C. E. CANDEE.

CAR-AXLE BOX.

No. 187,352. Patented Feb. 13, 1877.

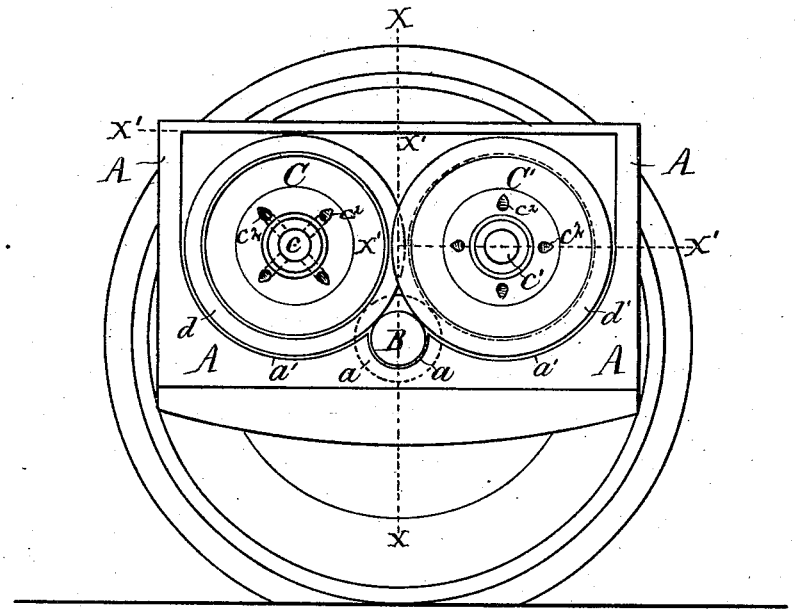

Fig. 1.

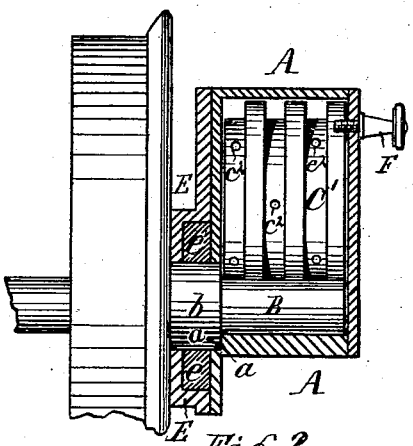

Fig. 2.

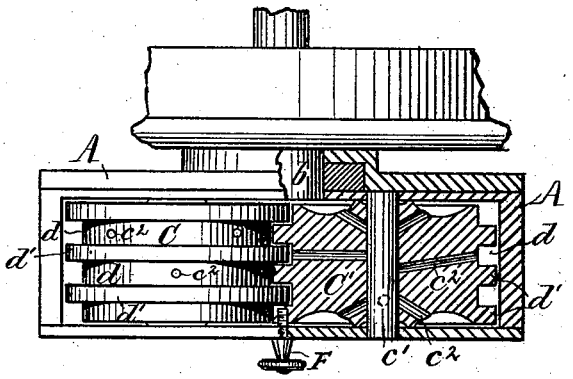

Fig. 3.

Witnesses:
J. W. Herthel.
Chas. F. Meimer.

Inventor:
Charles E. Candee
per. Herthel & Co
Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES E. CANDEE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO HIMSELF AND JOHN W. CONLOGUE.

IMPROVEMENT IN CAR-AXLE BOXES.

Specification forming part of Letters Patent No. **187,352**, dated February 13, 1877; application filed November 14, 1876.

To all whom it may concern:

Be it known that I, CHARLES E. CANDEE, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and Improved Anti-Friction Bearing for Car Axles, Shafts, &c., of which the following is a specification:

This invention relates to an improved manner of supporting the journal of shafts for machinery purposes in general, and when applied for the axles of car-wheels it possesses special advantages, as will hereinafter appear.

This invention relates to the improved combination of parts hereinafter pointed out in the claim.

Of the drawing, Figure 1 is a front or side elevation of one of my boxes, with the face thereof removed, and otherwise showing my improvements as applied to the railroad-car axles. Fig. 2. is a vertical section on line *x x* of Fig. 1. Fig. 3 is a part top plan and part sectional view on line *x' x'* of Fig. 1.

A represents my car-axle box or lubricating chamber. B is the journal-end of a car-axle. This I form to have the shoulder at *b*, (see Fig. 2,) around which the car-wheel engages. (See figures.) The car-axle box near bottom is fitted to receive the shoulder and journal of the axle. I form therefor at *a* (see dotted lines, Fig. 1, and full lines, Fig. 2) a half-round shoulder to receive the contiguous face of the shoulder *b* of the axle. The contact of these shoulders *a b* limit the lateral action of the axle. Likewise the bottom of the lubricating-chamber at *a' a'*, (see full lines, Fig. 1,) presents in line of center a half-round bearing, more specially designed as a guide for the journal of axle, the under bearing for said axle being properly the car-wheel.

It is my chief object to support the entire weight of the car upon the smallest frictional bearing that it is possible to employ. This frictional bearing, in my case, can be stated to consist in the direct-bearing action that independent acting and self-lubricating anti-friction wheels have in rolling or acting upon the journal of the shafting or axle when same is revolved. C C' represent the respective anti-friction wheels, each turning upon their own axles, *c c*[1]. (See Figs. 1 and 3.) The wheels C C', in their arrangement, have their respective peripheries in contact with the journal of the axle, as shown more clearly in Fig. 1, the journal being midway between the center of the two wheels C C', and hence these are supported alike. It is at the points where the wheels C C' bear upon the journal of the axle that this latter is made to support the entire weight of the car body; and as the contact of the parts spoken of is small, and consist of parts in rotation, it is apparent that the friction is here most greatly reduced. The great friction of the shaft or axle is almost entirely overcome, as it virtually rolls on the periphery of the rollers or wheels C C', and these revolve easily. As stated, the wheels C C', by their independent contact with the journal, are caused, when this latter revolves, to rotate in opposite directions. This independent rotation on part of the wheels C C' I utilize as a means to make said parts in their action self-lubricating. For this purpose I provide or bore holes, c^2, from the face of the periphery of the wheels, leading to their axle or center, similar holes or passages being also formed on the sides or ends of said wheels leading to the center, (see Figs. 1, 2, 3,) through which passages the lubricating compound passes to the journal. (See Fig. 3.) The rotation of the wheels C C' causes the lubricant at bottom of the chamber to pass along and through said passages to the center of the parts in friction.

The wheels C C' can have their peripheries to be but plain surfaces, but I prefer to form same with annular grooves and flanges *d d'*. (See figures.) These grooves and flanges are spaced off and formed in such proportion that the flange of one wheel will fit into a groove of the opposite wheel. (See Figs. 1 and 3.) A larger and more solid bearing is thus had, in other words, to prevent crowding of the axle between the two wheels, and also to make more surfaces to catch and distribute the oil for lubrication. The wheels acting thus as self-lubricants, a thorough and proper lubrication of the parts while in operation is at all times achieved, and consequently still more reducing friction.

E is my packing-chamber that I combine with the car-axle box. It consists of a simi-

lar side casting formed with the said chamber E, and fitted to be bolted contiguous to the side of the car-axle box. The chamber E I provide with packing, *e*, of any well-known kind. This packing surrounds the shoulder *b* of the axle, (see Figs. 2 and 3,) and is for the purpose of excluding air, dust, and impurities, to prevent the evaporation of oil, heating of the axle, and clogging or thickening of the lubricant. The car-axle box is provided with the ordinary screw at F, having the orifice leading to the interior of the lubricating-chamber, so that the oil or lubricant can find its way to said chamber.

My invention materially reduces friction for the journal of car-axles, as well as shafting in general. A consequent saving of power is achieved, and in great manner the effects of wear and tear prevented, and otherwise there is a great saving of time, labor, and expense.

What I claim is—

The combination of the car-axle box A having the shoulder at *a*, guides at *a'*, wheels C C' having lubricant passages c^2 from periphery to center of said wheels, the axle B having shoulder *b*, and the packing-chamber E *e*, formed as a separate side attachment to the car-axle box, all said parts being arranged to operate in the manner and for the purpose set forth.

In testimony of said invention I have hereunto set my hand.

CHARLES E. CANDEE.

Witnesses:

WILLIAM W. HERTHEL,

CHAS. T. MEISNER.