

F. H. TREVITHICK.
Compound Car Wheel.

No. 106,001.

Patented Aug. 2, 1870.

Fig. 1

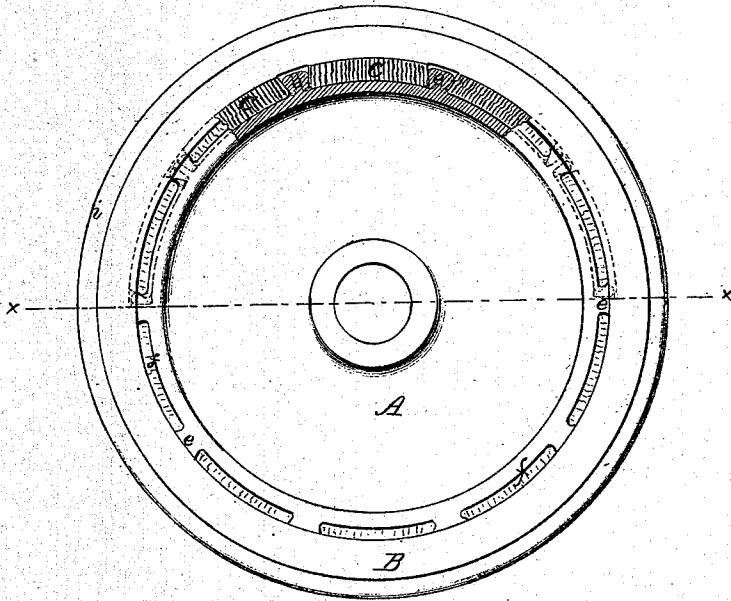


Fig. 2

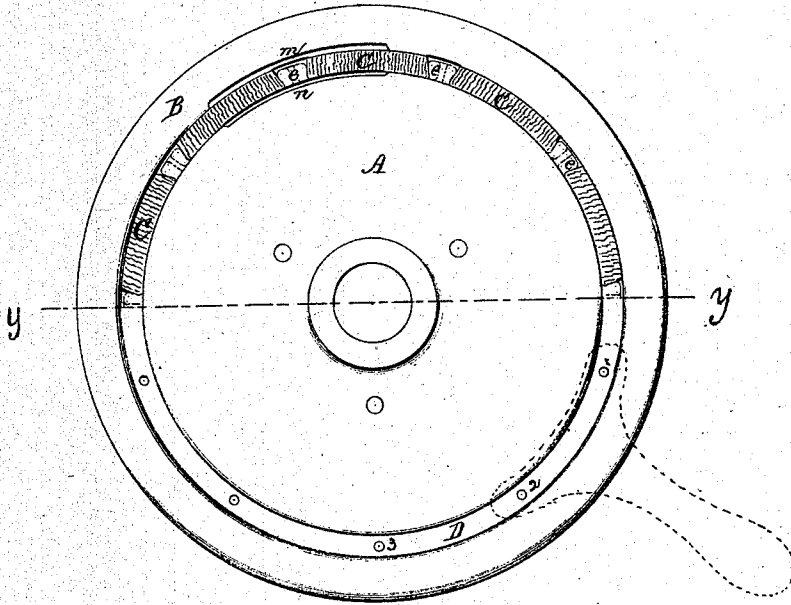
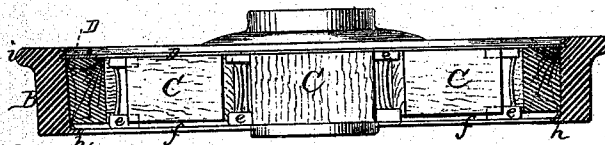


Fig. 5



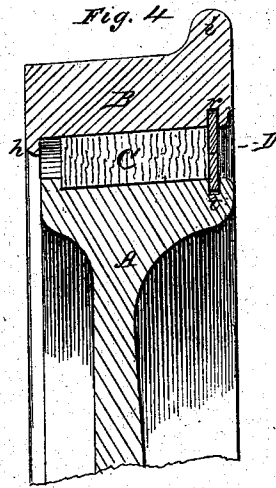
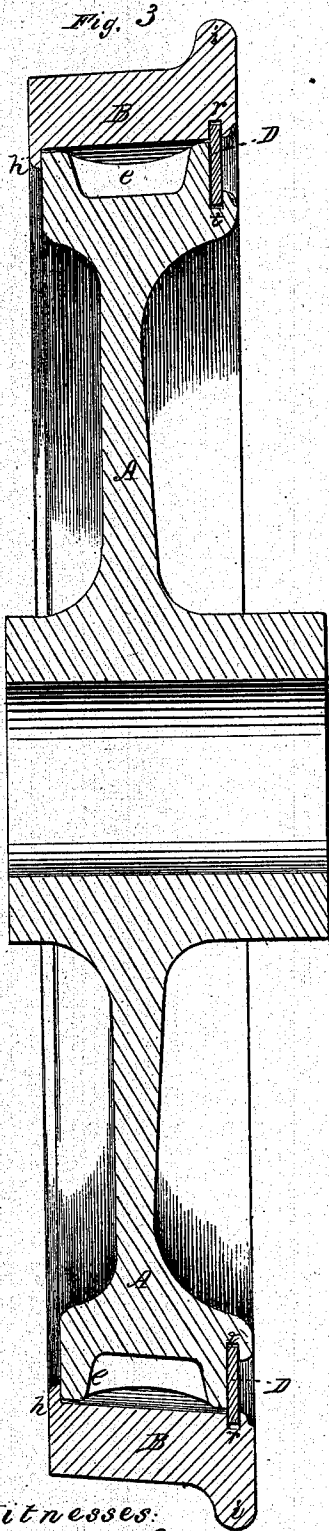
Witnesses:
 Frank H. Taylor
 F. J. Huntington.

Inventor:
 F. H. Trevithick.

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UNITED STATES PATENT OFFICE.

FREDERICK H. TREVITHICK, JR., OF NEW YORK, N. Y.

IMPROVEMENT IN RAILWAY-CAR WHEELS.

Specification forming part of Letters Patent No. 106,001, dated August 2, 1870.

To all whom it may concern:

Be it known that I, FREDERICK H. TREVITHICK, Jr., of New York, New York county, in the State of New York, have invented certain new and useful Improvements in Railway-Wheels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

Previous to my invention various plans have been devised for the construction of and numerous patents granted for what are known as "compound" railway-wheels. It has long been known to engineers and those experienced in the construction and working of railway-carriages that great advantage might be gained by compounding railway-wheels of metal and some more elastic material, so as to relieve both the wheel and the rail of much of the great jar or concussive strain to which they are subjected. Many years ago it was suggested to make railway-wheels with an annular wooden portion located between a metallic tire or rim and a metallic body or central portion, and although this principle of construction of a wheel—viz., with a wooden or other suitably elastic packing or annular cushion arranged between a metallic wheel and tire—must certainly possess great advantages over a method of construction in which the whole wheel is made of metal, or practically non-elastic, yet the practical difficulties met with in successfully carrying out this principle (a compound wheel) have for many years prevented its utilization. Experience and experiment have demonstrated that, to utilize the valuable idea of a compound wheel, some method of construction is necessary which will not only insure great simplicity and sufficient economy of manufacture, but which will also afford great durability in the wheel, and render it capable of serving, to the greatest extent, the desirable purposes for which this kind of wheel is intended. Among late improvements great advancement has been made over the old-fashioned compound wheels, the impracticability of which arose principally from their complication of construction, requiring much accurate fitting and many parts, which soon failed under the jar and wear to which railway-wheels are subject.

In all compound wheels made or suggested previous to my invention, at least one of two very serious objections exist—viz., either that of having numerous parts and bolts to effect the retention of the tire or packing, or both, or that of subjecting the cushions (or packing) to lateral strain, relying on them for the retention of the tire.

My invention has for its object the production of a compound wheel in which the cushion or packing, of wood, (or other slightly elastic material,) which is interposed between the metallic tire and the metallic body of the wheel, shall be subjected to strain or pressure in the direction only of the radii of the wheel, and in which the lateral thrust or strain of the tire shall be borne by the metallic body of the wheel, and not tend to wear or displace the packing; and to these ends my invention consists in constructing the wheel, as hereinafter more fully set forth, so that the cushions or packing of wood or other suitably elastic material which is interposed between the metallic wheel and tire shall be subjected to compression or strain only in the direction of the radii of the wheel, (and not receive any lateral thrust from the tire;) and my invention further consists in a novel and simple means for insuring the retention of the tire, as hereinafter described.

To enable those skilled in the art to make and use my invention, I will proceed to describe it more particularly, referring by letters to the accompanying drawings, in which—

Figure 1 is a side view and partial section of a compound wheel embodying my invention. Fig. 2 is a similar view, showing the opposite side to that seen at Fig. 1. Fig. 3 is a section at the line *x x*, Fig. 1. Fig. 4 is a section at *y y*, Fig. 2; and Fig. 5 is a plan of body of wheel with the tire removed to more clearly illustrate the shape and positions of the packing.

In the several figures the same part will be found designated by the same letter of reference.

A is the metallic body of the wheel, which may be made of about the usual design. B is the metallic tire or rim. C C, &c., are the cushions or packing of wood or other suitably elastic material, which are interposed between the said metallic tire and body to form a

cushion and give to the wheel the desired quality of elasticity, and D is the retaining-ring, for securing the tire in place.

The body A of the wheel is made, as seen, with a series of lugs or projections, *e*.

f is a web or flange extending round between the lugs *e* on one side of the body A of the wheel, as clearly shown, which flange *f* serves to retain the cushions C endwise in one direction. (They are retained in the other direction or confined by the ring D.) The wood packing C is slightly tapered, and the tire B bored to a similar taper and pressed on tight over it.

The tire B is formed with an annular projection or flange at *h*, which bears against the lugs *e* (when the tire is drawn home to its bearing on the packing or cushion-blocks C) in such a manner as to impart to the metallic body of the wheel any strain or thrust that the tire may be subjected to in consequence of its flange *i* coming suddenly against any obstruction in or being pressed against the rail of the road. When the blocks C have been fitted in, the tire B put on, and the retaining-ring D adjusted between the groove *r* in the tire and the groove *t* in body of wheel provided for it, it will be seen that the blocks C, although firmly packed or confined between the tire and the periphery of the body, are not tightly confined or compressed between the flange *f* and the ring D, but are merely kept in place between these parts; and it will be understood that during any tendency of the tire B to move laterally either way it is retained in one direction by the flange *h* bearing against the lug *e* of the metallic body of the wheel, and in the other direction by the ring D against its bearing on the said metallic body of the wheel, so that the blocks C are in no case subjected to any lateral wear or compression from the tire.

The ring D, I propose to have severed in one place, and I cut away a portion of one of the sides of each of the grooves in the tire and body of wheel, as seen at *m* and *n*, in order that one end of this cut ring may be inserted. I then "worm" or force the ring round into its grooves or bearings by the use of a spanner or key, (illustrated in dotted lines at Fig. 2,) the pins of which take into holes 1 2 3, &c., formed for the purpose in the said ring D. After the ring D has been "wormed" or

sprung into its seat, if deemed expedient, it may be prevented from turning round by riveting its ends round one of the lugs or otherwise.

It will be seen that in my improved wheel the blocks or cushions are subjected only to a vertical compression; or, in other words, they are only compressed between the internal face of the metallic tire and the periphery of the metallic body, to perform the function of "cushioning" the concussive action of the wheel on the rail, and thus save the wear and tear of both the wheel and rail, and induce to an easy and comparatively noiseless motion of the carriage, (which last-named object has become of great importance lately in sleeping and drawing-room cars,) and that they are not subjected to any concussion, strain, or wear by the lateral pressure (in either direction) of the tire, all such lateral strain coming on the metallic body of the wheel.

Of course the shape, size, and material of the cushions or packing may be varied from what I have shown and described, without departing from the spirit of my invention, so long as the wheel is constructed with its lugs, flanges, and rings as described, whereby the cushions are relieved from all lateral strain without resorting to the excessively long and impractical flanges upon the tire.

Having fully explained the several features of my invention, so that one skilled in the art can make and use my improved wheel,

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

1. A compound wheel in which the cushion-blocks or packing is relieved of all lateral strain by means of a flange on the tire bearing against the ends of lugs formed on the periphery of the body and between the cushion-spaces or seats, substantially as and for the purposes set forth.

2. In combination with the tire and body of a compound wheel, a retaining-ring, arranged and operating substantially as described.

In testimony whereof I have hereunto set my hand and seal.

FREDERICK H. TREVITHICK, JR. [L. S.]

In presence of—

J. N. MCINTIRE,
S. D. COZZENS.