(No Model.)

J. R. LITTLE.

METAL WHEEL.

No. 475,582. Patented May 24, 1892.

Fig. 1.

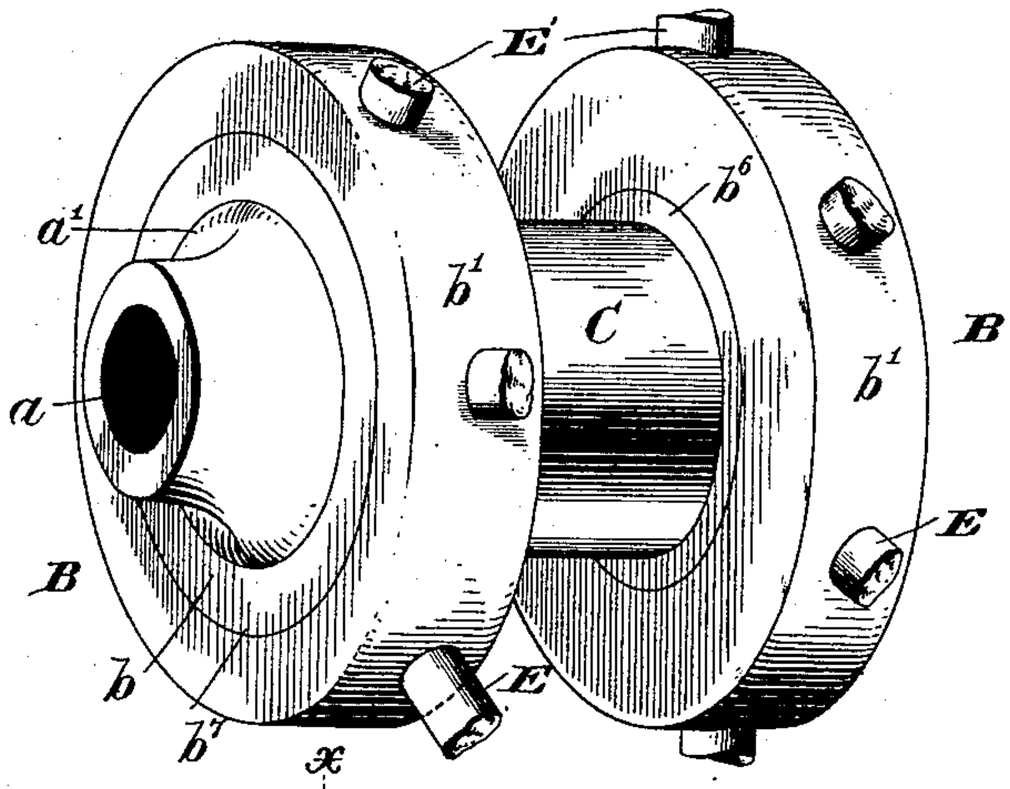


Fig. 2.

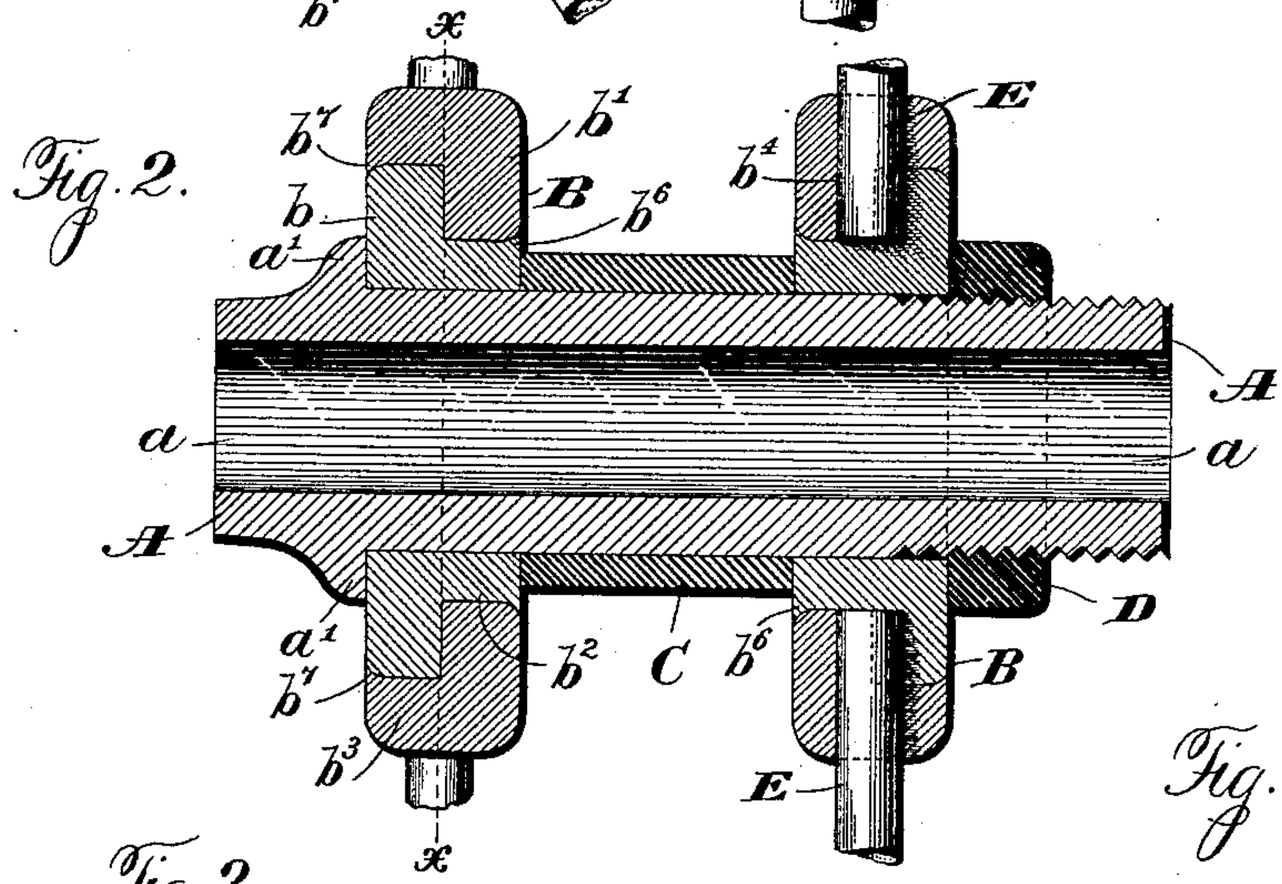


Fig. 3.

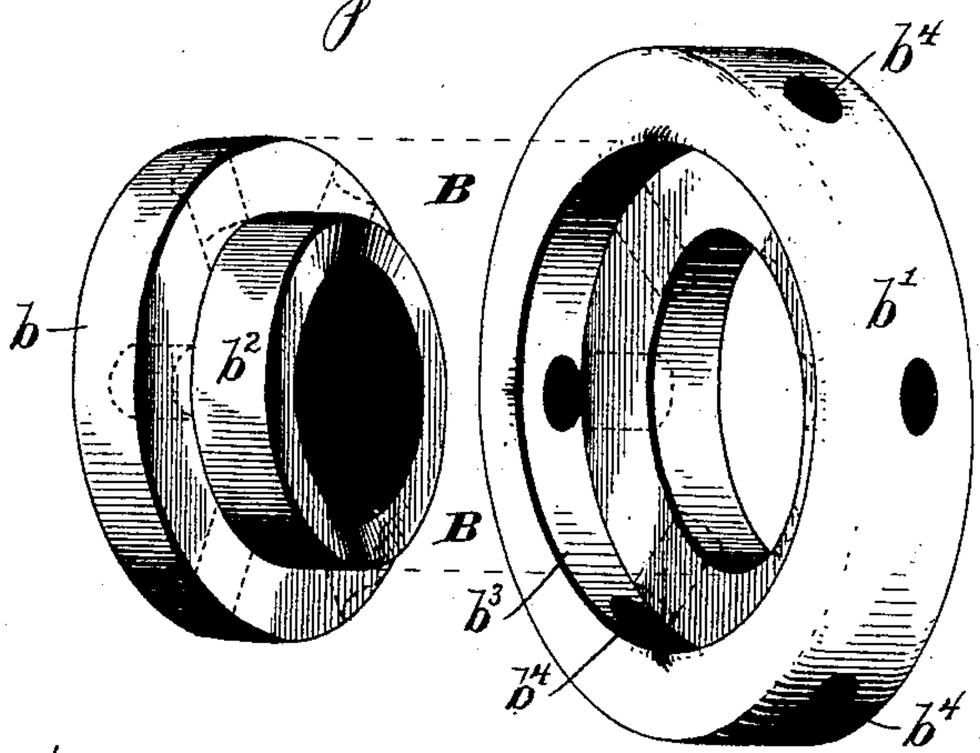
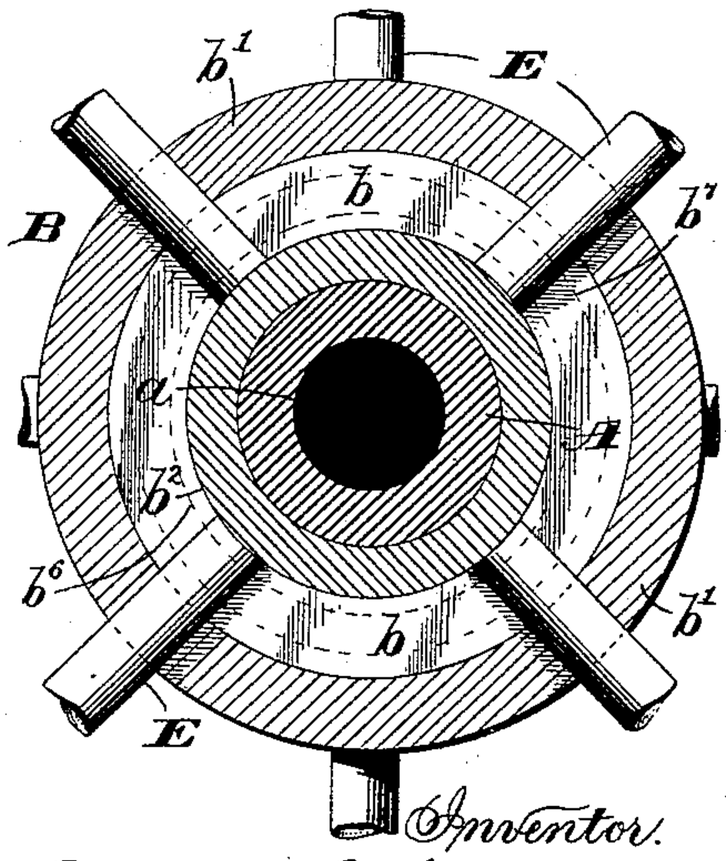


Fig. 4.



Witnesses:
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James R. Little
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UNITED STATES PATENT OFFICE.

JAMES R. LITTLE, OF QUINCY, ILLINOIS.

METAL WHEEL.

SPECIFICATION forming part of Letters Patent No. 475,582, dated May 24, 1892.

Application filed May 18, 1891. Serial No. 393,207. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. LITTLE, of Quincy, in the county of Adams, and in the State of Illinois, have invented certain new and useful Improvements in Metal Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a wheel-hub constructed in accordance with my invention, portions of spokes being shown as secured therein. Fig. 2 is a longitudinal section thereof; Fig. 3, a perspective view of the parts of my spoke containing and holding device before their union, and Fig. 4 a detail section on the line *x x* of Fig. 2.

Letters of like name and kind refer to like parts in all of the figures.

The design of my invention is to make certain improvements in hubs for metal wheels and the mode of attachment thereto of the wheel-spokes, whereby the latter may be most firmly and securely united to the hub; and to this end it consists in the means employed, substantially as and for the purpose hereinafter specified.

The invention which forms the subject-matter of this specification contemplates a specific embodiment of the broad idea of compressing upon a spoke the metal of all or a portion of the hub that incloses it for the purpose of effecting the union of the hub and spoke, as set forth in my application, Serial No. 393,208, filed May 18, 1891.

In constructing a hub in accordance with my present invention I place upon an axle-box A, cylindrical in form and having the usual axle-journaling opening *a*, two spoke-attaching devices B B, whose specific structure will presently be described. These devices B are held at a fixed distance apart upon the box A by means of a hollow cylindrical sleeve or tubular distance-piece C, encircling the box at or near its longitudinal center, whose opposite ends abut against the inner adjacent faces of said spoke-attaching devices. These three parts are confined or held in place upon the box by means of a shoulder or flange a' at one end thereof, against which the outer face of one of the devices B abuts, and by a nut D, engaging external thread at the other end of the box, which nut bears against the outer face of the other of the devices B.

Each spoke securing or attaching device consists of two rings b and b', the latter inclosing the former, when the hub is complete. From the inner ring b, which directly encircles the axle-box A at one side, there projects outwardly an annular flange b^2, while from the outer ring b', at its side, but the one opposite the flange of the other, there projects inwardly an annular flange b^3. The diameter of the flange b^2 of the ring b is the same as the internal diameter of the outer ring b' and the internal diameter of the flange b^3 the same as the external diameter of the ring b, so as to enable the latter ring to be placed within the other, as above indicated. In an axial line the dimensions of the two rings are the same. Perforating the outer ring b' is a series of radially-extending spoke-openings b^4, whose location is such that one edge of the same is in line with the inner face of the flange b^3 of the ring b'. Through each spoke-opening is passed the inner end portion of a spoke E, so as to place the same into position to be engaged by the inner adjacent faces of the ring-flanges b^2 b^3, (which at this stage are plane,) and when so placed it is secured therein by subjecting said rings by some suitable means to such pressure as will compress them upon the spoke portion they inclose. The joint thus formed will be most secure and firm and one possessing all the strength and rigidity needful for it to have in practical use. To enable the rings to be compressed as above described, they are made of malleable iron, while the spokes are either wrought iron or steel. Should it be found desirable, I comtemplate providing preliminary to putting the parts together cavities in the faces of the ring-flanges to be coincident with the openings in the outer ring for the reception of the end portions of the spokes when passed through such openings.

To lock or secure the rings together when compressed upon the spokes, the outer edge b^6 of the inner ring b is turned outwardly over the contiguous portion of the outer ring-flange

b^3 and the inner edge b^7 of the outer ring b', turned inwardly over the contiguous portion of the inner ring-flange b^2. These operations may be performed either at the same time that the rings are compressed upon the spokes or subsequently. Preferably in making a wheel the outer extremities of the spokes are secured to the rim and the latter trued before the hub and spokes are united.

My object in providing the two spoke-securing devices B B, as shown, is to enable the spokes to be "dodged" or "staggered;" but if this latter arrangement should not be desired it will be understood that with proper modification of the other parts of the hub one of such devices alone may be used. When two are used, I prefer to arrange the devices with reference to each other so that the sides thereof adjacent shall be the ones having the flange b^3 of the outer ring b'.

Having thus described my invention, what I claim is—

1. As an improvement in metal wheels, in combination, a spoke or spokes and the two-part device compressed upon the same, the parts of said device being suitably held together, substantially as and for the purpose described.

2. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings having adjoining faces between which said spokes are placed and have compressed upon them the contiguous metal thereof, said rings being suitably held together, substantially as and for the purpose set forth.

3. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings, one inclosing the other, between adjoining faces of which said spokes are placed and have compressed upon them the contiguous metal thereof, substantially as and for the purpose specified.

4. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings having parallel annular flanges between which said spokes are placed and have compressed upon them the contiguous metal thereof, substantially as and for the purpose shown.

5. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings, one having an outwardly-projecting flange and the other an inwardly-projecting flange, which flanges are compressed upon said spokes, substantially as and for the purpose set forth.

6. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings, an inner and outer, the former having an outwardly-projecting annular flange, the latter an inwardly-projecting annular flange, and the outer ring having spoke-openings through which said spokes are passed, so as to be placed between said flanges, which are compressed upon them, substantially as and for the purpose described.

7. As an improvement in wheels, a metal hub having two ring parts compressed upon the spokes and held together by having the edge of one ring part turned over against the other part, substantially as and for the purpose shown.

8. As an improvement in wheels, a metal hub having a spoke-holding part consisting of two rings, one of which incloses the other, the said rings being held together by having one edge of the inner ring upset over the adjacent portion of the outer ring and one edge of the outer ring upset over the adjacent portion of the inner ring, substantially as and for the purpose specified.

9. As an improvement in metal wheels, in combination, an axle-box, spoke-attaching devices thereon consisting of two-part rings compressed upon the spokes, and suitable means to hold said devices upon said box, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of May, 1891.

JAMES R. LITTLE.

Witnesses:
EDWARD A. ROGERS,
GUSTAVE A. BAUMAN.