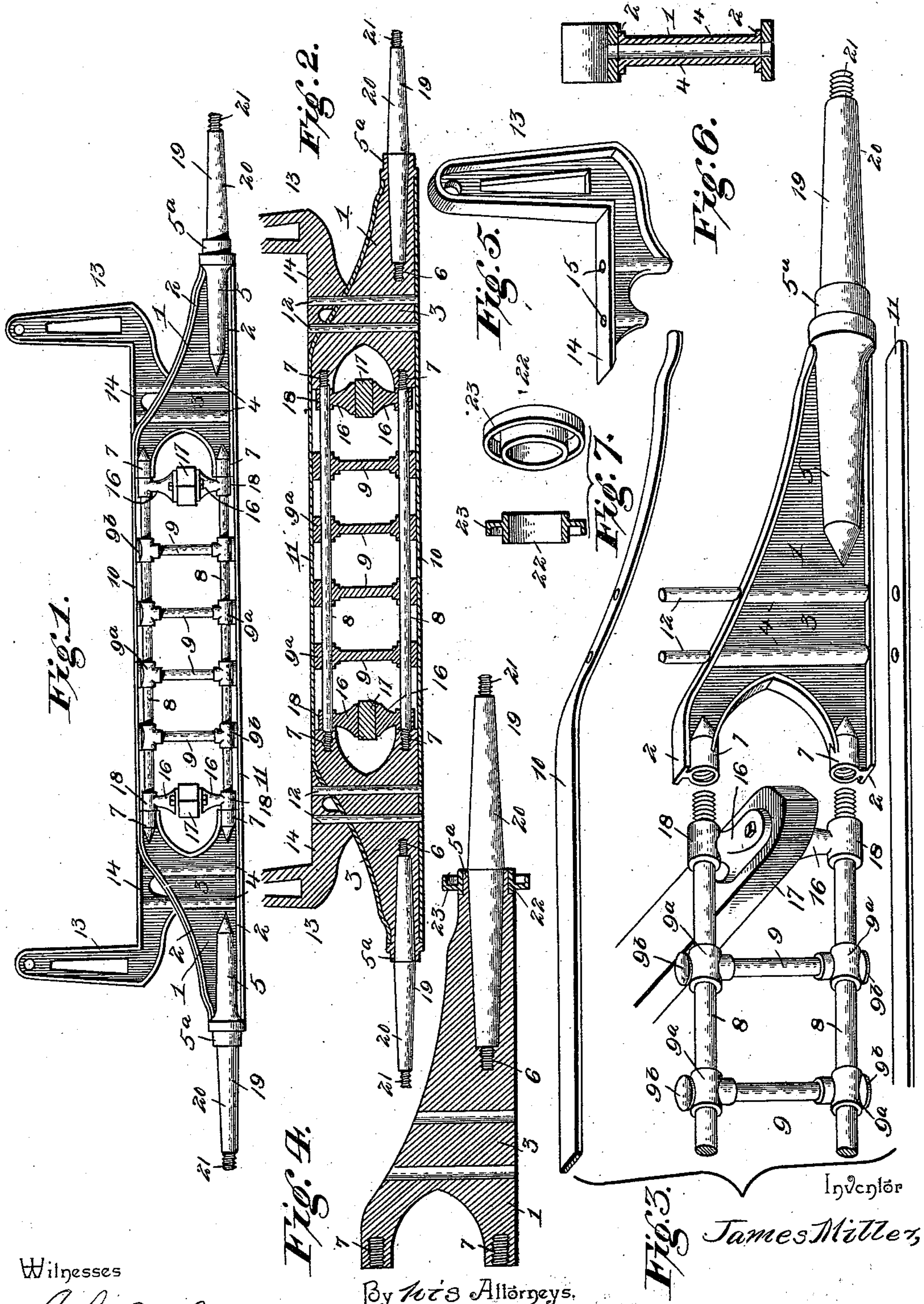


(No Model.)

J. MILLER.
AXLE FOR VEHICLES.

No. 528,482.

Patented Oct. 30, 1894.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES MILLER, OF ORLANDO, FLORIDA, ASSIGNOR OF ONE-HALF TO
CHARLES LORD, OF SAME PLACE.

AXLE FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 528,482, dated October 30, 1894.

Application filed January 23, 1894. Serial No. 497,805. (No model.)

To all whom it may concern:

Be it known that I, JAMES MILLER, a citizen of the United States, residing at Orlando, in the county of Orange and State of Florida, have invented a new and useful Axle, of which the following is a specification.

The invention relates to improvements in axles.

The object of the present invention is to improve the construction of axles, and to provide one possessing great strength, rigidity and durability, as well as lightness; and furthermore to provide for a convenient renewal of the spindles when worn.

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 an elevation of an axle constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is an enlarged perspective view of one end of the axle, the intermediate bars and the tie strips being separated from the end or casting. Fig. 4 is an enlarged sectional view of one end of the axle. Fig. 5 is a detail perspective view of one of the standards. Fig. 6 is a transverse sectional view of a portion of the axle. Fig. 7 shows detail views of the sand band.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1—1 designate similar end castings. Each end casting is tapered toward its outer end, and comprises upper and lower flanges 2 and an intermediate vertical web 3, said web, adjacent to the inner end of the casting, being thickened, or provided with superficial ribs 4, which are bored. The outer end of the casting 1 is provided with a horizontally disposed bored rib 5, the same having a collar or annular shoulder 5^a at its outer end, and the bore being slightly tapered to agree with the spindle, and having at its inner end a threaded socket or seat 6. The inner end of the casting is provided with upper and lower threaded sockets 7 arranged at the top and bottom; and the threads of these sockets 7 are reversely disposed to those of the other casting 1.

The castings 1 are connected by upper and

lower intermediate rods 8, the ends of which are reversely threaded to engage with the threads of the sockets 7; and these rods 8 are connected by a series of vertical rods or struts 9, which terminate in heads 9^a. The heads are bored or provided with socket openings to receive the upper and lower intermediate rods 8, and are provided with flattened bearing faces 9^b, which fit against metal tie-strips 10 and 11.

The lower side of the axle is provided with the metal tie-strips 10, the same being perforated opposite the bored ribs 4, and terminating at the outer ends of the castings 1, adjacent to the collar or shoulder 5^a. The upper side or top of the axle is preferably provided with the bent tie strip 11 likewise perforated. These strips are formed of steel, and are bolted to position by bolts or rivets 12, that pass through the perforations formed in the ribs 4, and through the strips 10 and 11, and also serve for securing metal standards 13 to the end castings.

The metal standards 13 each preferably consists of a casting, and is provided with an inward extending horizontal arm 14, having a flat upper face and provided with vertical bores or openings 15, which register with those of the ribs 4, and receive the upper portions of the bolts or rivets 12.

The axle is attached by means of plates 16 to hounds 17; the series of vertical rods 9 are arranged between the hounds; and the plates 16, which are located adjacent to the threaded ends of the intermediate rods 8, are provided with flat opposed faces which fit against the upper and lower faces of the hounds. The plates 16 are secured by bolts or other fastening devices to the hounds, and are provided with outward extending sockets 18 disposed above and below the hounds and receiving the upper and lower intermediate rods 8.

The spindles 19 are tapered from their centers toward their outer ends in order to form bearing portions 20 at each side of the longitudinal center of a spindle. The ends of each spindle are provided with threaded tenons 21; and these tenons are designed to receive axle nuts or to be threaded in the seats 6 of the tapered bores 5 at the outer ends of the castings 1.

The axle is provided with sand bands 22,

arranged on the annular collars or shoulders 5^a. Each sand band is provided at its outer face with an annular recess, to receive the axle box of the wheel; and this recess is 5 formed by an annular flange 23 L-shaped in cross-section.

It will be seen that the axle is truss-like, which, as is well known, secures a maximum amount of strength with a minimum amount 10 of weight, and that the parts, by being secured rigidly together, produce a strong and durable structure. When a spindle becomes worn, it will be readily understood, that the wheel may be removed and the spindle ro- 15 tated in order to disengage the threads of its inner tenon from the threaded socket of the bore 5, and the spindle reversed end for end, in order that the unworn portion may be brought outermost to receive the wheel; and 20 the inner worn end is fitted in the bore 5, and drawn snugly therein by means of the threaded tenon engaging with the threads of the socket 6.

Changes in the form, proportion and the 25 minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

30 1. The combination with an axle having its opposite ends provided with tapered bores terminating in threaded sockets, of opposite spindles tapered at each side of their centers and terminating at each end is a threaded 35 tenon for engaging the sockets and fitting the bores, the spindle being thereby made reversible, substantially as described.

2. In an axle, the combination with the op- 40 posite metal ends provided at their inner ends with oppositely threaded sockets, reversely threaded continuous intermediate rods en- gaging the threads of the sockets, and the ver- tical strut rods connecting the intermediate rods, substantially as described.

45 3. In an axle, the combination with the op- posite metal ends having upper and lower

flanges, intermediate webs and bored vertical ribs, of spindles at the outer ends of the cast- ings, upper and lower tie-strips embracing the axle, and fastening devices passed through 50 the strips and the bored ribs, substantially as described.

4. In an axle, the combination with the op- 55 posite metal ends provided at their inner ends with oppositely threaded sockets, the inter- mediate rods provided with threaded ends fit- ting in the sockets, vertical rods or struts pro- vided at their ends with heads having sockets receiving the intermediate rods, and spindles, 60 substantially as described.

5. In an axle, the combination of the metal 65 ends provided with vertical bores, intermedi- ate rods connecting the ends, standards pro- vided with horizontal arms having bores reg- istering with those of the ends, and fastening devices extending through said bores and se- 70 curing the standards to the ends, substan- tially as described.

6. In an axle, the combination of the ends, 75 intermediate rods connecting the ends, and plates provided with sockets to receive the in- termediate rods and having opposed faces adapted to bear against and be secured to 80 hounds, substantially as described.

7. In an axle, the combination of the ends, 85 intermediate rods connecting the ends and lo- cated at the top and bottom thereof, vertical rods or struts provided at their ends with openings or sockets receiving the intermedi- ate rods, and the plates 16 extending inward 90 from the intermediate rods and provided with sockets receiving the same, said plates being adapted to be secured to the upper and lower faces of hounds, substantially as described.

In testimony that I claim the foregoing as 95 my own I have hereto affixed my signature in the presence of two witnesses.

JAMES MILLER.

Witnesses:

WM. MARTIN,
CHAS. LORD.