

No. 703,143.

Patented June 24, 1902.

H. F. MANN.
PLATE METAL CAR WHEEL.
(Application filed Apr. 19, 1902.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

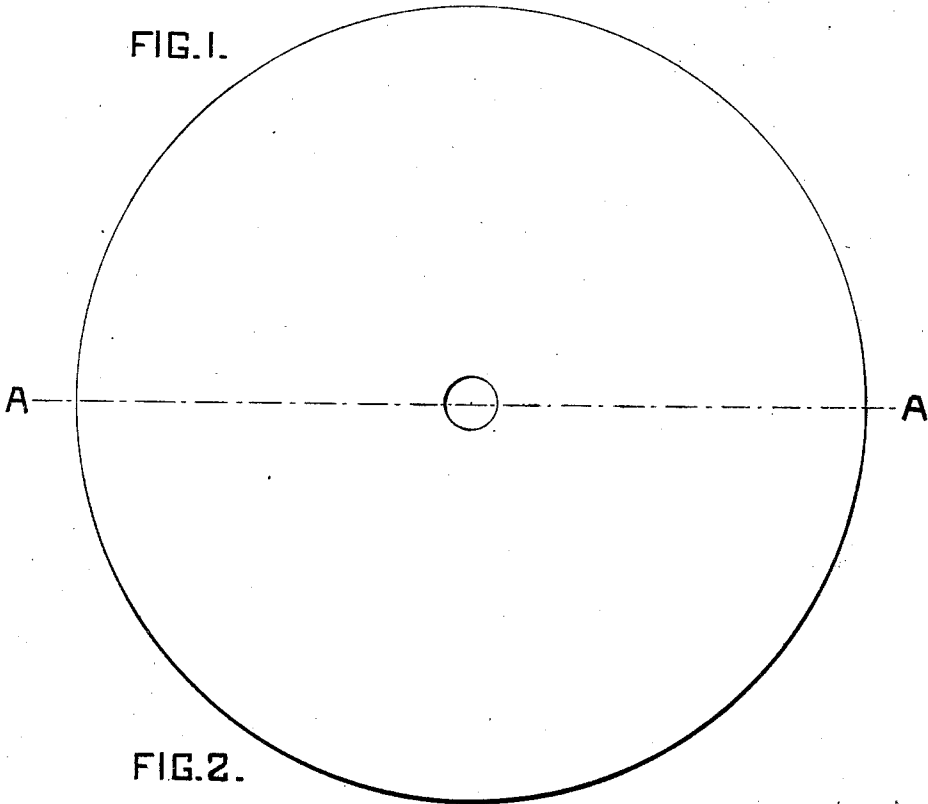


FIG. 2.



FIG. 3.



FIG. 4.

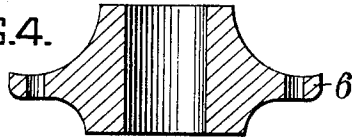
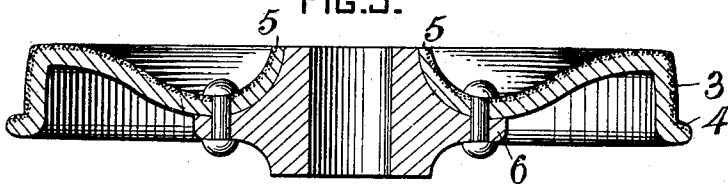


FIG. 5.



WITNESSES:

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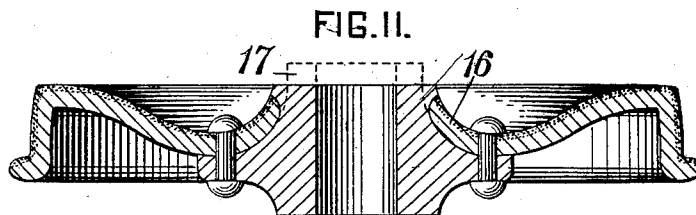
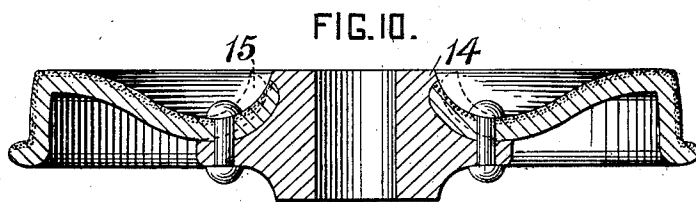
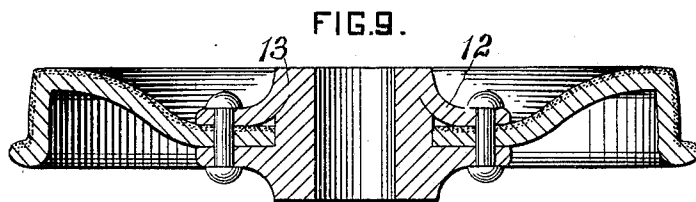
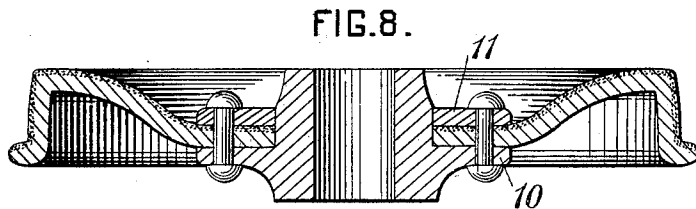
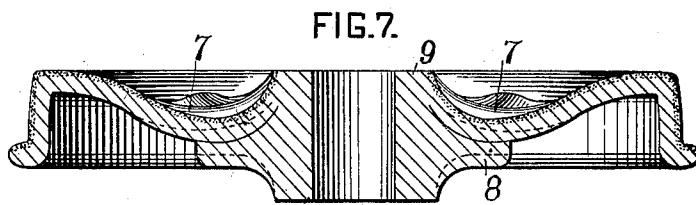
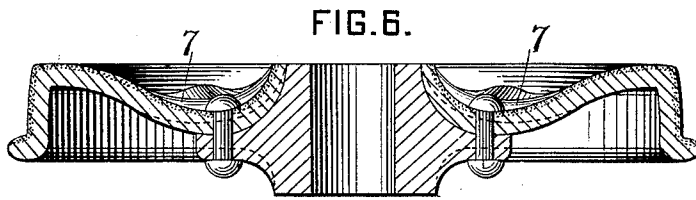
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

HENRY F. MANN, OF ALLEGHENY, PENNSYLVANIA.

PLATE-METAL CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 703,143, dated June 24, 1902.

Application filed April 19, 1902. Serial No. 103,823. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. MANN, a citizen of the United States, and a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, (whose post-office address is Box No. 716, Pittsburg, Pennsylvania,) have invented certain new and useful Improvements in Plate-Metal Car-Wheels, which improvements are clearly set forth in the following specification and accompanying drawings.

My invention relates to improvements in car-wheels the web, tread, and rail-flange of which are made of a single plate of steel or of a single plate of steel and iron, the hub of the wheel being formed separately of suitable material and securely attached to the center of the web, which will make a car-wheel which will be light and strong and possessing to a high degree the requisite wearing qualities on the tread and rail-flange.

The nature and general scope of my invention will be readily understood by reference to the following specification and accompanying drawings, which will enable those skilled in the art to practice the same.

In order to secure the desired results in the practice of my invention and make a car-wheel which will have the necessary strength and possess the desired degree of hardness on the outer or wearing surface of the tread and rail-flange, I make the web, tread, and flange of a single plate of steel or single plate of steel and iron. If the plate is made of steel, three-fourths of its thickness, more or less, is to be composed of low-carbon, tough, and strong steel and one-fourth of its thickness, more or less, of high-carbon hard steel. If the plate is to be made of steel and iron, three-fourths of its thickness, more or less, is to be composed of wrought-iron and one-fourth of its thickness, more or less, of high-carbon hard steel. In either case the different compositions of metal of which the plate is made are to be properly cemented or welded together by any known process.

In the several figures the mixed shading represents the high-carbon hard steel, and the plain open shading the low-carbon steel or wrought-iron of which the plate may be composed.

The hub may be made of wrought steel or

iron or of cast metal; but in cases where it is to be secured to the web or washer in whole or in part by welding, as will be hereinafter described, it should be made of suitable weldable metal.

Figure 1 represents a plate of steel or steel and iron of suitable diameter and thickness to form the web, tread, and rail-flange of the wheel. Fig. 2 is a sectional view of Fig. 1 at A A. Fig. 3 represents one form of the web, tread, and rail-flange after the plate has been subjected to the operation of suitable dies or other processes to give it the desired form.

In making car-wheels of plates composed of steel or steel and iron, as above described, they should be so formed as to bring the high-carbon hard steel on the outer surfaces of the tread, as at 3, and rail-flange, as at 4, in order to secure the best and most durable wearing qualities of the plate at these points where it is most needed. The central portion of the web is curved outwardly, as shown at 5, so as to furnish a strong bearing in which the hub is to be seated and secured. In order to secure additional stiffness to the web, it may be corrugated, as shown at 7 in Figs. 6 and 7, Sheet 2.

Fig. 4 is a sectional view of a hub and its flange 6, (which is formed integral with the hub,) of the proper size and shape, which is to be inserted in and secured to the center of the web by rivets passing through the flange of the hub and web, as shown in Fig. 5.

Fig. 5 represents one form or construction of a finished wheel, the hub, Fig. 4, being inserted in the central part of the web and secured thereto by rivets passing through the flange of the hub and the web, as shown.

Fig. 6 shows a finished wheel of the same form and construction as in Fig. 5, with the addition of the corrugations 7 in the web to give greater stiffness thereto.

Fig. 7 shows a modification of the manner of securing the hub to the web of the wheel, the flange 8 of the hub resting against the rear face of the web and the face or front end of the hub being welded to the turned-out edge of the center of the web, as shown at 9.

Fig. 8 shows another modification of the manner of securing the hub to the web of the wheel, the inner face of the flange 10 of the hub fitting against the rear face of the cen-

tral portion of the web and a plain washer 11 fitting over the front end of the hub and against the front face of the web, the three parts—*i. e.*, the flange of the hub, the web, and washer—being firmly secured together by rivets, as shown in the figure.

Fig. 9 shows another modification of the manner of securing the hub to the web of the wheel, which differs from that shown in Fig. 8 in that the inner edge of the washer 12 is curved outwardly and its outer edge welded to the end of the hub, as shown at 13. For further security the hub, flange, web, and washer may be riveted together, as shown.

Fig. 10 shows another modification of the manner of securing the hub to the web of the wheel by forming an annular recess near the front end or face of the hub, leaving an annular ring or projection 14 on the end of the hub, the inner edge of the web being curved outwardly, as shown in dotted lines 15, and when heated to a suitable degree of heat it is placed over the annular ring on the hub and the curved edge swaged into the annular recess of the hub by suitable dies or by other convenient means. For further security the flange of the hub and the web may be riveted together, as shown.

Fig. 11 shows another modification of the manner of securing the hub to the web of the wheel, the inner edge of the web being curved outwardly, as shown at 16, the outer end of the hub being shaped and made somewhat longer, as shown in dotted lines at 17, than it is to be when it is finally finished. This lengthened portion is to be heated to a suitable degree of heat and then passed through the curved opening of the web and upset by suitable means, so as to form an annular ring or shoulder against the edge of the web, as shown. For further security the web and hub-flange may be riveted together.

It should be understood that in forming car-wheels of a single plate of metal, as above described, and shown in the several figures, the web may be corrugated, if desired, to give additional stiffness thereto.

I claim herein as my invention—

1. A car-wheel, the web, tread and rail-flange of which are made of a single plate; three-fourths of the thickness, more or less,

of said plate, composed of low-carbon steel or wrought-iron and one-fourth of its thickness, more or less, composed of high-carbon steel, so that when the plate is given the proper form, the wearing-surfaces of the tread and rail-flange of the wheel will be composed of high-carbon hard steel, substantially as set forth.

2. A car-wheel the web, tread and rail-flange of which are made of a single plate, three-fourths of the thickness, more or less, of said plate composed of low-carbon steel or wrought-iron and one-fourth of its thickness, more or less, composed of high-carbon hard steel, so that when the plate is given its proper form, the wearing-surfaces of the tread and rail-flange of the wheel will be composed of high-carbon hard steel, and a hub made of suitable material and proper form seated in the outwardly-curved portion of the center of the web, the hub provided with a flange resting against the rear face of the web and firmly secured thereto by rivets, or other suitable means, substantially as shown and described.

3. A car-wheel the web, tread and rail-flange of which are made of a single plate of metal three-fourths of the thickness, more or less, of said plate composed of low-carbon steel, or wrought-iron, and one-fourth of its thickness, more or less, composed of high-carbon hard steel, so that when the plate is given its proper form, the wearing-surfaces of the tread and rail-flange of the wheel will be composed of high-carbon steel, and a hub made of suitable material and proper form, the hub provided with a flange resting against the rear face of the web, and a washer fitting over the front end of the hub and against the front face of the web, the three parts, *i. e.*, the flange of the hub, the web and washer being firmly secured together by rivets, or other suitable means, substantially as shown and described.

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

HENRY F. MANN. [L. S.]

Witnesses:

M. S. MURPHY,
GEO. W. GUINEA.