

(No Model.)

D. B. JAMES.  
CAR AXLE BOX.

No. 453,117.

Patented May 26, 1891.

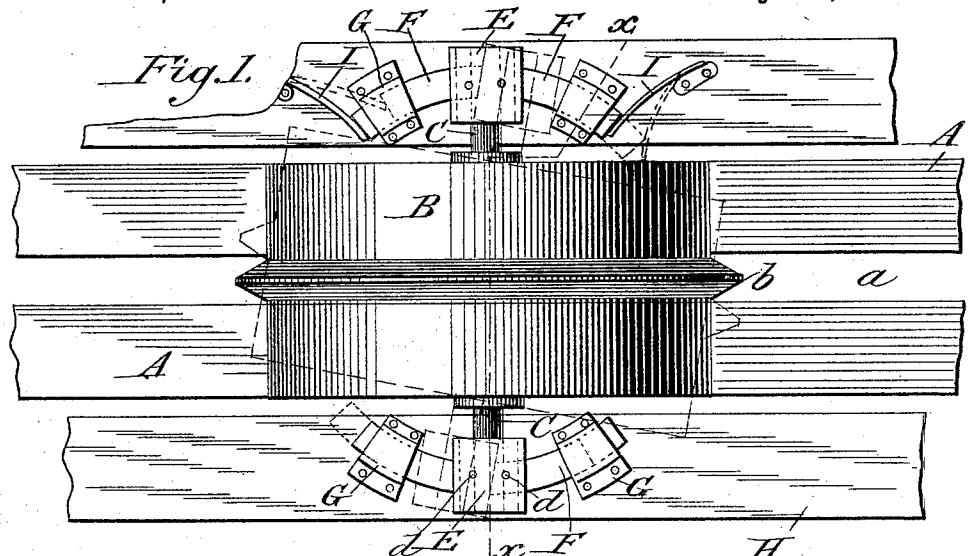


Fig. 2.

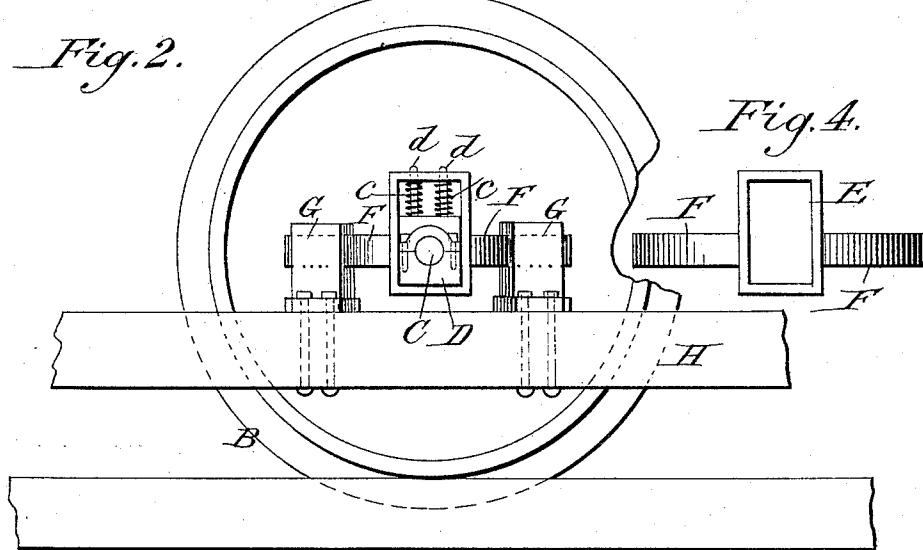
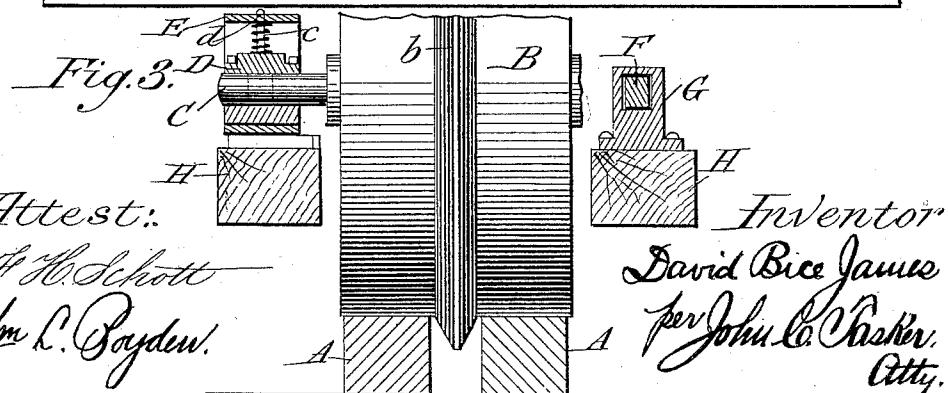


Fig. 4.



Attest:

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# UNITED STATES PATENT OFFICE.

DAVID BICE JAMES, OF SAN FRANCISCO, CALIFORNIA.

## CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 453,117, dated May 26, 1891.

Application filed October 28, 1890. Serial No. 369,598. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID BICE JAMES, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Axle-Boxes for Car-Wheels; 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.

My invention relates to an improvement in the running-gear of cars which are adapted to run upon a single-track railway, the object being to provide an easy and positive operating mechanism which will allow each wheel of the car to move independently of the other, the invention being particularly applicable to two-wheeled cars, locomotives, and other vehicles, and will follow very sharp curves in the track without cramping or otherwise injuring the running mechanism of the truck, as is the case oftentimes when the wheels are carried in rigid boxes; and the invention consists in the construction, arrangement, and combination of parts, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a top plan view of my improved car-wheel axle-box. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation, with a part of the axle-box mechanism in section, certain parts being broken away. Fig. 4 is a detail view of the arm-provided casting which carries the axle-box proper.

Like letters of reference designate corresponding parts throughout all the different figures of the drawings.

40 A designates a track having the slot *a* or intervening space between the two parts of the track, and B designates one of the wheels having the central circumferential flange *b*, adapted to work in the slot *a*.

45 C C denote the ends of the axle of the wheel B. These ends C C are supported in suitable bearings or boxes D D. (See Fig. 2.) These boxes D are carried in castings E, formed as sockets or frames of any suitable 50 form, preferably square or rectangular, (shown in detail in Fig. 4,) and adapted to neatly

contain and hold the box or bearing D, wherein is located the end of the axle.

In Fig. 2 the axle is shown as neatly held within the frame E. I preferably provide a 55 pair of coiled springs c c surrounding the pins d d and bearing within the frame E between the upper end thereof and the upper side of the axle-box D. In this way the axle-box is held adjustably within the frame E 60 and a compensatory movement permitted.

In Fig. 3 one of the axle-boxes D is shown in section, and by referring to this figure it will be clearly seen how the axle-boxes are located within the frame E and how the spiral 65 spring c is tensioned between the top of the axle-box and the upper portion of the frame E. Each frame E is provided with two oppositely-projecting curved arms, which lie in a horizontal position. These arms are designated by the reference-letter F. The two arms which belong to one casting E are curved in an arc of the same circle and project outward on opposite sides in curved lines from the casting E, which is thus intermediate between the curved arms. These arms F F are held in sockets G G, which are securely bolted upon the car-frame H. By referring to the right-hand part of Fig. 3 one of the guides or sleeves G is shown in section with one of the 70 arms F passing through it, said arm being likewise in section. Thus it will be seen that at each end of the axle the axle-box at that point is supported in the casting, which has a free lateral movement horizontally, so that 75 the wheel will be permitted to adjust itself to inequalities in the road and to turn sharp curves.

By referring to Fig. 1 it will be seen that I have represented the wheel with its axle and 80 axle-boxes as deflected from their normal position and caused to occupy a position at an angle. Such a deflection may often take place during the motion of the car-wheel, and it is the object of my invention to provide easy 85 and efficient means whereby the axle and wheel may change their position without any injury to the car or the truck. I preferably provide springs I I, consisting of flat pieces of metal, which bear upon the outer ends of 90 the arms F F, said springs serving to automatically replace the wheel in normal posi-

tion after the cause of any temporary deflection has been removed. The tension of the springs I I upon the ends of the pair of arms F F being presumably equal, the casting E, 5 which carries the axle-box, will be held normally at a point midway between said springs, and thus when the wheel varies from its normal position and the springs have their tension overcome momentarily the tendency will 10 be to replace the wheel and other parts in correct position as soon as possible.

The guides G G will act as stops against which the castings E E will strike, as shown in dotted lines in Fig. 1, thereby preventing 15 the wheel from moving too far out of its normal position. It will thus be seen that at each end of the car-wheel axle are circular arms fitting neatly in guides and moving therein, so as to permit the wheels to turn 20 upon an imaginary center, and thus run in one direction with the curves of the track no matter how sharp they may be, said guides acting also as stops and allowing the wheels to turn only to a certain distance, thereby preventing 25 the flanges of said wheels from cramping or cutting their way out from said track.

I am aware that prior to my invention various devices have been employed to pivot the wheels of cars and other vehicles and also 30 to allow them to turn in a sort of goose-neck or upon a fifth-wheel, and also upon a ring carrying the bearings of the axles while the body of the vehicle was likewise provided with a deflected ring resting and turning upon the 35 other, as in a car-truck pivoted at the center between the four wheels, the two parts being secured in place by a king-bolt; but I do not consider that any of these devices anticipate in any degree the construction and combination 40 herein given, but presume that my invention is entirely clear of and away from any of these devices, and by my construction I attain many obvious advantages not before attained and provide a combination possessing numerous 45 merits and valuable uses.

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

1. The combination, with a car-axle and its 50 boxes, of arm-provided castings carrying said boxes, said castings being movable in suitable

guides for the purpose of permitting the car-wheel to be deflected from its normal position, substantially as described.

2. The combination, with a car or vehicle 55 wheel and its axle, of the axle-boxes and castings supporting said boxes, said castings being provided with curved arms and guides, within which said arms are movable for the purpose of permitting the car-wheel to be deflected from its normal position, substantially as described.

3. The combination, with a car-wheel and its axle, of the axle-boxes, the castings within which said axle-boxes are adjustably held by 65 means of springs, said castings being provided with curved arms, and the guides on the car-frame containing said curved arms and permitting them to be movable therein, substantially as and for the purpose described. 70

4. In a car-wheel axle-box, the combination of the wheel having the opposite ends of its axle carried in suitable boxes, the arm-provided castings supporting said boxes, the guides on the car-frame which receive the 75 said arms, the springs within the castings bearing upon the boxes, and the springs bearing upon the ends of the said arms, substantially as described.

5. The combination, with a car-wheel and 80 its axle and the axle-bearings, of the castings E, each provided with a pair of oppositely-projecting curved arms F F, together with the guides G G, which receive said arms, substantially as described. 85

6. The combination of the wheel B, having axle with ends C C, the axle-bearings D, the frames E E, provided with the curved arms F F, and the guides G G, which receive said arms, substantially as described. 90

7. The combination of the wheel B, the axle having ends C C, the bearings D D for said axles, the castings E E, having curved arms F F, the coiled springs *c c* and pins *d d* within the frame E, the guides G G for the arms F F, 95 and the springs I I, bearing against the ends of said arms F F, all substantially as described.

DAVID BICE JAMES.

Witnesses:

H. A. COBB,  
D. J. O'BRIEN.