

J. D. MATTISON.
AXLE BOX.

No. 506,009.

Patented Oct. 3, 1893.

Fig. 1.

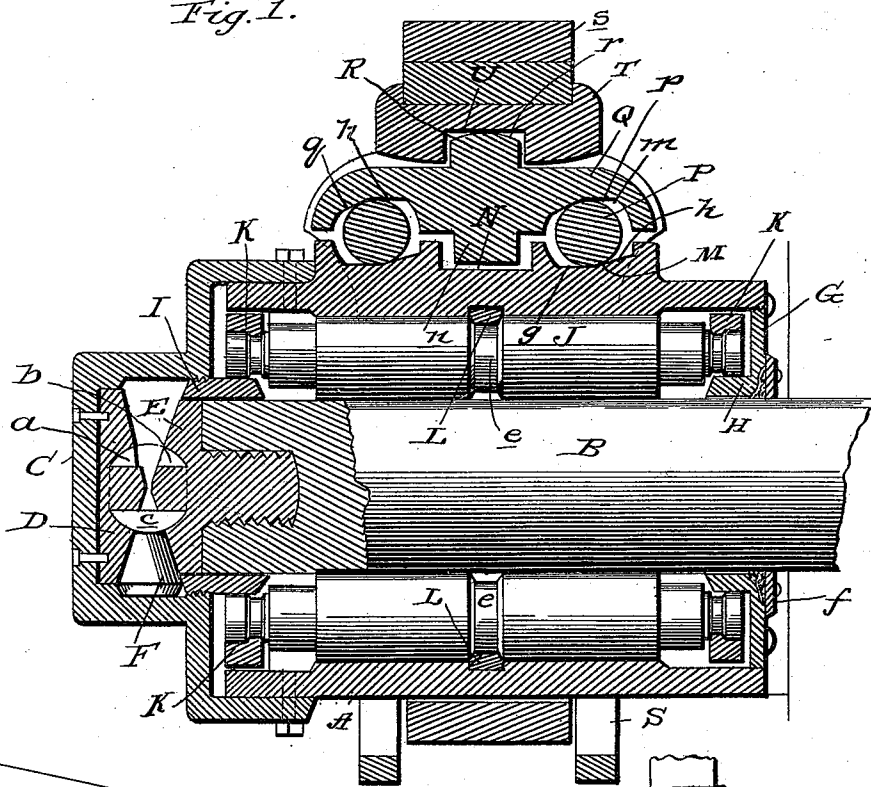
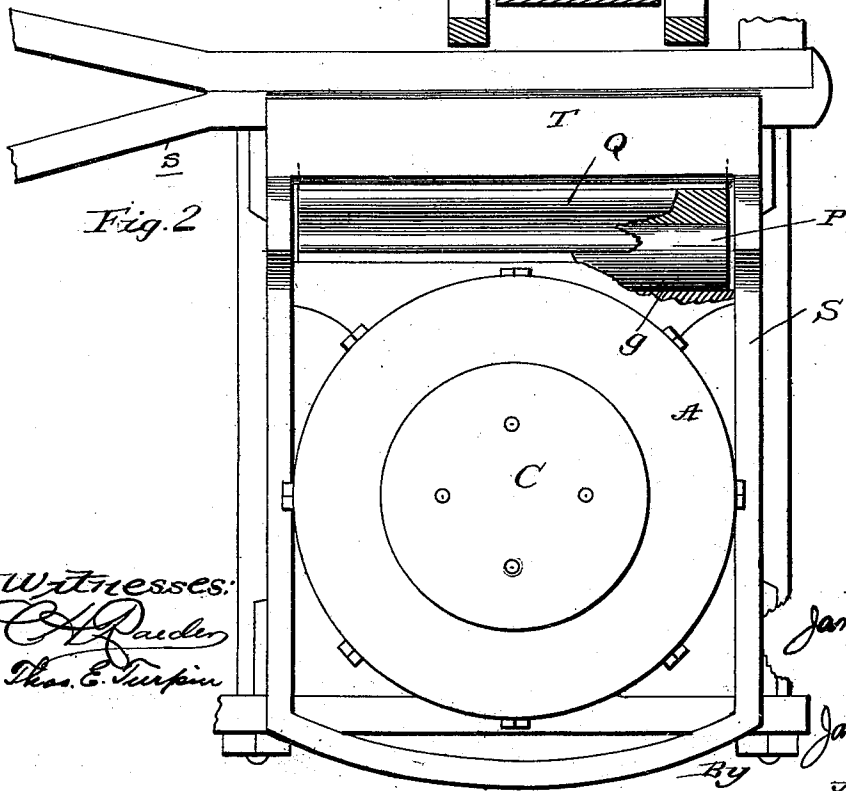


Fig. 2



Witnesses:
Chas. E. Turpin
Chas. E. Turpin

Inventor
James D. Mattison

James J. Sheehy
By Attorney

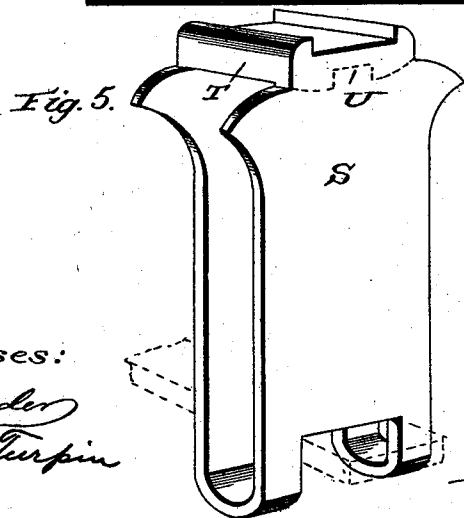
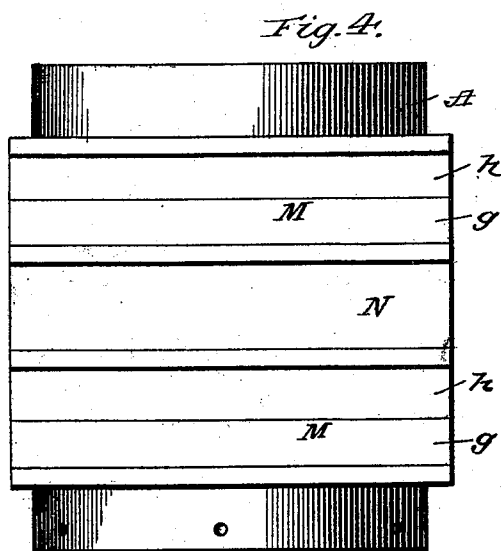
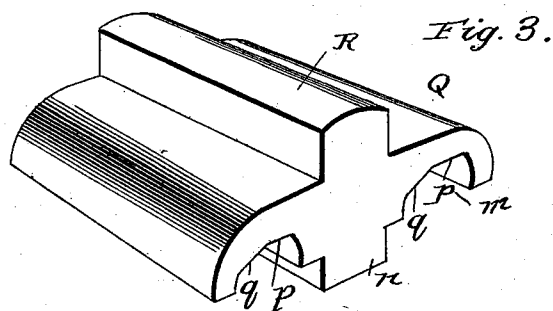
(No Model.)

2 Sheets—Sheet 2.

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No. 506,009.

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Witnesses:

C. A. Raider
Thos. E. Turpin

Inventor

James D. Mattison
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UNITED STATES PATENT OFFICE.

JAMES D. MATTISON, OF SAGINAW, MICHIGAN.

AXLE-BOX.

SPECIFICATION forming part of Letters Patent No. 506,009, dated October 3, 1893.

Application filed January 28, 1893. Serial No. 460,120. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. MATTISON, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Axle-Boxes; and I do 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 improvements in axle boxes, and it has for its general object to provide an axle box adapted to cushion the endwise thrust of an axle so as to prevent damage to the parts and enable a car to more easily turn a curve.

A further object of the invention is to provide an axle box adapted when a car is turning a curve or other place where one track is higher than the other, to assume an angle of inclination corresponding to that of the axle and thereby prevent undue frictional wear of the parts.

Other objects and advantages will appear from the following description and claims when taken in connection with the accompanying drawings in which—

Figure 1, is a vertical longitudinal section of an axle box embodying my invention. Fig. 2, is an end elevation of the same with parts broken away. Fig. 3, is a perspective view of the rocking piece or saddle. Fig. 4, is a plan view of the box with the saddle or rocking piece and the end cap removed, and: Fig. 5, is a frame through the medium of which the box is connected to the jaws or arms of a car truck.

Referring by letter to said drawings:—A, indicates the boxing proper which is preferably of a general rectangular form; B, indicates the axle journal, and C, indicates the end cap of the boxing. This end cap C, which is connected to the end of the boxing A, by bolts or in any other approved manner, is provided with a bearing piece D, of hardened steel, which is beveled on its inner side and is provided with a circular groove *a*, for a purpose presently described.

E, indicates a bearing piece of hardened steel which is connected to the end of the journal B, preferably in the manner shown. This piece E, is beveled in a manner similar

to the piece D, and is provided with a circular groove *b*, which is designed to serve in conjunction with the groove *a*, of the said piece D, to receive the peripheral rib *c*, of the cone shaped roller F, which is interposed between the pieces D, E, and serves to reduce the frictional wear thereof.

Connected to the end of the box A, opposite to the cap C, is an annular plate G, which surrounds the journal B, and is provided with an inwardly directed flange H, as shown. This flange H, of the plate G, serves in conjunction with the sleeve I, connected to the cap C, to afford bearings for the ends of the intermediate rollers J, which are arranged alternately with respect to the bearing rollers J', and these bearing rollers are held in position by the rings K, as illustrated.

The bearing rollers J, are held against longitudinal play or displacement by the annular rib L, which is connected to or formed integral with the inside of the box A, and is designed to engage the peripheral grooves *e*, with which the rollers J, are provided.

f, indicates an annular plate which is connected to the plate G, and serves to retain a suitable packing in position, around the journal as illustrated.

Formed in or upon the upper side of the boxing A, and extending transversely thereof as better illustrated in Fig. 4, are seats or grooves M, which are formed on opposite sides of a middle groove N, and are designed to receive rollers P, for a purpose presently described. These grooves M, have the forward portion *g*, of their bottoms, or that portion which rests adjacent to the outer end of the box, made level or approximately so, but the rear portion *h*, of the grooves is inclined rearwardly and upwardly as shown, so that when the journal and the box are thrust outwardly, as is the case in turning a curve, the rollers P, which normally rest upon the level portions *g*, will ride up the inclines *h*, and thereby cushion the thrust of the journal and box and prevent damage to the parts, which is an important desideratum.

Arranged above the rollers P, and bearing upon the same is a rocking piece or saddle Q, which is provided in its under side with recesses *m*, designed to receive said rollers P, which recesses *m*, preferably have their upper

walls cut, as shown so as to form an approximately level portion *p*, which normally rests above the inclined portion *h*, of the grooves M, and an inclined portion *q*, which normally rests above the level portion *g*, of the grooves M. The employment of the level and inclined planes *p*, *q*, is preferable for the reason that they serve to facilitate the return of the box to its normal position as will be presently described.

The rocking piece or saddle Q, is provided between the recesses *m*, with a depending projection *n*, which rests loosely in the groove N, of the box and serves to limit the movement of the box with respect to the rocking piece or saddle; and the said rocking piece or saddle is also provided, on its upper side with a projection R, which has its upper surface curved convexly, as indicated by *r*, for the purpose hereinafter set forth.

S, indicates a frame which surrounds the box A, and serves to prevent casual displacement of the rollers P, as well as to connect the box to the arms or jaws of a car truck. This frame S, is slotted at its lower end as shown to receive the lower jaw or tie bar of a truck, and is provided in its upper cross bar T, with a recess to seat the arch bars, of a freight car truck, but, as is obvious, I do not desire to be confined to this construction as the frame S, may be connected to the truck of a passenger car or coach in any approved manner.

The cross bar T, of the frame S, is provided in its under side, with a recess U, which is designed to loosely receive the projection R, of the rocking piece or saddle Q, as shown. By this construction, it will be seen that the box A, which is free to move in the frame S, will be permitted to assume an angle of inclination corresponding to that of the axle, when turning a curve or other place where one track is higher than the other, whereby undue frictional wear of the parts is obviated.

In operation when the axle is thrust endwise together with the box, in turning a curve, the rollers P, will ride up the inclines *h*, of the grooves or seats M, and thereby cushion the thrust of the journal and box and prevent damage to the parts, as well as to enable a car to more easily turn a curve. The rollers P, in this position rest between the inclines *h*, of the grooves or seats M, and the level portions *p*, of the recesses *m*, and when the car has passed the curve, the weight of the same will return the box and journal to their normal position. While turning a curve, the axle will be inclined, owing to one track being higher than the other, and the box A, and rocking piece or saddle Q, by reason of their peculiar connection to the frame S, will assume a corresponding angle of inclination, whereby it will be seen that the several bearing rollers J', will rest parallel to the journal and undue friction will be avoided.

It will be seen from the foregoing descrip-

tion taken together with the drawings, that I have provided an axle box of such construction that the parts will be subjected to but a minimum amount of frictional wear, when the axle is in its normal position, when it is inclined, and when it is thrust endwise as in turning a curve. It will also be seen that my improved box is exceedingly cheap and simple, as well as strong and durable, which is highly desirable.

I have illustrated and described my invention as embodied in an axle box for the reason that it is especially devised for such purpose, but, as is obvious, it might be employed to advantage, in journal bearings of various types.

Having described my invention, what I claim is—

1. In an axle box, the combination with a frame and a box arranged loosely in said frame and having a groove N, in its upper side; of a rocking piece or saddle arranged between the box and frame and having a depending projection upon its lower side and the projection R, provided with a convex surface on its upper side, and rollers arranged between the rocking piece and saddle, substantially as specified.

2. In an axle box, the combination of a frame, a box arranged loosely in said frame, a rocking piece or saddle arranged between the box and the frame, and rollers interposed between and engaging the box and the rocking piece or saddle, substantially as specified.

3. In an axle box, the combination of a frame, a box having a groove or seat in one of its sides provided with a level portion, and an inclined portion, a roller seated in the said seat or groove, and a rocking piece or saddle interposed between the box and frame and having a recess adapted to receive the roller, substantially as specified.

4. In an axle box, the combination of a frame, a box arranged loosely in the frame and having grooves or seats in one of its sides, each of which is provided with a level portion and an inclined portion, rollers seated in the said grooves or seats, and a rocking piece or saddle interposed between the box and frame and having recesses adapted to receive the rollers, and also having a convex surface engaging the frame, substantially as specified.

5. In an axle box, the combination with a frame, and a box arranged loosely in said frame and having a groove N, and the grooves or seats M, arranged in its upper side; the said seats or grooves M, being respectively provided with a level or approximately level portion and an inclined portion; of a rocking piece or saddle arranged between the box and frame and having the recesses *m*, and a depending projection on its lower side and the projection R, provided with a convex surface on its upper side, and rollers arranged between the box, and the rocking piece or saddle, substantially as specified.

6. In an axle box, the combination with a

box, and a piece of hardened steel arranged
in one end of the box and having its inner
side beveled and provided with a circular
groove; of a journal bearing in the box, a
5 piece of hardened steel connected to the end
of the journal and having its exposed side
beveled and provided with a circular groove,
and a conical roller interposed between the
pieces of steel and having a peripheral rib

adapted to engage the grooves thereof, sub- 10
stantially as specified.

In testimony whereof I affix my signature in
presence of two witnesses.

JAMES D. MATTISON.

Witnesses:

SETH T. GODDARD,

EMIL D. FRANCKE.

It is hereby certified that in Letters Patent No. 506,009, granted October 3, 1893, upon the application of James D. Mattison, of Saginaw, Michigan, for an improvement in "Axle-Boxes," errors appear in the printed specification requiring correction as follows: Page 1, lines 67-69, the clause "arranged alternately with respect to the bearing rollers J¹, and these bearing rollers are" should be stricken out and inserted after the word "are" in line 71, as now numbered; and in line 71, same page, the word "bearing" should read *intermediate*; and that the said Letters Patent should be read with these corrections therein to conform to the papers pertaining to the case in the Patent Office.

Signed, countersigned, and sealed this 20th day of March, 1894.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.