

(No Model.)

J. M. SIGOURNEY.
Car Axle.

No. 236,097.

Patented Dec. 28, 1880.

Fig. 1.

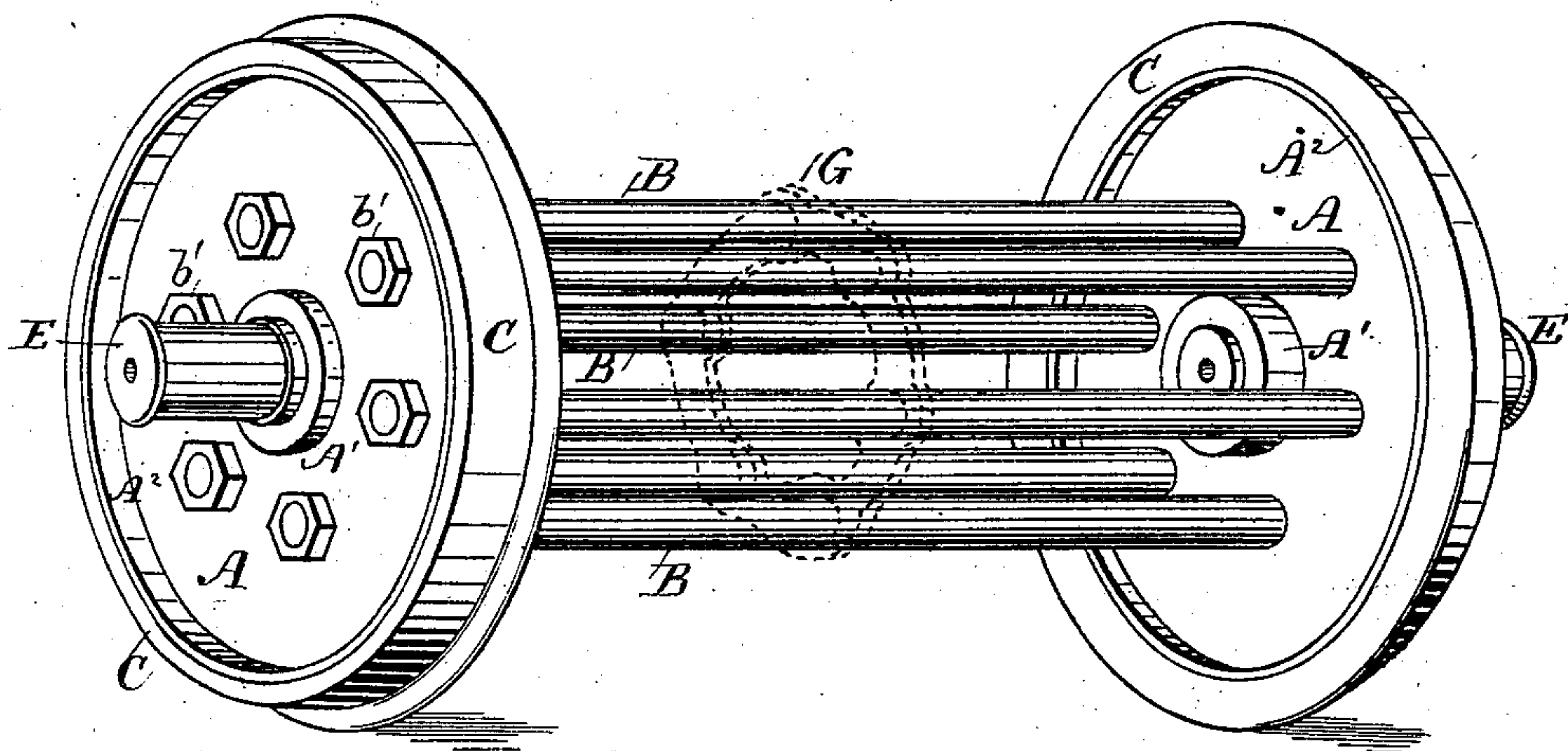
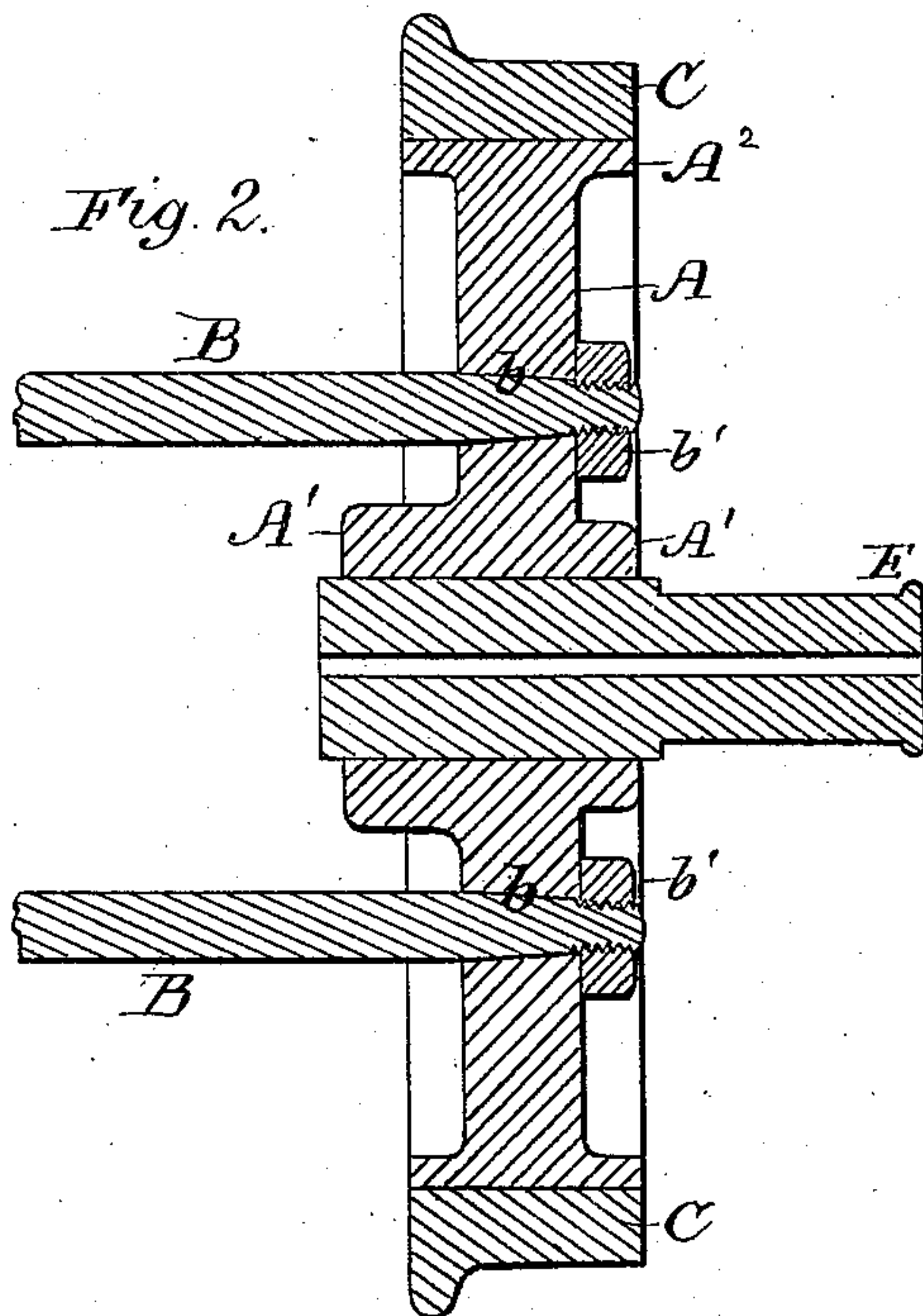


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN M. SIGOURNEY, OF WATERTOWN, NEW YORK.

CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 236,097, dated December 28, 1880.

Application filed July 17, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. SIGOURNEY, of Watertown, Jefferson county, New York, have invented a new and useful Improvement in Car-Axles, which invention is fully set forth in the following specification.

This invention relates to the manufacture of car-axles, and has for its object, mainly, to increase their strength and durability and to diminish the chances of accident resulting from breakage.

Heretofore the opposite wheels of railway-cars have been joined together by a single axle, which passes through the hub of the wheel and serves as a journal for the same. This construction has many disadvantages, the main one being the liability of accident where the whole strength resides in a single axle. These disadvantages I remedy by connecting the opposite wheels by a number of metal rods or shafts—say six—at suitable distances from the center of the wheels. The principal advantage of this construction is that it gives greater strength to the structure, inasmuch as the combined strength of all the rods, as they are arranged in this improvement, is much greater than that of a single axle, while the capacity to resist all strains is greatly increased, and torsional strains are less violent than on a single axle. Moreover, the breakage of one rod would not lead to an accident, since the strength of the whole would not thereby be seriously impaired, and the car could be kept on the track until a repair-shop was reached. The possibility of all the rods breaking together is so remote as not to be worth taking into consideration. With car wheels and axles as ordinarily constructed the breaking of an axle often occurs without any warning of the danger impending, since inspection will not readily reveal it; but when made according to this invention the breaking of a single rod would be at once detected. Another advantage of this construction is that the rods, if bent by accident to a train of cars, could be easily straightened, while the straightening of a single axle is, on account of its thickness, extremely difficult. And again, a single axle is made necessarily of a homogeneous metal, while in using a number of rods to form the axle a greater

range of metals is available, as the rods can be made of a metal of high tensile strength, to resist the strains upon them, and the journals of a metal possessing wearing qualities as its characteristic. The separate rods or shafts pass through the plates of the wheels and are given a taper fit therein. In this way the distance between the wheels can be accurately gaged, and at the same time the usual square shoulder is avoided. The shafts thus retain the entire strength due to their diameter, and have no angle of weakness at the points where they are joined to the wheels.

My improvement further consists in providing the wheels with short journals, independent of each other and of the axle. As the journals are subject to wear, they are frequently the first parts to give way, and with axles of the ordinary construction the giving way of one journal would necessitate an entirely new axle; whereas with short independent journals one worn or broken could be replaced without removing the other. These journals are preferably hollow, as an aid in keeping them cool, and are secured to the hub in any ordinary or suitable way.

To give greater strength to the axles, to lessen their vibration, and to enable them the better to resist torsional strain, one or more stays or braces are or may be employed, consisting of a wing-shaped metal plate with perforations through which the rods pass.

The invention can be adapted to chilled wheels, or wheels having the flange and tread in one piece with the plate and hub of any usual construction; also, to those with separate tires, to which it would probably, in practice, be applied as a matter of economy. With wheels having my improvements and tires the hub, plate, and rim of the wheel, with the rods, would form a permanent structure, and would so remain until one or more of the parts is disabled. The journals and tire, which become unserviceable by wear in a much shorter time than the other parts, can be replaced when necessary.

In order that the invention and the manner of carrying the same into effect may be fully understood, it will now be explained in connection with the accompanying drawings, which form a part of this specification, and in

which similar letters of reference, wherever they occur, indicate like parts.

Figure 1 is a perspective view of a pair of car-wheels and their axle and journals constructed in accordance with this invention; and Fig. 2 a vertical section through one of the wheels, showing the manner of attaching the rods thereto.

A A' represent, respectively, the plates and hubs of the wheels, which may be of iron or other suitable metal; A², the rim, and B the rods forming the axle. Where these rods pass through the plate they are tapered, as shown at b, Fig. 2, and they are secured to the plates A by means of nuts b'.

C represents the tires, and E the journals, which are, as shown, hollow. They are passed through and secured to the hubs A' in any desired manner.

In Fig. 1 a stay or brace, G, is shown in dotted lines. It is used, when deemed necessary, to connect the rods or shafts together and to impart thereto greater capacity for resisting strain. As shown, it is fastened securely to two opposite shafts by means of washers, which are shrunk on said axles; but any other suitable mode of fastening them may be adopted. If desired, several of these braces may be used instead of one.

The rods or shafts B are arranged parallel to and at equal distances from each other around the center of the wheel, and preferably at points midway between the center and the periphery. The combined area of these several shafts in cross-section may be about equal to the area of the single axle commonly employed.

If the plates A should not be of sufficient thickness to afford a secure fastening to the rods, re-enforcing hubs are employed for that purpose.

The hollow journals E may be plugged at one of the ends, if desired, and water may be introduced for the purpose of cooling them when heated.

It is evident that modifications may be made in the details of construction without departing from the spirit of this invention.

The series of rods and short independent journals are shown in connection with a pair of wheels for the purpose of illustrating the arrangement of the several parts of this improvement without reference to any particular style of wheel. A sufficient thickness is given to the plate to show the taper joint of the rods with the plate, and for this purpose merely, as such thickness would be manifestly much too great if the plate were wholly of metal.

The invention can be applied to chilled wheels of nearly every form, with the necessary modifications for the hubs for the rods; but its use would be largely more economical in connection with wheels having tires, as when the chill of a cast-iron wheel becomes unserviceable through wear the entire wheel is useless. With wheels having tires, on the other hand, the wheel with the improved axle remains intact after the tire becomes unserviceable. As a matter of economy in this respect, and having reference also to the renewal of the journals, my improvement is preferably used in connection with wheels having tires, and is more particularly applicable thereto.

Wheels of this class have many forms, and are made wholly of metal, or partly of metal and partly of other material. The paper car-wheel is an example of composite construction. To these wheels my improvement can be applied with the modification in regard to hubs before mentioned. I do not, therefore, limit myself to any particular form of car-wheel, as the invention has relation to the axle and journals, and not to the construction of the wheel by itself.

Having thus fully explained the said invention and the manner of carrying the same into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a pair of car-wheels, each provided with a separate short journal, of a number of rods connecting the said wheels with each other, said rods constituting the axle for the same, substantially as described.

2. The combination, with the plates of a pair of railway-car wheels, of a number of parallel rods firmly connected therewith by a tapering joint, substantially as described.

3. In a pair of car-wheels in which the plates of the wheels are connected by a series of rods, the brace located between the wheels and connecting said rods with each other, substantially as described.

4. A pair of car-wheels having their plates connected with each other and provided with independent short journals capable of removal and replacement without disconnecting the wheels, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JNO. M. SIGOURNEY.

Witnesses:

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RALPH T. SMITH.