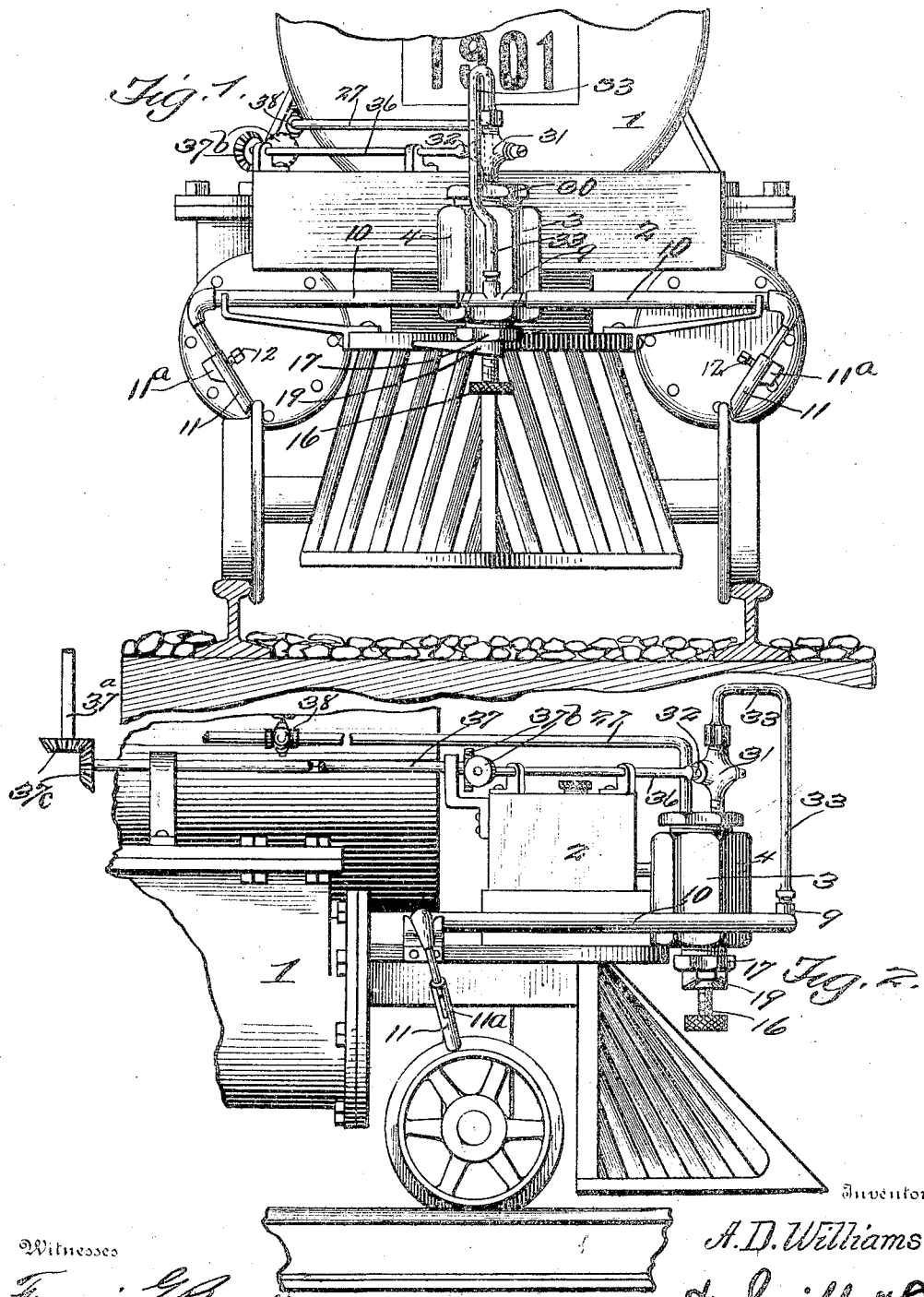


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LUBRICATOR.
APPLICATION FILED JUNE 16, 1909.

974,222.

Patented Nov. 1, 1910.

3 SHEETS—SHEET 1.



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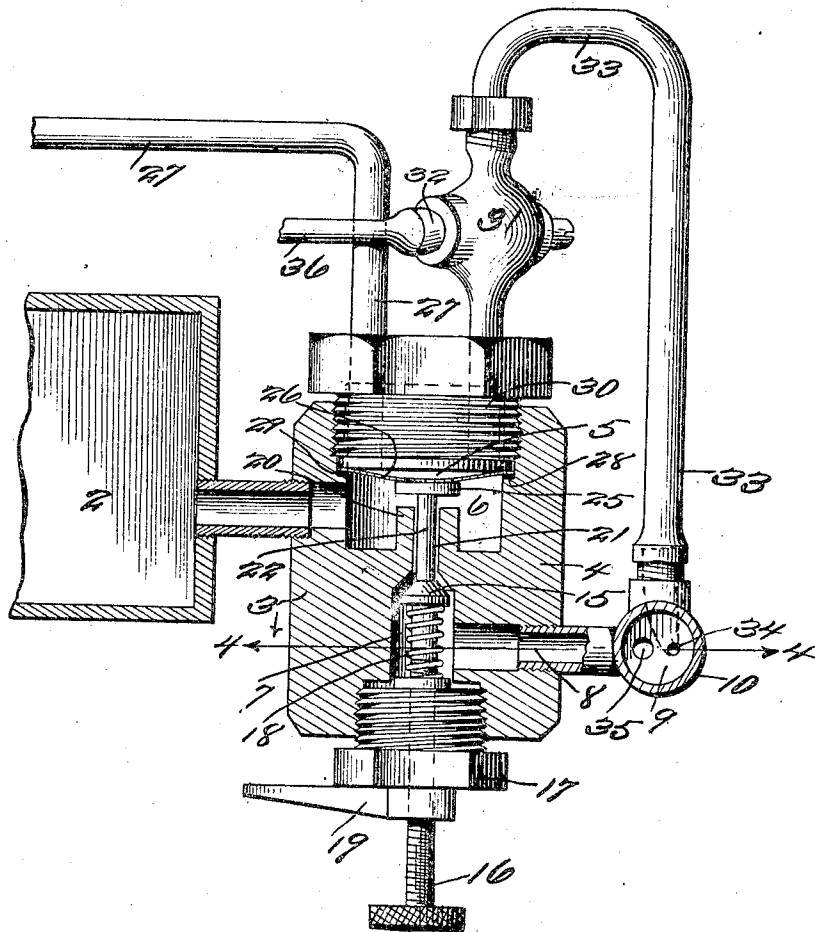
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3 SHEETS—SHEET 2.

Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

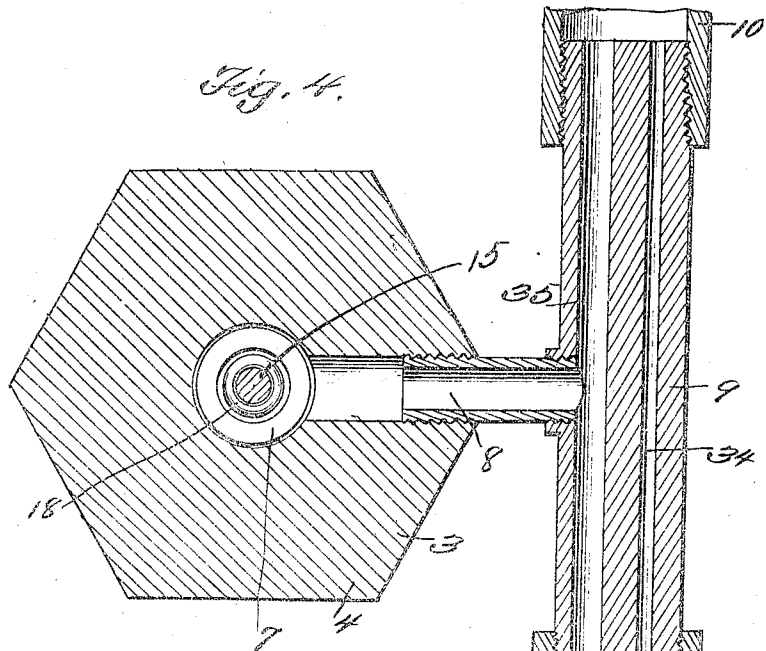


Fig. 5.

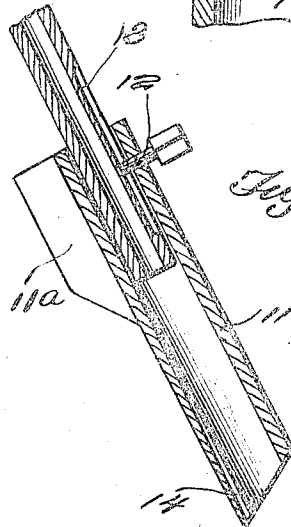
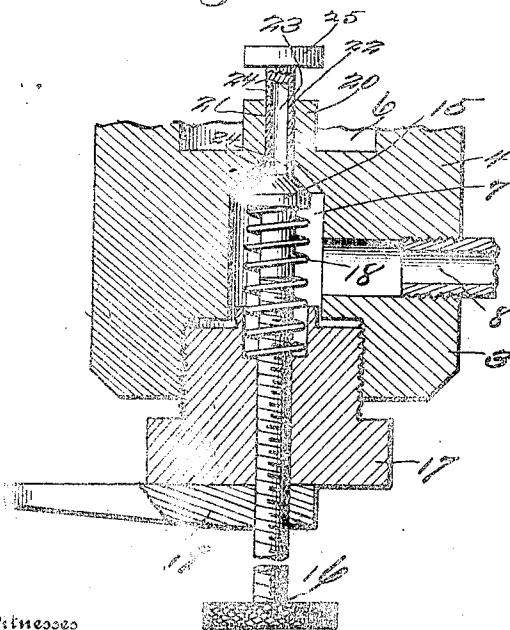


Fig. 6.

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UNITED STATES PATENT OFFICE.

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LUBRICATOR.

974,222.

Specification of Letters Patent.

Patented Nov. 1, 1910.

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To all whom it may concern:

Be it known that I, AUSTIN D. WILLIAMS, a citizen of the United States, residing at Roseville, in the county of Placer and State of California, have invented a new and useful Lubricator; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention about to be set forth and claimed pertains to a new and novel lubricator, adapted mainly for use upon locomotives and similar devices, wherein it is necessary to lubricate flanges of the wheels, in order to obviate, to a certain extent, the wear of the flanges and rails, and to also lessen the friction as the locomotive is turning curves.

An object of the invention is the provision of a device of this design, whereby the flanges of two wheels are simultaneously lubricated, the flow of lubricant being regulated as it flows to the flanges.

A further object of the invention is to provide a steam operated diaphragm, for opening or closing a suitable valve, thereby admitting the oil to the flanges.

A further object is to so construct the lubricator as to assist the feeding of the lubricant to the flanges by means of steam at intervals, but, otherwise, the lubricant feeds to the flanges by gravity, as will be clearly evident when examining the accompanying illustrations.

This invention comprises further objects and combinations of elements which will be hereinafter more fully described, shown in the accompanying drawings, and the novel features thereof will be pointed out by the appended claims.

To obtain a full and correct understanding of the details of construction, combinations of features, elements and advantages, reference is to be had to the hereinafter set forth description and the accompanying drawings in connection therewith, wherein—

Figure 1 is an elevation of the forward portion of a locomotive, showing the novel lubricator disposed properly in position, and showing the pipes or conduits by which the lubricant is fed to two opposing wheels simultaneously. Fig. 2 is a side elevation of the structure shown in Fig. 1, showing the connections between the lubricator and the cab of the locomotive. Fig. 3 is a vertical

sectional view through a portion of an oil tank, showing the lubricator secured in position. Fig. 4 is a sectional view on line 4—4 of Fig. 3. Fig. 5 is a detail sectional view of the means for limiting the movement, of a modified form of valve, and the means for locking the same. Fig. 6 is a detail sectional view through one of the nozzles 11, in order to show the key way and the gutter way 12 and 14.

Referring to the drawings, 1 designates a locomotive, to which a suitable oil tank 2 is secured. Secured to the lower portion of the oil tank is the lubricator 3, which primarily comprises a casing 4 having steam and oil chambers 5 and 6, as clearly shown. Below the oil chamber is a chamber 7, from which the oil feeds through the duct 8 into the T-pipe 9, from which it is conveyed by means of the pipes or ducts 10 to the flanges of the wheels. These pipes or ducts 10 are provided with slidable nozzles 11, in order that they may adjust themselves as the wheels vary in position. These nozzles and pipes are provided with keys and key-ways 12 and 13, so that the nozzles may slide but not turn. The inner surfaces of the nozzles, adjacent to their lower outward peripheral edges, are provided with gutterways 14, in order to guide the oil to the flanges of the wheels. The nozzles are provided with extensions 11', by which the nozzles may be manually raised. These extensions also act as weights to assist in forcing the nozzles against the wheels.

Operable in the chamber 7 is a spring tensioned valve 15, the movement of which is regulated by the thumb screw 16, which is threaded into a jam nut 17. Between this jam nut and the said valve, the spring 18 is interposed. To lock the thumb screw, after the same has been properly adjusted, a locking member 19 is threaded thereon, and which is designed to engage the said jam nut.

The inner portion of the oil chamber is provided with a hollow extension 20, the bore of which merges into the chamber 7. Movable within this bore 21 is a plunger core 22, the diameter of which is slightly less than the diameter of the bore, in order that the oil in the chamber, when the valve is opened, will flow readily about the plunger core and through the bore, for the purpose intended. This plunger core, in its preferred form, is shown as being solid, but,

in Fig. 5, it is hollow, as shown at 23, and is provided with apertures 24, in order that the oil may pass through the plunger core instead of about the same. The plunger core is provided with a head 25, against which the diaphragm 26 contacts, that is to say, when the same is forced inward, by the pressure of steam, admitted through the pipe or duct 27. This diaphragm, in practice, may be of any suitable metal, having the proper characteristics, such as flexibility, and durability, whereby the same may be easily forced inward, in order that the same may contact with the head of the plunger core, in order to open the said valve. This diaphragm is supported upon a shoulder 28 extending annularly about the interior of the steam chamber. This shoulder is provided with a packing ring 29, against which the diaphragm, that is to say, the peripheral portion thereof, is clamped, by means of the cap nut 30. This cap nut is threaded into the casing, as clearly shown, and into it the steam pipe 27 is threaded. Threaded into this cap nut is a bleeder valve casing 31, which is provided with the usual form of valve 32, as clearly shown. Swiveled to the casing 31 is a pipe or tube 33, which has threaded connections with the T-pipe 9, as shown clearly in Figs. 2 and 3. The duct of this tube or pipe 33 communicates with an independent duct 34 of the T-pipe, while the duct 35 of the T-pipe communicates with the duct 8, as shown clearly in the sectional view of Fig. 4. The ducts 34 and 35, at their ends, communicate with the pipes or ducts 10.

The valve 32 may be manipulated from the engine's cab by any suitable means, for instance, by the rods 36 and 37 which are provided with intermeshing beveled gears 37^a, and, by opening the said valve 32, the steam, after performing the function of forcing down the diaphragm, may be utilized for assisting the conveyance of the oil to the flanges of the wheels.

37^a denotes two intermeshing beveled gears, one of which is movable with the rod 37, while the other is movable with the rod 37^a. This rod 37^a may be operated from the engine's cap by any suitable means (not shown).

The flow of steam through the pipe 27 is governed by a suitable valve 38, as shown clearly in the drawings.

When the rod 37^a is operated by any suitable means (not shown), the rods 36 and 37 are operated, through the intermeshing gears 37^a and 37^c. By the operation of the rod 36 the valve 32 is operated, in order to allow the steam, after it has actuated the diaphragm, to pass through the pipe 33, down to and through the T-pipe, thereby assisting the oil to reach the flanges of the car wheel. Prior to this operation, however, steam is

admitted (from any suitable source of supply) through the pipe 27 into the steam chamber 5. The diaphragm 26 is then actuated, by the expansion of the steam, as shown clearly in Fig. 3, which will open the valve 15, thereby allowing the oil from the chamber 6 to pass by the valve and through the duct 8. The oil then passes through the duct 35 of the T-joint. The oil flows from either end of the T-pipe 9, and is forced through the pipes 10 by the admission of steam to the flanges of the wheel, as will be clearly understood. When the flow of steam is shut off through the pipe 27, the spring 18 returns the valve 15 to its normal or closed position, thereby restoring the diaphragm to its initial position. The valve 15 may be limited in its movement by the thumb screw 16, the upper end of which contacts with the shank of the valve when it is opened. When the thumb screw has been adjusted the same may be locked by the member 19.

From the foregoing, the essential features, elements and the operation of the device, together with the simplicity thereof, will be clearly apparent.

Having thus fully described the invention, what is claimed as new and useful is:—

1. In a lubricator, oil and steam chambers having a diaphragm dividing them operable by the pressure of steam, a valve controlled chamber adjacent the oil chamber, a duct leading therefrom provided with a T-pipe, ducts leading from either side of the T-pipe, said T-pipe having independent passages for oil and steam, and means for affording communication between the T-pipe and the steam chamber.

2. In a lubricator, the combination of the engine's wheels, of a casing having oil and steam chambers, a spring tensioned valve controlled chamber below the oil chamber and provided with a duct leading therefrom, a T-pipe having independent passages for the oil and steam, said duct having communication with the oil passage, and means for affording communication between the steam chamber and the T-pipe, said T-pipe having means for conveying steam and oil to the flanges of the wheels.

3. In a lubricator, the combination of the engine's wheels, of a casing having oil and steam chambers, a spring tensioned valve controlled chamber below the oil chamber and provided with a duct leading therefrom, a T-pipe having independent passages for the oil and steam, said duct having communication with the oil passage, means for affording communication between the steam chamber and the T-pipe, said T-pipe having pipes having their extremities provided with movable nozzles for conveying steam and oil to the flanges of the wheels.

4. In a lubricator, the combination of the engine's wheels, of a casing having oil and

5 steam chambers, a spring tensioned valve controlled chamber below the oil chamber and provided with a duct leading therefrom, a T-pipe having independent passages for the oil and steam, said duct having communication with the oil passage, a tube having a valve therein for affording communication between the steam chamber and the T-pipe, said T-pipe having means for conveying steam and oil to the flanges of the wheels.

10 5. In a lubricator, the combination of the engine's wheels, of a casing having oil and steam chambers, a spring tensioned valve controlled chamber below the oil chamber and provided with a duct leading therefrom, a T-pipe having independent passages for the oil and steam, said duct having communication with the oil passage, a tube having a valve therein for affording communication between the steam chamber and the T-pipe, said T-pipe having conduits having their extremities provided with movable nozzles for conveying steam and oil to the flanges of the wheels.

25 6. In a lubricator, the combination of the engine's wheels, of a casing having oil and steam chambers, a spring tensioned valve controlled chamber below the oil chamber

and provided with a duct leading therefrom, a T-pipe having independent passages for the oil and steam, said duct having communication with the oil passage, a tube having a valve therein for affording communication between the steam chamber and the T-pipe, said T-pipe having conduits having their extremities provided with movable nozzles for conveying steam and oil to the flanges of the wheels, and means for regulating the valve of the third-mentioned chamber.

7. A lubricator comprising a casing having oil and steam chambers, a valve controlled chamber adjacent the oil chamber, a T-pipe having communication between it and the third-mentioned chamber and provided with independent passages for oil and steam, a tube having a valve connecting the pipe and the steam chamber, and means for the conveyance of oil and steam to flanges of wheels.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUSTIN D. WILLIAMS.

Witnesses:

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E. CARL SAWTELL.