(No Model.)

J. ELLIS.

LUBRICATOR.

No. 347,335. Patented Aug. 17, 1886.

Fig. 1.

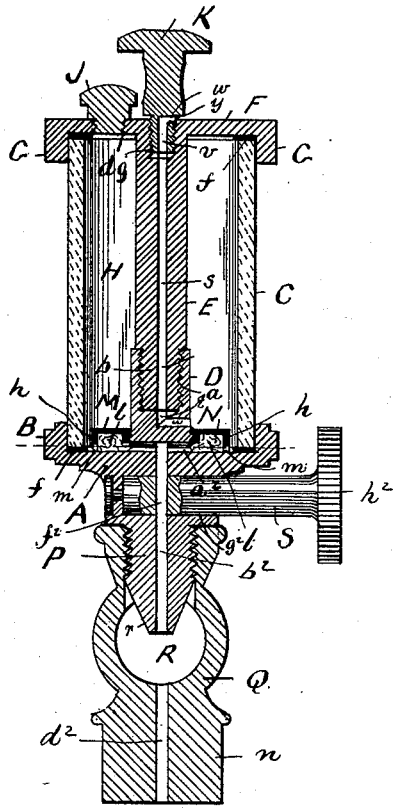
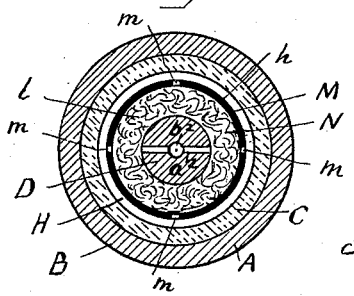


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN ELLIS, OF LYNN, MASSACHUSETTS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 347,335, dated August 17, 1886.

Application filed May 13, 1885. Serial No. 165,369. (No model.)

To all whom it may concern:

Be it known that I, JOHN ELLIS, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Lubricators, of which the following is a full, clear, and exact description.

This invention relates to improvements in lubricators for use in connection with crank-pins of steam-engines and other bearings or journals needing lubrication, and to such lubricators that are constructed and arranged for the oil to automatically flow from the lubricator to the bearing or journal to which the lubricator is attached; and the invention consists of a lubricator for oiling and lubricating the crank-pins of steam-engines and other bearings or journals constructed and arranged for operation all substantially as hereinafter fully described, reference being had to the accompanying plate of drawings, in which—

Figure 1 is a vertical cross-section of a lubricator constructed according to this invention; and Fig. 2 is a horizontal cross-section on line 2 2, Fig. 1.

In the drawings, A represents a circular base-plate having an upwardly-projecting flange or rim, B, within which is adapted to fit the lower end of a glass tube or hollow cylinder, C.

D is an upwardly-extending central plug or projection of the base A, having an open socket, *a*, provided with an internal screw-thread, into which is screwed the lower end, *b*, of a central rod or extension, E, of a cap-plate, F, having a flanged rim, G, adapted to fit over the upper end of the tube C. Screwing the rod E into its socket *a* brings the cap-plate F down onto the upper end of the tube C, and thus the cylinder will be firmly secured in place between the two plates A F.

The tube C forms a chamber or receptacle, H, for the oil, and, when secured as described, oil is put in the chamber through an opening, *d*, in the cap-plate F, adapted to be opened and closed by the plug J.

To prevent leakage of the oil from the chamber H at the joints between the tube and the plates A F, and to make said joints air-tight a packing of leather, *f*, or other suitable packing material is placed thereat.

K is a screw-plug having a milled head for operation thereof, and arranged to screw into a socket, *g*, in the central portion of the cap-plate F, and extending down into the rod or extension E a little way.

M is a flat ring or plate adapted to be screwed onto the outside of the central plug, D, within the chamber H, and having a downwardly-extending flange or rim, *h*, which rim, when the plate is screwed down, bears and rests by its edge upon the upper surface of the plate A. The rim forms a chamber, N, in the under side of the plate and around the plug D, which chamber is filled with a packing, *l*, of cotton—such as wicking—or of any suitable fibrous material.

m m are apertures or openings in the rim *h* of the plate M, forming communication between the chambers N H.

The base-plate A has a central downward extension, P, provided with an external screw-thread, on which is adapted to be screwed the bottom or attaching piece, Q, which piece at its end *n* is adapted, preferably, for a suitable screw-thread to be cut thereon for its attachment by such screw-thread to the bearing or journal to be lubricated. The lower end of the extension P tapers, as shown at *r*, and extends into a horizontal opening, R, in the attaching-piece. The rod or extension E has a central passage, *s*, through it, which connects with a central passage, *t*, in the plug D of the base-plate A, which passage *t* extends in a horizontal direction at *a* to the outside of the plug D, and opening into the chamber H. In the lower portion of the screw-plug K is a central vertical passage, *v*, open at its lower end, and at its upper end it extends horizontally at *w* to the outside of the lower portion of the plug below its shoulder *y*. With the screw-plug K screwed out a little air can pass into the chamber H through the passages *w*, *v*, *s*, and *t*, and screwing it down closes such passages. At the junction of the plug D and the base-plate is a horizontal passage, a^2, through the same, which communicates with a central vertical passage, b^2, in the plate A and its extension P, opening to the outside at its

end r, directly over and above another central passage, d^2, in the attaching-piece Q.

S is a valve having a transverse passage, f^2, through it, in line with the passage b^2 in the extension P, when properly turned therefor in its socket g^2, having a head, h^2, for operation thereof, so that turning the valve in the proper direction the passage b^2 will be opened or closed to the flow of oil from the chamber H.

The operation of the lubricator is substantially as follows: The lubricator is properly attached to the bearing or journal to be lubricated. The chamber H is nearly filled with oil, and the screw-plug K turned out sufficiently for air to pass through the several passages into the chamber H. The oil then passes through the passage m in the rim h of the plate M into its chamber N, saturating the packing or wicking, then through the passages a^2 b^2, and falls, drop by drop, from the end r of the extension into the passages d^2 in the attaching-piece Q; from thence to the bearings to which it is attached, and which are to be lubricated. As the oil passes thus from the chamber H to the bearing, air passes into the chamber H, as described, for the necessary supply of air to the chamber for the proper flow of the oil.

The amount of oil desired to flow to the bearing is regulated by the valve S in the following manner: For instance, open the valve fully, and, counting the number of drops of oil from the passage b^2 per minute, turn the valve to close it, until the number of drops required per minute for a proper lubrication of the bearing is secured. When so adjusted, the oil, from the construction and arrangement of the parts constituting the lubricator, will be constant and uniform in its flow to the bearing, so long as there is any oil in the chamber. When once set, as described, the valve need not be again changed, unless desirous of increasing or diminishing the quantity of oil required for the bearing. To stop the flow of oil at any time, screw in the plug K, which, preventing air from entering the chamber, as is obvious, will prevent the oil passing therefrom. Unscrew the plug, opening the air-passages, and the oil will commence to and will flow from the chamber as before, and in the same quantity in a given time.

In the operation of a lubricator constructed according to this invention, any sudden or violent motions of the lubricator, such as it might receive if attached to the crank-pin of a steam-engine, will not interfere with the proper working of the lubricator or the flow of the oil therefrom, which is owing more particularly to the packing in the chamber, which, although not interfering with the proper flow of the oil through it in the operation of the lubricator, will prevent any undue amount of oil from passing through the same, as is obvious. The passage v in the plug K can be arranged in any other suitable manner than as shown. For instance, one side of the plug at its lower portion could be filed away and arranged to communicate with the passage in the rod E; also, the various air and oil passages can be arranged in any suitable manner for the operation of the lubricator; also, the several parts of the lubricator can be put together in any suitable manner. The air-passage to the chamber H is arranged for the air to enter the chamber at or near the bottom, to be below the surface of the oil in the chamber, which insures a constant and uniform flow of the oil at all times, whether the chamber is full or only partially full of oil, the chamber H being otherwise air-tight.

The chamber N can be of any shape, and can be constructed so as merely to hold the packing against the plug D and its passages, the principal object being, when the packing is used, to confine and hold it around and against the plug at its passages to insure the oil passing through the packing before entering the discharge-passage.

When the lubricator is attached to a bearing that is stationary, the packing l can be dispensed with; but on bearings that move—such as the crank-pin of a steam-engine—it is preferable to use it, as such use prevents any increased flowing of the oil from the jar and movement of the bearing, and thus the regularity and uniformity of its flow to the bearing will not be interfered with. The chamber N, with its passages communicating with the chamber H, without the packing, in a more or less degree accomplishes the same result; but it is preferable, as before stated, to use the packing for movable bearings.

Having thus described my invention, what I claim is—

1. In a lubricator, the combination, with its oil-chamber H, of a chamber, N, provided with a packing, l, and having communication with said chamber H, a base-plate, A, having passages a^2 and b^2, communicating with said chamber N, a rod or extension, E, of the cap-plate F, provided with a passage, s, and a screw-plug, K, having passage v, substantially as and for the purpose specified.

2. In a lubricator, the combination, with its oil-chamber H, of a chamber, N, provided with a packing, l, and having communication with each other, a base-plate, A, having a passage communicating with said chamber N, and a rod or extension, E, of the cap-plate, provided with a passage, s, communicating with the chamber H, substantially as and for the purpose specified.

3. In a lubricator, the combination, with its oil-chamber H, having an air-passage communicating therewith at a point below the surface of the oil, of a chamber, N, having communication with said chamber H, and a base, A, having a passage, a^2, communicating with said chamber N, for the purpose specified.

4. In a lubricator, the combination, with its oil-chamber H, having an air-passage com-

municating therewith at a point below the surface of the oil, of a chamber, N, provided with a packing, *l*, having communication with said chamber H, and a base, A, having a passage, a^2, communicating with said chamber N, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN ELLIS.

Witnesses:
EDWIN W. BROWN,
WM. S. BELLOWS.