(No Model.)

E. C. HAMMOND.

CAR AXLE BOX.

No. 371,500. Patented Oct. 11, 1887.

Fig. 2.

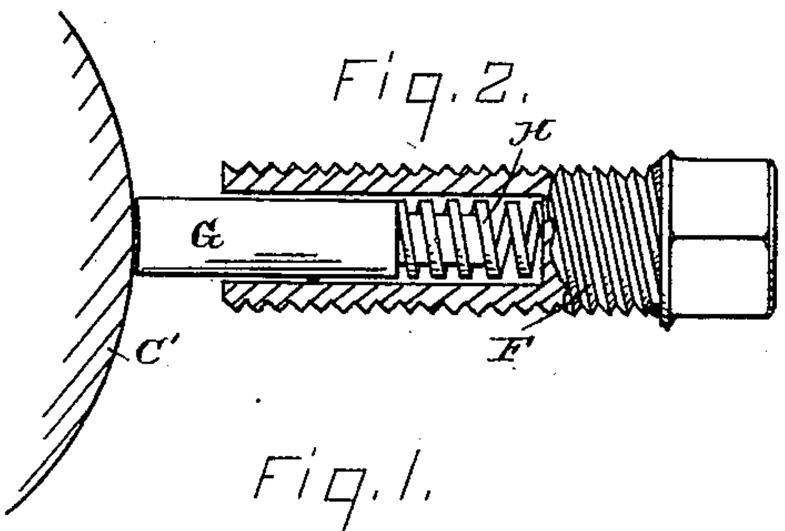


Fig. 3.

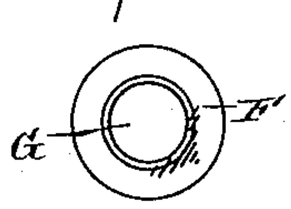


Fig. 1.

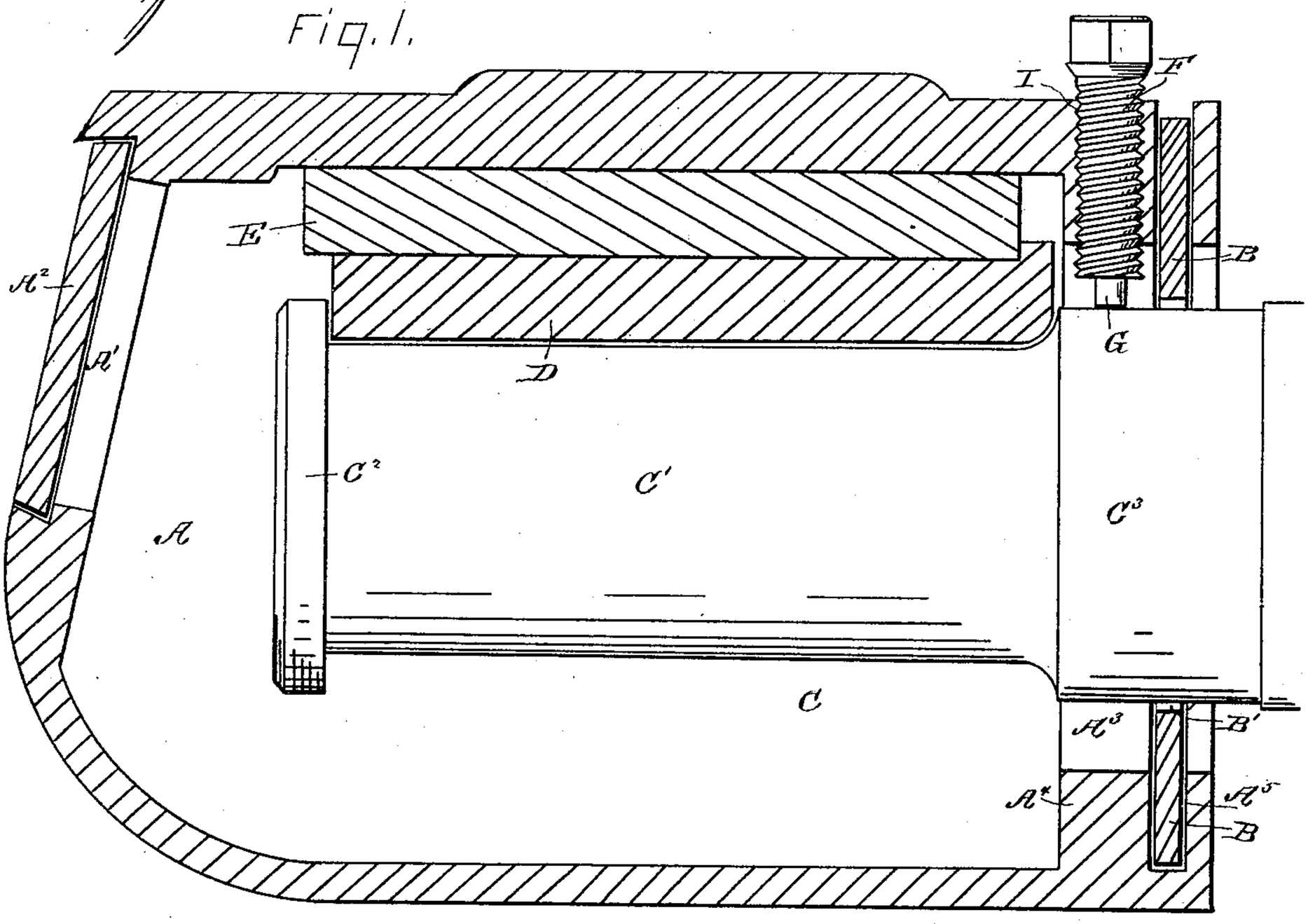
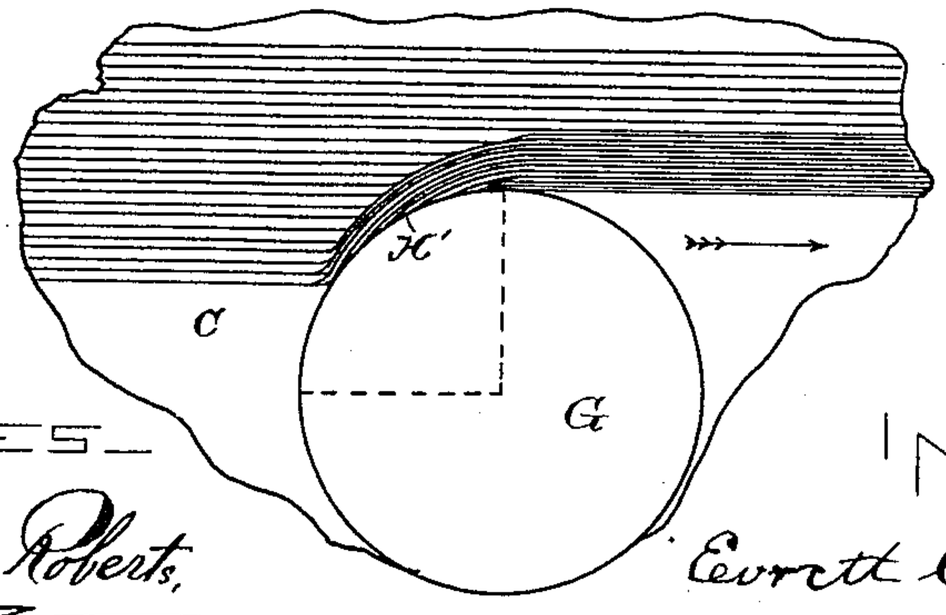


Fig. 4.



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UNITED STATES PATENT OFFICE.

EVRETT C. HAMMOND, OF PULLMAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FRANCIS BOND HEAD BONTER, OF CHICAGO, ILLINOIS.

CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 371,500, dated October 11, 1887.

Application filed December 16, 1886. Serial No. 221,705. (No model.)

To all whom it may concern:

Be it known that I, EVRETT C. HAMMOND, a citizen of the United States, residing at Pullman, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Axle Boxes; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to the axle-boxes of railway-cars; and has special reference to means for preventing waste of oil from such boxes.

It is well known that in railway-cars the wheels are secured immovably upon the axle at a sufficient distance from the ends of the latter to leave said ends long enough to enter bearing-boxes supported by the truck-frames or the body of the car, so that the wheel does not turn upon the axle, but the axle turns within said boxes. Friction, then, is created only in said boxes, and a large supply of lubricating-oil must be constantly present therein, in order to prevent their heating. In the car-axle boxes at present in use there is a large loss of oil. It is estimated by men experienced in railway service that fully one-half of the oil put into these boxes is wasted by escaping through the opening at which the axles enter the boxes. This difficulty and the nature of my improvement by which said difficulty is overcome will be fully understood by reference to the accompanying drawings and the following description.

In said drawings, Figure 1 is a vertical longitudinal section of an axle-box embodying my invention. Figs. 2, 3, and 4 are detail views.

The axle-box shown in the drawings represents substantially the type of axle-boxes in general use in America, and by showing the manner of applying my improvement to this form it will be understood how to apply it to other forms of boxes. As the construction of said box is well understood by those engaged in the building and operating of railway-cars, I deem it unnecessary to give more than a brief description of the same.

A is the box, having at one end the opening A′, covered by the door A^2, and having at its opposite end the opening A^3 in the wall A^4 for the admission of the end of the axle. Said opening is somewhat larger than the axle, and the wall through which said opening is cut is divided transversely to the axles by a channel, A^5, extending all around said opening and through the upper portion of said wall. In said channel rests a sand-board, B, having the central circular opening, B′.

C is the axle, having the journal C′ and the collars C^2 and C^3. Said axle enters the box through the opening A^3 and the sand-board B.

D is the usual bearing, resting upon the top of the journal C′.

E is the wedge lying between the bearing D and the top wall of the box A.

The lubrication of the journal is effected by placing cotton waste soaked in oil under the journal in the cavity of the box. A fresh supply of oil is poured into the front opening, A′. The cotton waste is in contact with the lower side of the journal C′, and by the aid of capillary attraction constantly applies oil to said journal. The oil adhering to the axle is carried with the latter while it rotates, and in practice it is found that while the car is running the oil travels from said journal outwardly over the collar C^3, through the opening A^3, and thence drips to the ground or is flung by centrifugal force over the ground against the adjacent parts of the truck or the bottom of the car.

Attempts have heretofore been made to stop the travel of the oil along the axle by means of a close-fitting sand-board, B, or a collar applied around the axle at the opening A^3; but such sand-board or collar soon wears sufficiently to make room for the passage of the oil, and up to the time at which I made my improvement I knew of no successful means for preventing such escape of oil.

Figs. 2 and 3 show in detail the device which I apply to the axle-box above described. F is a cylindric exteriorly-threaded tube terminating above in a closed square end suitable for grasping with a wrench. G is a stem fitting loosely into the open end of the tube F and resting with its inner end against a coiled spring, H, while its outer end protrudes a short

distance from said tube. Said stem, or at least the outer end thereof, is preferably made of some soft metal—as, for example, copper. A hole, I, is made through the wall A^4, or in an adjacent portion of the wall of the box A, perpendicular to the axle C, and of proper size to be tapped to receive the tube F far enough to press the outer end of the stem G against the axle C. The pressure of such stem against the axle may be increased or diminished by screwing the tube F nearer to or farther from the axle. When the axle rotates, the end of the stem F will constantly press upon said axle, and being of relatively soft material it will not wear a groove into the axle; but, on the contrary, it will itself be worn concave to conform to the exterior of the axle at the point where it is in contact with the latter. By actual test I have found that the oil in traveling outwardly from the journal C′ never crosses the path upon the axle traversed by the end of the stem G, but it accumulates contiguous to said path until the quantity is sufficient to cause it to drip back into the box A.

When the outer end of the stem G has worn to conform to the axle, as aforesaid, the entire periphery of said end will, of course, be in close contact with the axle, and the half of such periphery or circumference toward which the axle rotates serves to scrape or wipe the surface of the cylinder, and the half of such half of the circumference (one-fourth of the whole circumference) nearest the journal C′ and nearest the approaching oil serves as an oblique scraper or wiper for the surface of the axle. As the axle rotates and brings the oil which has advanced during one rotation in contact with such oblique portion of the circumference, said oil is deflected backward to the innermost point of such circumference. This being done continuously, the oil never progresses beyond such stem. Fig. 4 is intended to illustrate such action of the stem. H′ is the quarter of the circumference of the stem which constitutes the oblique scraper or wiper, while the lines represent the oil and the arrows represent the direction in which the surface of the axle moves.

It is obvious that the oblique scraping-edge above mentioned may be had by the use of a stem of other shapes than the cylindric form shown in the drawings; but I find the cylindric form convenient, because I need give no attention to its position when putting it in place in the axle-box. The stem and the tube F are merely screwed down to a depth sufficient to cause the proper degree of pressure of the stem upon the surface of the axle. Then in whatever position the stem is turned upon its own axis it is worn concave to conform to the surface of the axle.

I claim as my invention—

1. The combination, with a car-axle box and axle, of a stem or equivalent device pressing upon the surface of said axle and provided with a non-automatic adjustment, whereby the pressure of said stem may be controlled, substantially as shown, and for the purpose set forth.

2. The combination, with a car-axle box and axle, of a yielding stem pressing by one end upon the surface of the axle, said end being cylindric, or substantially cylindric, in order that it may at all times present an oblique edge to the advancing oil, as herein described.

3. The combination, with a car-axle box and axle, of a stem or wiper pressed upon the surface of said axle by a spring and a non-automatic adjustment whereby the pressure of said spring may be controlled, substantially as shown, and for the purposes set forth.

4. The combination, with a car-axle box and axle, of a scraping or wiping stem to impinge upon the surface of the axle, a spring for making said stem yielding, and a screw for adjusting the tension of said spring, substantially as shown and described.

5. The combination, with the axle-box A, of a threaded tube, F, a stem, G, and spring H, substantially as shown and described.

6. The combination, with the axle-box A, of a threaded tube, F, cylindric stem G, and spring H, substantially as shown and described.

7. The combination, with the axle-box A, of a screw, F, spring H, and stem G, said stem being composed at its lowest end at least of a metal which is softer than the metal of the axle, substantially as shown, and for the purpose described.

8. The combination, with the axle-box A, of a screw, F, spring H, and cylindric stem G, composed at its lower end at least of a relatively soft metal, whereby it is worn to conform to the surface of the axle, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

EVRETT C. HAMMOND.

Witnesses:
CHARLES H. ROBERTS,
CYRUS KEHR.