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Patented Sept. 25, 1900.

J. S. HICKEY & J. H. EGBERT.

CAR AXLE.

(Application filed June 25, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

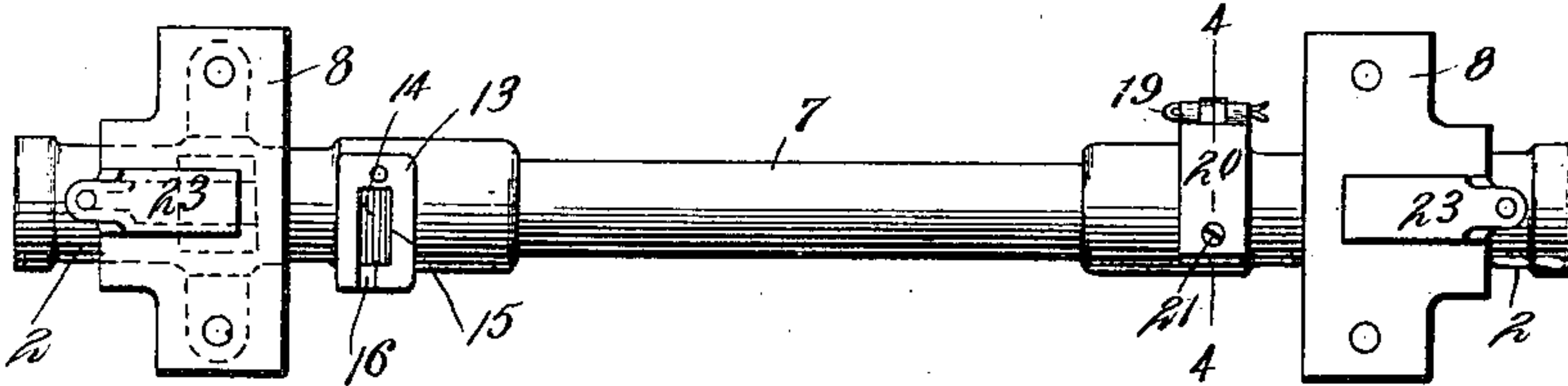


Fig. 3.

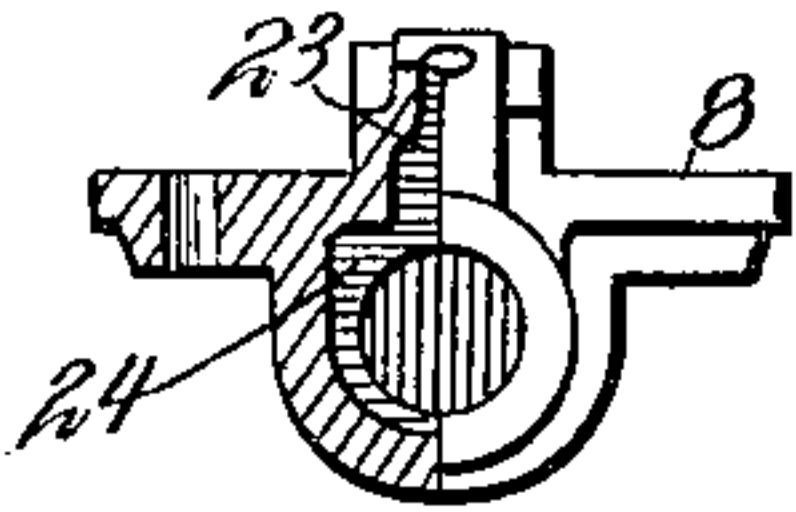


Fig. 4.

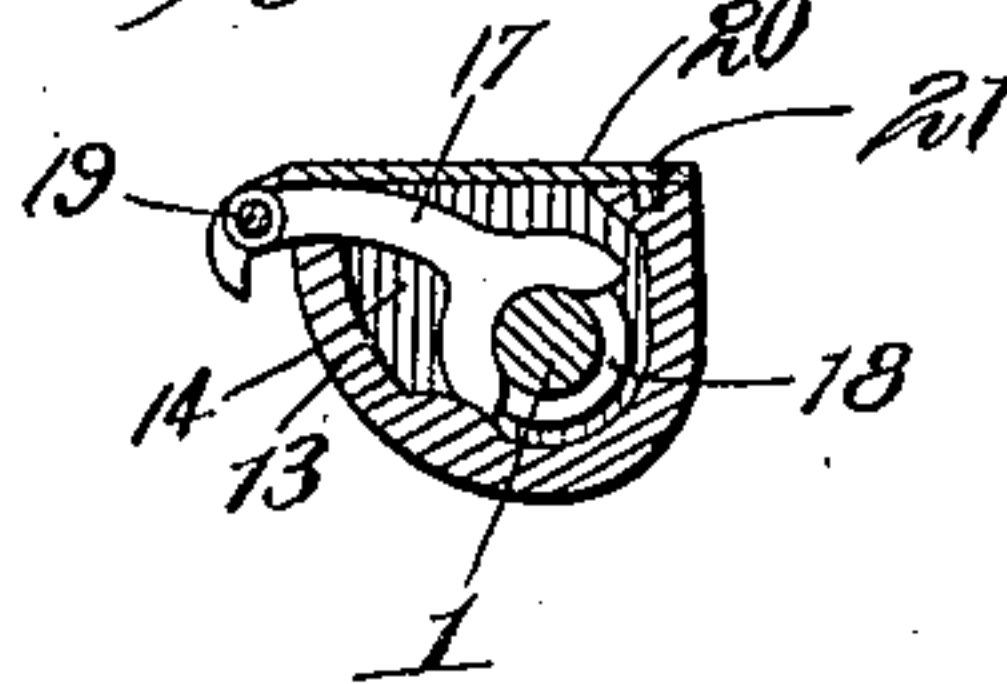
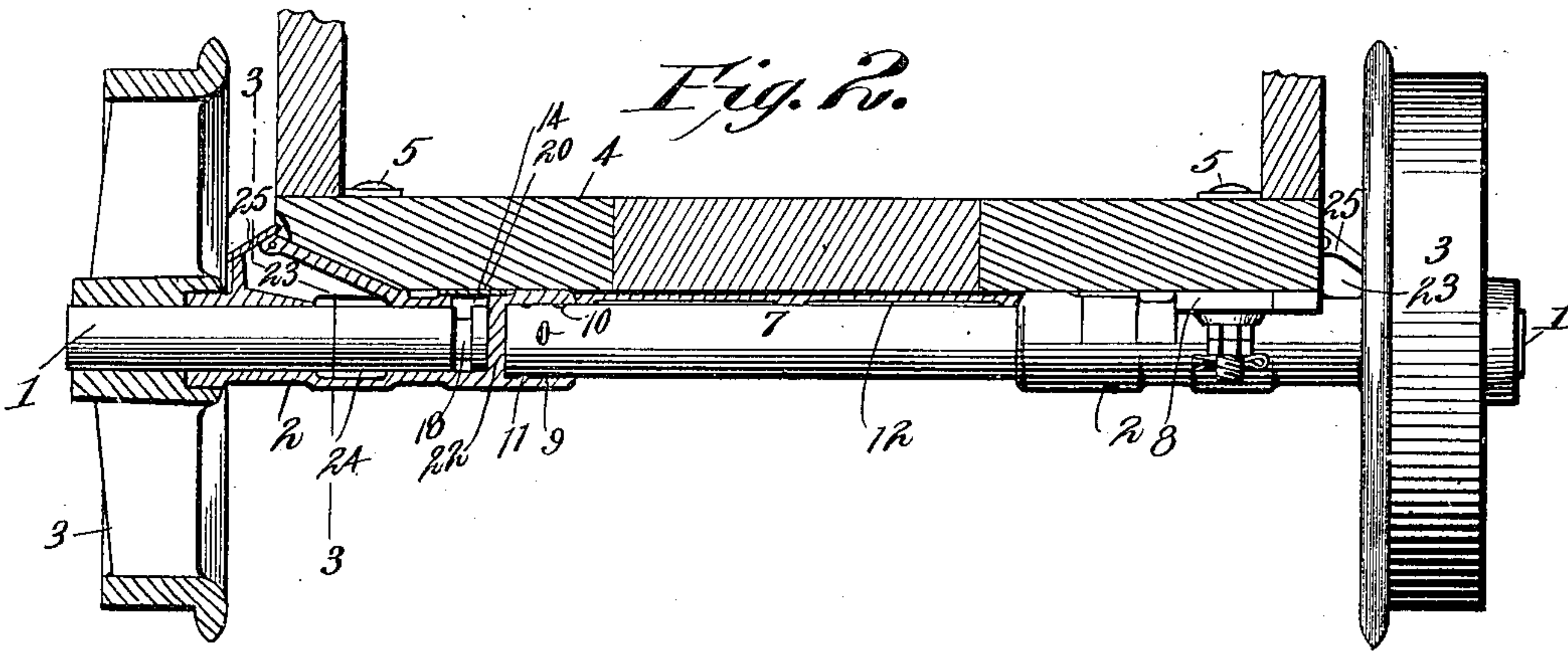


Fig. 5.



Fig. 6.



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Fig. 6.

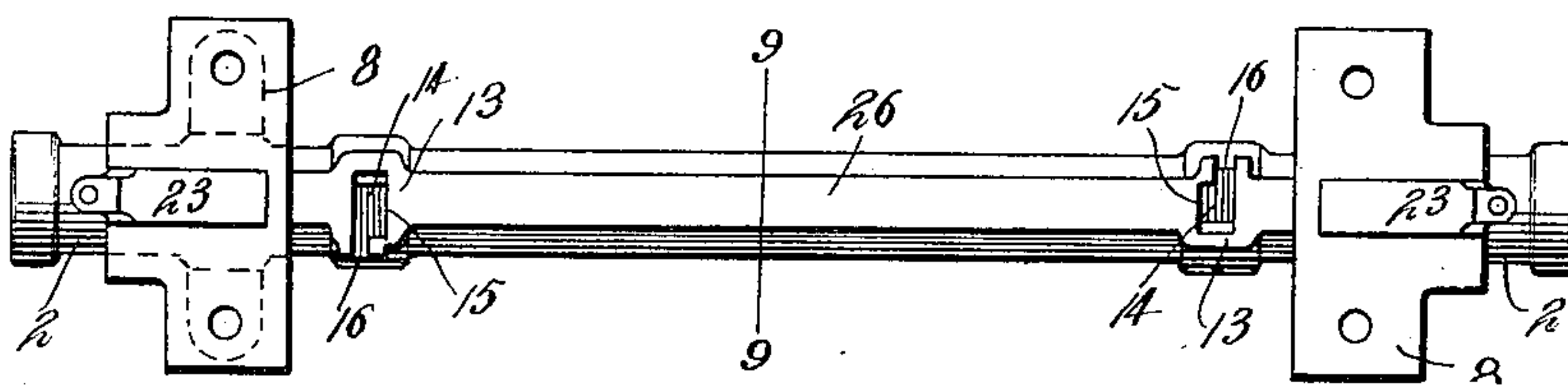


Fig. 8.

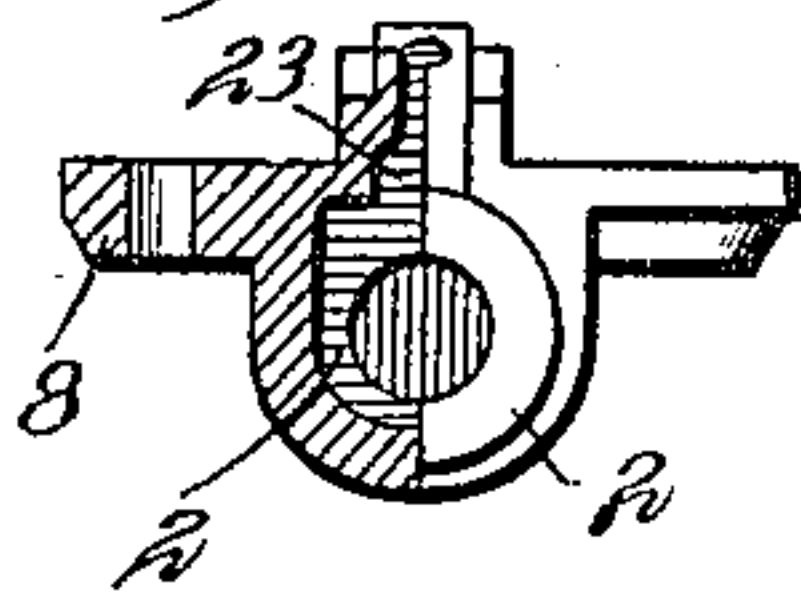


Fig. 9.

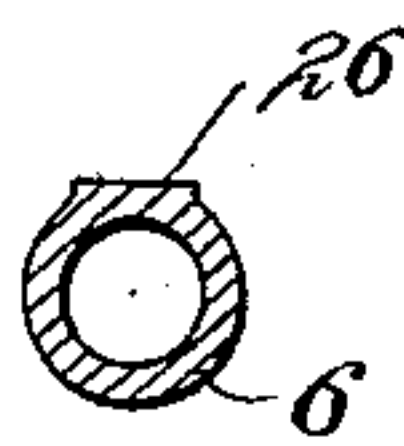


Fig. 10.

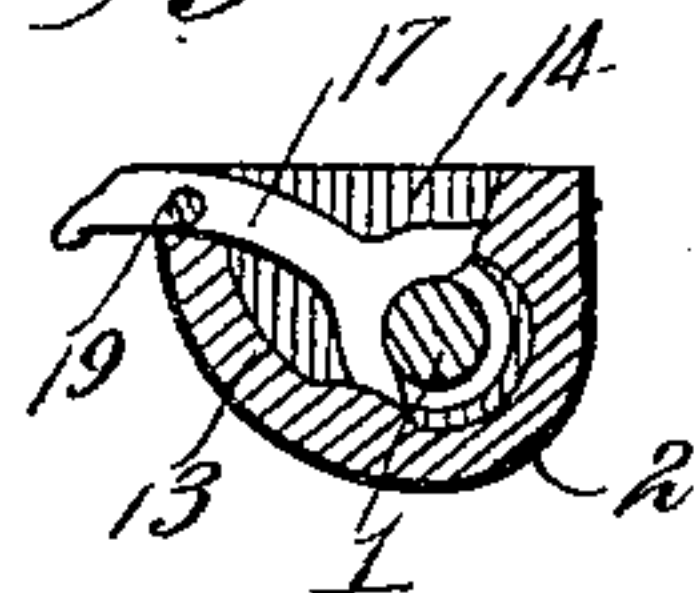
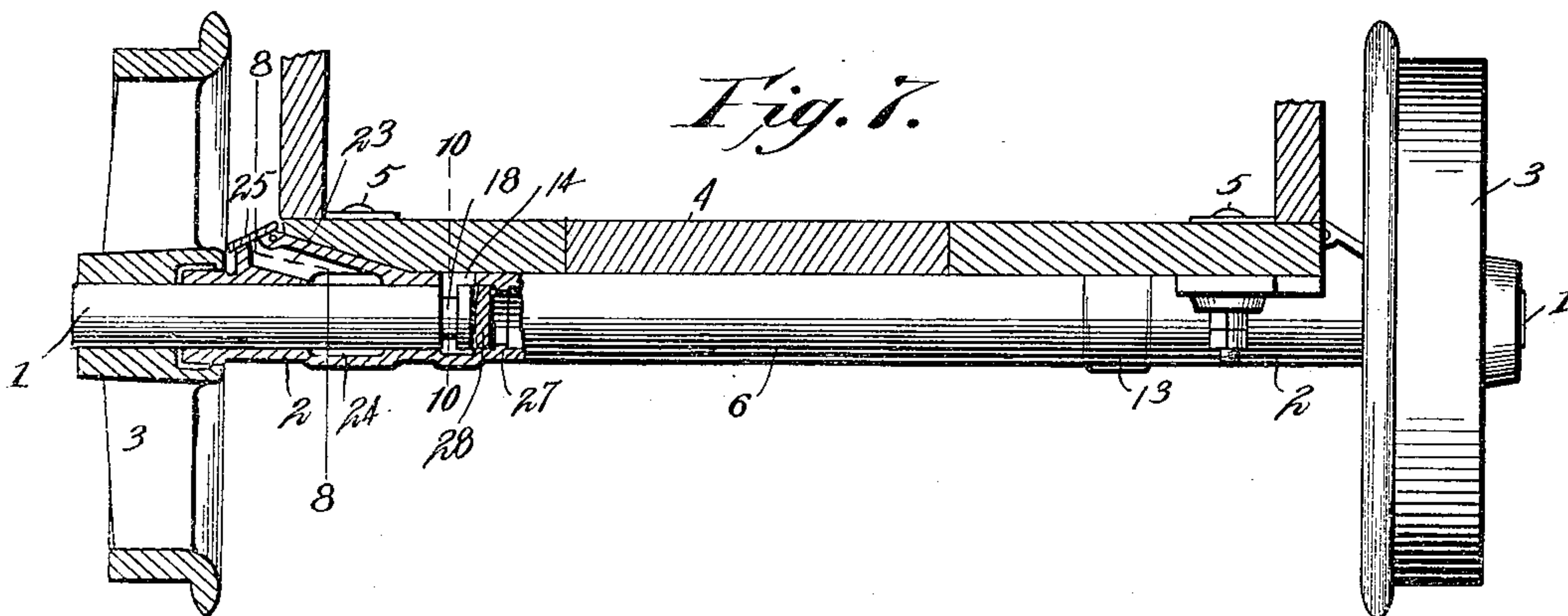


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN S. HICKEY AND JAMES H. EGBERT, OF ANACONDA, MONTANA.

CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 658,370, dated September 25, 1900.

Application filed June 25, 1900. Serial No. 21,561. (No model.)

To all whom it may concern:

Be it known that we, JOHN S. HICKEY and JAMES H. EGBERT, citizens of the United States, residing at Anaconda, in the county of Deer Lodge and State of Montana, have invented a new and useful Car-Axle, of which the following is a specification.

The invention relates to improvements in car-axles.

One object of the present invention is to improve the construction of divided axles for mining-cars and the like and to lessen the cost of their construction and increase their efficiency by shortening and separating the sections, whereby they may be arranged any distance apart, and are especially adapted for use on wide-gage roads.

A further object of the invention is to enable the sections of the axle to be removed from their bearings in event of breakage without unloading the car or taking the latter out of the train and without removing the bearing-sleeves from the car-body.

Another object of the invention is to reduce the friction and arrange the parts so that the bearings may be lubricated at the ends of the axle by introducing an oil-can through the spaces between the spokes of the wheels.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a plan view of a car-axle constructed in accordance with this invention. Fig. 2 is a side elevation, partly in section, showing the axle applied to a car-body. Fig. 3 is a transverse sectional view on line 3 3 of Fig. 2. Fig. 4 is a transverse sectional view on line 4 4 of Fig. 1. Fig. 5 is a detail view of the filling-piece which is interposed between the car-body and the central section, which connects the bearing-sleeves. Fig. 6 is a plan view similar to Fig. 1, illustrating a modification of the invention. Fig. 7 is a longitudinal sectional view of the same, partly in elevation. Fig. 8 is a sectional view on line 8 8 of Fig. 7. Fig. 9 is a sectional view on line 9 9 of Fig. 6. Fig. 10 is a similar view on line 10 10 of Fig. 7.

Like numerals of reference designate corre-

sponding parts in all the figures of the drawings.

1 1 designate sections of a divided car-axle arranged within separate and independent bearing-sleeves 2 and having car-wheels 3 fixed to their outer ends by being shrunk on them or forced on them by the application of pressure or by any other suitable means. The bearing-sleeves, which are secured to the bottom of a car-body 4 by bolts 5, may be connected by an intermediate integral tubular portion 6, as illustrated in Fig. 7 of the accompanying drawings, or a separate central spacing tube or section 7 may be employed. The bolts 5 pass through perforations of attachment-plates 8, formed integral with the sleeves and extending from opposite sides thereof, as clearly shown in Fig. 1 of the drawings. The inner ends of the sleeves 2, as illustrated in Fig. 2 of the accompanying drawings, are provided with sockets 9 for the reception of the ends of the central section 7, provided with recesses 10 and engaged by lugs 11 of the said sockets. The recesses, which are ground or otherwise formed in the outer face of the central tubular connecting-section 7, are engaged by the lugs or protuberances 11, which are formed integral with the sleeves and which are arranged on the inner faces of the sockets 9. The space between the central connecting-section 7 and the bottom of the car-body is filled by a plate or piece 12, having a flat upper face to fit the car and provided with a concave lower face having ribs extending transversely of it and conforming to the configuration of the section 7. This filling-piece 12, which is retained in position by the body of the car, prevents the bottom of the same from sagging at the center when subjected to a heavy load.

Each sleeve is provided at one side, preferably as shown in Figs. 1 and 6 of the drawings, with an enlargement 13, forming an interior chamber 14, having an opening 15 at the top and a slot 16 adjacent to the same. The chamber formed by the lateral enlargement receives a key or locking device 17, consisting of a shank and a forked or bifurcated head which fits in an annular groove 18 at the inner end of the axle-section 1, as clearly shown in Figs. 4 and 10 of the drawings. The shank is perforated for the reception of a key

or cotter 19, which passes through perforations of lugs of the sleeve or the cover, whereby the key or locking device 17 is retained in engagement with the section of the axle. The
 5 outer end of the shank of the key or locking device is provided with a depending extension or lug to enable it to be readily grasped, and the said key or locking device 17 is adapted to be drawn outward to release the axle-
 10 section 1 without entirely removing it from the chamber of the sleeve. The opening of the enlargement of the sleeve is preferably covered by a plate 20, having its upper face flush with the adjacent upper faces of the
 15 sleeve and secured to the latter by a screw 21. Should the axle-section 1 become broken or otherwise injured, it may be released by removing the split key or cotter and drawing the key or locking device 17 outward, and it
 20 may be removed from the bearing-sleeve without unloading the car or taking the latter out of the train. Instead of employing the locking devices 17 for securing the axle-sections 1 in the sleeves pins, bars, set-
 25 screws, and keys of different shapes may be used; but the locking devices shown and described are preferable.

The inner end of the section 1 of the axle abuts against a transverse wall 22 at the inner
 30 end of the socket 9, and by providing a bearing at this end of the axle-section the friction is reduced and is much less than when the wheel-hub takes the thrust of the load against the outer end of the sleeve.

Each sleeve is provided at its top near its
 35 outer end with a longitudinal oil-passage 23, formed in an enlargement and extending inward and downward at an inclination to an oil-receptacle 24, formed by annularly recess-
 40 ing the inner face of the sleeve. The longitudinal enlargement in which the oil-passage is formed is provided at the outer end of the passage with a hinged cover 25, and this lid or cover 25 has the hinge at its inner end and
 45 is adapted to be readily lifted to permit the spout of an oil-can to be passed through one of the spaces between the spokes of the wheel and inserted in the passage 23, thereby enabling the bearing to be conveniently sup-
 50 plied with a lubricant.

The sleeves instead of being connected by a separate section or portion may consist of a continuous integral casting, as shown in Fig. 6, and the central connecting portion 26 has
 55 a flat upper face, as shown in Fig. 9, which is arranged in the same horizontal plane as the adjacent horizontal portions of the sleeves. The plates 20 may be omitted, and in order to reduce the friction, as before ex-
 60 plained, the sleeves are provided with interior annular shoulders 27 to form seats or bearings for plates or buttons 28, constructed of hardened steel or other suitable material and forming bearings or abutments for the
 65 inner ends of the axle-sections.

The invention has the following advantages: The bearing-sleeves, which form jour-

nal-boxes for the car-axles, may be separated to a greater or less extent to suit the varying
 70 gages of tracks, and they may be made of continuous castings or connected by a tubular or angle-iron section to lighten the construction, or they may be held apart by any other suitable means. The locking device or key, which
 75 engages the inner ends of the axle-sections, may be manipulated from the side to remove and replace the wheel and axle-section without disturbing the load of the car or disconnecting the latter from the train or loosening
 80 or removing the bearing-sleeve from the bottom of the car. The split key or cotter may be arranged in eyes or perforations of the plate or cover 21 or in perforations of lugs of the enlargement of the sleeve when a cover
 85 is not employed, and it is arranged within easy reach and may be conveniently removed and replaced to fasten and unfasten the locking device or key 17. The oiling device, by
 90 means of which oil is supplied to the bearing, is located at the outer end of the sleeve, and an oil-can may be inserted in the same through
 95 the opening or space between the spokes of the car-wheel. The abutment at the inner end of the bearing-opening of the sleeve reduces the friction produced by the side
 100 thrusts of a car by taking the same from the outer ends of the sleeves and the inner ends of the hubs.

Changes in the form, proportion, size, and the minor details of construction within the
 105 scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

1. A device of the class described comprising
 110 a pair of separate and independent bearing-sleeves designed to be located at opposite sides of a car, a separate and independent piece connecting the sleeves, and a pair of short axle-sections spaced apart and secured
 115 within the sleeves and designed to have car-wheels fixed to them, substantially as described.

2. A device of the class described comprising
 120 a pair of separate and independent bearing-sleeves designed to be located at opposite sides of a car, a separate independent spacing-piece connecting the sleeves, the short axle-sections spaced apart and arranged within the bearing-sleeves and located beyond the
 125 central connection and designed to have car-wheels fixed to them, and locking devices for retaining the axle-sections in the bearing-sleeves, substantially as described.

3. In a device of the class described, the
 130 combination with a car, of bearing-sleeves arranged at opposite sides thereof, the short axle-sections arranged in the bearing-sleeves and designed to have car-wheels fixed to them, and the locking devices securing the axle-sections in the sleeves and arranged at the sides
 135 of the latter, whereby the axle-sections may be released and removed without unloading the car or separating the latter from the train

or removing the sleeve from the car, substantially as described.

4. In a device of the class described, the combination of a car, of bearing-sleeves arranged at opposite sides of the car and provided with laterally-disposed enlargements forming interior chambers, the latter being open at the top and provided with side slots, axle-sections arranged within the sleeves, spaced apart and designed to have car-wheels secured to them, and the locking devices or keys arranged within the bearing-sleeves at the enlargements thereof, engaging the axle-sections and provided with shanks extending through the said slots, said locking devices being adapted to be operated from the sides of the sleeves without removing them therefrom, substantially as described.

5. In a device of the class described, the combination of bearing-sleeves designed to be located at opposite sides of a car, the short axle-sections spaced apart and arranged in the bearing-sleeves, locking devices arranged at the sides of the sleeves and having shanks extending through the same, said locking devices engaging the axle-sections, and keys retaining the locking devices in engagement with the axle-sections, substantially as described.

6. In a device of the class described, the combination of bearing-sleeves designed to be arranged at opposite sides of a car and provided with laterally-disposed enlargements

having openings at the top and slots at the sides, the short axle-sections arranged in the bearing-sleeves, covers secured to the bearing-sleeves and arranged over the openings of the enlargements, and locking devices engaging the axle-sections and provided with shanks extending through the said slots and secured to the covers, substantially as described.

7. In a device of the class described, the combination of bearing-sleeves designed to be located at opposite sides of a car; the short axle-sections arranged within the bearing-sleeves and designed to have car-wheels fixed to them, abutting devices located within the sleeves and arranged to receive the inner ends of the axle-sections, whereby the outer ends of the sleeves and the inner ends of the hubs of the wheels are relieved of the friction resulting from the side thrusts of the bar, the independent spacing-piece connecting the bearing-sleeves and located between the abutting devices and means for securing the axle-sections in the sleeves, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JOHN S. HICKEY.
JAMES H. EGBERT.

Witnesses:

W. A. MCMANANEY,
F. W. PECKOVER.