

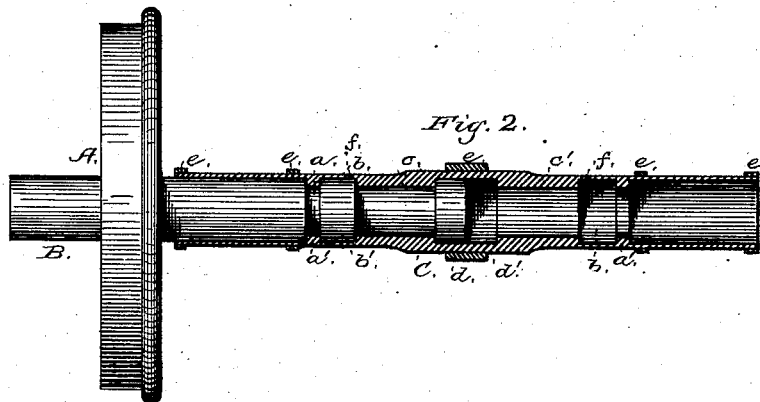
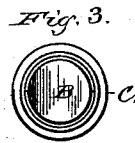
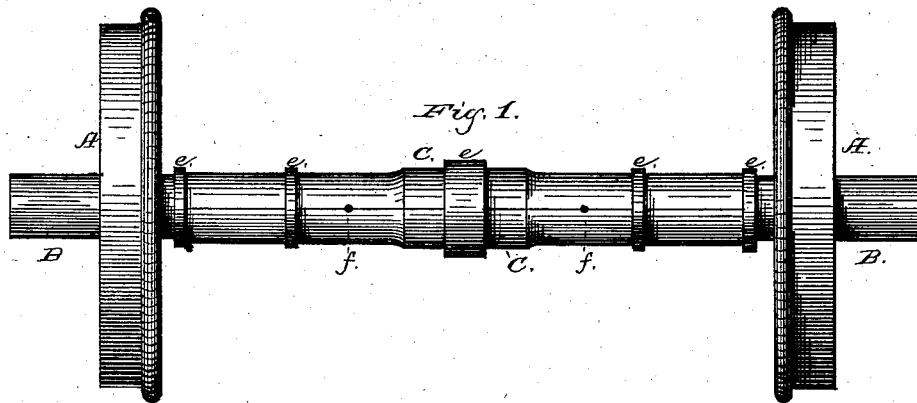
(No Model.)

J. L. FLEMING.

CAR AXLE.

No. 302,120.

Patented July 15, 1884.



Witnesses;

J. C. Clark.
m. J. Dagg

Inventor;

John L. Fleming
4 Geo. W. Dyer
Atty.

UNITED STATES PATENT OFFICE.

JOHN L. FLEMING, OF TEWKSBURY, MASSACHUSETTS, ASSIGNOR OF ONE-FOURTH TO LEONARD HUNTRESS, OF SAME PLACE.

CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 302,120, dated July 15, 1884.

Application filed July 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. FLEMING, of Tewksbury, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Car-Axles; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of the invention, which is to be hereinafter described and illustrated, is to so construct an axle for steam or street railway cars that the friction and consequent wear of the wheels of such cars when passing around a curve will be practically avoided, and at the same time all the strength and advantages of an ordinary axle be retained.

To the accomplishment of the above the invention consists of an axle divided at its center and inclosed in a suitable covering, said axle and covering being provided with corresponding grooves and ribs, the two being held firmly together by a number of wrought-iron rings, which are shrunk around said covering.

To the better understanding of my invention, and to enable those skilled in the art to make and use the same, I will now proceed to describe it, having frequent reference to the accompanying drawings, and to the letters of reference marked thereon, said drawings forming part of this specification, and representing, in Figure 1, a side elevation of an axle constructed in accordance with my invention; Fig. 2, a side elevation, with one-half of the axle and covering removed; Fig. 3, an end view.

Like letters refer to corresponding parts in each of the figures.

In the drawings, A A represent two wheels of a car; B B, the two parts of a divided axle, to which said wheels are secured, and C C a divided sleeve or covering held securely around said divided axle. Each half A of the divided axle is provided at the point *a* with a circumferential groove, into which fits tightly a rib, *a'*, provided at a corresponding point on the sleeve or covering C. This sleeve C is also provided with a groove, *b*, which is of

sufficient width and depth to receive a rib, *b'*, formed on the divided axle A, and separating the groove *a* from a groove, *c*, also cut in said axle A, said last-named groove receiving and holding securely a rib, *c'*, corresponding in size and depth to said groove and formed on the sleeve or covering C. On the end of each half of this divided axle is formed a rib, *a*, which fits into a groove or hollow opening, *a'*, made in the sleeve C. The sleeve C having been placed around the divided axle A, the parts are held securely together by means of a number of wrought-iron rings, *e e*, &c., which are passed over and around said sleeve, and then sufficiently shrunk by being heated to prevent their slipping or sliding from their proper position. This sleeve C may be provided at any suitable point with a hole or opening, *f*, through which oil for lubricating the axle may be passed.

The axle A may be made of any suitable material, as also may the covering C; but I prefer to form said covering of cast-iron, that metal being best adapted to withstand the strain to which said sleeve is subjected.

It will be seen by reference to the drawings that the sleeve C extends nearly the entire length of the axle A, thus serving to protect said axle from damage and imparting to it all the strength and durability of an undivided axle, while the advantages arising from the use of a divided axle are retained. By further reference to said drawings, it will be seen that the sleeve has its greatest thickness at its center, by means of which construction that portion of said sleeve which is the portion that receives the most strain is greatly strengthened, while the great weight which would be necessary were the sleeve of the same thickness throughout is avoided. By the use of the shrunk rings *e*, by means of which the sleeve and the axle are held in place, a construction is obtained which is most desirable at all times, inasmuch as the bolts and other contrivances used in axles of this description are not to be depended upon.

I am aware that it is old to divide a car-axle and inclose it in a covering or sleeve. I am also aware that such divided axles have

been held in semi-cylinders by means of a sleeve or helix shrunk or driven thereon, which is a construction well adapted to the axles upon which it is used, but which would
5 be impracticable and useless in the one herein described.

What I claim, and that for which I desire to secure Letters Patent, is—

The combination, in a car-axle, of the divided axles B B, each being provided with
10 grooves and recesses, and a divided sleeve, C

C, having projections corresponding with the grooves and recesses on the axle, and retaining-rings *ee*, substantially as and for the purpose described.

This specification signed and witnessed this
23d day of June, 1882.

15

JOHN L. FLEMING.

Witnesses:

JOHN DAVIS,

ALMERIA L. BOYNTON.