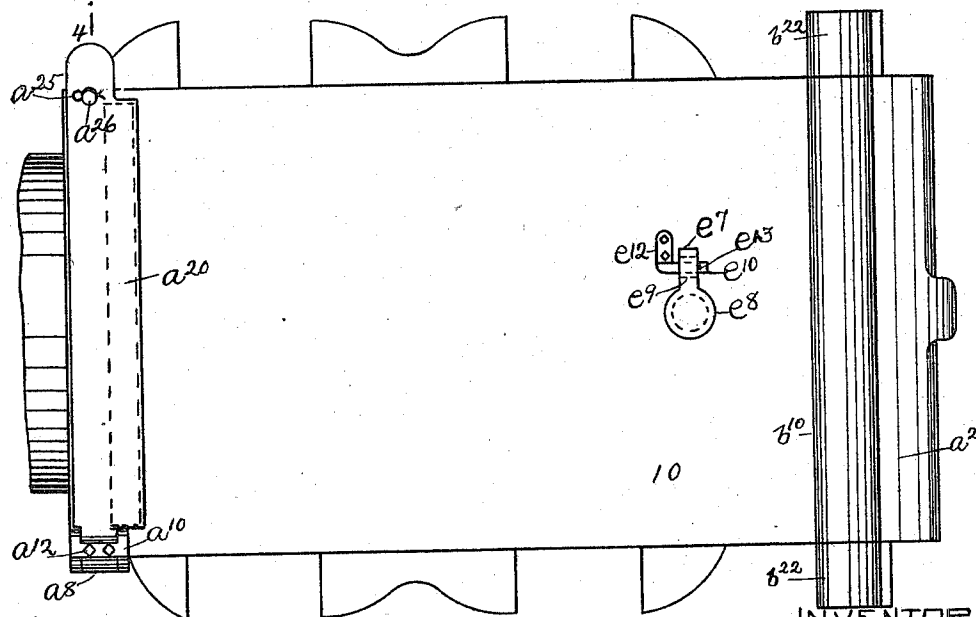
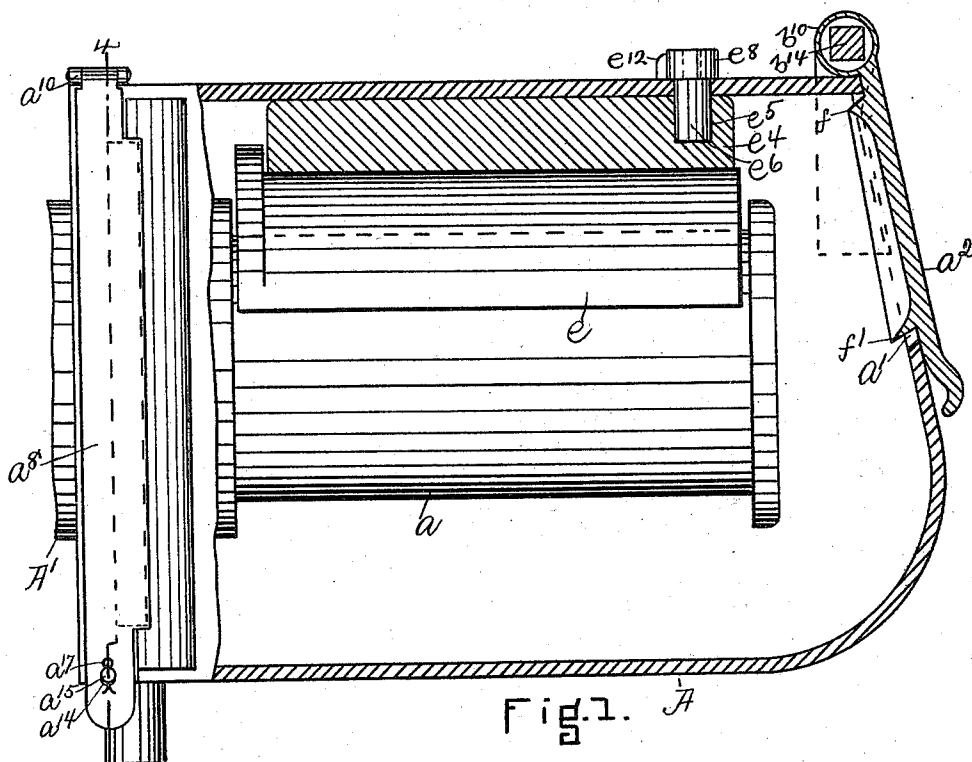


2 Sheets—Sheet 1.

Patented Mar. 30, 1897.



WITNESSES.
Matthew M. Blunt.
J. Murphy

Fig. 2.

INVENTOR -
John H. Carl
By Jas. H. Lehmkuhler
ATT'Y

UNITED STATES PATENT OFFICE.

JOHN H. EARL, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO FREDERICK C. GODEY, OF SAME PLACE.

JOURNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 579,567, dated March 30, 1897.

Application filed January 24, 1896. Serial No. 576,628. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. EARL, residing in Somerville, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Journal-Boxes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates to a journal-box for railway-cars, and has for its object to provide a novel construction of box and a novel construction of dust-guard located in said box and coöperating therewith, whereby the said journal-box is rendered dust-tight and the inconveniences and injurious effects resulting from the admission of dust into the journal-box are avoided and whereby a considerable saving in the oil required to lubricate the journals of the car-axles is effected.

Another feature of this invention consists in a novel construction of the journal-box, whereby the bearings or brasses and the dust-guard may be readily removed when desired.

The invention further consists in a novel construction of cover and hinge therefor, whereby the said cover is maintained positively closed even after long use.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation and section of a journal-box embodying this invention, the section being taken on the irregular line 1 1, Fig. 3; Fig. 2, a top or plan view of the journal-box shown in Fig. 1; Fig. 3, a front elevation, with parts broken away, of the journal-box shown in Fig. 1; Fig. 4, a vertical section on the line 4 4, Fig. 1; Fig. 5, a detail of the dust-guard to be referred to, and Figs. 6 and 7 details to be referred to.

Referring to the drawings, A represents the journal-box, which may be of any usual or suitable form and which is provided in its rear side with a suitable opening through which extends the journal a of the axle A' and having in its front end an opening a' , through which access may be had to the interior of the box, the opening a' being normally closed dust-tight by a cover a^2 of a construction as will be described.

In accordance with this invention the open-

ing in the rear side of the journal-box is covered or rendered dust-tight by means of a dust-guard, preferably made as herein shown, it consisting of an upper member or half a^4 and a lower member or half a^5 . (See Fig. 4.) The upper member a^4 is made substantially rectangular to correspond to the shape of the journal-box, and it is provided on its under side with a substantially semicircular cavity to embrace or fit over the upper half of the circular journal or axle A' , and the lower member a^5 is made of substantially the shape shown in Fig. 4 for a purpose as will be described.

Referring to Fig. 4, the lower half a^5 of the dust-guard has its upper edge provided with a substantially semicircular cavity to embrace the under part or half of the axle A' , and the said member has its bottom straight edge 2 made shorter than the width of the journal-box A, and one side 3 of the lower member a^5 is made curved, while its opposite side 4 is preferably made straight, and when so made it does not extend down to the bottom 5 of the journal-box, but the said member is cut off or connected to the bottom edge 2 by an inclined, or, it may be, a curved, edge 6. This construction of the lower member a^5 of the dust-guard enables it to be inserted into the journal-box through an opening in one side, (shown as the side 7,) the said opening being normally closed dust-tight by a cover a^8 , hinged at its top to a strap or plate a^{10} , fastened to the top 10 of the journal-box A, as herein shown, by a bolt a^{12} , the said cover being fastened at its free end (shown as the lower end) in any suitable or desired manner, it being shown as provided with a hole or opening a^{14} , (see Fig. 4,) through which projects, in the closed position of the cover, a stud or post a^{15} , extended from the side of the journal-box and provided with an eye through which is extended a split or other pin a^{17} . The cover a^8 on its inner side is preferably provided with a rib or thickened part a^{18} , which fits closely into the opening in the side of the journal-box and which preferably projects through said opening, as shown in Fig. 4.

The top 10 of the journal-box is provided with the usual opening, through which the upper half or member a^4 of the dust-guard is

dropped or fitted into the box, and this opening, which is now usually left uncovered, is provided with a cover a^{20} , hinged, as at a^{21} , to the strap or plate a^{10} and also preferably provided on its inner or bottom face with a rib a^{22} , which fits the opening substantially close, as clearly shown in Fig. 4. The top cover a^{20} may be fastened in a similar manner to the side cover a^8 , namely, by means of a split pin a^{25} , extended through an eye in a post or stud a^{26} , secured to or forming part of the top plate of the journal-box.

From an inspection of Fig. 4 it will be seen that the top member a^4 of the guard remains in contact with the car-axle while being worn and thereby maintains closed the upper half of the opening in the rear of the journal-box, and in order to enable the lower member a^5 to likewise maintain its half of the said opening closed provision is made to feed the lower member a^5 upward as it is worn away by the car-axle. This upward feed of the lower member may and preferably will be effected, as herein shown, namely, by means of a plunger or piston b , vertically movable in a cylinder or casing b^1 , secured into an opening in the bottom of the journal-box, the said cylinder or casing being closed by a removable cap b^2 , preferably screw-threaded to engage screw-threads on the inner circumference of the cylinder. The cylinder or casing contains a spring b^3 , encircling the stem or rod b^4 of the piston b and acting to normally force the said piston up into contact with the bottom edge 2 of the lower member a^5 of the dust-guard. The piston b may be guided in its movement by a pin b^5 , extended through the casing or cylinder and through a vertical slot b^6 in the piston. (See Fig. 4.)

To still further increase the efficiency of the dust-guard, the opposite ends 12 13 of the lower or bottom part of the upper member a^4 and the opposite ends 14 15 of the upper or top part of the lower member a^5 are made so as to overlap one another, which may be effected by making the said parts of reduced thickness, as clearly shown in Figs. 4 and 5.

The construction thus far described renders the rear portion of the journal-box dust-tight, and the front end of the said box may be rendered dust-tight by providing the opening a' with a cover which will remain tight when closed, and in the present instance I have shown a form of cover which I prefer to use.

Referring to Figs. 1 and 3, the cover a^2 is provided at its upper end with a cylinder b^{10} , secured to or forming part of it, which cylinder is made of a length preferably equal to the width of the cover, and the opposite open ends of the said cylinder receive in them the stationary members b^{12} of the hinge for the cover. The stationary members b^{12} are shown as cylindrical plugs or heads provided on their inner ends or faces with radial projections 21, separated to form depressions 22 between them, with which coöperate like depressions and elevations on the outer faces or ends of

the movable members b^{13} of the hinge. The movable members b^{13} consist, as herein shown, of a cylindrical body having projecting from one end a square or angular stem or rod b^{14} and from its opposite end a round pin or rod b^{15} , which latter extends into a suitable socket b^{16} (see dotted lines, Fig. 3) in the stationary member b^{12} . The angular pin or rod b^{14} enters a correspondingly-shaped bore or opening b^{17} , formed in the thickened central portion of the cylinder, the said bore or opening containing a spring b^{20} or other yielding medium acting on the ends of the angular stems or rods b^{14} to keep the ends of the movable members of the hinge in contact with the ends of the stationary members of the hinge. The stationary members b^{12} of the hinge are secured to or form part of lugs or ears b^{22} , attached to the sides of the journal-box, as by bolts b^{23} , or the said ears may be cast integral with the journal-box. The stationary members are herein shown as provided with cylindrical stems or pins b^{24} , which are driven into suitable holes in the ears b^{22} .

By reference to Fig. 3 it will be seen that the cylinder b^{10} , being attached to the cover a^2 , moves with it when the said cover is raised or lowered and that the angular bore or opening in the thickened center portion of the cylinder causes the movable members of the hinge to turn with the cover. The cylinder b^{10} turns on the cylindrical stationary members b^{12} of the hinge, and the movable members b^{13} of the said hinge in their rotary movement have their raised portions carried out of the depressions in the stationary members up onto the raised portions of said stationary members, and in this rotary movement the angular stems b^{14} are forced back against the action of the spring b^{20} , which keeps the movable members b^{13} pressed against the stationary members b^{12} with sufficient force to insure the two members being practically locked, with the cams or raised portions on the movable members in engagement with the depressions or cavities in the stationary members.

In the position shown in Figs. 1 and 3 the cover a^2 is closed and is held closed until positively moved, and when the cover is raised into a substantially vertical position the raised portions or cams on the movable member will be in engagement with the highest point of the cams or raised portions on the stationary member at or about the time the cover uncovers the opening a' , and a further upward and backward movement of the cover carries the raised portions or cams on the movable member by the highest point of the cams or raised portions of the stationary members and into depressions on the stationary members, in which case the cover is locked in its raised or open position.

It will be seen that the chances for injury to the working parts of the hinge are reduced to a minimum, and therefore the cover may be used a long time without danger of its getting out of working order, so as not to shut

tight when closed, thereby preventing the admission of dust into the journal-box through the opening a' in the front of the box.

From the above description it will be seen that the journal-box is rendered dust-tight, which prevents the admission of dust into the journal-box and avoids the injurious action of the dust on the brasses or journal-bearings e , which injurious action results in cutting or wearing away of the brasses, the creation of friction which gives rise to hot boxes, which frequently necessitates long delays of the train, and the inconveniences and expense attending such delays.

It frequently happens that the journal-bearings become so worn that they have to be removed, and with journal-boxes as now commonly constructed and known to me this removal of the journal-brasses is a difficult and frequently very expensive operation, as in jacking up the journal-box in order to remove the wedge and journal bearing or brass the journal-box is tilted backward and the truck-frame is frequently twisted or distorted, so that when the box is again lowered onto the journal the brass will bear unequally and greater wear will come on one end than on the other, which results in increased friction and more quickly renders the brass useless.

This invention has for one of its objects to provide the journal-box with a removable fastening for the wedge, which secures the journal bearing or brass in place within the journal-box.

In Fig. 1, e represents the journal bearing or brass, of any usual or suitable construction, and e^4 represents the wedge, which is inserted between the journal-bearing and the top of the journal-box and which in accordance with this invention is provided in its upper surface with a socket e^5 for the reception of a cylindrical pin or rod e^6 , extended up through a suitable hole in the top of the journal-box and provided above the same with an arm e^7 , having an enlargement e^8 , which covers the hole in the top of the journal-box. The arm e^7 is designed in practice to be locked to the journal-box, and this result may be accomplished, as herein shown, by providing the arm e^7 with an opening e^9 , (see dotted lines, Fig. 2,) through which projects a stationary arm e^{10} on a bracket e^{12} , fastened to or forming part of the journal-box, the arm e^{10} having an eye through which is inserted a split or other pin e^{13} . The opening e^9 is made sufficiently wide to allow for turning the arm e^7 on the pin or rod e^6 as a center. By reference to Figs. 1 and 2 it will be seen that by withdrawing the pin e^{13} from the eye in the stationary arm e^{10} the arm e^7 may be turned so as to be disengaged from the arm e^{10} , and the pin or rod e^6 may thereby be drawn up out of its socket in the wedge e^4 , thereby leaving the latter free to be quickly and easily removed by a slight jacking up of the journal-box sufficient to take the weight off from the journal, and after replacing the

old journal-bearing with a new one the wedge may be restored to its operative position and locked by the pin or rod e^6 , the latter having its arm e^7 locked to the stationary arm e^{10} .

In journal-boxes as now commonly constructed and known to me the waste of oil is very considerable and is an important item of expense to railroads. The oil within the journal-box is taken up by the journal and runs along the top of the box to the front end, where it passes out through the opening a' . It is one of the objects of this invention to avoid this waste of oil, and I accomplish this result by providing the cover a^2 on its inner side with preferably two transversely-extended deflecting ribs or lips $f f'$, located, respectively, as herein shown, adjacent to the top and bottom walls of the opening a' , and the said deflecting-ribs preferably incline downward, so as to deflect the oil which falls upon them back into the journal-box and prevent its passage out through the opening a' .

I claim—

1. The combination with a journal-box having an opening in its rear end for the passage of the journal and of the axle, and provided in its top and side with dust-guard openings, of a dust-guard comprising an upper and a lower member, the upper member being inserted through the opening in the top of the journal-box and provided with a concavity to embrace and fit over the upper part or half of the journal, and the lower member being inserted through the opening in the side of the box and provided with a concavity to embrace the lower part or half of the journal, means to keep the lower member in contact with the journal, and removable covers for said dust-guard openings, substantially as described.

2. The combination with a journal-box having an opening in its rear end for the passage of the journal and of the car-axle, and provided in its top and side with dust-guard openings, of a dust-guard comprising an upper and a lower member, the upper member being inserted through the opening in the top of the journal-box and provided with a concavity to embrace and fit over the upper part or half of the journal, and the lower member being provided on its upper side with a concavity to fit the lower part of the journal and having one side curved to permit it to be inserted through the opening in the side of the box, and means to compensate for wear of the lower member and keep its concaved face in contact with the journal, and removable covers for the said dust-guard openings, for the purpose specified.

3. The combination with a journal-box for car-axles provided with an opening for the insertion of the journal-bearings, of a cover for said opening provided with a cylinder, a hinge for said cover comprising stationary members inserted into the opposite ends of said cylinder and provided with elevations

and depressions forming cam-surfaces, movable members having elevations and depressions in their contacting faces and located in said cylinder near its opposite ends, means
5 to connect the movable members of the hinge with the said cylinder so as to move there-
with on the said stationary members, and a
yielding medium interposed in said cylinder
10 between the said movable members to keep the said movable member in engagement with
the stationary member and yet permit them
to move toward each other within the said
cylinder, substantially as described.

4. The combination with a journal-box for
15 car-axles, a journal inserted therein, a journal-bearing supported on said journal, a
wedge inserted between the journal-bearing
and the top of the journal-box and provided

with a socket e^5 , of a cylindrical locking-pin
for said wedge inserted through a hole in the
20 journal-box into said socket and projecting
outside of the journal-box, an arm e^7 on said
pin provided with an enlargement to cover
the hole in the journal-box, an eye or open-
25 ing e^9 in said arm, a stationary bracket pro-
vided with an arm adapted to extend through
the eye in the arm e^7 , and means to lock the
arm e^7 to the stationary bracket, substan-
tially as and for the purpose specified.

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

JOHN H. EARL.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.