lubricant contained in the reservoir A is always supported in the upper end of the said reservoir and consequently passes or feeds through the openings G' into the cylinder G, and from the latter into the outlet pipe H. From the latter it rises and passes, past the valve I, in drops, into the sight feed tube J, in which it can be readily observed by the operator, as the said drop appears in front of the background formed by the paper J'. The oil then passes through the pipe K to the cylinder in the usual manner.

It will be seen that the sight feed tube J can be kept charged with the necessary amount of water of condensation by the pipe L connecting the condenser pipe B with the lower end of the sight feed tube J, the amount of water thus passing to the latter being regulated by the valve L'. The amount of water passing from the condenser B' into the reservoir A is regulated by the valve F and indicated by the pointer F² on the dial F³. The number of drops passing in a given time through the sight feed tube is indicated by the pointer I² on the dial I³, it being understood that by opening the valve I more or

less, a larger or smaller number of drops of oil will pass upward through the feed tube, the number of the drops being indicated on the dial I³, as will be readily understood by reference to Fig. 3.

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

1. A lubricator, comprising a reservoir provided with an outlet valve in one side near its bottom, an open top cylinder on the bottom of the reservoir and having its upper end projecting above the said outlet valve, a condenser above the reservoir, a valved pipe leading from the condenser down into the reservoir with its lower end extending into the said cylinder, a valved outlet leading from the top of the reservoir, a sight feed tube connected with the said outlet and with the machine to be lubricated, and a valve pipe connecting the condenser with the lower end of the sight tube, substantially as described.

2. A lubricator, comprising a reservoir provided with an outlet valve near its bottom, an open top cylinder in the reservoir, and having its upper end projecting above said outlet valve, a condenser above the reservoir, a valved pipe leading from the condenser down into the reservoir with its lower end extending into the said cylinder, an apertured cylinder depending from the top of the reservoir, a valved outlet projecting into the said cylinder, a sight feed tube connected with the outlet and with the machine to be lubricated, and a valved pipe leading from the condenser to the sight feed tube, substantially as described.

3. A lubricator, comprising a reservoir having a valved outlet near its bottom, an open top cylinder in the reservoir, a condenser above the reservoir, a pipe leading from the condenser down into the cylinder in the reservoir, a valve in said pipe, an indicating device connected with said valve, an apertured cylinder depending from the top of the reservoir, an outlet pipe projecting into said cylinder, a valve in said outlet pipe, an indicating device connected with the said valve, a sight feed tube connected with the outlet and with the machine to be lubricated, and a valved pipe leading from the condenser to sight feed tube, substantially as herein shown and described.

BENJAMIN F. HOWARD.

Witnesses:

M. W. TISHER,
J. W. ZUZAT.