No. 825,609. PATENTED JULY 10, 1906.

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LUBRICATING APPARATUS.

APPLICATION FILED OCT. 23, 1905.

Fig. 1.

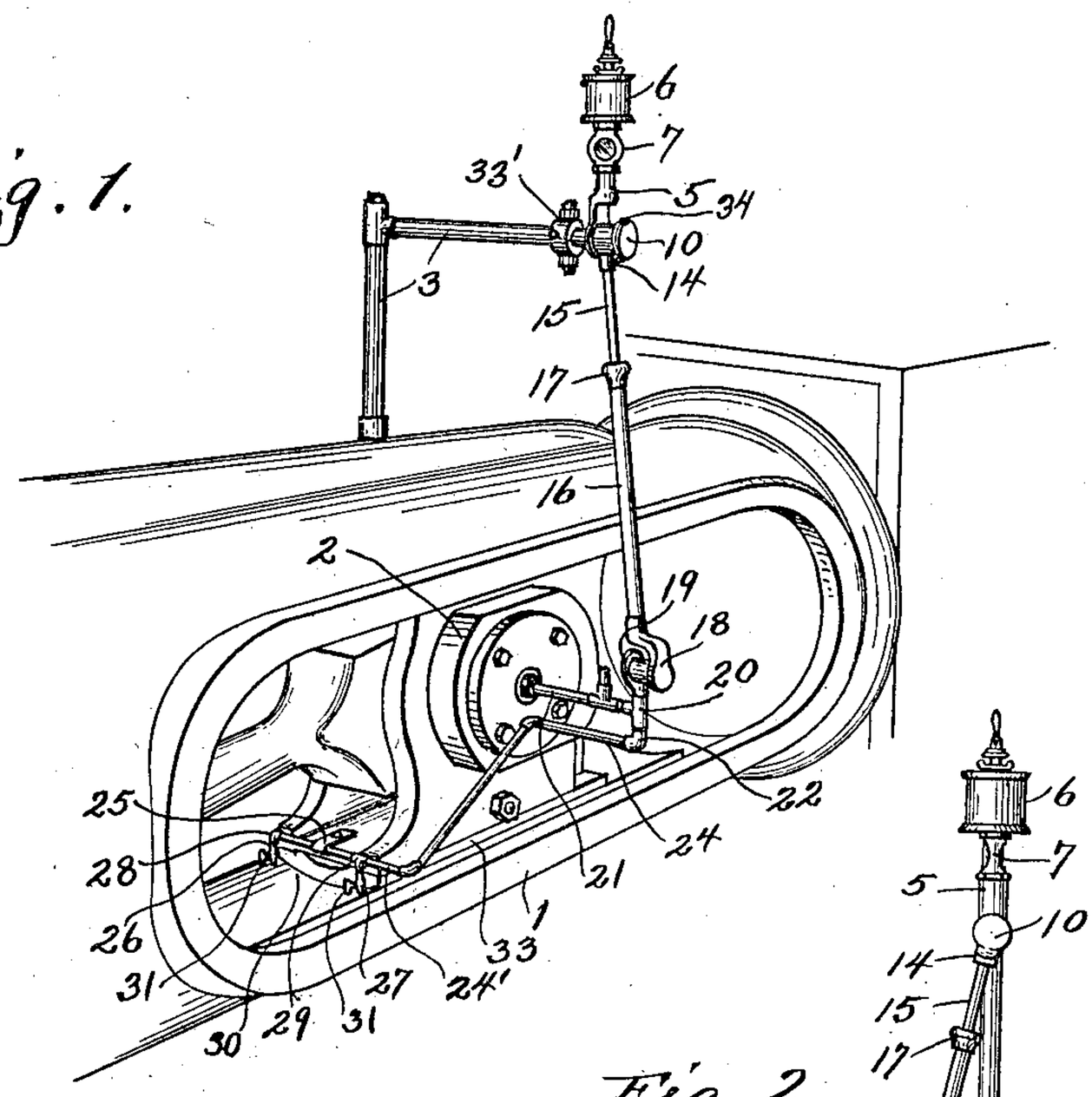


Fig. 2.

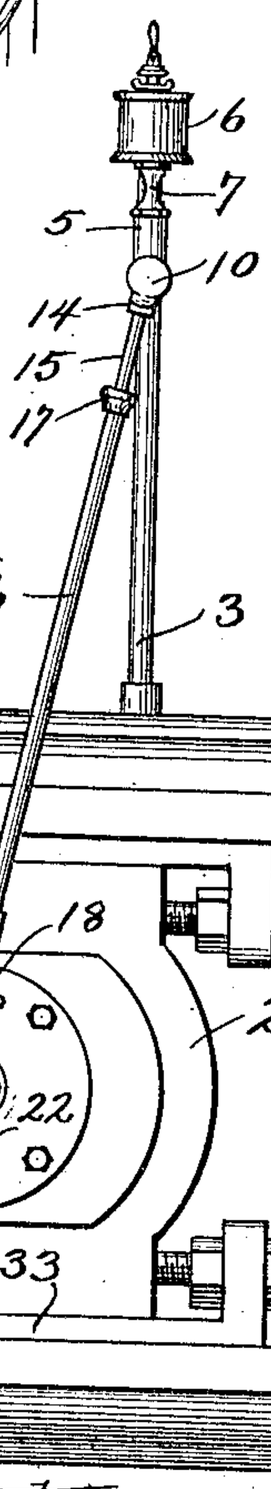
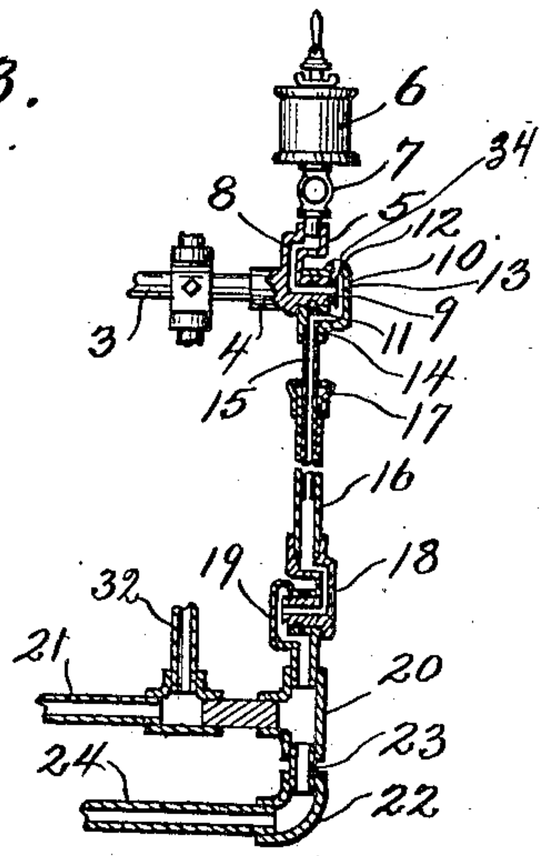


Fig. 3.



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LUBRICATING APPARATUS.

No. 825,609. Specification of Letters Patent. Patented July 10, 1906.

Application filed October 23, 1905. Serial No. 283,949.

To all whom it may concern:

Be it known that I, WILLIAM W. NUGENT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lubricating Apparatus, of which the following is a specification.

This invention relates to improvements in lubricating apparatus, and refers more specifically to a lubricating mechanism adapted for oiling the cross-head slides of reciprocating engines and for analogous purposes.

The objects of the invention are to provide a construction in which the oil is fed from a stationary oil-cup or other suitable source of supply through a telescopic tube to a part carried by the cross-head and from thence delivered to the guideway, upon which the cross-head slides, in such manner as to secure extremely uniform and perfect distribution of the oil to the part to be lubricated, to provide a construction of the character referred to in which the movement of parts is reduced to a minimum and the necessary movements of rotation and telescoping confined to such parts as will least disturb the regular delivery of the oil-supply, to provide a construction which insures the delivery of the oil directly upon the guide-surface and in plain sight of the engineer, so that in case of accidental interruption of the feed or in case the oil-supply runs out it will be immediately discovered, to so construct and arrange the supply-tubes and their supports that they will be as nearly as possible out of the way and not interfere with the usual functions of the engine-tender nor be seriously exposed to accidental injury, and in general to provide a simple and improved mechanism of the character referred to.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

The invention will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the cross-head guides of an engine and cross-head arranged therein equipped with my invention. Fig. 2 is a side elevation of the parts shown in Fig. 1; and Fig. 3 is a sectional view taken axially through the several lubricator-pipes and pipe connections, portions of the telescoping tube being broken out to reduce the size of the figure.

Referring to the drawings, 1 designates as a whole the cross-head slide casting, within which reciprocates the cross-head 2.

3 designates a suitable support or bracket mounted upon the engine-frame. Upon the bracket 3 is fixedly mounted a chambered union member 4, provided at its upper side with a tubular extension 5, upon which is mounted an oil-cup 6. The interior of the cup communicates through a sight-feed extension 7 with the tubular passage 8 of the member 4, the latter being provided with a journal portion 9, through which the lower end of the passage 8 extends axially.

10 designates a second union member which is chambered to fit over the journal portion 9 of the member 4, one portion of the member 10 being internally cylindric and journaled upon the correspondingly-shaped bearing of the member 4, so as to be capable of oscillation thereon.

The journal 9 is provided with a circumferential groove 11, and a cotter-key inserted through a suitable aperture in the member 10 and engaging said groove maintains the part in connected relation. The member 9 is internally enlarged, as indicated at 12, to form a chamber which surrounds the terminal portion of the member 9, and the latter is provided with an annular lip 13, surrounding the axial passage therethrough, the object of this lip being to insure the oil dropping free from the end of the journal. At its lower side the member 10 is provided with a nipple 14, with which is connected a tube 15, which extends downwardly and telescopes within another similar tube 16. The upper end of tube 16 is provided with a thimble 17, the free end of which is turned inwardly toward the tube 15, but spaced slightly away from the latter, the object of this thimble being to form a guard which prevents oil from working up from the interior of the lower tube out over the end of the latter.

The lower end of tube 16 connects with a union member 18, which is generally similar to the corresponding parts of the union 4 and is fitted and journaled within a stationary union member 19, generally similar to the member 10. The member 19 connects at its lower end with a T-union 20, which is mounted upon the end of a supporting-stud 21,

which is in turn mounted to extend axially outward from the wrist or journal of the cross-head. An elbow 22 is connected with the lower arm of the T-union by means of a short section of pipe 23, and with the other terminal of the elbow is connected a pipe 24, which extends horizontally inwardly directly beneath the supporting-stud 21 to a point near the face of the cross-head, from which point it is arranged to extend obliquely downwardly and forwardly to a point opposite the lower end of the cross-head and is then deflected horizontally across the latter, as indicated clearly in Fig. 1. The lower horizontal portion 24′ of the pipe 24 is desirably supported rigidly from the cross-head by means of a bracket 25. This extension-pipe 24′ is in the preferred construction shown provided with two discharge-nozzles 26 and 27, respectively, these nozzles desirably taking the form of petcocks connected with the pipe by means of suitable unions 28 and 29.

In the particular instance illustrated the lower guide of the cross-head slide is concave, as indicated at 30, and the petcocks are arranged to respectively discharge near the outer edges of the slide-surface, so that the oil will flow by gravity downwardly toward the center of the slide, and thus lubricate its entire surface uniformly. Each petcock is provided with a suitable thumb-nut 31, whereby the flow therethrough may be regulated.

It will of course be obvious that the supporting-stud 21 may be connected with some part of the cross-head other than the center of the wrist-pin, but usually an oiling mechanism is provided for lubricating the bearing-surfaces between the wrist-pin and connecting-rod, and in such event the stud 21 is tubular and serves to conduct the supply of oil to the interior of the wrist-pin. The combination of a wrist-pin-oiling mechanism with the cross-head slide mechanism is indicated in the drawings, the hollow portion of the stud 21 being shown in Fig. 3, as well also as the lower end of the supply-pipe which connects therewith, (designated 32,) and a fragmentary portion of this wrist-pin-oiling mechanism, shown as mounted on the bracket 3, (designated 33′.) By this arrangement the single bracket 3 and stud 21 serve for both sets of lubricating apparatus.

The telescoping movement of the two pipe members 15 and 16 upon each other creates a distinct pumping action tending to draw the oil out through the telescopic joint, and thus cause it to leak. As a distinct feature of improvement I have discovered that by making a small vent in the upper chamber 12, which directly communicates with the downtake-pipe, this pumping tendency is obviated, this being doubtless due to destroying the vacuum pressure during the extending movement of the pipes. Such a vent is indicated in the drawings at 34, it being noted that it is placed at the highest point of the chamber 12, so that it is always open as long as the rate of supply of oil from the oil-cup 6 does not exceed the rate of delivery at the discharge end of the apparatus.

The operation of the apparatus will be obvious from the foregoing description. It is to be noted that the only parts which move upon each other are the telescoping tubes and the unions with which they are respectively connected, while the fixed pipe 24 is so shaped as to be almost entirely out of the way of accidental injury and interference. It is also to be noted that the connection between the extension 24′ and the cross-head is such as not to interfere with the adjustment of the wearing-shoe 33 of the cross-head.

I claim as my invention—

1. A lubricating apparatus for lubricating cross-head guides, comprising a bracket adapted for connection with the upper part of a cross-head guide, an upper stationary union member mounted upon said bracket, a coöperating union member journaled upon said stationary member, a supporting stud or bracket adapted for connection with the traveling cross-head of the engine, a lower union member mounted thereon, a coöperative union member journaled upon said latter union member, telescoping pipe connections between the two journaled union members, an extension-pipe connected with the lower union member and leading to a point contiguous to the lower cross-head-guide surface and provided with one or more drip-nozzles, and a source of oil-supply communicating with the upper stationary union member.

2. A lubricating apparatus for lubricating cross-head guides, comprising a bracket adapted for connection with the upper part of a cross-head guide, an upper member journaled upon said bracket, a supporting stud or bracket adapted for connection with the traveling cross-head of the engine, a lower union member mounted thereon, a coöperative union member journaled upon said lower union member, telescoping pipe connections between the upper member and lower journaled member, an extension-pipe connected with the lower union member and leading thence to a point contiguous to the lower cross-head guide and above the latter, one or more drip-nozzles connected with said extension-pipe, and a source of oil-supply delivering to said upper member.

3. A lubricating apparatus for lubricating cross-head guides, comprising a bracket adapted for connection with the upper part of a cross-head guide, an upper stationary union member mounted upon said bracket and having a journaled portion extending parallel with the axis of the cross-head pin of the en-

gine, an oil-cup mounted upon and connected with said stationary union member, a cooperating union member journaled upon said stationary member, a supporting-stud connected with the traveling cross-head, a lower union member mounted upon said stud and provided with a journaled portion extending parallel with the axis of the cross-head pin, a lower union member journaled upon said lower member, telescoping pipe connections extending between said upper and lower journaled union member, an extension-pipe connected with the lower union member and extending thence downwardly alongside of the cross-head and deflected across the end of the latter above and contiguous to the lower cross-head-guide surface, and one or more drip-nozzles connected with said lower deflected portion of the extension-pipe.

4. A lubricating apparatus for lubricating cross-head guides, comprising a bracket adapted for connection with the upper part of a cross-head guide, an upper stationary union member mounted upon said bracket and having a journal portion extending parallel with the axis of the cross-head pin of the engine, an oil-cup mounted upon and connected with said stationary union member, a coöperating union member journaled upon said stationary member, a supporting-stud connected with the traveling cross-head, a lower union member mounted upon said stud and provided with a journaled portion extending parallel with the axis of the cross-head pin, a lower union member journaled upon said lower member, telescoping pipe connections extending between said upper and lower journaled union member, an extension-pipe connected with the lower union member and extending thence downwardly alongside of the cross-head and deflected across the end of the latter above and contiguous to the lower cross-head-guide surface, a supporting attachment connecting said deflected portion of the extension-pipe with the cross-head, and one or more drip-nozzles connected with said pipe.

5. A lubricating apparatus, comprising a support, an upper union member mounted upon said support and having a journal portion, an oil-cup mounted upon and connected with said upper union member and communicating with the oil through a duct terminating in the end of said journal portion, a coöperating union member journaled upon said upper union member and internally chambered to provide a space surrounding the terminal portion of the journal upon which it is mounted and provided with a vent affording communication between the upper part of said chamber and the outer atmosphere a down-leading pipe connected with said chambered union member, and a second pipe having telescopic connection with the first and adapted to be connected with a moving part of an engine.

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