

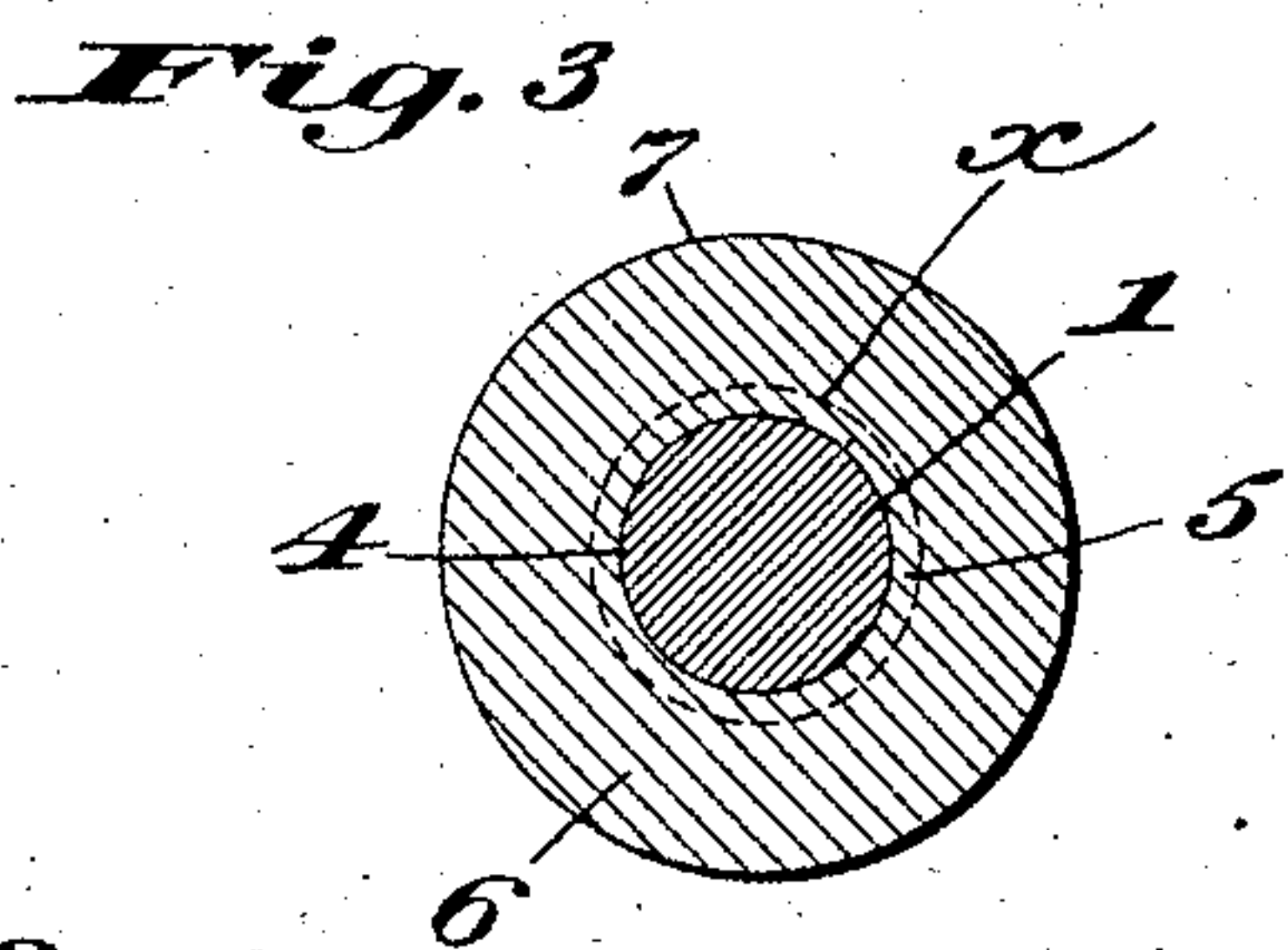
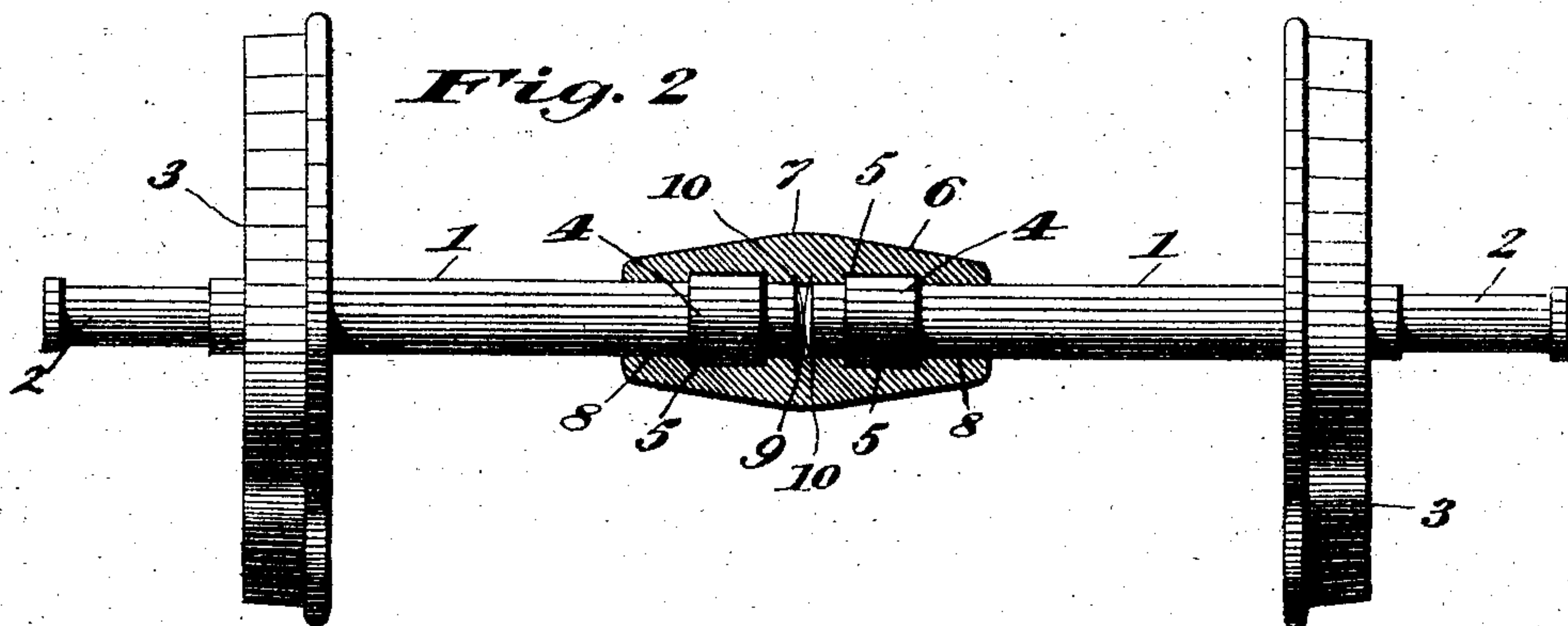
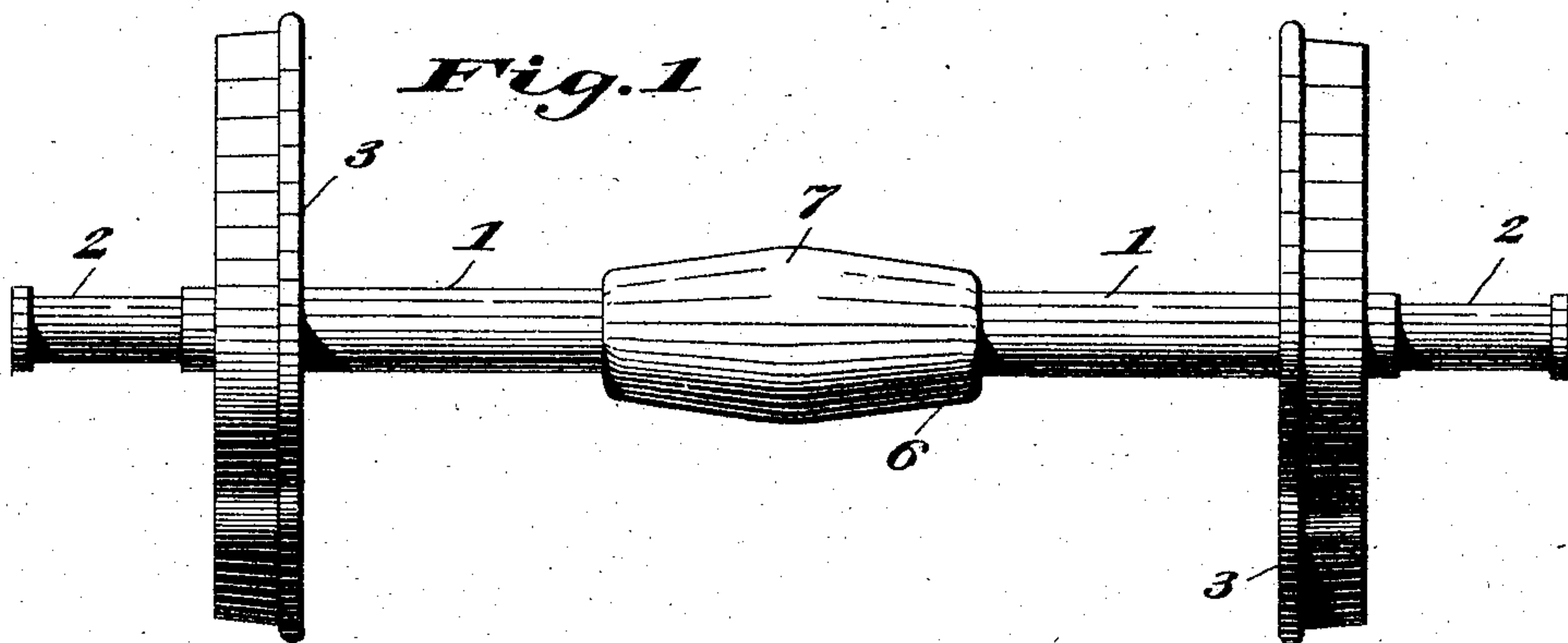
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H. J. BAYARD.

CAR AXLE.

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Witnesses

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CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 778,299, dated December 27, 1904.

Application filed February 23, 1904. Serial No. 194,727.

To all whom it may concern

Be it known that I, HYRAM J. BAYARD, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Car-Axles, of which the following is a specification.

This invention relates to certain improvements in car-axles, and particularly in that class of axles which are divided centrally between the wheels and have their sections adapted for independent turning movement whereby compensation is afforded for the differences in movement of the respective wheels in rounding curves and the like; and the object of the invention is to provide an axle of this general character of a simple and inexpensive nature and of a strong and durable construction by means of which the independent turning movement of the axle-sections is permitted with less wear of the parts and also with lessened liability of breakage.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved car-axle whereby certain important advantages are attained and the device is rendered simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is an elevation showing a car-axle constructed according to my invention; and Fig. 2 is a view somewhat similar to Fig. 1, but with the central cylindrical coupling sleeve or member shown in section. Fig. 3 is a sectional view drawn to a larger scale and taken transversely through the axle as seen in Fig. 2 and illustrating certain features of the coupling of the axle-sections to be hereinafter referred to.

As seen in these views, the axle is centrally divided to form two sections or parts 1 1 of substantially equal length, and these sections 1 1 are alined with each other and have their outer ends provided with reduced portions 2

2, in which are adapted to be engaged the brasses of the bearings, each section being also provided inside of its reduced portion 2 with one of the car-wheels 3, fixedly held thereon in the ordinary or any preferred way.

At their adjacent ends each of the respective axle-sections 1 1 is provided with an integral annular enlargement or collar 4, extended circumferentially around it, and the inner adjacent ends of the axle-sections 1 1 are surrounded by and inclosed within a cylindrical tubular coupling sleeve or member 6, the bore of which at opposite ends of said sleeve or member is made, as indicated at 8 8 on the drawings, in a diameter to snugly receive the sections 1 1 at points outside the integral enlargements or collars 4 4 on said axle-sections. The snugly-fitting portions 8 8 of the bore at the end of sleeve or member 6 form bearings wherein the axle-sections are held for free turning movement, and at points inside of said bearings the bore of the sleeve or member 6 has annular hollows or cavities extended from it, as indicated at 5 5 on the drawings, and wherein the enlargements or collars of the axle-sections 1 1 are adapted to be received, the ends of the collars or enlargements 4 4 and of the said hollows 5 5 forming shoulders or devices for reciprocal engagement and formed, respectively, on the axle-sections and on the coupling sleeve or member and adapted to prevent endwise withdrawal of the axle-sections from the sleeve or member 6, while permitting free turning movement of each section 1 relative to the other axle-section.

The sleeve or member 6 is formed in a single or integral piece and will be applied to the adjacent ends of the sections 1 1 by first heating it in a well-known way, so that its bore is enlarged to permit the sections 1 1 to be engaged therein with their enlargements or collars 4 4 in position to be engaged by the hollows or cavities 5 5 of the sleeve, which enlargements or collars 4 4 will when the sleeve or member cools and shrinks be engaged within said annular hollows or cavities to securely hold the adjacent ends of the axle-sections in

relation, while permitting free turning movement of each section independently of the other.

The central portion of the sleeve or member 6, whereat the greatest stress is exerted in the operation of the device, will be by preference made in increased thickness, as indicated at 7 on the drawings, and the bore of said sleeve or member 6 will by preference also be so formed as to afford for the inner end of each axle-section 1 a snugly-fitting bearing 10, similar to the bearings 8 8, which bearings 10 10 are between the hollows or cavities 5 5 in the sleeve of member 6 and are of a length adapted to permit the section to turn without undue wear in the sleeve 6. The adjacent abutting ends 9 9 of the sections 1 1 are also by preference made convex or rounded, as seen in Fig. 2, so that the friction of each section in turning upon the other will be lessened and the independent turning movement thereof will be more readily accomplished.

In the operation of the device it will be seen that the inner adjacent ends of the axle-sections are securely and firmly held together in such a way as to afford the stability and strength of an integral or undivided axle, while at the same time the respective sections 1 1 are permitted to freely turn independently one of the other, so that one wheel may move at a less speed than the other, and in this way the grinding or dragging of one wheel upon the rail in rounding curves and the wear and deterioration of the parts consequent thereon are altogether avoided.

From the above description it will be seen that the improved car-axle constructed according to my invention is of an extremely simple and inexpensive nature and is especially desirable for use by reason of the strength afforded by forming the coupling-sleeve in an integral tubular form and the attachment of said sleeve to the axle-sections by first heating and then shrinking said sleeve in place on the ends of the sections, and it will also be understood that in carrying out my invention the extent of projection of the flanges 5 of the sleeve or member 6 should be to afford the best results proportioned so as to be within the range of the expansibility of the metal from which said sleeve 6 is formed.

It will also be obvious from the above description that the improved car-axle is capable of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of the device herein set forth in carrying out my invention in practice.

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

1. A car-axle comprising abutting axle-sections each having a wheel fixedly held thereto and a coupling-sleeve having a bore within which the abutting ends of the axle-sections are received, said sleeve being made in integral tubular form and annular devices of different diameters adapted for reciprocal engagement and produced upon the respective axle-sections and within the bore of said sleeve for holding the sections within the sleeve, the difference in diameter between the respective annular engaging devices being within the range of the expansibility of the material of which the sleeve is produced.

2. A car-axle comprising abutting axle-sections having at their abutting ends convex surfaces and having wheels fixedly held upon them, and a coupling-sleeve made in integral tubular form with a bore in which the abutting ends of the axle-sections are received and reciprocal annular engaging devices of different diameters and carried on the ends of the axle-sections and within the bore of said sleeve, respectively, for holding the parts in relation, the difference in diameter between the respective annular engaging devices being within the range of the expansibility of the material of which the coupling-sleeve is formed.

3. A car-axle comprising abutting axle-sections each having a wheel fixedly held thereon and having, adjacent to its inner end a circumferential enlargement and a coupling sleeve or member having a bore, the end and central portions of which are made in diameters to snugly receive and hold the axle-sections for independent turning movement in said coupling sleeve or member, said sleeve or member having its bore provided, at points intermediate between said end and central portions, with annular hollows or cavities in which the circumferential enlargements of the respective axle-sections are received, the end surfaces of the circumferential enlargements of the axle-sections and of said annular hollows or cavities forming devices adapted for reciprocal engagement to prevent endwise withdrawal of the sections from the coupling sleeve or member and being of widths within the range of expansibility of the material from which the coupling sleeve or member is produced.

Signed at Chicago this 16th day of December, 1903.

HYRAM J. BAYARD.

Witnesses:

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