

P. G. GARDINER.

Car Wheel.

No. 7,967.

Patented Mar. 11, 1851.

Fig. 2.

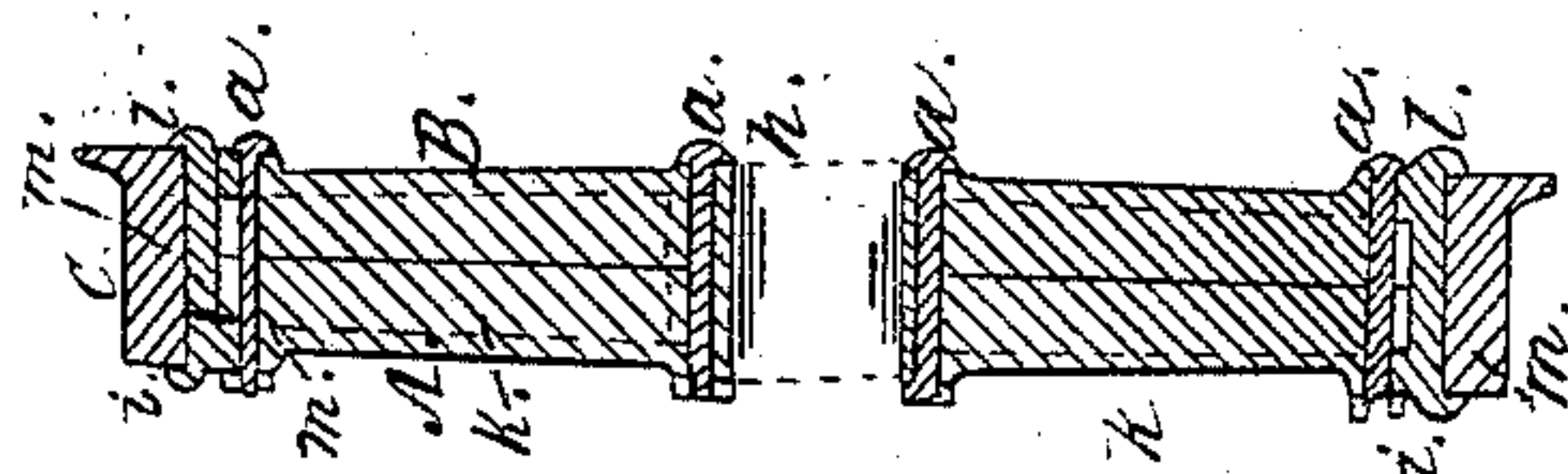


Fig. 1.

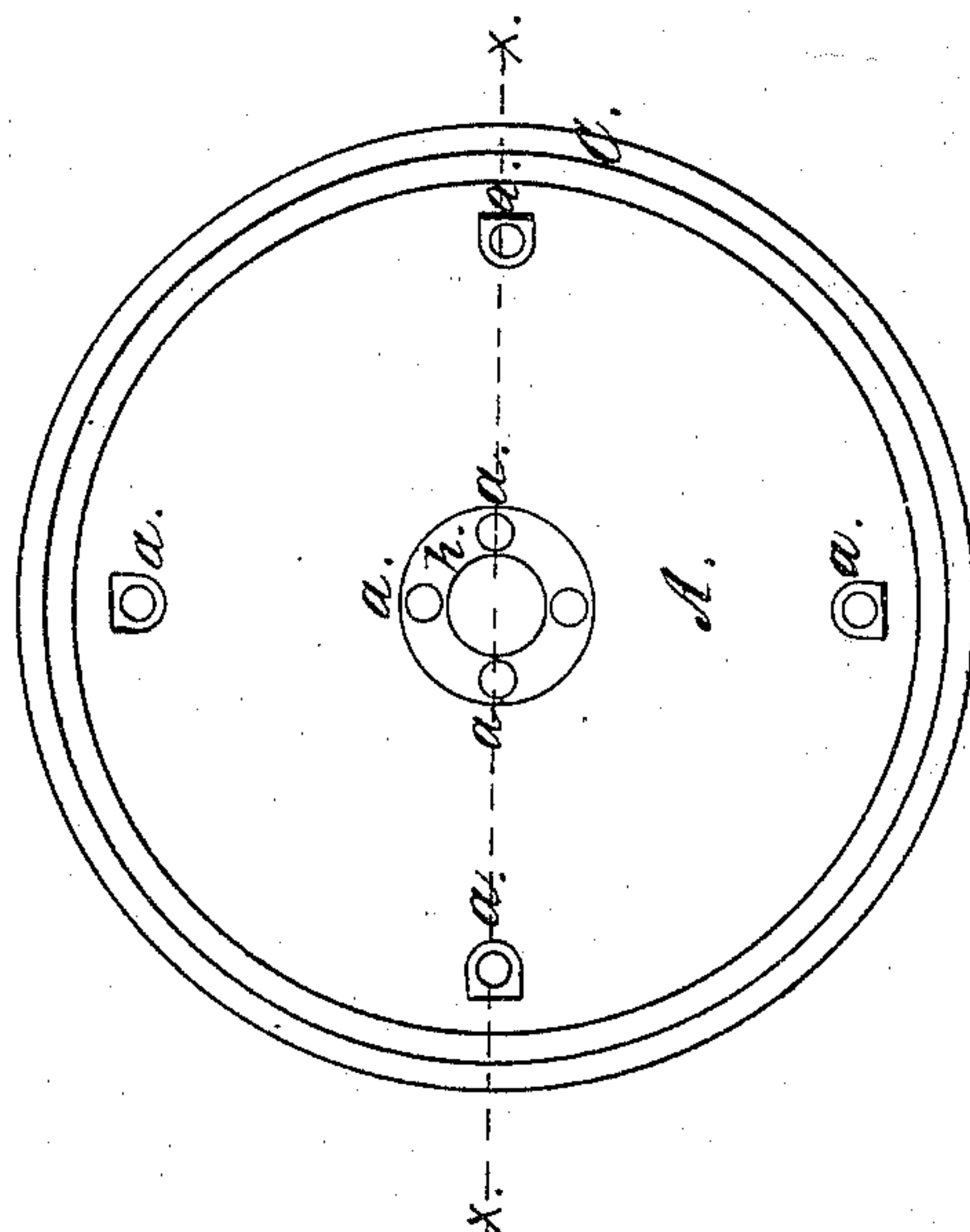
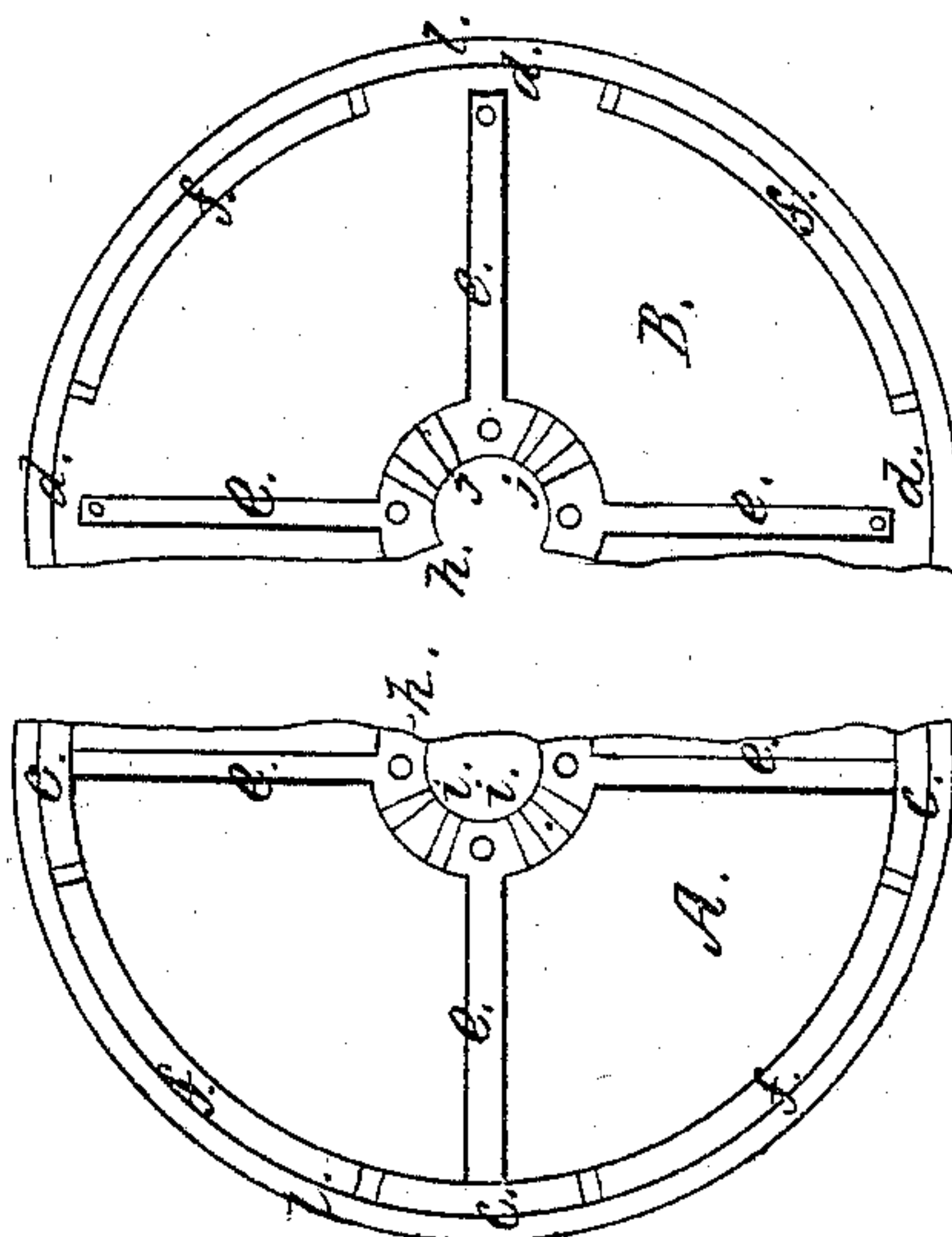


Fig. 3.



UNITED STATES PATENT OFFICE.

P. G. GARDINER, OF NEW YORK, N. Y.

CAST-IRON CAR-WHEEL.

Specification of Letters Patent No. 7,967, dated March 11, 1851.

To all whom it may concern:

Be it known that I, PERRY G. GARDINER, of the city, county, and State of New York, have invented a new and useful Improvement in Railroad - Car Wheels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side elevation of such wheel; Fig. 2, is a section on a line from X to X (see Fig. 1); Figs. 3 and 4 are internal views of the formation of two side plates which form, when bolted together, the eye, hub and body of the wheel; being a pair of plates to go together, and are shown side by side each other, with a portion of each, cut off in the drawings, to show the precise way they go together, when one of the plates is turned over on to the other, bringing certain projections and notches or recesses, formed in the edge of the rim or flange, which forms the seat for the tire, rightly into place.

The drawings are made on a scale of $1\frac{1}{2}$ inches to 1 foot—and the letters marked on the drawings refer to like parts in all of the figures.

The nature of my invention consists in constructing a rail road car wheel of three principal pieces or members of the same, which pieces are held together with screw bolts; that is to say, I make two cast iron side plates, each forming one half of the eye, hub, arms, a horizontal or right angle flange to the plate, for the tire to rest upon, and a vertical flange at the outside periphery of the plate, to hold in place the tire—combined with a wrought iron tire, which when bolted together, constitutes the entire wheel.

It is known that rail road car wheels, having arms with open spaces between them, have a tendency when running under ordinary speed, to agitate the adjacent air, disturbing the dust upon the rail road track—a circumstance of annoyance to passengers in the cars, and destructive to the journals and other wearing parts of the car gear; it is also known that the uneven sides of corrugated car or rail road wheels have a partial tendency in the same way; it is also known that plate wheels that have smooth and even sides have been made, which are not subject to the above objection, but are nevertheless liable to crush down by lateral strain, unless

made very thick and heavy. My aim therefore, in contriving the form of the wheel herein described, has been, to make a wheel with such arrangement of metal as to give sufficient strength to resist lateral strain, with the least amount of weight of material, possible; and yet make a full plate (even surface) wheel, at the outsides of the same, which I have accomplished, by forming in such plates at the inside of the same any number of radiating flanges, answerable to the ordinary arm of a wheel with open spaces; such flanges or arms, extending from the hub part of the wheel to the flange at the inside periphery, (upon which the tire is made to rest,) and cast solid with the plate; projecting from the same so as to be level with the thickness of the hub (which is the one half thickness of the wheel when put together,) thus forming narrow or half arms, the two half or semi-arms of each plate meeting opposite to each other, at the inside on the dividing line between them, when put together, and thus giving support to the external or outside plates (being a part of them) against lateral strain,—and thus disposing of the metal of the wheel to the best advantage to attain sufficient strength, lightness of materials, and an even outside surface having the least tendency possible, to agitate the air and disturb the dust upon the track.

It will be seen that the form of these side plates is such, that they may be cast, without leaving in the casting, from the shrinkage in cooling, any injurious tension or strain of the metal, being a full and even disk of metal at the outside, filled in with low flanges or half arms cast solid with such plates, and being mere ribs at the inside, to sustain and support the external plate; and are in point of form free from objections (as to the condition of the metal after it is cast) as it regards the effects of the shrinkage of the same in cooling. The combination of these well supported side plates with a light wrought iron tire, make up a wheel less in weight, in proportion to its strength, than ever has been heretofore made, by the combination of the same—mixed wrought or cast iron materials; and in my belief, I have attained to a new and useful improvement in the constructing of rail road car wheel.

I will now proceed to describe my invention in order that others, skilled in the art

of which this is a branch, may be able to make, construct and put in operation such wheel.

A is the front plate; B is the back plate, 5 and C the tire—the screw bolts or rivets *a*, pass through both plates near the eye of the hub *h*, and near the periphery of the wheel, and together conjoin the two plates firmly—the projections *c* on plate A, are made to fit 10 into spaces *d* in plate B, such projections are the full depth of the width of the tire, that is, the projection meets, in contact with the opposite plate, there being no flange raised on plate B, at this point; the semi-arms *e*, 15 flange *f*, and hub *h*, (see Fig. 3,) are level and meet each other on the dividing line (see *k*, Fig. 2,) when the wheel is put together. Projection *i*, on plate A, are made to fit into recesses *i* on plate B, when con- 20 joined; thus interlocking they and projections *c*, and recesses *d*, mutually sustain each other, and overcome a known defect in ordinary plate wheels—which are liable to fracture from the strain being sometimes thrown 25 upon a single one half of the hub; the object of all of these projection pieces and recesses, is to keep the two plates from twisting or sliding from their seats with each other, thus relieving the transverse upon the screw 30 bolt. When such plates are firmly and properly bolted together the wheel is put into the lathe and the seat for the tire turned off perfectly, the bolts are then slackened, and

the part is then ready to receive the tire; which tire is then heated and shrunk on to 35 the body of the wheel—the expansion of the metal of the tire being sufficient when heated, to admit the same over the vertical flange *l*; and while cooling the screw bolts are again screwed up tightly. It will be 40 seen that the tire, when shrunk on to the tread flange of the wheel *m*, will be held in place by the vertical flanges *l*, at each side and edge of the tire.

I do not make any claim to the combina- 45 tion, self considered, of wrought iron tire with a cast iron body, or yet for full plate sides, or for internal arms in section when cast solid with the side plates, of a rail road car wheel, for such have all been known and 50 used before; but

What I do claim as new and desire to secure in Letters Patent is,

The precise manner in which I have constructed and put together the parts of my 55 wheel, by which, thus formed, they are free of strain from shrinkage in cooling, and have semi internal flanges as described, to protect the wheel when in use, against lateral strain, and are bolted together and 60 combined with a wrought iron tire, in the manner set forth.

P. G. GARDINER.

Subscribed in the presence of—

THOS. W. HARNEY,
DE VAN WYSK.