H. W. MOORE.

Car Wheel.

No. 21,614. Patented Sept. 28. 1858.

Fig. 1.

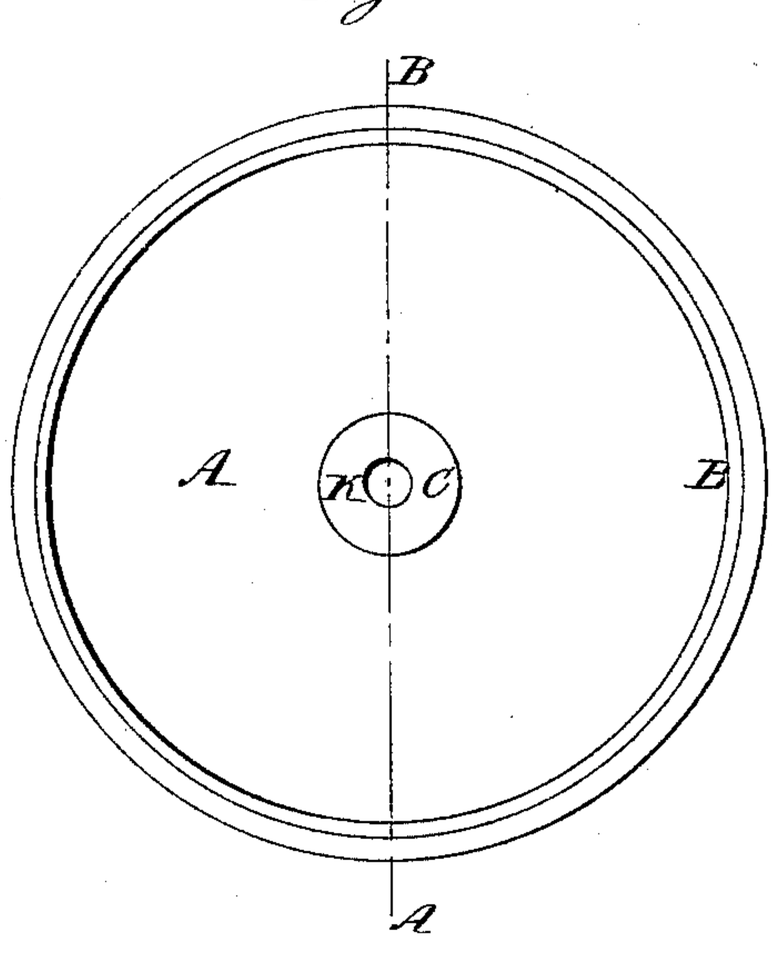


Fig. 2.

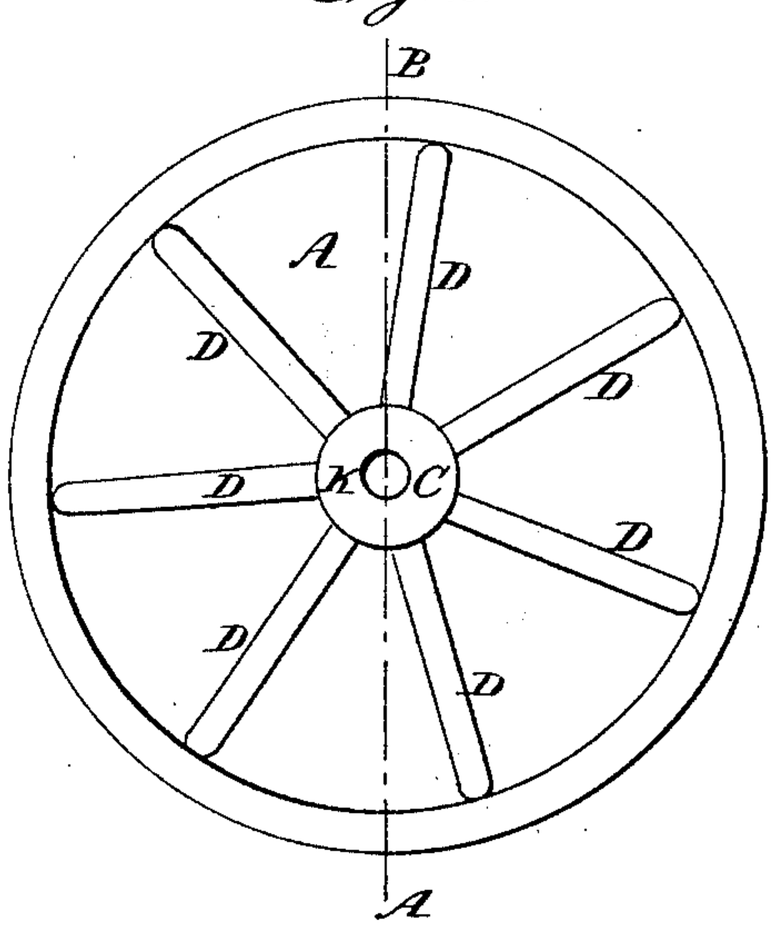


Fig. 3.

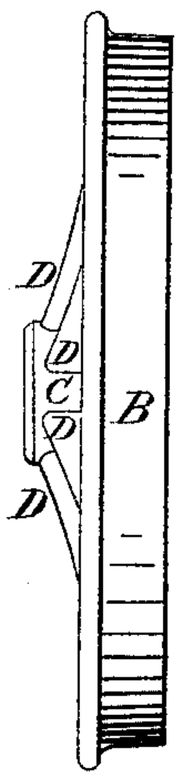


Fig. 4.

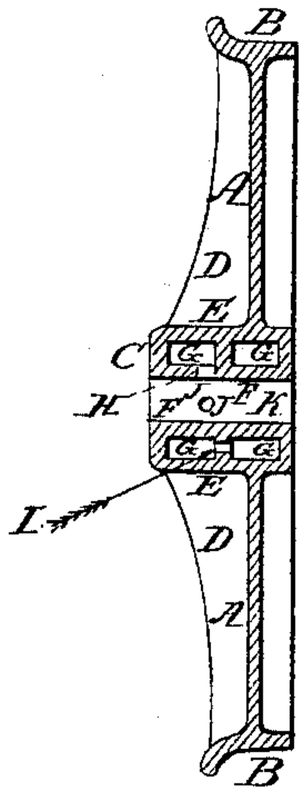
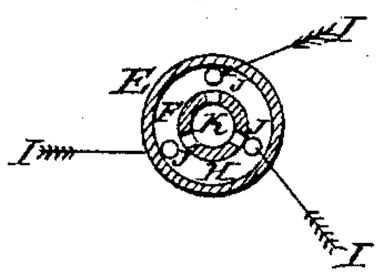


Fig. 5.



Witnesses:

Geo Adams

G. W. Lane

Inventor:

H. W. Moore

UNITED STATES PATENT OFFICE.

H. W. MOORE, OF JERSEY CITY, NEW JERSEY.

CAST-IRON CAR-WHEEL.

Specification of Letters Patent No. 21,614, dated September 28, 1858.

To all whom it may concern:

Be it known that I, HIRAM W. MOORE, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Cast-Iron Wheels Applicable to Locomotion and other Purposes; and I do hereby declare that the following specification, in connection with the accompanying drawings and references thereon, constitutes a lucid, clear, and exact description of the same.

In referring to the said drawings, Figure 1, denotes a front elevation of my car wheel. Fig. 2, a backside or inner elevation of the same. Fig. 3, an edge view of it. Fig. 4, a central and cross section on lines A, B. Fig. 5, a section through the hub, near its center, and parallel to the face of the wheel: and showing the parts beyond, and also the holes leading from the eye of the wheel, to the cavities of the hub, caused by the connections of the core in casting.

Like letters refer to the same parts, in the several figures of the drawings.

The nature of my invention consists in making my car wheel in the following manner, the hub being constructed of an inner, and outer cylinder of equal length and united at their ends by concentric plates all of equal thickness, and in uniting the two cylinders together by an intermediation disk between the ends of the hub, to give it the requisite strength to prevent its bursting when drawn on the axle, or in use, and to render hooping the hub unnecessary, and to compensate for the usual unequal shrinkage and strain of thick hubs, when such hubs are combined with a straight plate radiating from the outer cylinder of the hub between its end and the intermediation disk, and when such hubs, together with the wheel of which they form part, are cast in one piece, all as will be hereafter seen.

Heretofore the hubs of car wheels have been made a large mass of iron. and very much thicker than other portions of the wheel, thereby the hub is the last portion of the wheel which cools: consequently an increased contraction takes place at that point when cooling; causing great strain between the hub and plate or web of the wheel especially if the plate or web be straight, and of course rendering such wheels liable to fractures and breakage, from concussions, or traverse strain when in use, and when it has been attempted to use a hollow hub, such hubs have not been in any preceding case, bound together in any manner save by their ends, *i. e.* no intermediate plate has been formed between the outer and inner portion of the hub to prevent its bursting, which renders such wheels seriously and fatally defective.

The object of my invention being to effectually obviate this defect, besides improving and cheapening the wheel, in the manner which I set it forth.

To enable persons skilled in making cast iron car wheels; to make, construct, and fully carry out my invention, I will describe it as follows.

Any desired form may be given that portion of the wheel connecting the hub and rim together, I give preference however to the single plate, or plane, seen at A, for connecting the rim B, of the wheel, to the hub C, as that form will sustain the greatest weight. A number of braces seen at D, are also cast with, and connect the rim, hub, and plate together, to impart additional strength.

The hub of the wheel seen at C, is made hollow, as seen in section at Figs. 4 and 5, and consists of an inner cylinder seen at F, the main opening K, of which constitutes the eye of the wheel, and this cylinder F, is cast with, and joined to an outer cylinder E, by the ends of the hub, and the intermediation disk H, at its central portion, for increasing the strength of the hub, and forming the cavities or hollows G, within the hub itself, thus giving it great strength, and solidifying the iron, while at the same time all parts of the metal composing it, are of the same thickness as the other portions of the wheel. In order that every part of the wheel, may cool in the same time; to effectually prevent an overstrain caused by contraction of one portion of the wheel, at a different time, and to a greater extent than the other.

It is of the most vital importance to form the plane disk H, in, and of, the hub intermediate between its ends, for on that depends the strength of the hub; and consequently the wheel of which it is a part, and beyond and above all: the safety to life and property which are secured by a safe and reliable wheel, which I know, and claim this to be. In fact my entire wheel as a whole is much stronger than any previous wheel which I have proved by the most thorough tests. And it is necessary that the disk H, radiate in a plane and at right

angles from the inner to the outer cylinder of the hub, in order to be effectual and sustain the greatest possible amount of strain, imparted to the hub and wheel.

The core for casting the hollow hub coincides in shape with the cavities to be formed therein, and the eye of the wheel, and is made as follows. To the central part for forming the hole K, I join an outer part or portion, by a number of radial arms which form the holes J, from the eye K, to the cavity G, when the wheel is cast. To the outer part of the core, another similar one, is connected by a number of small arms of the core; which leave or form the holes seen at I, when the wheel is cast. The two outer parts of the core being of sufficient distance apart to allow the intermediation disk H, to form between, when casting, and as much shorter than the hub, at each end, as the thickness of iron composing the ends of the hub.

The plate A, radiates from the outer surface of the outer cylinder E, of the hub C, and between the intermediation disk, and the end of the hub, in order that the plate A, may yield, and not break, when the wheel is subjected to violent shocks, or concussions, so frequent when in use.

The whole wheel is cast in one entire piece, and having a hollow hub of great strength by reason of its straight disk H to resist the pressure of the axle within it, and also every other strain to which it may be subjected. And every part of the wheel is very nearly of the same thickness as every other part: thereby obviating the danger of over strain and consequent weakening of the wheel in contracting, besides materially lessening the expense in construction, in consequence of the saving of labor, and the reduced weight of iron necessary to make wheels of equal or greater strength than any others known.

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

My within described cast iron car wheel; the hub of which is made of an inner, and outer, straight cylinder F, and E, joined together by concentric plates at their ends, and an intermediate plate H, between; for imparting great strength and durability to the wheel, and in combining and uniting such hubs to the rim or tread by straight plate A, radiating therefrom between the end of the hub and intermediate disk H, or connection otherwise formed, in order that every portion of the wheel may be of a uniform thickness, to cool even, be durable and cheaply constructed, and to render hooping of the hub, unnecessary essentially in the manner fully set forth and described.

H. W. MOORE.

Witnesses:
GEO. ADAMS,
G. W. LAW.