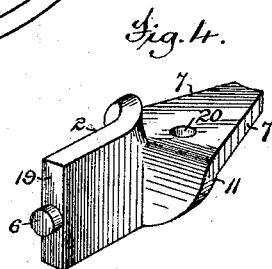
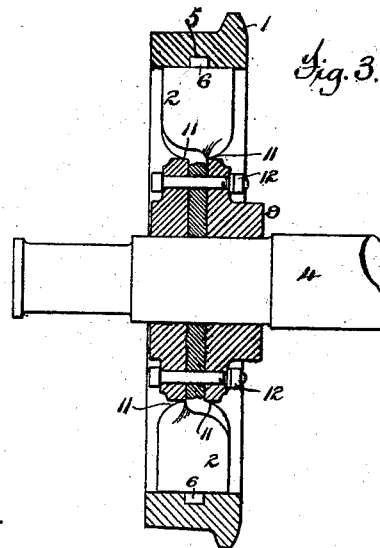
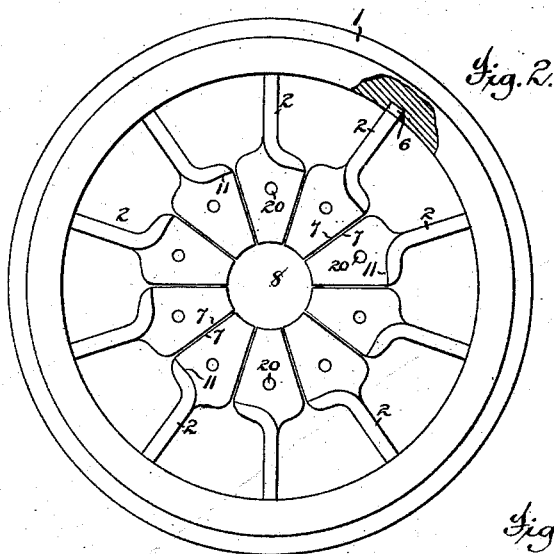
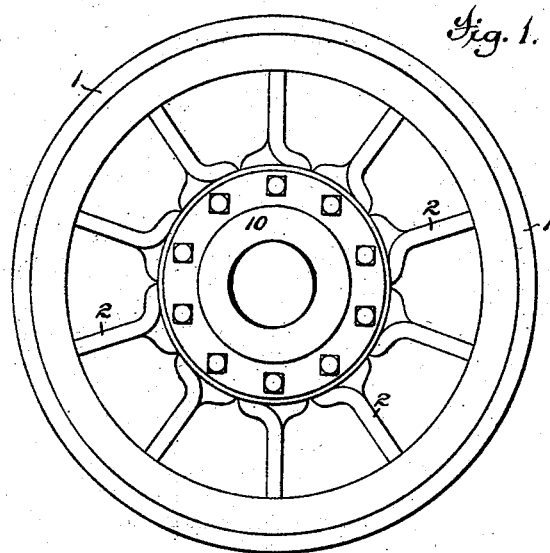


(No Model.)

G. W. MILTIMORE.
ART OF MAKING CAR WHEELS.

No. 262,910.

Patented Aug. 15, 1882.



Attest;
Geo. N. Milmore
A. St. J. J. J. J.

Inventor,
George W. Milmore,
by *Munson & Philipp*
Attys.

UNITED STATES PATENT OFFICE.

GEORGE W. MILTIMORE, OF CHICAGO, ILLINOIS.

ART OF MAKING CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 262,910, dated August 15, 1882.

Application filed January 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MILTIMORE, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Art or Method of Making Car-Wheels, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

Wheels for railway-cars were formerly almost universally made of cast-iron and in a single piece. To cure the many disadvantages attending the use of wheels made of this material and in this manner, principal among which is their liability to crack, particularly in cold weather, it has in recent years been found desirable to make wheels by building them up from separate parts, and this has resulted either in defective or costly constructions.

My invention relates to this last-named class of wheels; and its object is to produce a wheel which shall overcome the dangerous defects of the other structures and avoid the great expense attending the production of the more approved wheels.

To this end it consists in a peculiar method of assembling and securing the parts, all of which is too particularly hereinafter set forth to need further preliminary description.

In said drawings, Figure 1 is a side elevation of a wheel constructed according to the herein-described method. Fig. 2 is a side elevation of the wheel, with one part of the hub and a portion of the rim broken away to show the joint between one of the spokes and the rim. Fig. 3 is a transverse vertical section of the wheel, showing the axle in position. Fig. 4 is a perspective view of one of the spokes.

The rim of the wheel is made of steel or wrought-iron, and is of the usual shape to enable it to run properly upon the track-rails. Around its interior periphery it is provided with a series of mortises, 5, which receive the tenons 6 of the spokes. The spokes 2 are made from ordinary flat commercial bars of iron of suitable size, one end being provided with the tenon 6 to enter the mortise 5 in the rim, and a straight surface, 19, to bear against the inner periphery of the rim, the other end being cut away at its edges 7, so as to form

substantially a sector of a circle, the piece being then twisted at about mid-length by giving it a quarter-turn, as clearly shown in Fig. 4.

When a series of spokes of the construction just described have their tenons entered into the mortises of the rim, and are depressed and assembled in a radial series within said rim, they will present the appearance shown in Fig. 2, their beveled inner ends, 7, fitting together like the sectors of a circle and forming a flat even surface on opposite sides. When the wheel is in this condition, it being properly supported, a mandrel is forced through the opening 8. This mandrel must be of sufficient size to force each one of the spokes outward and seat it outward against the rim. The shoulders 11 on both sides of the spokes are then, by the use of a suitable instrument, cut away so that they will present perfectly circular bearing-seats of a given diameter on opposite sides. The hub-plates 9 10, which are of such size as to fit tightly into their bearing-seats, are then placed over the mandrel and pressed to the proper position within their seats, thus resting against the shoulders of the spokes and operating to hold them outwardly in the position to which they have been forced. Holes 20 are then bored through the hub-plates and spokes, and the hub-plates are then securely fastened in position by the bolts 12, which are fastened either by riveting or by nuts, as shown in Fig. 3.

It should be here remarked that it is not necessary that there should be a bolt for each spoke. A less number will often be found sufficient to hold the wheel firmly together, the intervening unbolted spokes being held in position by the hub-plates. After the hub-plates have been bolted in place the mandrel is removed and the center opening or axle-bearing 8 is reamed out to the desired size, after which the axle 4 is forced into position by hydraulic or other pressure, and the wheel is complete.

It is to be remarked that the spokes should be cut of such a length and the opening in the hub-plates be made of such a size that the opening 8, when the mandrel is forced through it, will be considerably smaller in size than it is designed to be when the wheel is finished.

This will permit of great force being used to force all the spokes snugly home, even though there may be slight variation in their lengths, and admit a marring of their ends without injury, though it will entail considerable reaming-out to produce a perfectly circular bearing, so that all the spokes may rest firmly upon and have the entire surface of their ends bear upon the axle when it is finally forced home.

10 While the method just described is particularly adapted to the manufacture of wheels for railways-cars, it is evident that it is applicable to the manufacture of wheels for rolling-stock generally.

15 Although the preferred structure is that in which the inner ends of the spokes have a solid bearing, yet the herein-described method may be applied to the making of wheels in which the ends of the spokes are shortened, so that they depend wholly for support upon the shoulders 11.

20 The shoulders 11 of the spokes might be made straight instead of arc-shaped, in which case the hub-plates would be polygonal instead of circular. This form of wheel would

not, however, be desirable, as it would involve an increase in the cost of production.

The wheel herein described is not claimed, it forming the subject-matter of an application already pending in the United States Patent Office.

What I claim is—

The herein-described method of making car-wheels, the same consisting in placing the spokes in position within the rim, then pressing them outward by forcing a mandrel between their converging ends, then cutting the shoulders on the spokes so that they will form a circular seat, and then inserting and securing on each side hub-plates of such size that they will bear upon the shoulders of all the spokes, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE W. MILTIMORE.

Witnesses:

JAMES K. BATCHELDER,
S. E. WRIGHT.