

(No Model.)

G. F. GODLEY.
JOURNAL BOX.

No. 471,069.

Patented Mar. 15, 1892.

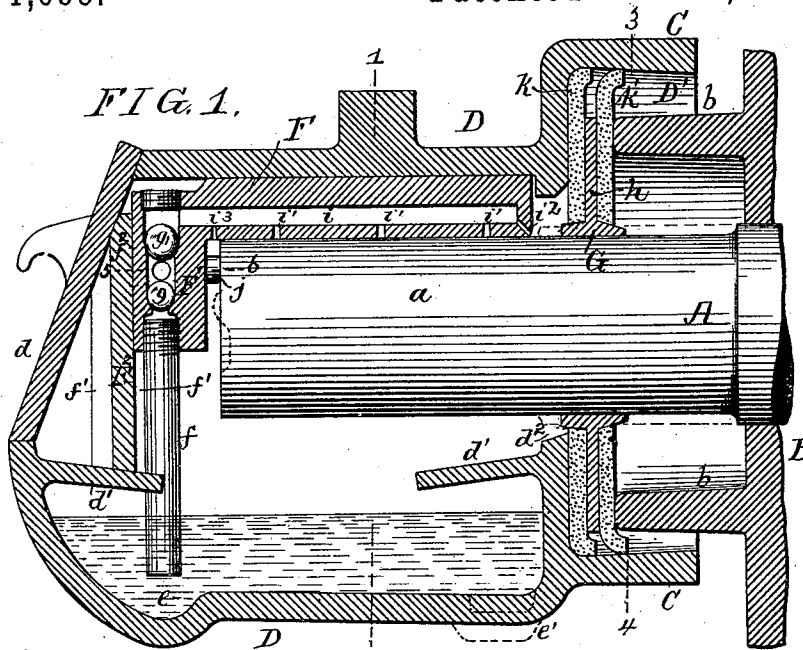


FIG. 3.

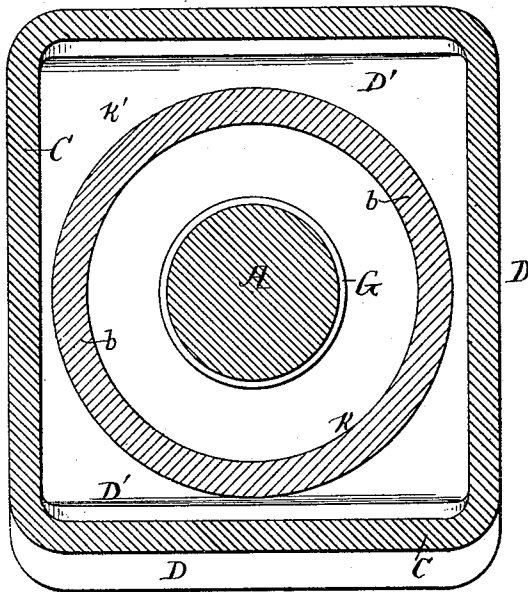


FIG. 2.

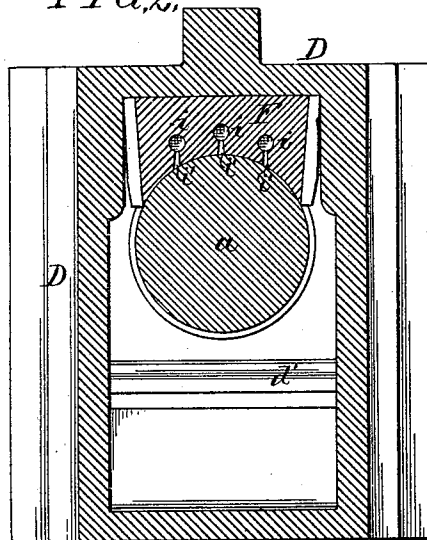
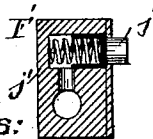


FIG. 4.



Witnesses:
Murray LeBoyer
Alex. Barkoff

FIG. 5.

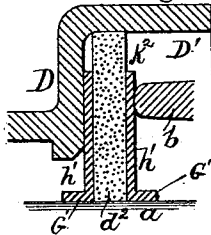
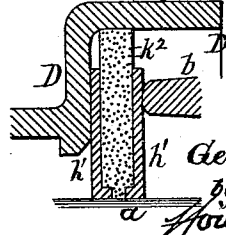


FIG. 6.



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UNITED STATES PATENT OFFICE.

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JOURNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 471,069, dated March 15, 1892.

Application filed July 25, 1891. Serial No. 400,724. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. GODLEY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Axle-Boxes, of which the following is a specification.

One object of my invention is to so construct an improved box for the journals of railway-car axles, shafts, &c., that it will be dust-proof, a further object being to thoroughly lubricate the journal, and a still further object being to prevent splashing of the oil in the box.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of my improved journal-box as applied to the journal of a railway-car axle. Fig. 2 is a section on the line 1 2, Fig. 1. Fig. 3 is a section on the line 3 4, Fig. 1. Fig. 4 is a sectional plan on the line 5 6, Fig. 1, and Figs. 5 and 6 are views illustrating modifications of one of the features of my invention.

A is the axle, having a journal *a*, which is, however, without the usual end collar, and B represents part of the car-wheel which is secured to the axle A and has a flange *b*, the latter extending into a hood or casing C at the inner end of the axle-box, as clearly shown in Fig. 1, and for a purpose described hereinafter.

The axle-box D has at the front the usual opening, covered by a door *d*, through which access can be had to the interior of the box, and in the bottom of the box at the front end is a depression *e*, from which point the bottom of the box is inclined downwardly toward the rear end of the box, as indicated in Fig. 1, so that foreign matter in the oil will be directed toward said rear end of the box. A receptacle *e'*, such as shown by dotted lines, may be formed at the rear of the box to receive the foreign matter, and, if desired, an opening may be made in this receptacle, which opening can be provided with a plug, so that the sediment or foreign matter may be removed from the box from time to time.

Fitted to the upper portion of the interior of the box is a journal brass or bearing F, of any suitable material, this bearing having one or more longitudinal passages *i* therein, which communicate with downwardly-ex-

tending passages *i'*, through which the oil passes to the journal, as shown clearly in Figs. 1 and 2. In some instances I may form at the rear end of the bearing a passage *i*², and at the head or front end of the bearing a passage *i*³ for lubricating the outer end of the journal, the opening *i*² being especially applicable when the journal of the axle is of the character shown by dotted lines in Fig. 1—that is to say, when the axle is reduced to form the journal at a point close to the end of the bearing.

At the outer end of the bearing F, and communicating with the longitudinal passages *i* of the same, is a pump-barrel F', having a depending tube *f* and seats for two ball-valves *g g'*, both of which open upwardly, the upper valve *g'* being preferably larger than the lower valve *g*, so as to provide for the introduction of the valves through the same opening.

The depression *e* in the bottom of the box provides for the screwing of the tube *f* into or the unscrewing of the same from the pump-barrel F', and yet maintains the bottom of said tube close to the bottom of the box when in operative position, so that the pump will work until the oil has been almost completely withdrawn from the box. A pump-plunger *j* is fitted to a chamber communicating with the main-pump barrel, between the two valves, and a spring *j'* tends to keep this plunger always projected, so that its inner end will bear against the outer end of the axle. Hence any transverse movement of either the pump-barrel or axle toward each other will tend to force the plunger inward, thus opening the valve *g'* and closing the valve *g*, so that oil will be forced into the passages *i*, movement in the opposite direction closing the valve *g'* and lifting the valve *g*, so as to draw oil from the bottom of the box into the pump. Hence a good flow of oil is kept up from the reservoir to the passages in the bearing, the surplus oil from the journal dripping back into the box to be again used.

I do not claim, broadly, the combination of the axle and bearing, with a pump-plunger operated by transverse movement of the axle or box to cause a flow of oil to the bearing, as this is shown in my patent, No. 451,195, dated April 28, 1891, nor is it necessary to my pres-

ent invention that the plunger shall rely for its operation upon such movement of the axle or box, as the journal may have a depression in the end, or a projection on the end, as shown, for instance, by dotted lines in Fig. 1, to insure the operation of the plunger in cases where there is little or no longitudinal movement of the journal, and the pump-plunger may be arranged vertically instead of horizontally, if desired, or the pumping mechanism or part of the same may be carried by the journal in some cases.

On each side of the box, near the outer end of the same, are guide-ribs f' , between which is fitted a check-plate F^2 , which serves to prevent outward movement of the bearing F , and is itself held in position vertically by the door d , on opening which the check-plate can be removed and the bearing F then withdrawn with but slight jacking up of the box, the pump-tube f being first removed.

At the front and rear of the axle-box are wings or flanges d' , which project over the oil-reservoir, so that the oil which would, owing to the motion of the car, have a tendency to splash will be checked by these wings or flanges and thus prevented from escaping from the reservoir, the use of waste for this purpose being discarded.

At the rear of the journal-box is a chamber D' , formed by the hood C , extending from the main casing of the box, and surrounding the axle is a sleeve G , having an annular flange h , on opposite sides of which are disks k , of such a size that when they are forced into the chamber D' of the box they will snugly fit the same, their upper and lower ends being by preference turned outward, as clearly shown in Fig. 1, the width of the disks being preferably the same as the width of the chamber D' , as shown in Fig. 3. These disks and the sleeve G also, if desired, may be made of any suitable pliable material—such, for instance, as felt, wool, asbestos, or compounds containing plumbago—or in some instances they may be made of wood, vulcanized fiber, or of anti-friction metal, the object being to insure such a snug fit that while the materials can yield under pressure they will keep the interior of the box proof against the entrance of dust and will prevent the oil within the box from escaping.

The opening d^2 in the inner end of the box is somewhat larger than the axle, so that as the journal-bearing wears the box will be free to follow it, the opening being sufficiently large to permit such movement, and the disks are also made sufficiently large to accommodate the wear, so that a tight joint will always be maintained, the flange of the wheel pressing against the disk k' and holding the disk k in contact with the end of the box. In order to prevent the displacement of the disks and to arrest any movement of the same with the axle when the latter moves longitudinally, I make the chamber D' in tapering form, said chamber being smaller at the mouth than at

the base, as shown in Fig. 1. Hence the tendency of the disks is to remain at the base of the chamber. In some instances, however, the chamber may be of the same diameter throughout, the disks moving in the chamber with the axle, and yet providing a dust-proof joint, owing to their snug fit. It will be understood that the flange b , while shown in the drawings as formed on the wheel, may be formed on the axle independently of the wheel.

In Fig. 5 I have shown a modification of the packing, in which two sleeves G' , with flanges h' , are used, these flanges extending upon each side of a packing ring or disk k^2 , the flange b resting against one of the flanges h' , and in Fig. 6 I have shown sleeves having the flanges at the outer instead of at the inner edges, and it will be understood that other forms of flanged sleeves and disks may be used without departing from my invention.

I have illustrated my invention as applied to railway-car axle-boxes; but it will be understood that my invention can be applied to other journal-bearings as well.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the axle, the axle-box, a hood at the rear of the box forming a chamber, a sleeve fitting loosely on the axle, a packing-disk carried by said sleeve, with a flange adapted to turn with the axle, the packing-disk fitting in the chamber between the edge of said flange and the base of the chamber, substantially as described.

2. The combination of the axle-box D , having a hood C at its inner end forming a chamber, an axle A , a flange b , secured thereto and extending into the chamber, with a packing-disk mounted loosely upon the axle and fitting snugly in the chamber, said disk exceeding in vertical length the height of the chamber, so that the excess of the disk may be turned over at the top and bottom to form a double seal, substantially as described.

3. The combination, in an axle-box, of the chamber at the rear end of the box, an axle, a flange carried by the axle, said flange extending into the chamber, a flanged sleeve mounted upon the axle between the axle-flange and the box, with packing-disks carried by said sleeves, one on each side of the sleeve-flange, said disks fitting between the axle-flange and the base of the chamber, substantially as specified.

4. The combination, in an axle-box having a chamber at its rear end, said chamber having a contracted mouth, with a packing-disk adapted to the enlarged portion of the chamber and confined thereto, substantially as described.

5. The combination, in an axle-box, the axle-journal therein, a bearing projecting beyond the end of the journal, and a check-plate adapted to guides at the front of the axle-box and serving as a stop to prevent outward movement of the bearing, substantially as described.

6. The combination of an axle-box, an axle, a bearing for said axle adapted to the box, said bearing having a depending portion extending over the end of the axle, the oil-chamber in the bearing, oil-delivery passages from said chamber, some of said passages discharging oil into the space between the end of the journal of the axle and the depending portion of the bearing with means for supplying oil for said oil-chamber, substantially as described.

7. The combination of an axle-box, a journal, a bearing in said box for said journal, oil-distributing passages in the bearing, an oil-reservoir in the base of the box, a pump-barrel forming a communication between the reservoir and the oil-distributing passages in the bearing, a pump-plunger carried by a depending portion of the bearing, an inlet check-valve below the plunger and a discharge-check valve above the plunger, said plunger being acted upon by the journal, substantially as described.

8. The combination of an axle-box, a journal, a bearing in said box for said journal, oil-passage in the bearing, an oil-reservoir in the base of the box, a pump-barrel forming communication between the reservoir and the oil-distributing passage in the bearing, a pump-plunger carried by a depending portion of the bearing, a ball *g*, acting as an inlet check-valve, seated below the plunger, and a ball *g'*, larger in diameter than the ball *g*, seated above the plunger and acting as a discharge check-valve, said plunger being actuated by the journal, substantially as described.

9. The combination, in an axle-box, of the bearing, a reservoir in the base of the box, pumping mechanism, and a pump-barrel extending into the reservoir, so that on the operation of the pump mechanism the lubricant will be pumped to the bearing, the bottom of the axle-box being downwardly inclined from the pump-barrel, so that sediment that may drip from the journal and bearing will be carried away from the mouth of the pump-bar-

rel and deposited at the end of the box opposite to the pump-barrel, substantially as described.

10. The combination of an axle-box, a bearing, a journal adapted to said bearing, a pump-barrel depending from said bearing, a depression in the bottom of the box, near its front end, in line with the pump-barrel, the said bottom being inclined toward the back of the box from the depression, so that sediment that drips from the journal will be carried to the rear of the box away from the depression under the pump-barrel, substantially as described.

11. The combination, in an axle-box, of the bearing mounted in the upper portion of the box, pump mechanism in the depending portion of the bearing, pump-barrel extending from said depending portion, a reservoir in the bottom of the box having a bottom inclined toward the rear end of the box, flanges at the front and rear of the box extending over the oil-reservoir, a dust-shield at the rear of the box, and a check-plate at the front of the box directly in front of the bearing and adapted to guides in the box, substantially as set forth.

12. The combination, in an axle-box, of a bearing having a depending portion, a pump-barrel attached to said depending portion, a vertical passage also in said portion, a plunger adapted to pump oil through said passage, a valve-seat in the passage below the plunger, a ball-valve adapted to said seat, a valve-seat in the passage above the plunger of increased diameter, a ball-valve adapted to said seat, with a cap closing the upper portion of said opening, substantially as specified.

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

GEORGE F. GODLEY.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.