

(No Model.)

T. F. TIMBY.
LUBRICATOR.

No. 545,986.

Patented Sept. 10, 1895.

Fig. 1.

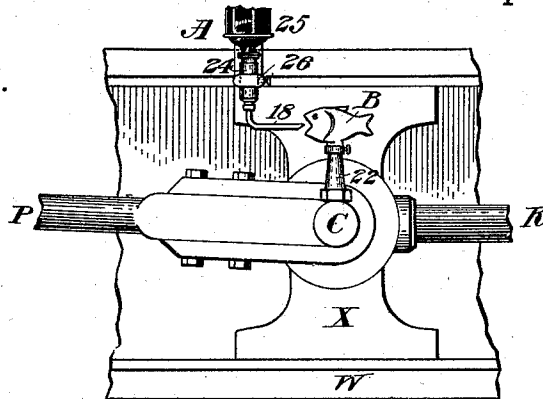


Fig. 2.

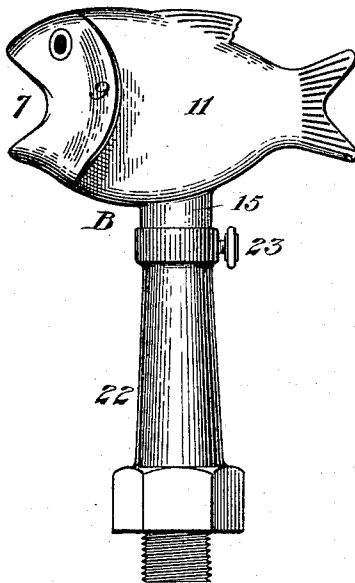


Fig. 3.

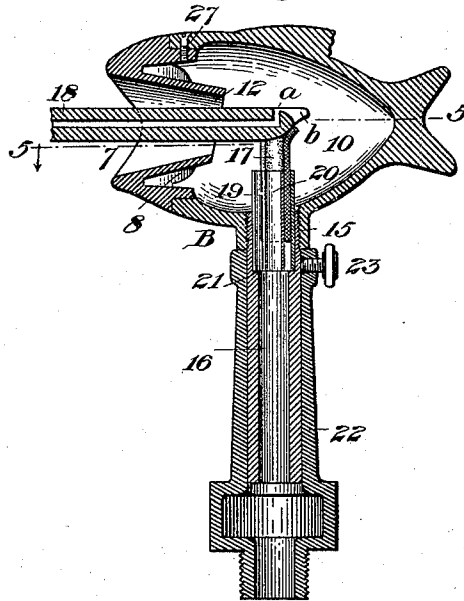


Fig. 4.

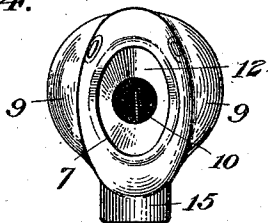


Fig. 5.

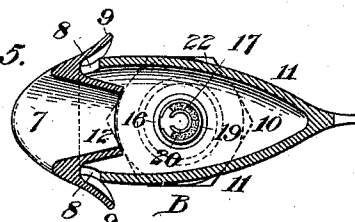
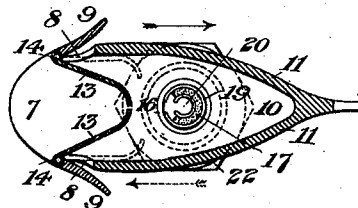


Fig. 6.



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LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 545,986, dated September 10, 1895.

Application filed May 13, 1893. Serial No. 474,128. (No model.)

To all whom it may concern:

Be it known that I, THEODORE F. TIMBY, a citizen of the United States of America, and a resident of Alma, Gratiot county, in the State of Michigan, have invented a new and useful Improvement in Lubricators, of which the following is a specification.

This invention relates to lubricating devices for cross-heads and like reciprocating machine elements; and it consists in certain novel combinations of parts and peculiar features of construction, hereinafter set forth and claimed. Its objects are, first, to prevent any flow-resisting suction during the back stroke of that part of the device which is attached to the cross-head or its equivalent, and, on the contrary, to insure air-pressure in the direction of the feed throughout both strokes or in both directions of travel, and by such air-pressure to facilitate the flow of the oil and to assist in keeping cool the pivotal coupling-pin or other part most exposed to friction to which the lubricator is directly attached; second, to adapt the device to take air during its respective strokes in a positive manner without complication of parts; third, to make special provision for the admission of sufficient air during the back stroke by a structure which conveniently takes the form of a fish; fourth, to prevent the escape of air through the respective air-admitting openings during the respective strokes; fifth, to provide for immediately catching and utilizing every drop of oil as fed from a relatively stationary oil-cup, so as to prevent any waste or spattering of the oil, and, sixth, to prevent any interference of the wiper with the escape of oil from the feed-tube on engines running at a high speed.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of these drawings is a fragmentary elevation of a cross-head, its ways and connections, together with a lubricator therefor constructed according to this invention. Fig. 2 is an elevation of the traveling drip-receiver and its support detached. Fig. 3 represents a vertical section through said drip-receiver and support and through the discharge end of the feed-tube of the relatively stationary part of the lubricating device. Fig. 4 is a front view of the drip-receiver alone. Fig. 5

is a section on the line 5 5, Fig. 3; and Fig. 6 is a view similar to Fig. 5, showing an additional improvement and illustrating that species of the improved lubricator which is selected for specific claims.

Like reference letters and numbers indicate corresponding parts in the several figures.

This improved lubricator is composed of a relatively stationary part A for attachment to the cross-head ways W or the relatively fixed frame or adjunct of a different reciprocating machine element, and a traveling part B for attachment to the pivotal pin C, which couples the piston-rod R and cross-head X to the power-transmitting pitman P, being thus attached to the cross-head so as to travel therewith or for attachment to cross-heads in other ways or in any approved way to other reciprocating machine elements. The drip-receiver, which mainly constitutes said part B, is preferably and conveniently fish-shaped, as shown. It has an air-admitting mouth 7 in front and a pair of lateral gill-like air-admitting openings 8 behind fin-like deflecting projections 9, and a tapering hollow body with the interior 10 of which all said air-admitting openings communicate, as in Fig. 5 or Fig. 6, so as to insure the admission of air for air-pressure in the direction of the feed of oil in both directions of travel, and by means of the rearwardly-converging sides 11 of said hollow body to assist moderately short deflecting projections in gathering an ample supply of air during each back stroke. A simple internal funnel 12, Figs. 3 to 5, forming said mouth 7 at its front end and extending rearwardly behind said lateral openings 8, may sufficiently obstruct the escape of air through one opening or set of openings while it is entering the other; but in the species represented by Fig. 6 a pair of light flap-valves 13, swing on vertical pivots 14, so as to close said mouth-opening 7 during the backward strokes of the drip-receiver represented by the full arrow in Fig. 6, and to open said mouth-opening and close the lateral gill-like openings 8, as in dotted lines in the figure, during the forward strokes of the drip-receiver represented by the dotted arrow. Otherwise the construction of the lubricator as thus made may be identical with that of the form more fully shown in Figs. 1 to 5. A neck 15 at bottom is screwed

fast to an elongated hollow cylindrical stem 16, at the upper end of which a wiper 17 is supported in such a way as not to obstruct the interior of said stem as an air-passage, and so as to coact effectively with the discharge end of the feed-tube 18 of said relatively stationary part A, as in Fig. 3. This portion of the feed-tube is straight and horizontal, or substantially so, to a sufficient length to project into the hollow body of the drip-receiver through said air-admitting mouth 7, and is preferably cut off obliquely and rounded at its extremity, as shown, so as to facilitate the action of the wiper.

On engines running at a high rate of speed—say two hundred revolutions per minute and upward—the contact of wipers with the extremities of ordinary horizontally-projecting feed-tubes and the inrush of air as the drip-receiver approaches the tube both tend to force the oil back in the bore of the tube to gush out and spatter the engine after the wiper is withdrawn from contact with the tube. Such spattering not only defaces the engine and wastes the oil, but deprives the bearing of its required lubrication, which is very dangerous, particularly to engines in electric-lighting plants and other high-speed engines. To prevent this the outlet *a*, Fig. 3, of the feed-tube 18 is located preferably in its top, and thus away from the extremity of the tube, which may be and is closed against the inrush of air, and away from the surface which comes in contact with the wiper. The outlet *a* is preferably connected with this surface by a groove or channel *b*, said surface itself being imperforate. Any contact of the wiper with the outlet *a* or any effect therefrom or from inrushing air on the oil within the feed-tube is thus prevented, and any accumulation of the discharged oil on the exterior of the feed-tube is at the same time effectively prevented. The horizontal portion of the feed-tube is kept full of the oil on its way to the bearing, and the bearing is lubricated by the overflow of oil, which is regulated by the drip of the supply-cup.

The wiper 17 shown in the drawings is cut from flat felt or the like of a suitable width, and is held between two split tubes 19 20, of spring metal, as in Figs. 3, 5, and 6, being first inserted in the outer tube, after which the inner tube is compressed and inserted within the wiper, and the whole is then compressed and sprung into the upper end of said vertical stem 16, which is chambered and provided with a supporting-shoulder 21 at the proper height to coact with the wiper-holder so formed. This specific form of wiper-holder forms no part of my present invention. Said elongated cylindrical stem 16 fits within a hollow post 22, provided with a set-screw 23 and coupled to the part to be lubricated, as in Fig. 1, so as to form an adjustable telescopic support for the drip-receiver, by means of which the contact of the wiper with the feed-tube is readily regulated

and a given lubricator is adapted for attachment to engines and the like of various sizes and proportions. Apart from said discharge end of the feed-tube 18, said relatively stationary part A of the lubricator may be of ordinary construction or of any approved make. As shown in Fig. 1, it comprises a reducing coupling 24, having an elongated cylindrical body and fitted at its lower end to a vertical bend of said feed-tube 18, while its upper end is fitted to the standard screw-necks of sight-feed oil-cups, one of which is represented at 25 in Fig. 1, said cylindrical body of the coupling being embraced by the customary attaching-strap 26, which is provided with a set-screw to coact with the coupling, so as to form a supplemental adjusting device in aid of the vertical adjustment hereinbefore described.

The drip-receiver may be cast in two parts, as represented in Figs. 3 and 5, the parts being connected by a lap-joint and one or more screws 27, Fig. 3, or the like; or it may be made of sheet metal in two or more parts united in any customary or approved way. An air-admitting opening at top or behind may supplement or take the place of said lateral openings 8, and other like modifications will suggest themselves to those skilled in the art.

The drip-receiver is conveniently and preferably fish-shaped, as above; but for the purposes of the present invention it may be of any approved shape which does not interfere with the construction and operation above described.

Having thus described the said improvement, I claim as my invention and desire to patent under this specification—

1. In a lubricating-device for cross-heads and like reciprocating machine-elements, the combination with an oil-cup and its discharge tube, which is the feed-tube of the lubricating-device, of a traveling drip-receiver having inwardly extending openings which freely admit the air during its respective strokes, whereby a practically continuous air pressure is maintained within the receiver for facilitating the flow of the oil and assisting to keep the bearing cool.

2. In a lubricating device for cross-heads and like reciprocating machine-elements, a traveling drip-receiver having a mouth which admits the air during its forward strokes, and lateral gill-like openings, with deflecting projections in front of them, to admit the air during each backward stroke, substantially as hereinbefore specified.

3. In a lubricating device for cross-heads and like reciprocating machine-elements, a traveling drip-receiver having a wedge-shaped body with an air-admitting mouth in front, gill-like air-admitting openings in its sides at its front end, and laterally projecting deflectors immediately in front of the openings last named, substantially as hereinbefore specified.

4. In a lubricating device for cross-heads and like reciprocating machine-elements, a traveling drip-receiver having a hollow body, a mouth which admits the air during its forward strokes, lateral gill-like openings to admit the air during each backward stroke, and laterally swinging flap-valves within the body to obstruct the respective air-admitting openings during the respective strokes, substantially as hereinbefore specified.

5. In a lubricating device attached in part to a reciprocating machine-element and partly to its relatively fixed frame, the combination with a relatively fixed feed-tube and a wiper to coact therewith of a traveling drip-receiver having a hollow body, an air-admitting mouth which admits the relatively fixed feed-tube, lateral gill-like openings to admit air during its backward strokes, a hollow downwardly

projecting stem, and a wiper-holder at the upper end of said stem within said body, substantially as hereinbefore specified.

6. In a lubricating device attached in part to a reciprocating machine-element and partly to its relatively fixed frame, the combination of a traveling drip-receiver, a wiper carried by said drip-receiver, and a relatively fixed feed-tube having the extremity of its outlet end closed against the inrush of air and constructed with an imperforate surface to coact with said wiper, substantially as hereinbefore specified, for preventing the spattering of oil in the manner set forth.

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