(No Model.)

S. L. DENNEY.

CAR AXLE.

No. 551,746. Patented Dec. 17, 1895.

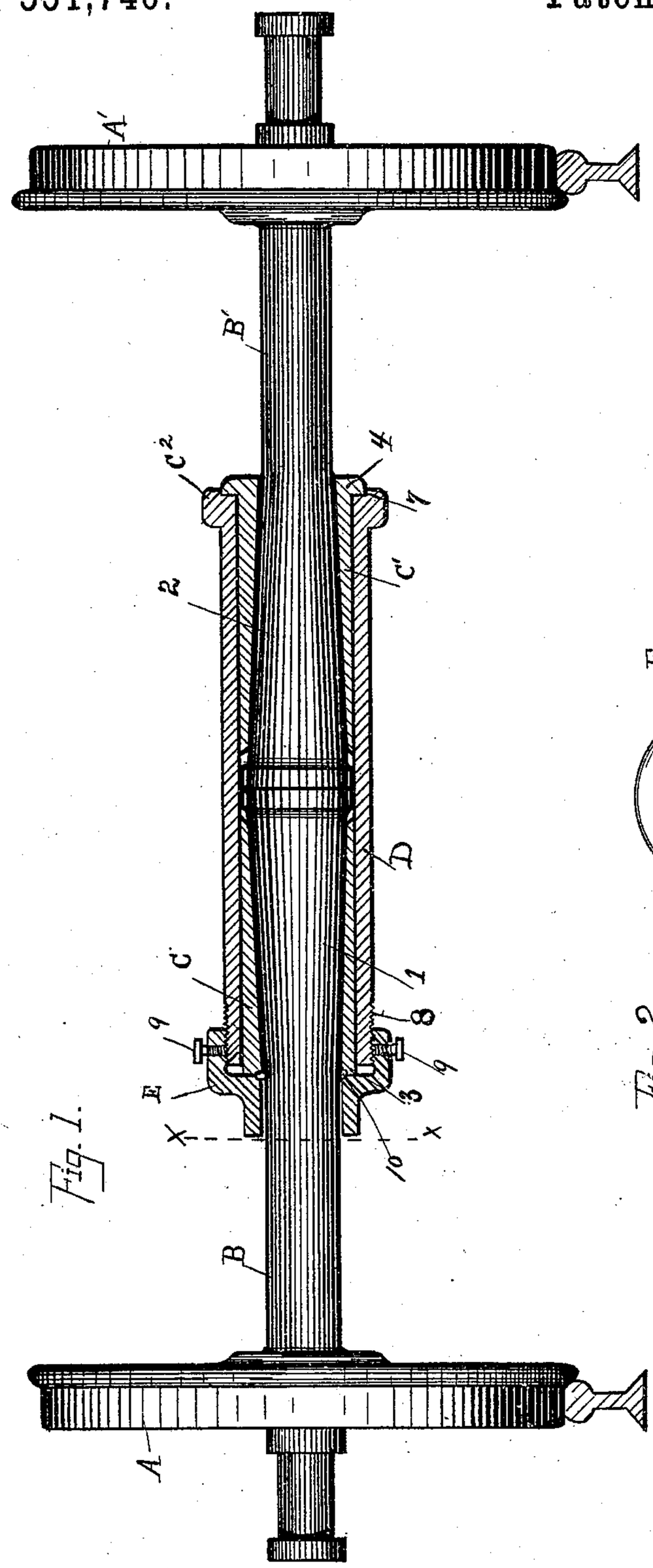

Fig. 1.

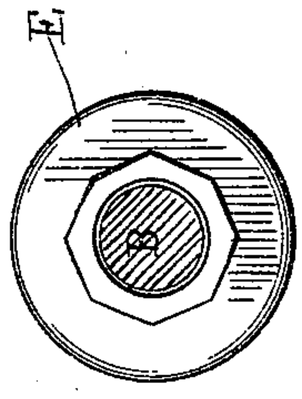

Fig. 2.

WITNESSES

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CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 551,746, dated December 17, 1895.

Application filed June 29, 1895. Serial No. 554,417. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. DENNEY, a citizen of the United States, residing at Atlantic City, in the State of New Jersey, have invented certain new and useful Improvements in Car-Axles; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has relation to improvements in car-axles of that class or style denominated "divided axles," which are intended to permit oppositely-mounted wheels of the axle to accommodate themselves automatically to the strains, variable rotation and different exigencies of motion arising during the progress of the car over the track, and especially around curves.

The present invention has for its object to improve my former invention, as shown and described in my Letters Patent No. 366,307, dated July 12, 1887, wherein are disclosed an axle divided near its mid-length, the adjacent middle portions being enlarged to form the frustum of cones with their bases contiguous, and a divided and flanged coupling-sleeve fitted to the conical portions and secured in position. In the present invention I do away with this divided coupling-sleeve and provide the new and improved coupling-sleeve herein shown and described.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a front view of wheels carrying a divided axle and having my improved coupling-sleeve mounted thereon, the sleeve being shown in central sectional view. Fig. 2 is a transverse section of the axle on the line $x\ x$ and end view of the coupling-sleeve cap.

Referring to the drawings, A A′ designate car-wheels mounted in the usual manner on the respective portions of the divided axle B B′ substantially as shown in the drawings. The inner middle and adjacent parts of the divided axle are each enlarged, as seen at 1 2, to form a frustum of a cone, the bases thereof being arranged contiguous, as shown, so that when the parts are arranged in operative relation they will present the appearance of a double cone united at the bases.

C C′ designate inner sleeves fitted over the conical portions of the respective parts of the axle and for this purpose are formed with oppositely-arranged conical interiors and plane outer surfaces, preferably round, as shown, and in length stop short of the meeting bases of the cones of the axle. The sleeve C is formed and arranged to project a determined and requisite distance from the end of the outer sleeve, as at 3, in order that it may be adjusted on the axle as desired and may be necessary. The inner sleeve C′ is formed with an annular end flange 4, against which the end of the outer sleeve abuts. This sleeve C′ is preferably made of open-hearth steel and is firmly and securely fixed in the outer sleeve by hydraulic pressure or other proper power, the material named being well adapted to withstand the strain consequent on forcing this sleeve into position in the outer sleeve.

D designates the outer coupling-sleeve fitted over the inner sleeves and constituting the means for holding the latter in operative positions and relation. This coupling-sleeve D is preferably a straight end plane cylinder and is formed with an annular end flange C^2, preferably formed with an annular recess or shoulder 7, in which the end flanges of the inner sleeve C′ fits, as shown. On the outer end of the coupling-sleeve D are formed exterior screw-threads 8, over which fits a fastening or clamping and adjusting cap or nut E, which is held in a set or adjusted position by means of a set screw or screws 9, as shown in the drawings. This cap E bears against the inner sleeve C and affords the means for adjusting that element on the axle. Between the end of the sleeve C and the cap E adjacent to the axle is a recess 10, in which may be fitted a packing to prevent the escape of oil or other lubrication.

By making the sleeve D straight, plane and continuous, as shown, I do away with the middle meeting flanges of the two-part sleeve shown in my former patent cited, which flange is sometimes in the way of structures or machinery located under the car, especially in tenders to locomotives, and I also secure greater strength in the coupling by disposing

of the holding and fastening bolts, which are liable to become loose and sometimes break.

To assemble the elements of my invention the sleeve C′ is secured in the outer sleeve, as specified, and then the two are arranged on the axle and then the adjusting and holding cap is fitted and adjusted in place and the coupling is complete.

Any wear of the parts is readily remedied by adjustment of the cap E on the outer sleeve and against the movable sleeve C.

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

1. As an improvement in car-axles, an axle divided near its mid-length and each end of the adjacent parts being conical and arranged with their bases contiguous in combination with two oppositely arranged and conical bored inner sleeves, an outer coupling-sleeve over the inner sleeves, and a fastening and holding cap on the outer sleeve, substantially as described.

2. As an improvement in car-axles, an axle divided near its mid-length and each end of the middle parts being conical and arranged with their base adjacent in combination with the outer coupling sleeve D, the inner sleeve C′ firmly fixed in the sleeve D, the inner sleeve C, adjustably fitted in the outer sleeve, and the adjusting and fastening cap E substantially as specified.

3. As an improvement in car-axles, an axle divided near its mid-length and each end of the adjoining parts enlarged to form the frustum of a cone, and having annular flanges at the meeting bases, in combination with a coupling sleeve formed with an interior to fit one end of the cone of one part of the axle, an adjustable sleeve on the other conical part of the axle, and fastening means to hold and adjust the coupling in position.

4. A coupling for a divided car-axle having adjacent cone-shaped terminations at the meeting parts of the axle and annular flanges at the bases thereof, sleeves on the cones of the axles, an outer coupling sleeve, and a fastening and adjusting means to hold and adjust the parts relatively.

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

SAMUEL L. DENNEY.

Witnesses:
WM. H. BATES.
WM. H. DE LACY.