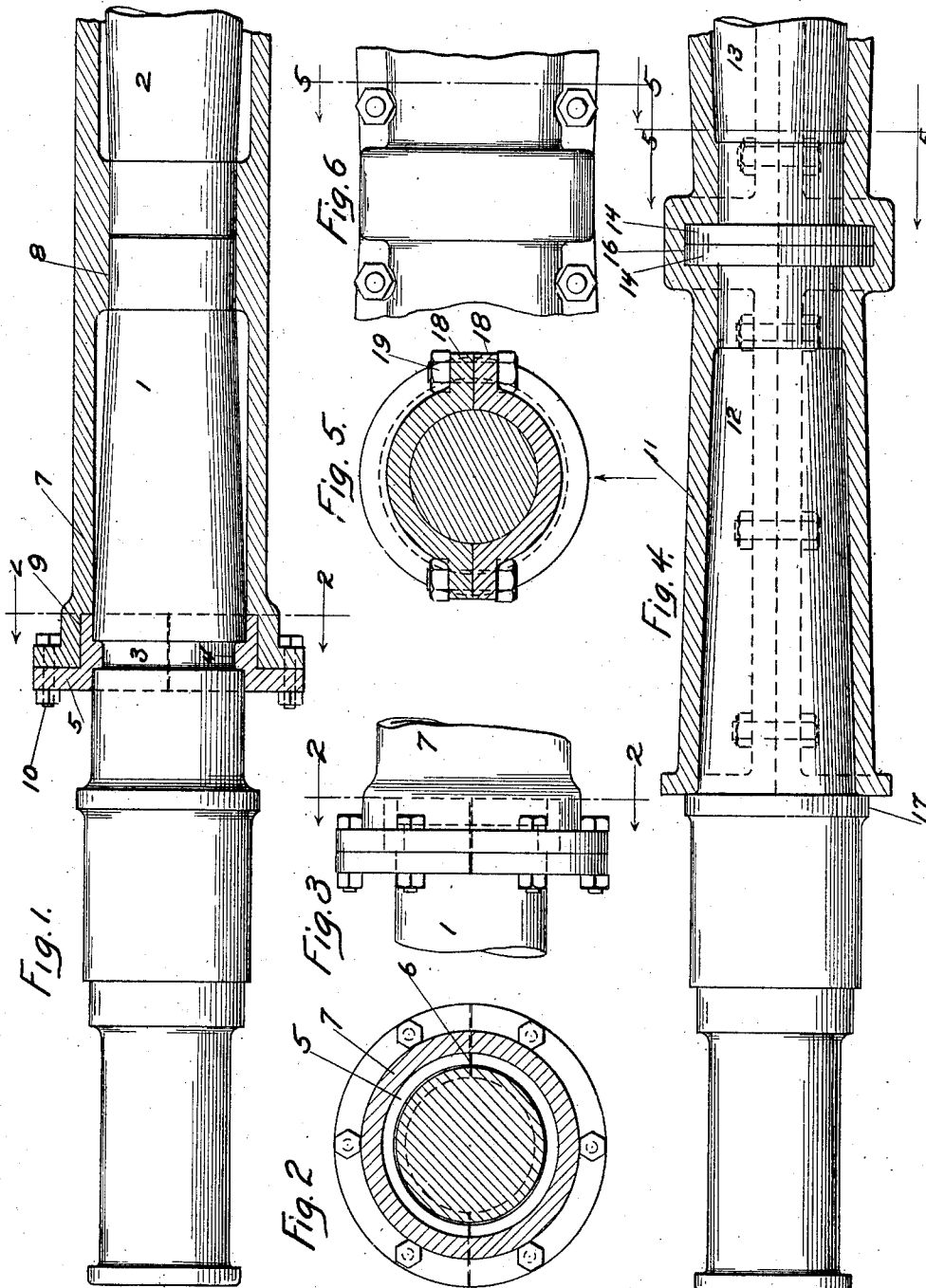


976,486.

J. O. NEIKIRK.
CAR AXLE.
APPLICATION FILED JUNE 12, 1908.

Patented Nov. 22, 1910.

4 SHEETS—SHEET 1.



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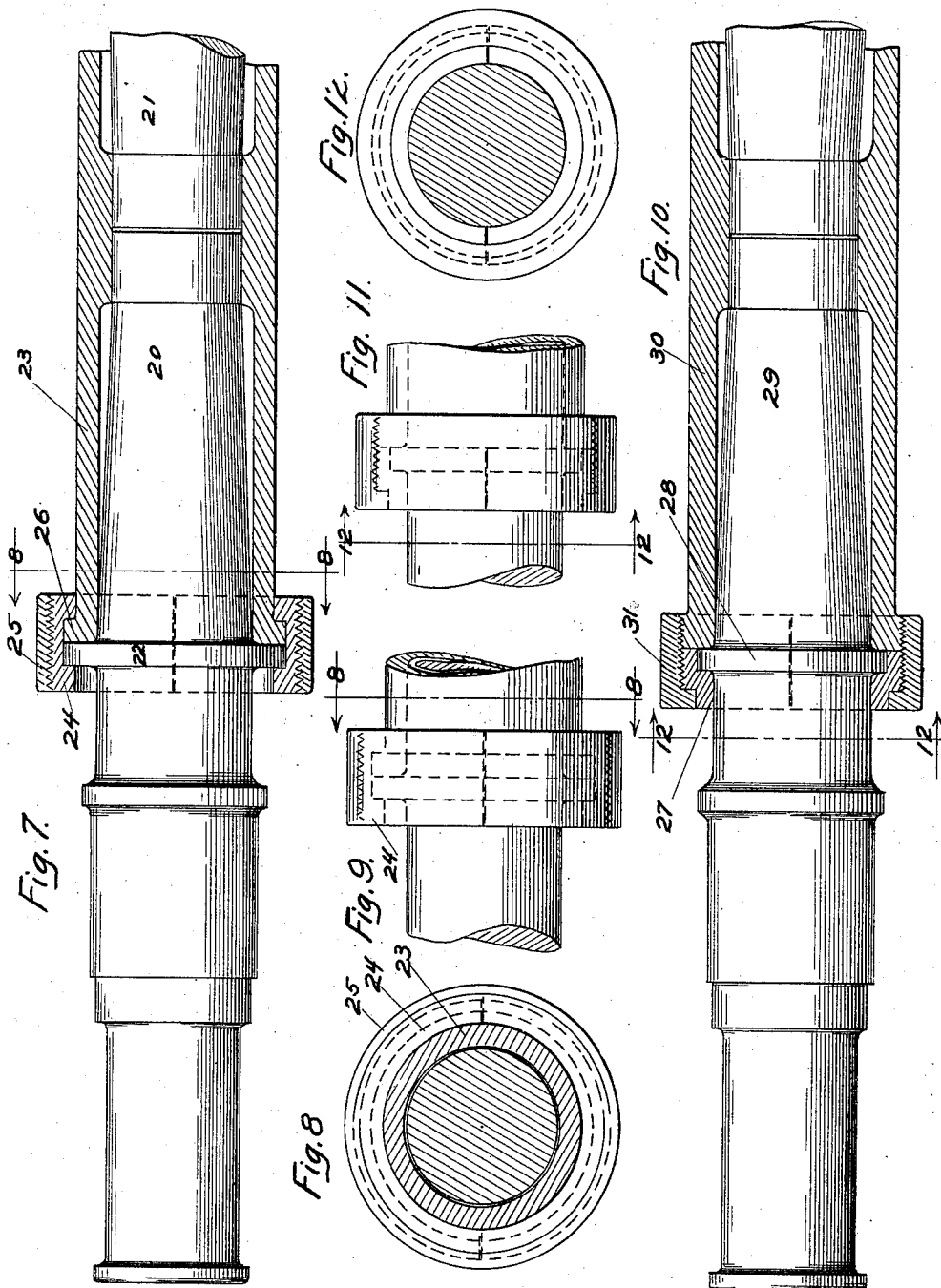
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4 SHEETS—SHEET 2.

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4 SHEETS-SHEET 3.

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Fig. 14.

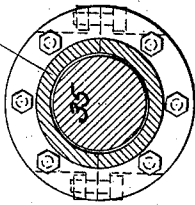
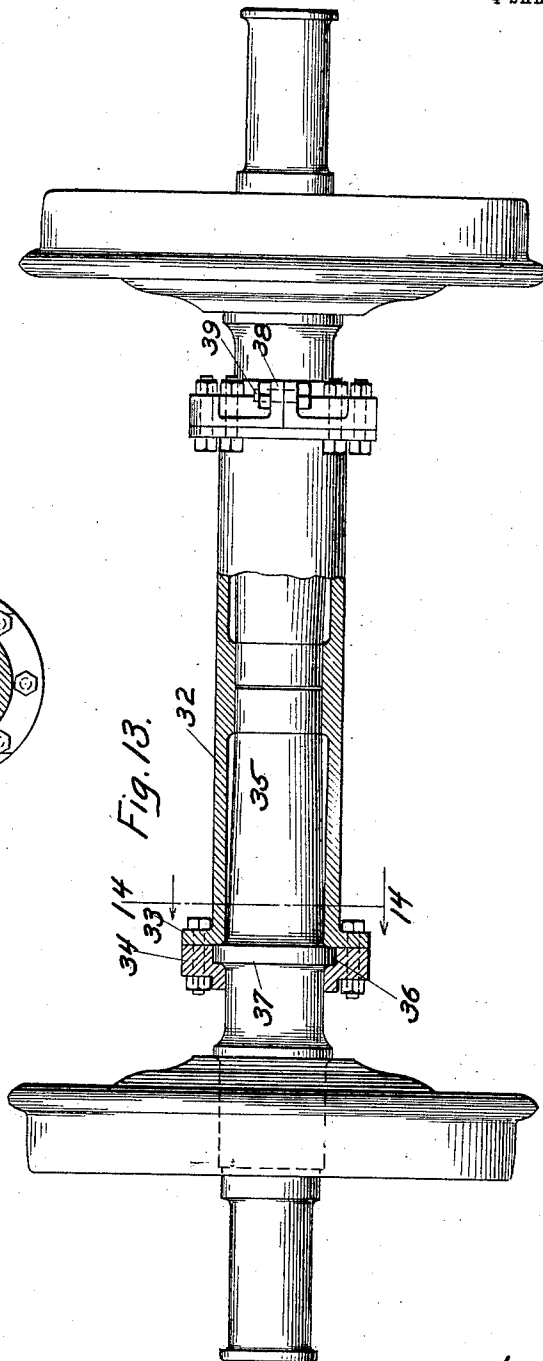


Fig. 13.



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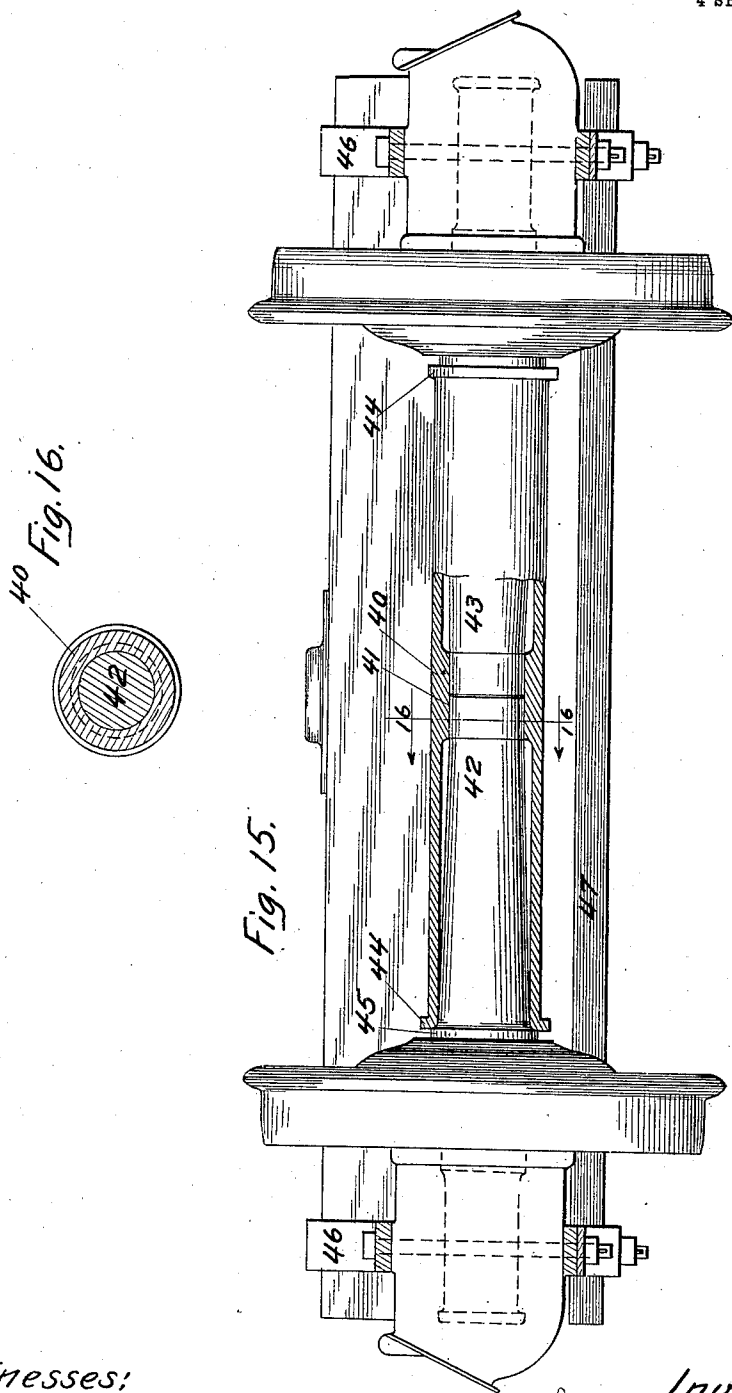
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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CAR-AXLE.

976,486.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed June 12, 1908. Serial No. 438,096.

To all whom it may concern:

Be it known that I, JOHN OSCAR NEIKIRK, a citizen of the United States, residing at Morgan Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Axles, of which the following is a specification.

In ordinary practice, railway cars are provided with integral axles upon which the wheels are rigidly mounted. This construction while securing strength and simplicity involves the disadvantage of preventing independent rotation of the wheels at the opposite ends of an axle, thus resulting in a considerable degree of wear and friction upon curves due to the fact that the outer rail presents a longer path of movement than the inner.

The purpose of my invention is to permit independent rotation of the wheels at the opposite ends of the axle, thus obviating the undesirable effect above referred to.

In the drawings—Figure 1 is a view, partly in section, of a transversely divided axle and sleeve constructed according to my invention. Fig. 2 is a transverse section on line 2 of Fig. 1. Fig. 3 is an exterior view of one end of the sleeve shown in Fig. 1. Figs. 4, 5 and 6 are views corresponding to Figs. 1, 2 and 3, but showing a modified form of the invention. Figs. 7, 8 and 9 are views corresponding to Figs. 1, 2 and 3 and showing a further modification. Figs. 10, 11 and 12 are views corresponding to Figs. 1, 2 and 3 and showing another modification. Fig. 13 is an elevation, partly in section, with the car axle and wheels complete equipped with another modified form of holding sleeve. Fig. 14 is a transverse section on the line 14, 14 of Fig. 13. Fig. 15 is an elevation, partly in section, of a still further modification. Fig. 16 is a transverse section on the line 16, 16 of Fig. 15.

Referring to Figs. 1, 2 and 3, the car axle is divided at its center into two parts 1 and 2. Each of the parts 1, 2 is provided at a point adjacent the journal with an annular groove 3 designed to receive the flange 4 of a collar 5. The collar 5 consists of two semi-circular parts divided upon the diametral line 6. The collar 5 is provided with an outwardly projecting flange provided with bolt holes. Surrounding the abutting ends of the axle sections 1 and 2 is a sleeve 7 pro-

vided at its center with a bearing surface 8 55 designed to rotatively engage the inner ends of the sections 1 and 2. At its outer ends the sleeve 7 is provided with a rabbet 9 designed to receive the inner end of the collar 5, and is also provided with an outwardly projecting flange containing bolt holes registering with those upon the collar 5. The sleeve 7 and collar 5 are held together by means of bolts 10 passing through the bolt holes in the flanges of the sleeve and collar. The engagement between the bearing surface of the sleeve 7 and the flange 4 of the collar 5 with the axle permits the axle sections to rotate freely within the sleeve but endwise displacement of the axle sections is prevented by the engagement of the flange 4 with the annular groove 3.

The form of the device illustrated in Figs. 4, 5 and 6 differs from that shown in Figs. 1, 2 and 3, in that the entire sleeve 11 is 75 longitudinally divided into two semi-circular parts, and endwise displacement of the axle sections 12 and 13 is prevented by means of the engagement of flanges 14 upon the inner ends of the axle sections with the annular groove 16 in the sleeve. In order to further insure against displacement of the axle sections and to exclude foreign matter from the space between the sleeve and said sections the outer end of the sleeve may 85 abut against the fillet 17 of the axle. In this instance the sleeve is illustrated as rotatively engaging the axle near its center and near its ends. The sleeve is preferably provided with longitudinal flanges 18 provided 90 with bolt holes, and the two sections are secured together by means of bolts 19.

In Figs. 7, 8 and 9 I have illustrated a modification similar in the general relation of the parts to the form shown in Figs. 1, 2 and 3. In this instance, however, the axle sections 20 and 21 are provided with annular flanges 22 adapted to be engaged by the ends of the sleeve 23 and by split collars 24. The collars 24 are annularly grooved on 100 their inner surfaces, the grooves being provided for the purpose of receiving the flanges 22 and the out-turned flanges upon the outer ends of the sleeves 23. The semi-circular sections of which the collar 24 is 105 composed are screw threaded upon their outer surfaces, and after being placed in position are secured by means of an internally

threaded continuous ring 25. After being assembled this form does not differ in operation from that shown in Figs. 1, 2 and 3.

The form shown in Figs. 10, 11 and 12 is quite similar to that shown in Figs. 7, 8 and 9, except for the fact that the split collar 27 embraces one side only of the annular flange 28 upon the shaft section 29, and does not overlie the sleeve 30. In order to secure the parts together, the sleeve 30 is provided with a screw thread upon its outer surface adjacent the end and the outer surface of the split collar 27 is similarly screw threaded. An internally threaded ring 31 engages the screw threads upon the sleeve and collar, and said ring 31 is preferably provided with an in-turned flange at its outer edge adapted to engage an annular recess in the collar 27.

In Figs. 13 and 14 I have illustrated a further modification, similar to the form shown in Figs. 10, 11 and 12 in general structure. In this form, however, the sleeve 32 is provided at its outer end with an out-turned flange 33 provided with bolt holes registering with similar holes formed in the split collar 34. The collar 34 is provided on its inner surface with a substantially rectangular recess 36, which together with the adjacent end of the sleeve 32 forms a channel in which the annular flange 37 of the axle section 35 is received. The semi-circular sections of the collar 34 are provided with bolt lugs 38 and when the parts are assembled the sections of the collar are held in place by means of bolts 39.

In the forms of my device above described the axle sections are held against separation by the engagement of the sleeve therewith. In the form of the invention illustrated in Figs. 15 and 16, however, reliance is placed upon the truck frame to hold the axle sections against endwise separation. In this form the sleeve 40 is provided with a bearing surface 41 at its center adapted to rotatively engage the inner ends of the axle sections 42 and 43. The outer ends of the sleeve may be provided with out-turned flanges 44 adapted to engage the fillet 45

upon the axle. In this modification no provision is made for holding the axle sections against separating by means of the engagement of the sleeve therewith, but such separating may be sufficiently prevented by the frame of the truck. In this instance I have illustrated a truck of a common type, comprising the side frame 46, the same being held together by the usual framing including the spring plank 47. The transverse members of the truck frame will in this instance effectually prevent the axle sections 42 and 43 from spreading apart, any tendency to such movement being resisted by the side frames.

What I claim and desire to secure by Letters Patent, is—

1. In a railway car axle, the combination of a divided axle, a sleeve surrounding and rotatively engaging the same, a two-part coupling member secured to each end of said sleeve, and means between said coupling members and the axle sections to prevent relative longitudinal movement of the sleeve and the axle sections.

2. In a railway car axle, the combination of a divided axle, a sleeve surrounding and rotatively engaging the same, two-part coupling collars secured to the ends of said sleeve, and means between said collars and the axle sections permitting free rotative movement but preventing longitudinal movement of said parts.

3. In a railway car axle, the combination of a divided axle the abutting sections whereof are provided with annular grooves, a sleeve surrounding and rotatively engaging said sections, two-part coupling collars provided with ribs to engage said grooves, and means for securing the collars to the ends of said sleeve.

In testimony whereof, I have subscribed my name.

JOHN OSCAR NEIKIRK.

Witnesses:

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