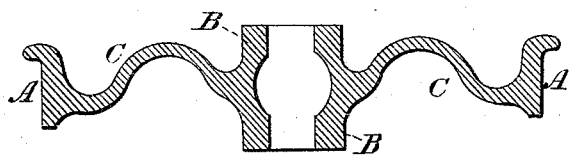
E. A. LESTER.

Car Wheel.

No. 3,700. Patented Aug. 10, 1844.



UNITED STATES PATENT OFFICE.

EBENEZER A. LESTER, OF BOSTON, MASSACHUSETTS.

METHOD OF MAKING CAST-IRON RAILROAD-CAR WHEELS.

Specification of Letters Patent No. 3,700, dated August 10, 1844.

To all whom it may concern:

Be it known that I, EBENEZER A. LESTER, of the city of Boston, in the State of Massachusetts, have invented a new and useful improvement in the manner of constructing wheels for railroad-cars and for other vehicles to which wheels of a like character are adapted; and I do hereby declare that the following is a full and exact description thereof.

In my improved car wheel, it has been my object to form it with a rim of chilled cast-iron, which should be united to the hub by a continuous disk, or plate, dispensing with the use of spokes, and also with the necessity for dividing the hub into parts, or sections, as is ordinarily done with those wheels which are cast with spokes, while I, at the same time, gave such a form thereto as would entirely, or to the necessary extent, take off that tension which is the ordinary result of casting wheels entire with their rims chilled.

In the accompanying drawing, I have given a sectional view, representing the general form in which I cast my wheels, and have marked thereon the proportionate size which I have given to the respective parts; not intending, however, to limit myself to the precise form and dimensions thereby indicated, but to vary these as I may think proper, while the principle upon which I proceed is not departed from.

A, A, is the rim, or tread, of the wheel, which is to be cast within a chill, and in any of the forms given to that part. B, B, is the hub, which I cast on a core for the admission of the axle, but without dividing it into segments to allow for shrinkage. C, C, is the disk, or continuous plate, of metal by which the rim and hub are connected with each other. To this disk, or plate, I give a double swell, or what, in a section through the axis of the wheel, might be denominated a waved line, in form resembling that represented in the drawing. It might at first, appear that all the advantage resulting from this curved form might be obtained by making the disk simply concavo-convex, but I have found in practice that such is not the case, the shrinkage leaving the disks of such wheels liable to the occurrence of fractures near the rim; but since adopting the form by me delineated, no tendency of this kind has been apparent.

I am aware that in two instances, wheels have been cast in which the rims and hubs were united by continuous disks; but in both these cases the disks have been formed of two plates, having spaces between them; in one instance, these plates were both convex on their outer sides, and the hub was divided into two parts, transversely, so as to allow of each of the disks to become somewhat flattened by the shrinkage. In the other instance, they were cast with two concavo-convex plates, one of them convex outward and the other inward, their surfaces being parallel to each other; the hub, in this case, was cast in one piece, and connected with each of the plates. These wheels, it will be manifest, were liable to the same objection with that which exists to the single, concavo-convex plate, and they have not continued in use. The characteristic difference between these wheels and that invented by me is that I use but a single disk, or plate, and that to this I give such a waved form as shall present a certain degree of convexity on each face of the wheel, as shown in the drawing. A cast wheel has also been made with a single concavo-convex plate, with the addition of brackets to support the rim and hub. This concavo-convex disk, it is apparent, would be prevented from sinking in any degree so as to lessen the tension occasioned by the chill, the brackets having, in this case, all the attributes of spokes cast with an undivided hub.

Having thus, fully pointed out the manner in which I construct, or form, my wheel, and shown the characteristic difference between it and those previously made, which approach it most nearly in construction, what I claim therein as new, and desire to secure by Letters Patent, is—

The casting of such a wheel with a single, continuous plate or disk, uniting the chilled rim to an undivded hub; said plate being so formed as that a plane bisecting the wheel in its axis shall present a waved line, or one having a convexity on each face of the wheel, in the manner herein described and represented, and for the purpose set forth.

In witness whereof I have hereunto set my hand and seal this twentieth day of May A. D. one thousand eight hundred and forty four.

EBENR. A. LESTER. [L. S.]

Witnesses:

SAML. B. DEAN,

H. MONTGOMERY.