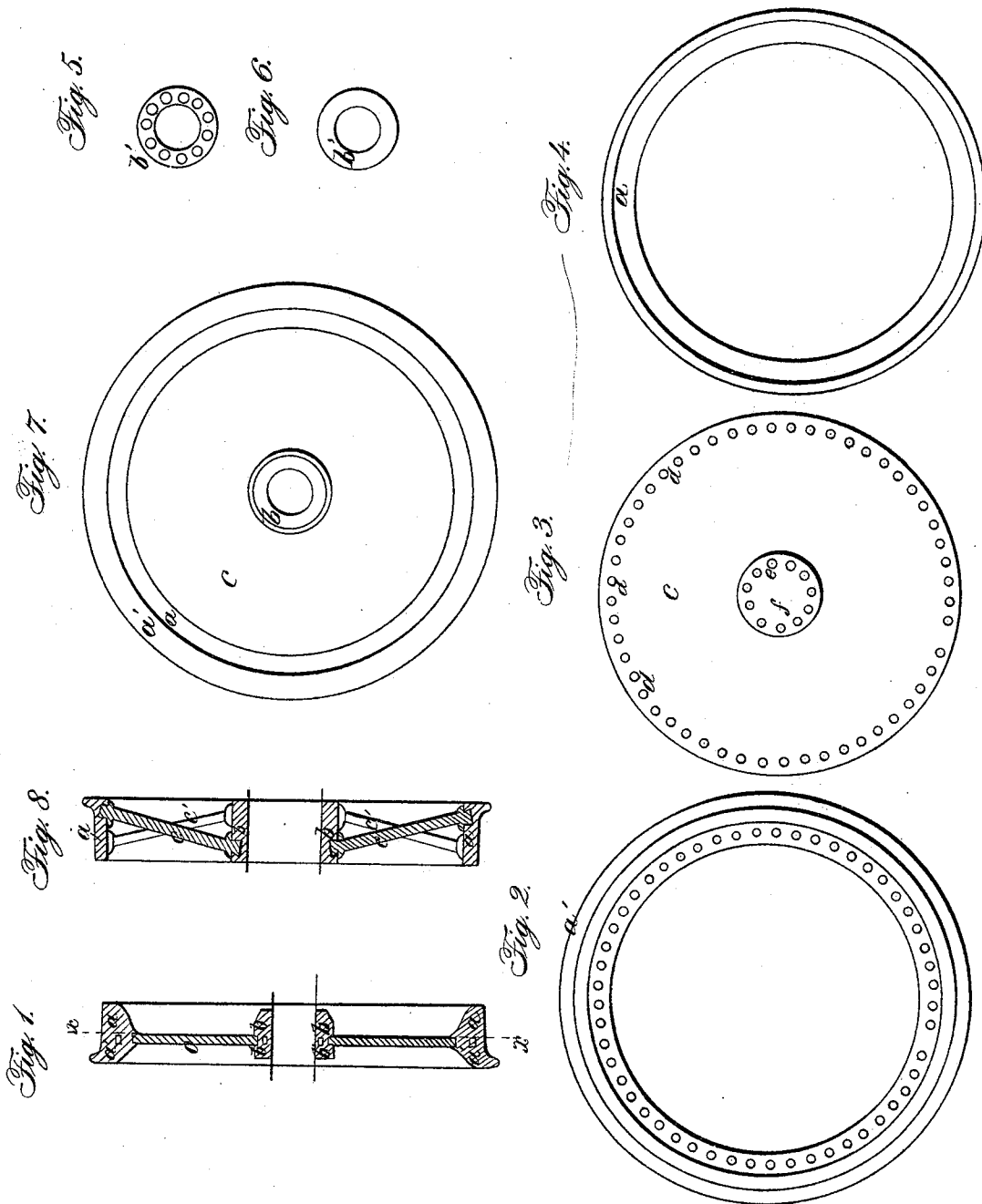


W. V. MANY.

Car Wheel.

No. 5,424.

Patented Feb. 1, 1848.



# UNITED STATES PATENT OFFICE.

W. V. MANY, OF ALBANY, NEW YORK.

## CAR-WHEEL.

Specification of Letters Patent No. 5,424, dated February 1, 1848.

*To all whom it may concern:*

Be it known that I, WILLIAM V. MANY, of Albany, in the county of Albany and State of New York, have invented new and useful improvements in the method of making wheels for railroad carriages, locomotives, &c., of cast and wrought iron, with the rim chilled, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section of the wheel taken in the plane of the axis; Fig. 2 a plan of one part of the rim separated from the other part at the line (X X) of Fig. 1; Fig. 3, a plan of the disk; Fig. 4, a plan of the other part of the rim; Fig. 5, a plane of the part *b'* of the hub, Fig. 6 a plane of the part *b* of the hub, and Fig. 7 a vertical section of a wheel (made with spokes) parallel with and in the plane of the axis to represent the application of one part of my invention to various kinds of wheels.

The same letters indicate like parts in all the figures.

The importance of making rail road wheels with the hub and rim of cast iron, the latter chilled, connected with wrought iron has long been recognized by engineers; but the numerous attempts to attain this important end have heretofore proved unsuccessful for various and conclusive reasons. If the parts are united by screws, bolts, or other means the jar to which rail road wheels, particularly those of the locomotives, are exposed, in a very short time loosens their connection, and so soon as this takes place, the wheels cannot be used with safety. And when the connection has been formed by casting the rim and hub onto the wrought iron spokes or arms the union of the two metals was not sufficiently perfect to resist for any length of time the jar, and the spokes or other wrought iron connection being placed in the mold in a cold state, could not contract to yield to the contraction of the rim in cooling, and hence it could not retain the tenacity and strength required. These difficulties I have, as I verily believe, entirely overcome by my invention, which consists, first, in heating to a red heat the wrought iron which forms the connection

between the chilled rim and the hub, preparatory to casting the chilled rim and hub thereon, by which I attain the double effect of forming a perfect connection between the wrought iron to contract throughout its length and breadth sufficiently in cooling to yield to the contraction of the cast iron. And secondly, in casting the hub and rim onto a disk or disks or parts of a disk pierced with holes, or provided with other cavities or with projections, at its junction or junctions with the hub and rim, that the cast iron may run into the holes or recesses or around the projections, and thus insure a firm connection of the parts.

In the accompanying drawings (*a*) and (*b*) represent the cast iron rim and hub, and (*c*) a wrought iron disk forming the connection between the two. In making a wheel on this plan the patterns for the rim and hub are each made in two parts (*a*) and (*a'*) and (*b*) and (*b'*) the part (*a*) of the rim and (*b*) of the hub are first molded, the pattern of the wrought iron disk (*c*), pierced with holes (*d*) all around near the periphery, and with like holes (*e*) (represented with dotted lines in Fig. 3) around the central hole (*f*), is then molded, and over this is molded the other part (*a'*) of the rim, and (*b'*) of the hub. After the molding has been completed, the mold is opened, the wrought iron disk (*c*) is heated to a red heat, and placed in the mold which is then closed and the molten iron run in. The highly heated state of the wrought iron permits the molten iron to run in freely to fill the cavities of the mold around, and to unite with it, and as the cast metal contracts in cooling, the wrought iron contracts with it and thus avoids the injurious strain to which it would be exposed by any other known mode of forming this union. The pattern may be made in as many parts as desired, and instead of the one wrought iron disk which unites the hub and rim, two or more may be used by pursuing the same method of casting the hub and rim onto them.

It will be obvious that the disk or disks instead of being made in one piece may be made in sections, open or closed, and that instead of the series of holes at the junction of the hub and rim, other cavities or projections may be substituted; as for instance, a ridge or flanch may be raised around the

outer and inner periphery of the disk by simply hammering. And it will be equally obvious that the first part of my invention is applicable to wheels made with wrought iron spokes. One form of this kind of wheel is represented at Fig. 5 of the drawings where (*c, c'*) represents two sets of wrought iron spokes each set inclining in opposite directions.

For casting the rim and hub onto wrought iron spokes the pattern is made in two parts divided by a plane passing through the axis of the two sets of spokes, and therefore consisting of a series of planes inclined to each other. After the pattern has been removed from the mold, the wrought iron spokes are heated and laid in the cavities formed in the mold by the pattern, the mold is closed and the molten iron run in which unites with the ends of the wrought iron spokes that are provided with recesses or enlargements for

the cast iron to run into or around, as in the first example given.

When the wheel is to be made with a single set of spokes the pattern is to be made in the same manner, but altered in form as is well known to foundrymen.

What I claim as my invention and desire to secure by Letters Patent, is—

The method of making cast and wrought iron wheels for rail road cars with chilled rims, by casting the hub or rim, or both, onto the highly heated wrought iron connections, substantially as described, that these (the connections between the hub and rim) may contract in cooling with the cast iron, as described.

WILLIAM V. MANY.

Witnesses:

A. P. BROWNE,  
J. J. GREENOUGH.