

No. 697,952.

Patented Apr. 15, 1902

W. H. SCHOFIELD.
METAL RUNNING GEAR FOR WAGONS.

(Application filed Dec. 28, 1901.)

(No Model.)

2 Sheets—Sheet 1.

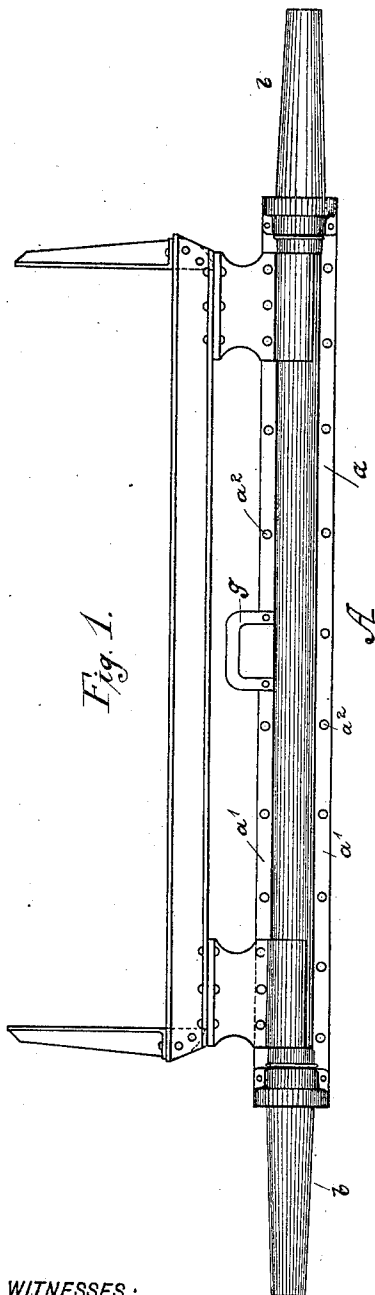


Fig. 1.

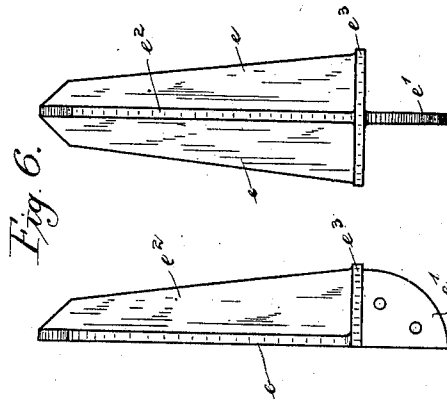


Fig. 6.

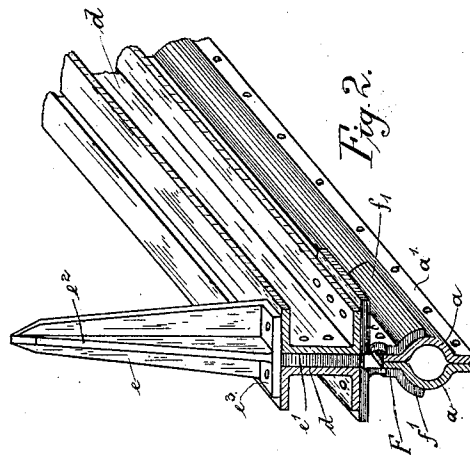


Fig. 2.

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No. 697,952.

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W. H. SCHOFIELD.
METAL RUNNING GEAR FOR WAGONS.

(Application filed Dec. 26, 1901.)

(No Model.)

2 Sheets—Sheet 2.

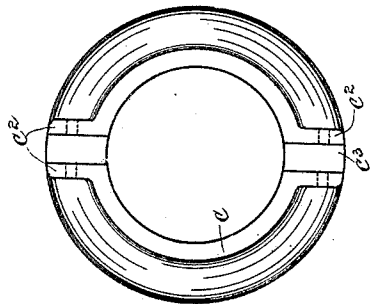
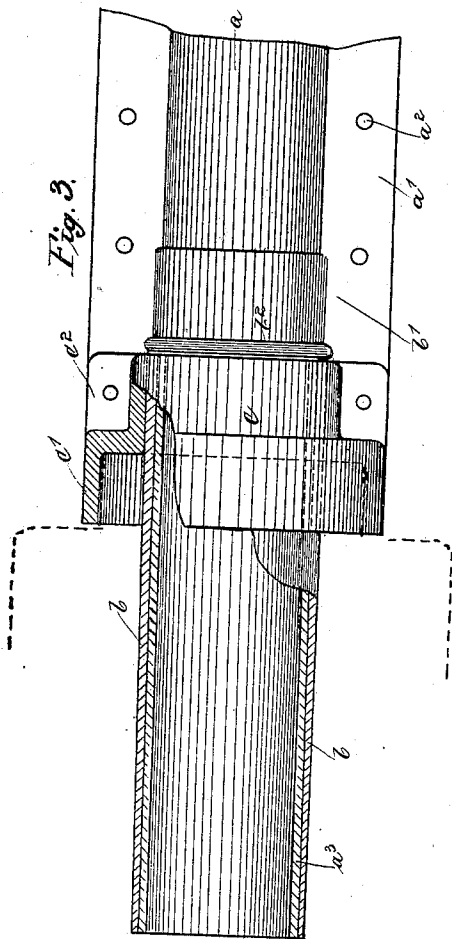


Fig. 4

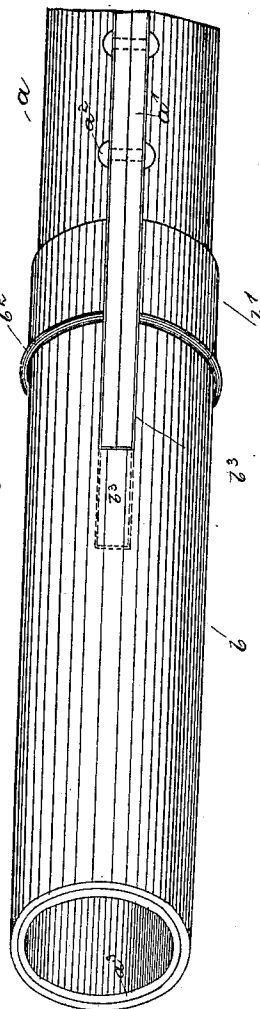


Fig. 5

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METAL RUNNING-GEAR FOR WAGONS.

SPECIFICATION forming part of Letters Patent No. 697,952, dated April 15, 1902.

Application filed December 26, 1901. Serial No. 87,154. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SCHOFIELD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metal Running-Gear for Wagons; 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 the construction of the running-gear of wagons, said gear being formed entirely of metal, and embodies improvements in the form, arrangement, and combination of the axle, bolster, and stake or standard features composing such gear.

The chief objects of my improvements are to produce the several parts making up the gear from simple, strong, and standard mechanical forms of pressed or rolled steel or iron and to depend upon or utilize but few forms of cast-metal construction; to so arrange and combine the several parts that they will be interdependent, divide the strain or load, supported and stiffened where the stress or load is the greatest; to provide a construction possessing more or less resiliency, so that the injurious effects of jars or quickly-applied stress will be reduced to a minimum; to utilize forms and parts, so that if certain elements should break they can be renewed or replaced without abandoning or altering the remaining parts; to provide a tubular axle formed in sections in such manner that it will be stronger and lighter than an integral or unbroken tube and in which the degree of resiliency can be controlled, and generally to produce an all-metal gear in an inexpensive manner which will possess in the highest degree qualities of strength, lightness, and durability.

Having in view the foregoing objects and others of minor importance, I have invented and designed the metal gearing for wagons shown in a preferred form in the accompanying drawings, in which—

Figure 1 is an elevation of the hind gear of a wagon, showing my improvements. Fig. 2 is a perspective view in section, showing the axle, bolster, and standard and the method of uniting same. Fig. 3 is a view on an enlarged

scale, showing the relative arrangement of the axle, sleeve or spindle, and coupling-ring. Fig. 4 is a top view in perspective of the spindle-sleeve applied to one end of the axle. Fig. 5 is a rear elevation of the coupling-ring, and Fig. 6 comprises side and front elevations of one of the standards forming part of the gear or bolster.

Referring to the drawings in detail, A represents the axle portion of the gear and is composed of two complementary sections *aa*, each of which is stamped or otherwise formed from sheet metal into a semitubular shape, with outwardly-turned flanges *a'* extending along their edges, except near their ends, where the flanges are cut off, and with openings *a²* through the flanges to receive the rivets by which the two sections are secured together to form a tubular axle. The unflanged end portions of the sections when placed together form the spindle-section of the axle, as *a³*, which may be a true cylinder or may be slightly tapering. The sections when assembled with the other elements composing the gearing are placed with their flanges vertical, as shown, thus leaving an opening in the upper and lower sides of the spindle portion, which must be closed, as otherwise the lubricating-oil would run through to the inside of such portion. Such closure may be effected by inserting a thimble with in the spindle by welding the edges of the sections together or in any other well-known manner. I prefer to complete the spindle and at the same time effect the closure of the said openings by applying a sleeve *b*, the inside of which fits closely to the spindle portion of the axle and with its outside tapering to conform to the usual spindle shape. This sleeve is preferably formed of hardened steel in order to give it superior wearing qualities. It is provided in its upper and lower sides with open-end slots *b³*, which divide the rear portion into two wings *b'*, said slots permitting the sleeve to be pushed over the end of axle beyond the ends of the flanges, the latter entering said slots, and thus preventing the sleeves from turning on the spindle portion of the axle. To prevent the sleeve from being displaced endwise, I form thereon ribs *b²*, which abut against the rear side of the collar or coupling-ring *c* when the several parts are assembled. The ring *c* is

cylindrical in form and provided with two pairs of spaced lugs c^2 , between which fit the ends of the flanges a' of the axle, and through suitable openings in these lugs and the flange
 5 rivets are passed, thus securing the ring to the axle positively and in a manner that will prevent it from turning and also prevent longitudinal displacement.

In assembling the parts to form the complete axle I first place the sleeve over the
 10 spindle portion of the axle-sections which have been riveted together and push it along until the shoulders at the end of the slots strike against the upper and lower axle-
 15 flanges, then slide the coupling-ring over the sleeve until its rear edge strikes against the annular rib b^2 of the sleeve, whereupon its rivet-holes will register with the corresponding openings in the flanges of the axle-sections. To exclude sand and dirt from the
 20 joint between the hub-box and the sleeve, I form the ring with an overhanging flange c' , which laps a portion of the hub, as indicated by dotted lines in Fig. 3.

The bolster-section of the gear is preferably made up of two channel-irons $d d$, placed with their webs together or adjacent with sufficient space therebetween to permit the
 25 insertion at each end of the bolster of the extension e' of the standards e . The standards are formed with a vertical rib e^2 , extending from the top downwardly and slanting outwardly to the foot e^3 , the latter being horizontal and adapted to rest on the top of the
 30 channel-bars. The standards are secured in position by rivets which pass through suitable holes in the web of the channel-bars, the extension of the standard, and also, if desired, by rivets through the foot and the upper
 35 flanges of said bars, as clearly shown in Fig. 2 of the drawings.

To secure the bolster to the axle, I provide stools F , which are formed from channel-irons, with one flange f' bent downwardly and
 40 curved to partially embrace the tubular portion of the axle, the upper flange being left horizontal. The stools are secured to the axle by rivets passing through suitable holes in their web and in the upper flanges of the
 45 axle-sections and are secured to the bolster by other rivets passing through openings in the upper arm of the stool and the lower flange of the channel-irons which constitute the bolster proper. These stools may be placed at
 50 each end of the bolster or at each end and intermediate thereof.

To provide a suitable bearing for the wagon-reach, (not shown, as it forms no part of this invention,) I cut away the flanges on the upper
 55 side of the axle-sections for a short space at the center, and on each side of this cut-out portion I rivet a yoke g , of suitable form to embrace a reach of ordinary construction.

It will be apparent that by utilizing flanged
 60 metal plates or bars in the manner and of the forms shown I get greater strength and stiffness from a given weight or thickness of metal

than would be possible with other forms. It should be noted that I have built up each element entering into the device from simple
 70 forms and have tied them together in a manner that produces a strong yet comparatively light construction. In placing the flanges of the axle-sections vertically I get a stiffening and stress-resisting capacity not possible if
 75 the flanges extended horizontally, thus permitting the use of a thinner metal in the tube-sections than could otherwise be used. The sleeve and coupling-ring reinforce the axle at its weakest point—i. e., where the flanges
 80 end and the spindle portion begins—thus making it the strongest point.

It is manifest that changes may be made in design and arrangement without affecting the vital elements of the invention described,
 85 and I therefore do not wish to be limited to the exact construction shown.

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

1. In a running-gear for wagons, the combination of a tubular axle composed of two flanged semitubular sections formed from sheet metal and secured together, a bolster composed of flanged metal bars supported by
 90 the axle, and metal standards having portions secured to and embraced by the bars forming the bolsters.

2. In a running-gear for wagons, the combination of a tubular axle composed of two
 100 flanged semitubular sections formed from sheet metal and secured together at their flanges, a bolster composed of flanged metal bars, stools secured to the axle and to the bolster, and metal standards having portions
 105 secured to and embraced by the metal bars forming the bolster.

3. In a running-gear for wagons, the combination of a tubular axle composed of two flanged semitubular sections formed from
 110 sheet metal and secured together at their flanges, sleeves fitting the end portions of the axle, a bolster composed of flanged metal bars having outwardly-turned flanges, stools secured to the axle and the bolster, and standards
 115 having portions secured to and embraced by the metal bars composing the bolster.

4. In a running-gear for wagons, a metal standard composed of a flat metal bar, a horizontal foot at the lower end of said bar, a vertical
 120 extension below said foot and at right angles to said bar, and a vertical rib extending from the top of the bar to the foot, said bar, foot, extension and rib all integrally formed, substantially as set forth.

5. In a running-gear for wagons, a bolster formed of two complementary flanged metal bars secured together with a space therebetween and with their flanges outward, substantially as described.

6. In a running-gear for wagons, an axle composed of two flanged semitubular sections formed from sheet-metal plates and secured together at their flanges, and having exten-
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sions at each end of the axle, said extensions being without flanges.

7. In a running-gear for wagons, an axle composed of two flanged semitubular sections 5 formed from sheet-metal plates and secured together at their flanges, and having end portions without flanges and having the edges of said end portions not secured, and metal sleeves fitting over said end portions and 10 formingspindle-bearings, substantially as described.

8. In a running-gear for wagons, an axle composed of two semitubular sections formed from sheet-metal plates, secured together at 15 their flanges and having end portions without flanges, metal sleeves fitting said end portions of the axle, and means for preventing said

sleeves from turning and from longitudinal displacement.

9. In a running-gear for wagons, an axle 20 composed of two semitubular sections formed from sheet-metal plates secured together at their flanges and having unflanged end portions, metal sleeves fitting said end portions, said sleeves having a rib formed thereon and 25 slots cut therein, and rings fitting over said sleeve and secured to the flanges of the axle.

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

WILLIAM H. SCHOFIELD.

Witnesses:

F. BENJAMIN,
WILTON B. JUDD.