

E. PECKHAM.
CAR AXLE BOX.

No. 485,219.

Patented Nov. 1, 1892.

Fig. 1.

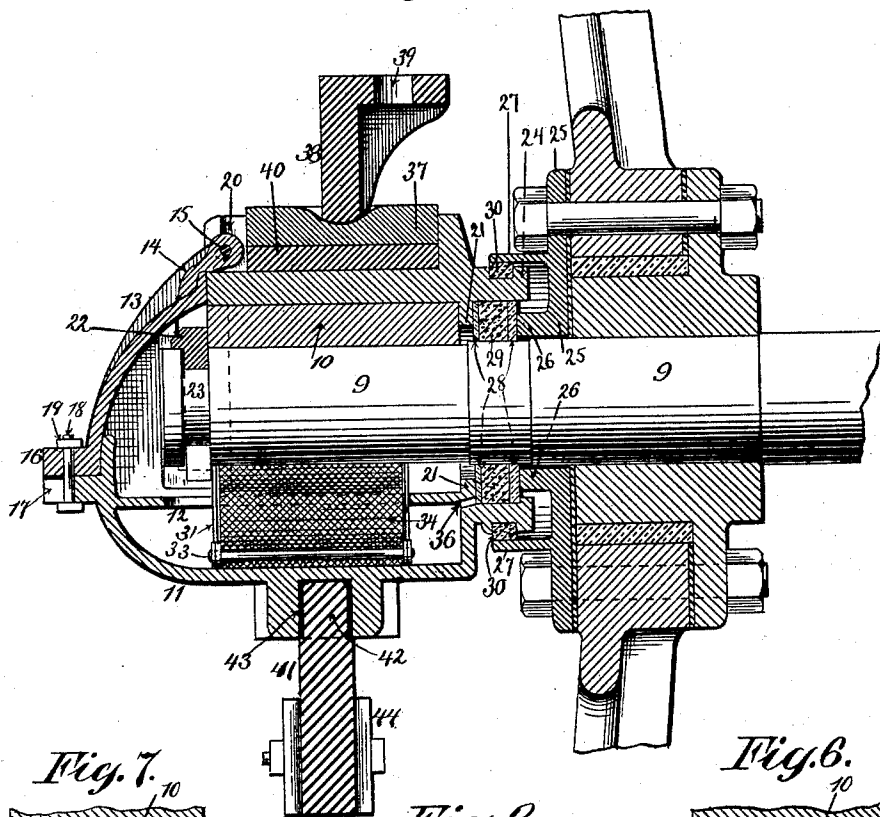


Fig. 7.

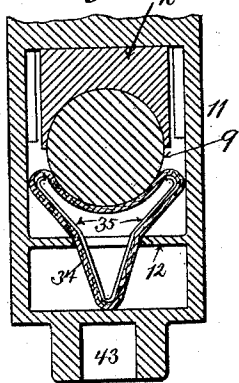


Fig. 2.

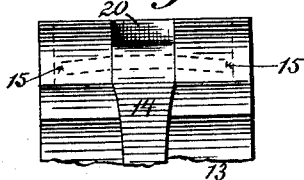


Fig. 8.

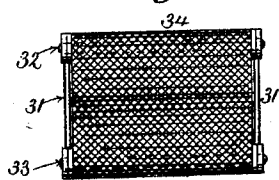
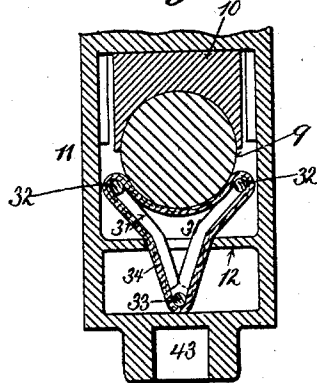


Fig. 6.



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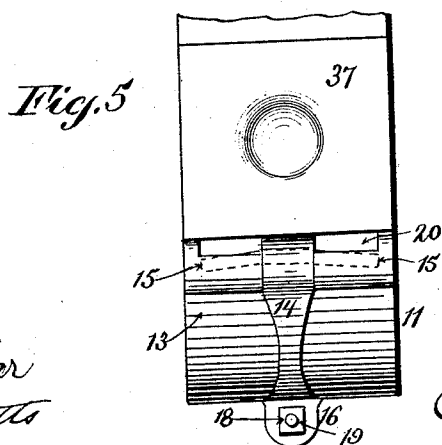
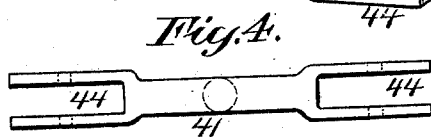
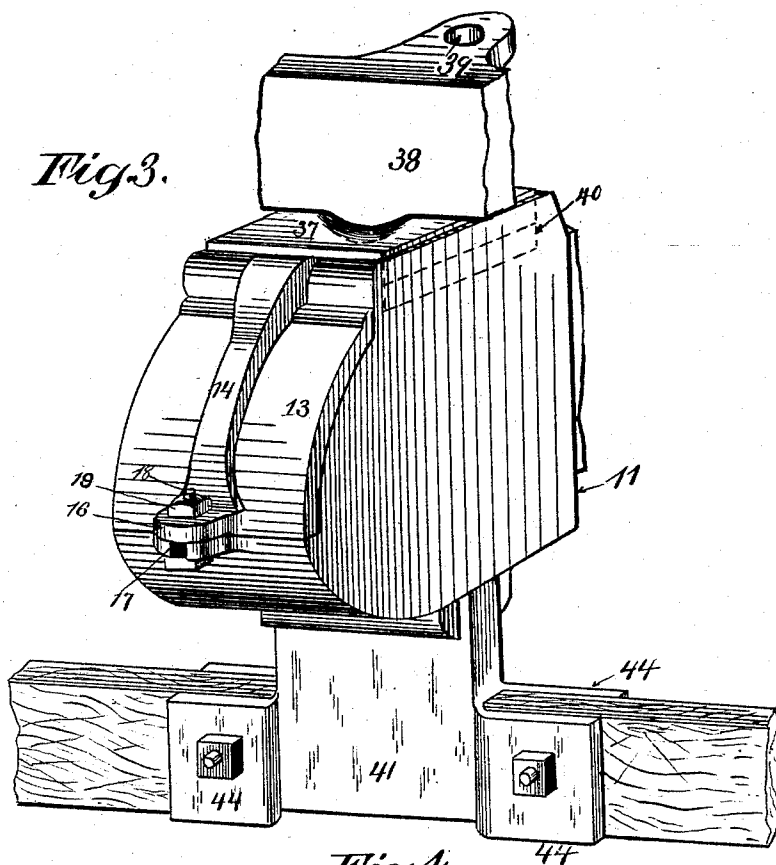
(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

EDGAR PECKHAM, OF NEW YORK, N. Y.

CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 485,219, dated November 1, 1892.

Application filed August 18, 1891. Serial No. 403,001. (No model.)

To all whom it may concern:

Be it known that I, EDGAR PECKHAM, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Axle Boxes and Bearings, of which the following is a specification.

My invention relates to the axle boxes and bearings for trucks used to support the bodies of street and steam railway cars.

My improvements are more especially intended for application to electrically-propelled street-cars; but their use is not restricted to such cars.

The objects of my improvements are to incase the ends of the axles and the bearings with which such ends coact so as to prevent dust or other foreign substances from reaching the same; also, to provide the axle-box with a detachable lid held firmly in place by a single nut and readily removed from the box by loosening said nut; also, to provide a simple and effective automatic lubricating device which will adjust itself to the under side of the axle, and thus at all times keep said axle free from dust and at the same time steadily and uniformly apply the lubricant; also, to provide means for conducting such of the lubricant as be may forced along the journal toward the rear or inner end of the box back to the reservoir for the lubricant, from which reservoir the automatic lubricating device is supplied; also, to provide the axle-box with suitable bearing-surfaces, which serve to relieve the side frames of the truck from the detrimental effect of sudden shocks due to irregular movements and changes in position of the truck, and also to make such bearing-surfaces detachable from the axle-box, in order that truck-frames of various widths may be accommodated to axles-boxes carried by axles of uniform lengths.

In the accompanying drawings, forming part of this specification, Figure 1 represents a longitudinal section of an axle-box constructed according to my invention. Fig. 2

is a front view of the joint between the axle-box and the upper part of its lid. Fig. 3 is a perspective view of said box with parts of the truck adjoining said box. Fig. 4 is an inverted view of the part of the truck-frame in immediate contact with the under side of said box. Fig. 5 is a top view of the box. Fig. 6 is a cross-section of the axle-box, showing the axle and the automatic lubricating device. Fig. 7 is a corresponding section showing a modification of said lubricating device, and Fig. 8 is a side view of the lubricating device illustrated in Fig. 6.

Corresponding numerals throughout the various figures refer to corresponding parts.

9 is a car-axle, and 10 the bearing, constructed in the usual way and of brass or other suitable metal, its bearing-surface in contact with the axle being provided with a layer of antifricition metal, such as Babbit metal.

11 is the axle-box, having the inner surface of its top part resting on the upper surface of bearing 10. Said axle-box is divided into an upper and a lower compartment, 12 being a partition between the same, a large opening being left, however, in said partition for purposes mentioned hereinafter.

13 is the lid of the box, provided at its upper end near its central part with a rib or projection 14, and from said projection the arms 15 extend laterally.

16 is a horizontal projection extending outward beyond the lower edge of said lid, so as to fit closely a corresponding projection 17 on the face of box 10.

18 is a bolt which passes through a hole in projection 16 and through a slot in projection 17, said slot extending to the outer surface of said projection, so that as soon as nut 19 at the end of said bolt is loosened slightly, without detaching it from said bolt, lid 13 may be swung upward, the parts of arms 15 directly adjoining projection 14 in that case serving as a fulcrum.

20 is a socket in the upper part of the axle-box for receiving the end of projection 14 and the arms 15, attached thereto. Said arms are free to move within said socket when the

lid is in an elevated position, and may be withdrawn from the socket altogether when the lid has been swung upward sufficiently to place projection 16 above said socket; but when the lid is closed they extend downward and outward (see Figs. 1 and 2) and engage with the walls of said socket, so as to make any outward movement of the upper part of the lid impossible prior to the loosening of bolt 18 and the swinging upward of lid 13. The edges of the lid and the corresponding edges of the axle-box are either fitted together, so as to produce a dust-tight joint between their metallic surfaces, or a suitable packing made of leather, rubber, or other proper elastic substance, may be placed between such edges.

Bearing 10 is prevented from moving inward along the axle by the upper part of a shoulder 21, which shoulder extends around the interior part of the axle-box, and from moving outward along said axle by a fork or yoke 22, closely fitting the recessed neck 23 near the outer end of the axle, said fork being made to move in vertical notches provided in the side walls of the axle-box and capable of being withdrawn altogether from said notches and from said axle-box after lid 13 has been detached from the same.

24 is an annular projection on the rear end of the axle-box concentric with axle 9, so as to leave an annular space between said projection and said axle.

25 is the outer part of the hub of the wheel, and is provided with two annular projections 26 and 27, extending from the same outward toward the axle-box. The annular space between axle 9, projections 24 and 26, and shoulder 21 contains a dust-tight packing constructed of two rings 28, made, preferably, of vulcanized fiber, and a ring 29, made of felt or other suitable substance capable of arresting and absorbing lubricating-oil, and interposed between the same. The annular space between projections 24 and 27 contains another dust-tight packing 30, constructed of one piece in ring form, preferably made of vulcanized fiber. A suitable shoulder on axle-box 11 serves to confine it in its position. As any dust in order to enter the axle-box through its inner end would have to pass two annular packings and an air-tight annular space between the same, this construction effectually guards against dust reaching the axle-bearings from that direction.

The lower compartment in the interior of the axle-box is particularly intended to receive and hold a sufficient quantity of oil for lubricating the bearing-surfaces of the axle. In order to apply such oil gradually and uniformly to said bearing-surfaces, I provide a continuous wick which reaches down into such oil-receptacle, and at the same time is held in close contact with the under side of the axle directly underneath the axle-bearing. In the construction illustrated in Figs. 6 and 7 I show

V-shaped frames for supporting such wick. In Fig. 6, 31 represents the arms of such frame, extending upward in close proximity to the axle. The arms on the sides of the axles are connected by longitudinal rods 32, as shown, and all the arms 31 are hinged together by means of a rod 33, running parallel with rods 32 near the bottom of the oil-reservoir. 34 is the continuous wick, which is stretched outside of the framework and in close contact with the under side of the axle, arms 31 being so shaped and proportioned that said wick will also be held against and will be supported by the inner edges of horizontal partition 12. If dust should have reached the interior of the axle-box, such wick will as the axle revolves remove it from that part of the axle which engages with the axle-bearing above it. In Fig. 7 I have substituted a V-shaped spring 35 for the framework serving to support the endless wick, as described above, the operation of the two devices being substantially the same.

As the revolving motion of the axle is apt to cause lubricating-oil to flow inwardly toward packing-rings 28 and 29, it is desirable to be able after ring 29 has become saturated to reconduct any surplus oil from the same into the main oil-receptacle in the axle-box. This I accomplish by providing a small conduit 36, which leads from the lowest part of packing-ring 29 into such oil-receptacle, penetrating for such purpose the upper part of the wall of such receptacle and the adjoining packing-ring 28, as shown.

37 is a bearing-piece placed on top of the axle-box in a suitable recess provided on the same for that purpose. The upper surface of such bearing-piece is curved in the form of a part of a sphere, and a bearing-piece 38, intended to be secured to or carried by any suitable part of the truck-frame, is provided with a corresponding bearing-surface. The upper part of piece 38 is furnished with a flange containing a hole 39, through which a bolt may be inserted for connecting bearing-piece 38 with the main truck-frame. The "ball-joint" so formed by bearing-pieces 37 and 38 permits of the axle (and with it bearing 10, box 11, and bearing 37) rapidly assuming varying positions and inclinations, as will be particularly produced on curves and because of roughness of the track, without thereby producing sudden and injurious strains upon the main body of the truck. It will also be seen that as the location of the indentation in bearing-piece 37 may be varied by placing it farther outward or farther inward, and these bearing-pieces are detachable and interchangeable, axes of a given length may thus be made to support truck-frames of varying widths. Of course the projecting part of the ball-joint could be located on bearing-piece 37 and the receding part on bearing-piece 38, and instead of the spherical curvature of the bearing-surfaces other suitable forms might be adopted

for the same—as, for example, a cylindrical form—without departing from the spirit of my invention. The cylindrical form would permit of link-like motion and the spherical form a radial motion.

40 is an elastic bolster placed between bearing-piece 37 and the top of the axle-box for the purpose of counteracting the injurious effects produced upon the joint above the same and upon the truck-frame by sudden changes in the position of the axle-box, as mentioned above.

41 is the vertical member of a device to be interposed between the under side of the axle-box and parts of the truck-frame. The same has at the upper end of its central flat section a cylindrical projection 42, which is intended to loosely fit a rounding recess 43 in the under side of the axle-box, the outer forked arms 44 of device 41 being provided with bolt-holes, whereby it is made possible to attach between or to the said forked arms the proper parts of the truck-frame, and to thus provide a further yielding connection between the axle-box and said frame. The form of the projection 42 and recess 43 may vary, according to circumstances. It is not essential that they should be of the exact conformation shown herein.

30 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the axle-box provided with a slotted horizontal projection on its surface near the bottom, of a lid provided with a hooking device at its upper end adapted to engage with the axle-box and with a perforated projection at its lower end and co-operating with the projection on the axle-box, and means for fastening said projections together, substantially as set forth.

2. The combination, with the axle-box provided with a slotted horizontal projection, as 17, of the lid provided with a hooking device at its upper end engaging with the axle-box and with a horizontal projection at its lower end having a bolt-hole and coacting with said projection 17, and a bolt and nut co-operating with said projections, substantially as and for the purpose set forth.

3. The combination, with an axle-box, of a lid having rib or projection 14, with arms 15, adapted to engage with the walls of a recess in said box, and a bolt engaging with another part of said box and adapted to draw said arms toward their bearing-surfaces, substantially as set forth.

4. The combination, with an axle-box provided at its rear end with an annular projection, of a wheel-hub provided with annular projections, between which said annular projection of the axle-box extends, an annular packing interposed between the outer surface of the annular projection of the axle-box and the inner surface of the exterior annular pro-

jection of the wheel-hub, and a second annular packing interposed between the inner surface of the annular projection of the axle-box and the car-axle, substantially as set forth.

5. The combination, with an axle-box provided with a suitable lid, of an annular packing placed between said box and a revolving part of the truck, such a packing made of a substance suitable for arresting and absorbing the lubricating-oil, and a passage for re-conducting lubricating-oil from such packing back into the main body of the axle-box, substantially as set forth.

6. The combination, with an axle-box having a recess in its under side, of a device comprising horizontal arms provided with bolt-holes for attaching the device to the truck-frame, and a vertical member, as 41, which is adapted to enter said recess in the axle-box and thus form a yielding connection between the bottom of the axle-box and the truck-frame, substantially as set forth.

7. The combination, with an axle-box having recesses in its top and bottom surfaces, of a bearing-piece, as 38, attached to the truck-frame and projecting therefrom at right angles to its longitudinal beams and co-operating with the recess in the top of the axle-box, and a device comprising horizontal attaching-arms and a vertical member, as 41, which is adapted to enter the recess in the bottom surface of the axle-box, the combination providing yielding connections between the truck-frame and the top and bottom surfaces of the axle-box, substantially as set forth.

8. The combination, with a car-axle, axle-boxes provided with recesses in their tops, and bearing-pieces provided with curved surfaces and removably held in said recesses of the axle-boxes, of bearing-pieces, as 38, adapted to be secured to the truck-frame, and likewise provided with curved surfaces co-operating with the removable bearing-pieces in the tops of the axle-boxes, whereby axles of a given length are adapted to support truck-frames of varying widths, substantially as set forth.

9. The combination, with an axle-box, of a bearing-piece with curved bearing-surface interposed between the outer surface of said box and a bearing-piece provided with a corresponding surface adapted to connect with the truck or car frame, and an elastic bolster between said axle-box and the first-named bearing-piece, substantially as set forth.

10. The combination, with an axle and its bearing, of a reservoir for containing lubricating-oil underneath said axle and a continuous wick having a V-shaped support for maintaining said wick in contact with the oil in said reservoir and with the under side of the axle, substantially as set forth.

11. The combination, with an axle and its bearing and a reservoir for containing lubri-

cating-oil underneath such axle, of a continuous wick having a V-shaped hinged support for the purpose of allowing the wick to adjust itself to the under side of the axle, substantially as set forth.

5 12. The combination, with an axle and its bearing, of a reservoir for containing lubricating-oil, an annular packing between the axle-box and a wheel-hub made of an absorbent substance, and a conduit for conduct-

ing surplus oil from such packing into the oil-receptacle, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 7th day of August, A. D. 1891.

EDGAR PECKHAM.

Witnesses:

M. D. PECKHAM,

A. E. BUTTS.