(No Model.)

M. RANDOLPH.

CAR AXLE BOX.

No. 356,333. Patented Jan. 18, 1887.

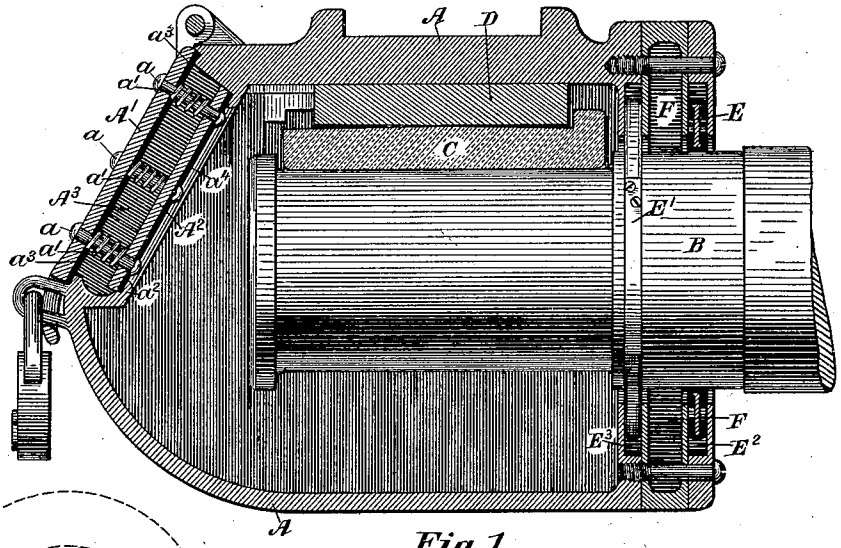


Fig. 1.

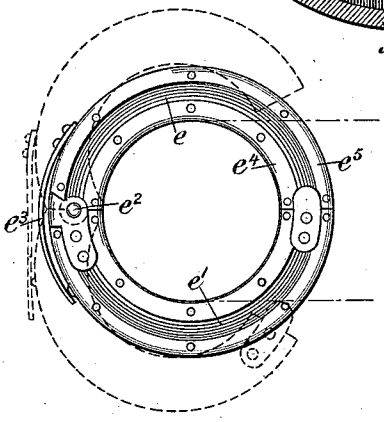


Fig. 3.



Fig. 4.

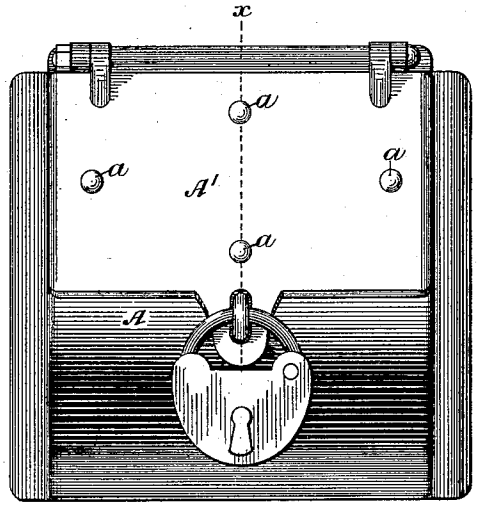


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

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CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 356,333, dated January 18, 1887.

Application filed November 17, 1886. Serial No. 219,140. (No model.)

To all whom it may concern:

Be it known that I, MAHLON RANDOLPH, of the city, county, and State of New York, have invented a new and useful Improvement in Dust-Proof Railway Journal-Boxes; and I hereby declare the following to be a full and clear description thereof.

This invention relates to an improved box or housing for the journal-bearings of railway cars, engines, &c., which is constructed with double guards and intervening air-chambers, so arranged as to practically exclude all dust from the journal-bearing, and thereby greatly prolong its durability, and at the same time reduce the frictional resistance to the rotation of the journal to a minimum.

This invention will be readily understood by reference to the accompanying drawings, of which—

Figure 1 is a longitudinal sectional elevation of the improved dust-proof box. Fig. 2 is a front elevation of it. Fig. 3 is an elevational view of one of the packing rings or guards at the inner end of the journal-box. Fig. 4 is a transverse sectional plan of one of the said packing rings or guards.

The box or shell A is quite similar to those now in use, except as to the dust-guard appliances, hereinafter especially described. It is made of cast-iron, has a removable door or gate, A′, at its front end, has a suitable aperture at its inner end for the admission of the axle B, and is provided with suitable interior arrangements for the bearing-box C and its key D.

The door or gate A′ is hinged or otherwise suitably attached to the box or housing A, and it has an inner or duplex sheet, A^2, which is attached to the outer door by means of stud-bolts *a*, so as to leave an air-space, A^3, between the said outer and inner plates of the said door or gate. The bolts or attachment-rods *a* are securely fastened to the outer plate, A′; but the inner plate, A^2, is allowed a slight movement in or out upon the said rods, and spiral or other suitable springs, *a′*, are placed between the said plates A′ and A^2 in such a position as to press the inner plate, A^2, habitually inward upon its seat, thus insuring a tight fit of the inner door upon its seat or rabbets a^2.

Packing-strips a^3 and a^4, of felt, leather, india-rubber, rawhide, vulcanized fiber, or any suitable packing material, are interposed, respectively, between the doors A′ and A^2 and their seats, so as to make them close—practically air-tight. If, however, a small amount of dust should pass the outer door or guard it will be caught and retained in the air-chamber A^3, which contains only dead or confined air, and thus the dust caught in said chamber will be absolutely excluded from passing the second barrier formed by the inner door, A^2. This air-chamber may be lightly filled with wool, hair, asbestus, mineral wool, &c., which will add to the retention of the dust therein without disturbing the air-space, except to divide it into more minute air-cells, which will act to prevent any dust-laden draft or air-current impinging against the inner door or barrier, A^2, and so act as a complete dust-guard.

If the doors A′ and A^2 are nicely fitted, each to the other, and respectively to their individual seats, they may be securely fastened together, and the closing-springs for the inner door or plate dispensed with.

In a manner quite similar to the above-described double guard and air-chamber at the front end of the box, the rear end of the box is provided with a duplex guard, E E′, and an intervening air-chamber, F, which, while they permit the axle free access to the box, quite exclude the dust therefrom. The guard-rings E and E′ are respectively adapted to fit laterally quite closely into housing or recesses E^2 and E^3, formed in or attached to the rear or inner end of the box A, but these chambers or recesses permit the said guard-rings to move freely up or down to a limited extent, as may be required by the wheels of the axle in passing over undulations of the track. These guard-rings are constructed as shown in Figs. 3 and 4, and each consists of a divided metallic ring, *e e′*, hinged together at e^2, and provided with a suitable spring, e^3, which habitually presses the two segmental sections of the ring together upon the axle B, as shown in Fig. 1 and in the full lines of Fig. 3, but permits the said sections to be opened in the direction of the dotted lines of Fig. 3, so as to readily place the same upon the axle in assembling the parts together. These packing-rings are allowed to turn freely in their housing-recesses or the axle to turn within them,

and therefore the springs e^3 are arranged to press them firmly upon the axle, so as to take up any lost motion that may from time to time occur by reason of the wearing of the axle upon them.

Suitable annular packing-strips, e^4 and e^5, are respectively fitted and attached in any suitable manner to the inner and outer edges of the said packing-rings E E', as shown in Figs. 1, 3, and 4. These packings are made of leather, rawhide, felt, vulcanized fiber, or any suitable durable packing material, and the inner ones are made to habitually close tightly upon the axle B and exclude the dust from passing between them and the axle, and the outer ones are arranged to fit tightly against the sides of their respective recesses or chambers E^2 and E^3, and, consequently, prevent dust from passing through at that point. The intervening chamber, F, serves a purpose similar to that of the air-chamber A^3, above described, and like it may be lightly filled with a dividing substance like asbestus fiber, mineral wool, hair, wool, &c., so as to break up or prevent any air-currents passing through the said chamber.

The recesses or chambers E^2 E^3 may be formed on or attached to the box A in any suitable manner which will readily suggest itself to any competent mechanic, and as there is no opening in them except the central aperture for the axle, when the packing-rings are properly seated in them they inclose between them an air-chamber or dust-guard practically air-tight.

Having described my invention, I claim—

1. A railway journal-box formed of a suitable metallic case closed at its front end by a removable duplex door having its inner door-plate attached to the outer door-plate by means of stud-bolts, on which the inner plate is allowed a slight motion in or out, so that the two doors, while being coupled together, may individually adjust themselves upon their respective seats, while at the same time they, with the shell or housing of the box, form a tightly-closed air-chamber or dust-guard between them.

2. In combination with a railway journal-box, a duplex front door or gate formed of two parallel plates held together by stud-bolts fixed to the outer door-plate and passing easily through the inner door-plate, so as to allow the inner door a slight adjusting movement in or out upon the said bolts, in combination with one or more springs interposed between the door-plates, arranged to yieldingly press the inner door inwardly, so as to compel both doors to close simultaneously upon their respective seats, as described.

3. A duplex front door or gate formed of two parallel plates secured together at a short distance apart, so as to form an air-chamber between them, and respectively fitted to seats or rabbets formed on the front end of a railway-car box, in combination with cushions or packing-strips interposed, respectively, between them and their said seats, substantially as described.

4. A railway-car box provided at its rear end with two parallel guard-plates fitted, respectively, into exteriorly tightly-closed recesses in the box and placed parallel to each other and a short distance apart, so as to form a closed air-chamber between them and the axle and its surrounding case, substantially as described.

5. A dust-guard for the inner end of a railway journal-box, formed of two segmental plates, each forming about one-half of a ring, hinged together at one of their ends, and provided with a spring to throw their free ends together so as to form a complete annular plate or guard-piece, the inner and outer edges of which, respectively, form two concentric rings or flanges, which are cushioned or covered with a yielding packing material and are respectively adapted to fit tightly to the axle they are to protect, and laterally the annular grooves formed for them in the box or housing, in combination with the box or housing provided with annular grooves adapted to the said rings, substantially as described.

6. A duplex dust-guard for the inner end of a railway journal-box, formed of two divided annular plates hinged together at one of their sides and habitually closed upon the axle by actuating-springs, cushioned with a packing material at both their edges, and arranged to fit close laterally into vertical chambers formed for them in parallel vertical planes at short distances apart in the inner end of the journal-box, the whole combined and arranged substantially as described and set forth.

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Witnesses:
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