R. S. MENNIE & E. WANAMAKER.

LUBRICATING SYSTEM FOR JOURNAL BOXES.

APPLICATION FILED JULY 9, 1917.

1,254,424.

Patented Jan. 22, 1918.

Fig. 2.

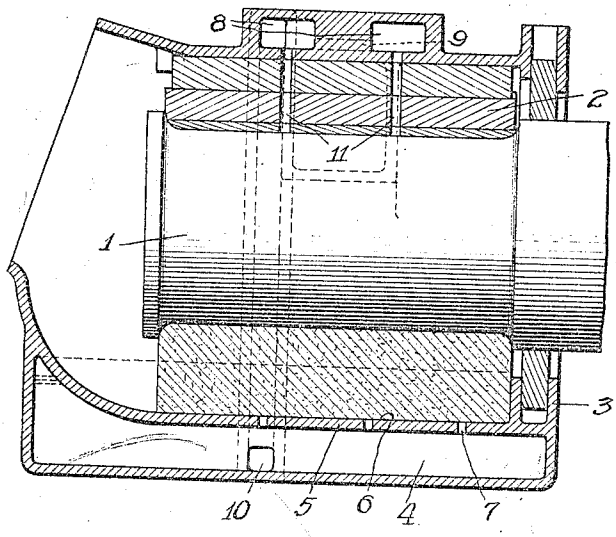
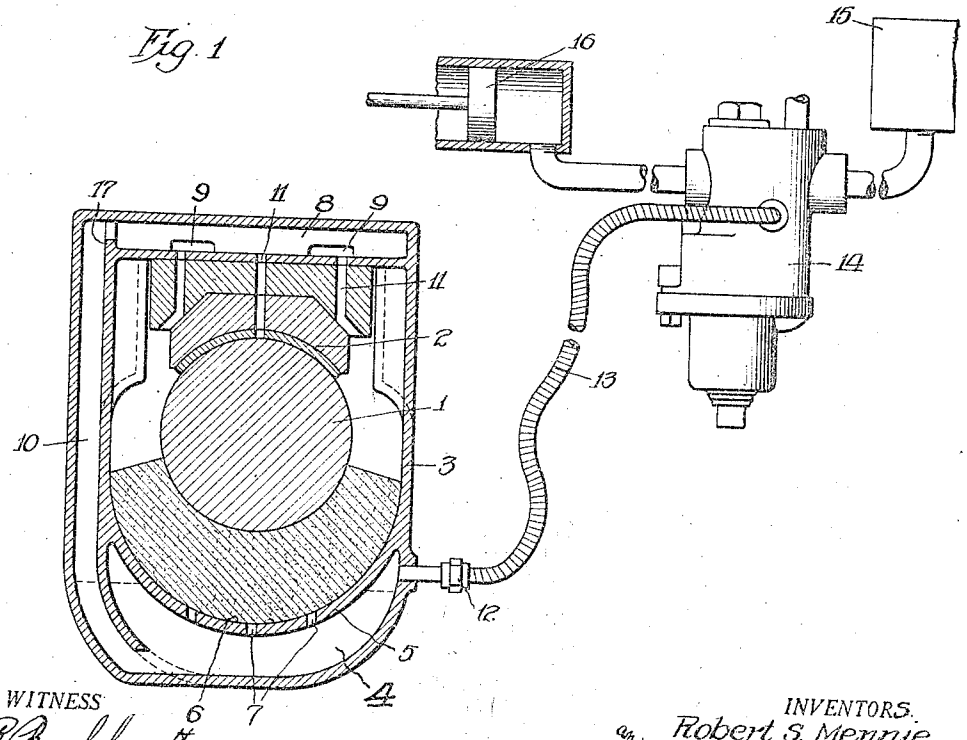


Fig. 1



WITNESS

R. Burkhardt.

INVENTORS.

Robert S. Mennie

and Ernest Wanamaker.

By George Bagby James

ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT S. MENNIE AND ERNEST WANAMAKER, OF CHICAGO, ILLINOIS, ASSIGNORS OF ONE-THIRD TO WILLIAM J. TOLLERTON, OF CHICAGO, ILLINOIS.

LUBRICATING SYSTEM FOR JOURNAL-BOXES.

1,254,424. Specification of Letters Patent. Patented Jan. 22, 1918.

Application filed July 9, 1917. Serial No. 179,364.

To all whom it may concern:

Be it known that we, ROBERT S. MENNIE, a subject of the King of Great Britain, and ERNEST WANAMAKER, a citizen of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Lubricating Systems for Journal-Boxes, of which the following is a full, clear, concise, and exact description.

This invention relates to improvements in railway car axle journal boxes and more particularly to lubricating systems therefor.

In journal boxes of the type now extensively used, the end of the car axle which is journaled therein and which is housed thereby, is supplied by saturated waste with a suitable lubricant, said waste being packed around the lower portion of the axle between said axle and the base of the journal box. Oftentimes in practice, an axle revolving in contact with its bearing, in journal boxes of this type, becomes heated to such a degree as to ignite the waste and oil causing what is commonly termed a "hot box" which may seriously damage said bearing making necessary expensive repairs and causing much loss of time.

Furthermore, in journal boxes of this type the saturated waste during continuous use sometimes recedes from the axle until it no longer contacts therewith. This also produces a "hot box" by reason of the fact that said bearing is no longer supplied with lubricant.

The primary object of the present invention is to overcome these various defects and disadvantages and to provide a journal box with means whereby the journal bearing housed therein, in addition to being lubricated continuously by means of the usual saturated waste packed thereabout, will also be lubricated at intervals by a further supply of lubricant which cools as well as lubricates said bearing.

A further object of the invention resides in the provision of a forced feed lubricating system for railway journal bearings adapted to be connected with and controlled directly by the air brake system of the train equipped with the same, whereby said bearing will be bathed with a lubricating medium each time the brakes of said train are released.

Other objects and advantages will be apparent from the following description taken in connection with the accompanying drawings wherein the preferred embodiment of the invention is illustrated.

Figure 1 is a vertical transverse sectional view taken through a journal box constructed in accordance with the present invention, and

Fig. 2 is a vertical longitudinal sectional view thereof.

Referring more in detail to the drawings, the end of the car axle is shown at 1 and is provided with the usual journal bearing 2. The journal box is illustrated at 3 having formed in the base thereof an oil reservoir 4. The bottom 5 of the journal box which forms the upper wall of the reservoir 4 is channeled as at 6 and is provided with suitable apertures 7 communicating with the reservoir 4, said apertures affording means whereby oil from the reservoir may flow into said channel 6. Between the bottom plate 5 of the journal box and the axle 1 is shown the usual saturated waste which is adapted to dip within the oil in the channel 6 and to conduct the same to the axle 1 as said axle revolves in contact therewith.

Formed in the top of the journal box 3 and overlying the bearing 2 are a plurality of elongated chambers 8 communicating one with the other through suitable ports 9. One of said chambers 8 is shown connected with the oil reservoir 4 by means of a suitable passage 10 whereby oil from said reservoir may be forced upwardly through said passage into said chambers and through a plurality of small ducts 11 into contact with the axle and its bearing 2, in a manner as hereinafter set forth. Certain of these ducts 11 extend downwardly through the bearing 2 and its mounting and are adapted to feed oil directly to said bearing as the axle revolves in contact therewith, while the remaining ducts are positioned at either side of the bearing substantially as shown and are adapted to conduct the lubricant thereabout and into contact with the axle at points below the bearing. It is of course obvious that applicant is not limited to the particular positioning of the ducts shown, as many other arrangements may be devised within the scope of the appended claims.

In order to force a quantity of the oil from within the reservoir 4 upwardly into the chambers 8 so as to permit the same to flow downwardly therefrom through the

ducts 11 into contact with the axle 1 and its bearing 2, it is desired to connect said reservoir 4 with a suitable source of pressure. As is well known, each time the brakes of a train are released the air pressure which has been utilized to retain said brakes in operative position is exhausted into the atmosphere through the triple valve interposed between the auxiliary pressure tank and the cylinder which houses the brake actuating plunger. It is this pressure, which has heretofore been wasted, that the present invention proposes to utilize in order to provide means whereby a forced circulation of the lubricating medium within the journal box may be effected. As shown, the reservoir 4 is connected, by means of the coupling 12 and the flexible conductor 13, with the exhaust outlet of the triple valve 14. The auxiliary pressure tank of the air brake system is shown at 15 and the brake actuating plunger at 16. From this, it will be noted, that each time the brakes of the train are released, the air under pressure, instead of exhausting into the atmosphere, will be conducted either wholly or in part through the flexible conductor 13, to the reservoir 4, where it will act to force a quantity of the oil from within said reservoir upwardly into the chambers 8 through the passage 10 and then downwardly into contact with the axle 1 and its bearing 2, substantially as above set forth. A small upstanding abutment 17 is formed at the point where the passage 10 communicates with the chambers 8. In the event the pressure on the oil in the reservoir 4 is exhausted before said oil is forced through the apertures 11 into contact with the bearing, this abutment or shoulder 17 will prevent the oil which has been forced into the chambers 8 from flowing back into the reservoir 4 through the passage 10, said shoulder 17 acting to retain said oil in said chambers 8, thereby necessitating its passing through the apertures 11 and into contact with the bearing prior to its return to the reservoir 4.

It will be noted from the foregoing that when the pressure is applied to the surface of the oil in the reservoir 4 it not only forces a portion thereof up into the chambers 8 and down over the bearing 2, but also raises the level of the oil within the channel 6. This raising of the oil within the channel 6 acts to more thoroughly saturate the waste packed therein as does also the return oil from the chambers 8 as the same flows back into the reservoir 4 after it has passed over the bearing 2. It will also be noted that the oil is subjected to air which has been under considerable pressure, but which is being released from said pressure when it enters the journal box and is therefore expanding and absorbing a considerable amount of heat. The oil and the walls of the various chambers with which said air comes in contact are therefore cooled appreciably, offsetting any tendency of the bearing to become overheated. It will be further noted that the air used for this purpose is compressed air, which would otherwise be exhausted into the atmosphere after the brakes have been set and therefore after said air has performed its main function. Use is therefore made of compressed air which would otherwise be wasted and without drawing on the main supply and without creating a back pressure which effects the application of the brakes. Any slight back pressure created during the release of the brakes is not objectionable.

It is obvious that the circulation of the oil may be effected by mechanical means, as well as by fluid pressure and that where fluid pressure is made use of, as in the present case, the source may be something other than the air brake system of the train, if desired. Accordingly it is not desired to limit the invention to the arrangement shown or to the detailed construction herein illustrated.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:—

1. A journal box comprising a bearing, an oil reservoir, a chamber communicating therewith, and means whereby when the brakes of the train, equipped with said journal box, are released, oil from said reservoir is forced upwardly into said chamber and down over said bearing.

2. The combination with the air brake system of a train, of a bearing, a journal box therefor provided with an oil reservoir, and means whereby when the brakes of said train are released, oil from said reservoir is forced into contact with said bearing thereby lubricating the same and cooling said oil.

3. The combination with the air brake system of a train, of a journal box connected therewith and provided with a journal bearing, a lubricating medium therefor, and means whereby when the brakes of said train are released a portion of said lubricating medium is forced into contact with said bearing.

In witness whereof, we, hereunto subscribed our names this 3rd day of July, A. D., 1917.

ROBERT S. MENNIE.
ERNEST WANAMAKER.