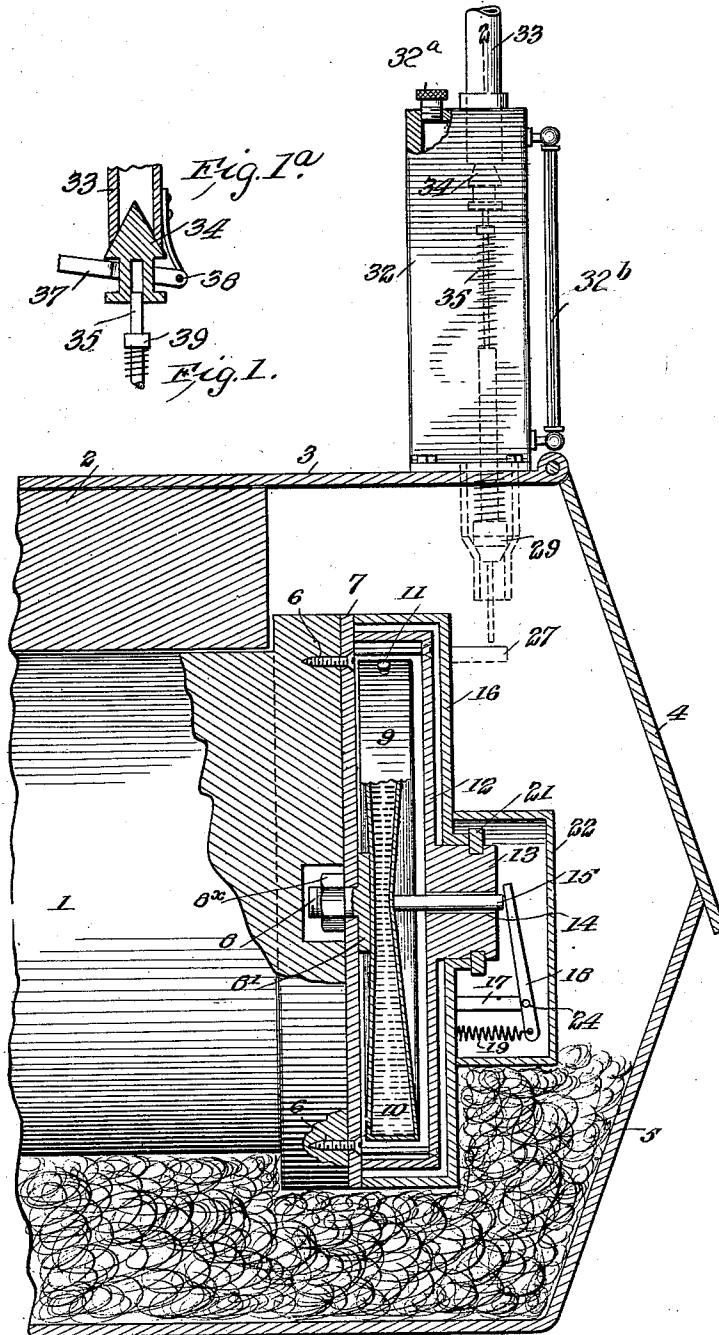


E. P. BERGMAN.  
CAR JOURNAL OILER.  
APPLICATION FILED JUNE 2, 1910.

994,565.

Patented June 6, 1911.

2 SHEETS—SHEET 1.



WITNESSES:

E. M. Callaghan  
L. S. Stanley

INVENTOR

ERICK P. BERGMAN

BY *Munn & Co.*

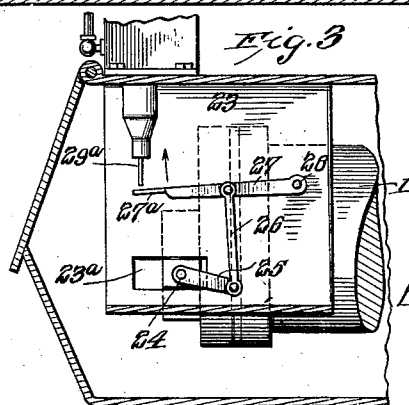
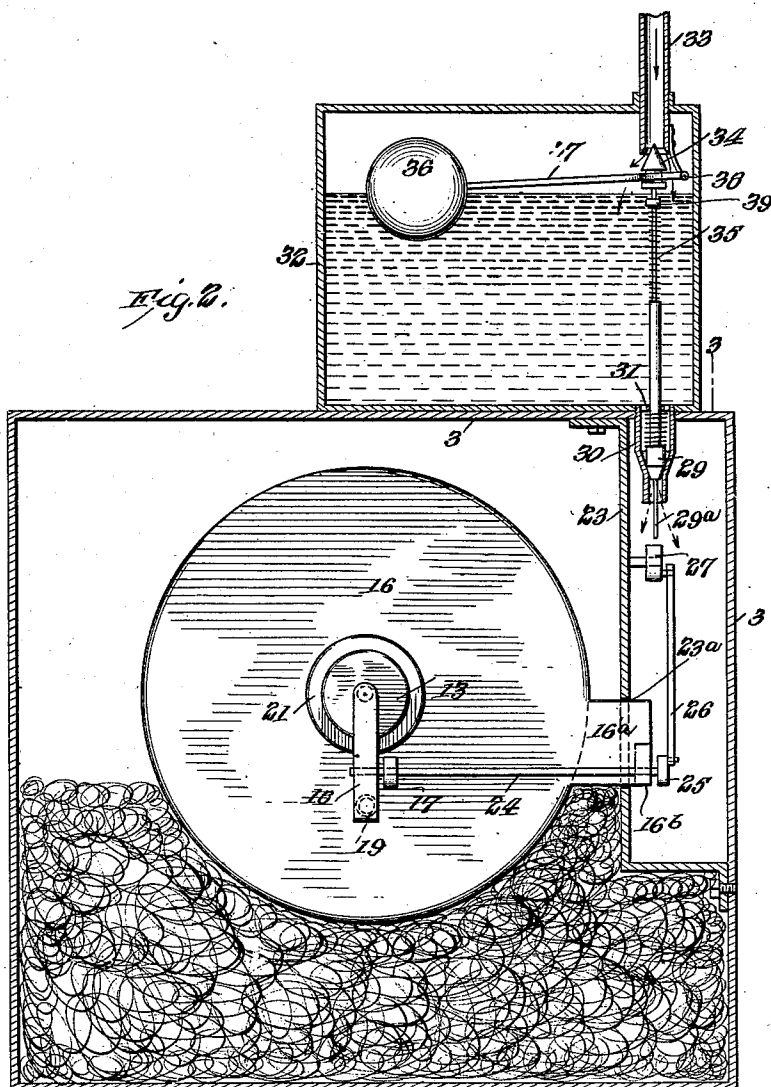
ATTORNEYS

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2 SHEETS—SHEET 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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CAR-JOURNAL OILER.

994,565.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed June 2, 1910. Serial No. 564,625.

*To all whom it may concern:*

Be it known that I, ERICK P. BERGMAN, a citizen of the United States, and resident of Cherokee, in the county of Alfalfa and State of Oklahoma, have made certain new and useful Improvements in Car-Journal Oilers, of which the following is a specification.

My invention relates to devices for oiling journals of cars or other similar vehicles, and for preventing "hot boxes", and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device by means of which the journal may be oiled automatically, when the heat generated by the rotation of the axle rises to a certain point.

A further object of my invention is to provide a novel form of apparatus which works upon the principle of the expansion of liquids or gases to effect the operation of valves for permitting the feeding of oil to the box.

A further object of my invention is to provide a device in which the automatic oiling of the journal is rendered absolutely certain.

A further object of my invention is to provide a device having few parts and, therefore, which is not likely to get out of order.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a central vertical section through the device. Fig. 1<sup>a</sup> is a sectional detail view, showing a valve. Fig. 2 is a section along the line 2—2 of Fig. 1, a portion of the casing being removed for sake of clearness, and Fig. 3 is a reduced section along the line 3—3 of Fig. 2.

Referring now particularly to Fig. 1, I have shown an axle journal 1 of a car and a portion 2 of the journal box wedge therefor. At 3 is shown the journal box, which is provided with the usual lid or door 4. The bottom of the boxing is provided with the usual waste 5. Secured to the end of the axle 1, by means of screws 6, is a plate 7 provided with a central opening. A bolt 8 passes through this central opening and is provided with a head 8', on one side, and a nut 8" on the other. Secured to the head 8'

of the bolt 8 is an expansion box 9, having resilient ends and adapted to contain a liquid 10. The expansion box is provided with a filling opening, which is closed by a plug 11. Secured to the plate 7 is a protecting casing for the expansion box. This casing, I have shown at 12. It is provided with a hub 13, which has a central opening 14 adapted to receive a pin or arm 15, which is secured to the center of the expansion box 9. The parts thus described are designed to turn with the axle 1. Outside of the casing 12 is an external casing 16, which surrounds the hub 13, and which bears an arm 17 on which is pivoted a lever 18. The latter is held normally in contact with the end of the pin 15 by means of a spring 19. The outer casing 16 does not revolve with the hub 13, but is prevented from coming off from the hub by means of a split ring 21. Secured to the outer casing 16 is a cylindrical extension 22, which is designed to cover the lever 18.

Referring now to Fig. 2, it will be seen that the external casing 16 is provided with a lateral extension 16<sup>a</sup>, which projects loosely through an opening 23<sup>a</sup> in a partition 23, the latter being secured to the boxing 3. The extension 16<sup>a</sup> prevents the casing 16 from rotating on the hub 13. The lever 18 is pivotally mounted on a rock shaft 24, one end of which is journaled in the arm 17, as described, and the other end of which is journaled in the end 16<sup>b</sup>, of the extension 16<sup>a</sup>. To the end of the shaft 24 is secured a rock arm 25 (see Fig. 3) which is pivotally connected by means of a link 26 to a lever 27, pivoted at 28 on the partition 23. The forward end 27<sup>a</sup> of the lever 27 is arranged to engage the downwardly projecting stem 29<sup>a</sup> of a valve 29, which is inclosed in a valve casing 30, and is normally held in a closed position by means of a spring 31. The valve casing 30 is an extension of an oil chamber 32. The latter has an inlet pipe 33, at its top, which communicates with a larger reservoir (not shown). A valve 34 is slidably mounted on the end of a stem 35, this stem connecting with the valve 29, as shown in Fig. 2. A float 36 is secured to an arm 37, which is pivoted at 38 and is adapted to engage the valve 34 to move it into its closed position. A lug 39 is secured to the stem 35, so that when the latter is raised it will also engage the slidable valve 34 to close the latter.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The expansion box 9 is filled with some liquid, which has a high coefficient of expansion such as mercury or a liquid which is volatilized at a low temperature, such as wood alcohol. In practice, I prefer to use wood alcohol. The liquid is poured through the opening and the plug 11 is inserted. As has been previously stated, the plate 7, the expansion box 9 and the inner casing 12, which bears the hub 13 revolve with the axle 1. The casings 16 and 22 both supported on the hub 13 do not revolve, being kept from revolving by means of the extension 16<sup>a</sup>, which protrudes through the opening 23<sup>a</sup> in the partition 23. The latter opening provides for a longitudinal movement of the axle 1, and of the parts secured to the end thereof.

Normally the valve 29 is held in its seat by means of the spring 31 so as to keep the oil in the reservoir 32 from flowing downwardly. When, however, the axle 1 becomes heated on account of lack of oil, the heat expands the liquid in the expansion box, or if it is easily volatilized converts it into vapor, which causes a movement of the resilient sides. The pin 15 is thereby shoved outwardly through the hub 13 and the arm 18 is moved. This arm, as has been stated, is fixed to a shaft 24, which is rotated on its bearings, thereby turning the rock arm 25, which moves the link 26 and the lever 27 upwardly. The outer end of the lever 27 is flattened at 27<sup>a</sup> to engage the valve stem 29<sup>a</sup> of the valve 29, thereby moving the valve stem upwardly. This opens the valve 29 and closes the valve 34, the lug 39 of the valve stem coming in contact with the lower part of the valve 34. The float is raised by the movement of the valve 34 and remains so until the valve is permitted to open. The oil runs out of the reservoir 34 into the box 3, whence it is absorbed by the waste and lubricates the axle 1. As soon as the axle cools down the pressure will be relieved in the expansion box 9, which will then return to its normal position, thereby withdrawing the pin 15 from contact with the arm 18 and permitting the valve 34 to open and the valve 29 to close. The oil continues to run into the receptacle 32 until the float 36 has risen to a sufficient height to cause an upward movement of the valve 34, so as to close the end of the pipe 33. Since the pipe 33 communicates with an oil supply (not shown) containing sufficient oil for lubricating the axle for a prolonged period, it is obvious that it is merely necessary to fill this supply reservoir occasionally, in order

to permit the automatic lubrication of the axle. In practice, however, the axle will be lubricated in the ordinary manner, by lifting the door 4 of the box 3 and pouring oil on the waste.

In order to equalize the pressure on the reservoir 32, the latter is provided with an air vent which may be partially closed by a screw cap 32<sup>a</sup>, by unscrewing the latter until the air can enter the reservoir. It is also provided with a gage 32<sup>b</sup>. The main supply reservoir (not shown) is also provided with a gage similar to the gage 32<sup>b</sup>.

I claim:

1. The combination with a car axle and a journal box therefor, of an oil reservoir, a passage establishing communication between said oil reservoir and the interior of said box, an expansion box secured to said axle having sides adapted to expand from the heat of the axle, and means engaged by said expanding box for actuating said valve.

2. The combination with a car axle and a journal box therefor, of an oil reservoir, a passage establishing communication between said oil reservoir and the interior of said box, an expanding box secured to said axle having sides adapted to expand from the heat of the axle, a pin secured to said box, a rock shaft provided with arms, one of said arms being adapted to be engaged by said pin, and lever connections to said arm and adapted to engage said valve for actuating the oil.

3. In an automatic lubricating device for car axles, an expansion box secured to the end of said axle, an inner casing for said box secured to the end of the axle, said casing being provided with a hub having a central opening therethrough, a pin secured to said extension box and adapted to extend through said opening, an outer casing loosely secured on said hub, said outer casing having a lateral extension, and means adapted to engage said extension for preventing the rotation of the outer casing.

4. In an automatic lubricating device for car axles, a reservoir provided with an inlet, a valve in said inlet loosely disposed on said valve stem, a float for operating said valve, an outlet at the bottom of said reservoir, a second valve secured to said valve stem and adapted to control said outlet, and means actuated by the heat of said axle for moving said valve stem and thereby causing the closing of the inlet opening of said reservoir and the opening of said outlet.

ERICK P. BERGMAN.

Witnesses:

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SYDNEY R. ROTH.