J. TAYLOR.
Car-Wheel.

No. 218,409. Patented Aug 12, 1879.

Fig. 1.

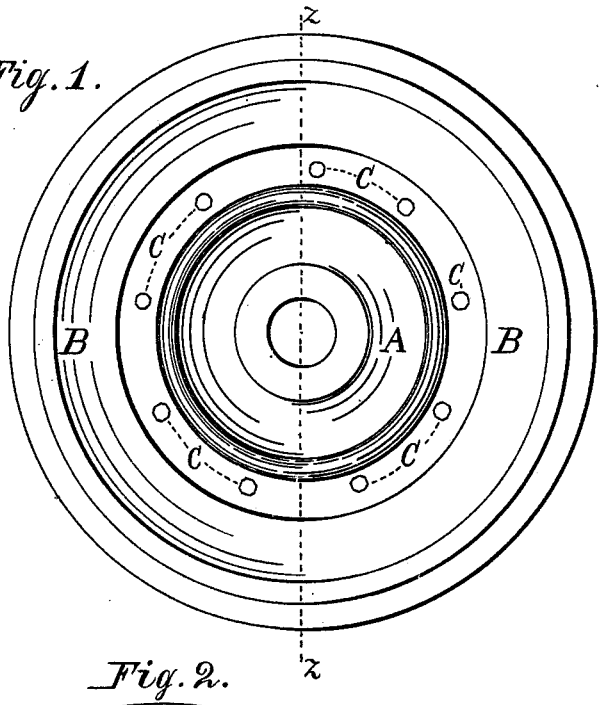


Fig. 2.

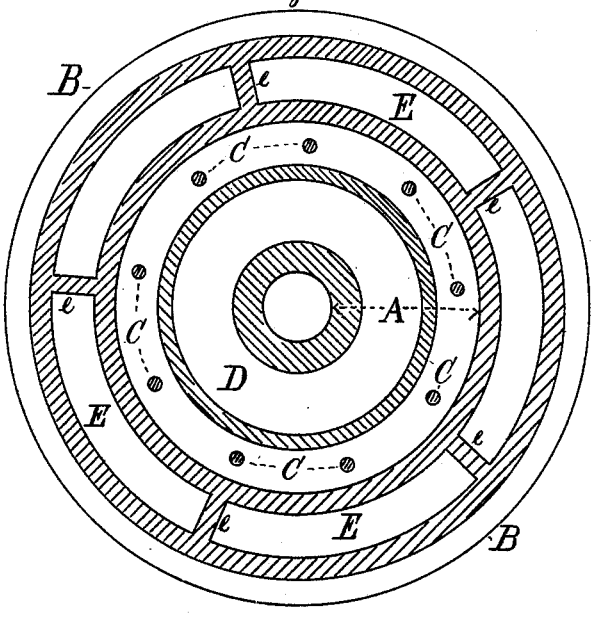
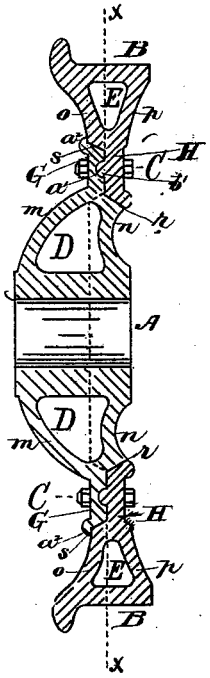


Fig. 3.



WITNESSES.

James B. Lizius
R. P. Daggett.

INVENTOR.

James Taylor.
PER
C. Bradford.
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES TAYLOR, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ORAMEL H. WATSON AND WATSON J. HASSELMAN, OF SAME PLACE.

IMPROVEMENT IN CAR-WHEELS.

Specification forming part of Letters Patent No. **218,409**, dated August 12, 1879; application filed December 19, 1878.

To all whom it may concern:

Be it known that I, JAMES TAYLOR, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and Improved Car-Wheel; and I do hereby declare the following to be a full, clear, and exact description of the same, which will enable others skilled in the art to make and use it, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the wheel; Fig. 2, a section in the plane of the wheel; and Fig. 3 is a transverse section.

Similar letters of reference denote the same parts in the several figures of the drawings.

My invention relates to that class of car-wheels in which the tread and hub are cast separately and afterward united in the web, for the purpose of preventing the unequal shrinkage between the chilled tread and the unchilled hub from straining the fibers of the iron and thereby weakening the wheel, as well as to permit the removal of the tread without destroying the wheel; and the invention has for its object to produce a car-wheel that as a whole shall combine those advantages of construction which render it strong, durable, and efficient without employing the large quantity of metal usually contained in wheels of this class, and therefore correspondingly decrease its weight and cost of production.

To this end the invention consists, in general terms, in combining in a car-wheel of the kind described the important and valuable features of construction, as I will now proceed to point out in detail.

In the accompanying drawings, A represents the hub of the wheel, made of unusual length, and cast with a circumferential flange, G, to form a part of the web. Instead of casting the hub of solid metal immediately around the eye, I core it out to form a large annular space between the eye and the flange G, as shown at D, Figs. 2 and 3. This construction so disposes the metal that the wall *m* forms an arch to support the flange G in the line of the greatest resistance to the vertical and lateral strains upon the wheel when in use, and equalizes the pressure upon the hub from end to end, and causes it to bear uniformly upon the axle. Under this arrangement of the parts, therefore, dispensing with the large amount of metal which would otherwise be required to fill the space D does not weaken the wheel or impair its efficiency, but on the contrary strengthens and braces it to a greater extent, while materially reducing its weight and correspondingly decreasing the cost of its manufacture.

B is the tread, cast with a thin flange, H, around its inner edge to unite with the flange G of the hub and form the web of the wheel. These parts are made upon the same principle as the hub and its flange, being in fact the counterpart of them, excepting as to those changes in form necessitated by their positions in the structure. The tread is cast with an interior annular space, E, the same as the hub, excepting that short radial braces, *e*, are formed at intervals, as shown in Fig. 2, to more completely brace the tread radially. This construction forms two inside bracing side walls, *o p*, to support the flange H, so that it shall unite with the flange G in resisting the vertical and lateral strains upon the wheel. By coring out the tread the weight of the wheel is still further reduced, while the bracing position of the side walls, *o p*, together with the radial braces *e*, renders the tread more capable of resisting the crushing force of the blows when the wheel is in use than it would be if made solid in the usual way.

I do not, of course, claim coring out either the tread or rim, considered separately, but only as they are combined to assist in building up a more substantial and permanent structure, all the elements of which are individually old, but which, when united, effect a unitary result in the production of a better, cheaper, and more durable wheel.

It will be observed that the tread is not simply a tire for a wheel, by which it is hooped, but that it forms an integral part of the wheel as well as the tire, or to which a tire can be applied. To form the web, the two flanges G H are united so that their radial edges bearing against the shoulders *r s* shall be removed some distance from the tread and hub between

the cored-out portions D E, and thus direct the strains into each through the walls *m n o p*, thereby distributing them uniformly, so that the weight upon the wheel shall be equal throughout the width of the tread and the length of the hub. If the flange of the hub were extended to bear against the inner circumference of the tread, and the flange of the tread extended to bear against the hub, both these parts would be subjected to unequal strain vertically, and the danger of bending the axle of the wheel increased when the tread should bear upon the rail outside the line of division between the two flanges G H; but by directing the strains through the walls *m n o p* this danger is entirely avoided.

To form a lock for the joint, one of the flanges is cast with a circular rib, *b'*, on its side to enter a correspondingly-shaped groove, *a'*, in the face of the opposing flange, and when the two flanges are secured together by the bolts C, arranged at suitable intervals, they are firmly locked together to form practically an unbroken web. To still further interlock and brace the flanges and prevent their lateral movement upon each other, one or both may be cast with an overlapping lip, a^2, to bear against the outer face of the tread or hub wall next adjoining.

I am aware that a separate and detached wrought-iron or steel ring has been employed in the divided body of a cast-iron car-wheel to enter a recess in each part; but it cannot form a secure lock because of the impossibility of practically constructing the ring to accurately fit the recess in the wheel. It is besides expensive to manufacture and apply, and therefore unnecessarily increases the cost of making the wheel. By my improvement in this part of the wheel the ring is cast with one of the flanges of the web, and is always ready for fitting into the recess in the adjoining flange when the two flanges are united.

It is no more expensive to cast the wheel with the ring and recess than without them, because the metal added to form the ring is subtracted to form the ring-groove, and the operation of molding the parts is not attended with any additional trouble or labor.

If desired, a packing composed of paper, cloth, or other material may be placed in the joint of the web to take up the shocks upon the wheel when in use; but this is not essential, nor does it constitute a part of my invention.

Having thus described my invention, what I claim is—

The car-wheel composed of two parts joined together in the web, one part consisting of the long hub A, cast with the circumferential web-flange G, the side walls, *m n*, and the hollow space D surrounding the hub between the walls and flange, and the other part consisting of the tread B, similarly cast with an interior web-flange, H, side walls, *o p*, and hollow space E between the flanges and tread, provided with the radial braces *e*, the said flanges G H being bolted together to form the web and locked to each other by the circular rib *b'* cast upon one flange and entering a corresponding groove, a^1, cast in the other flange, substantially as described, for the purpose specified.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 16th day of December, A. D. 1878.

JAMES TAYLOR. [L. S.]

In presence of—

C. BRADFORD,

O. H. WATSON.