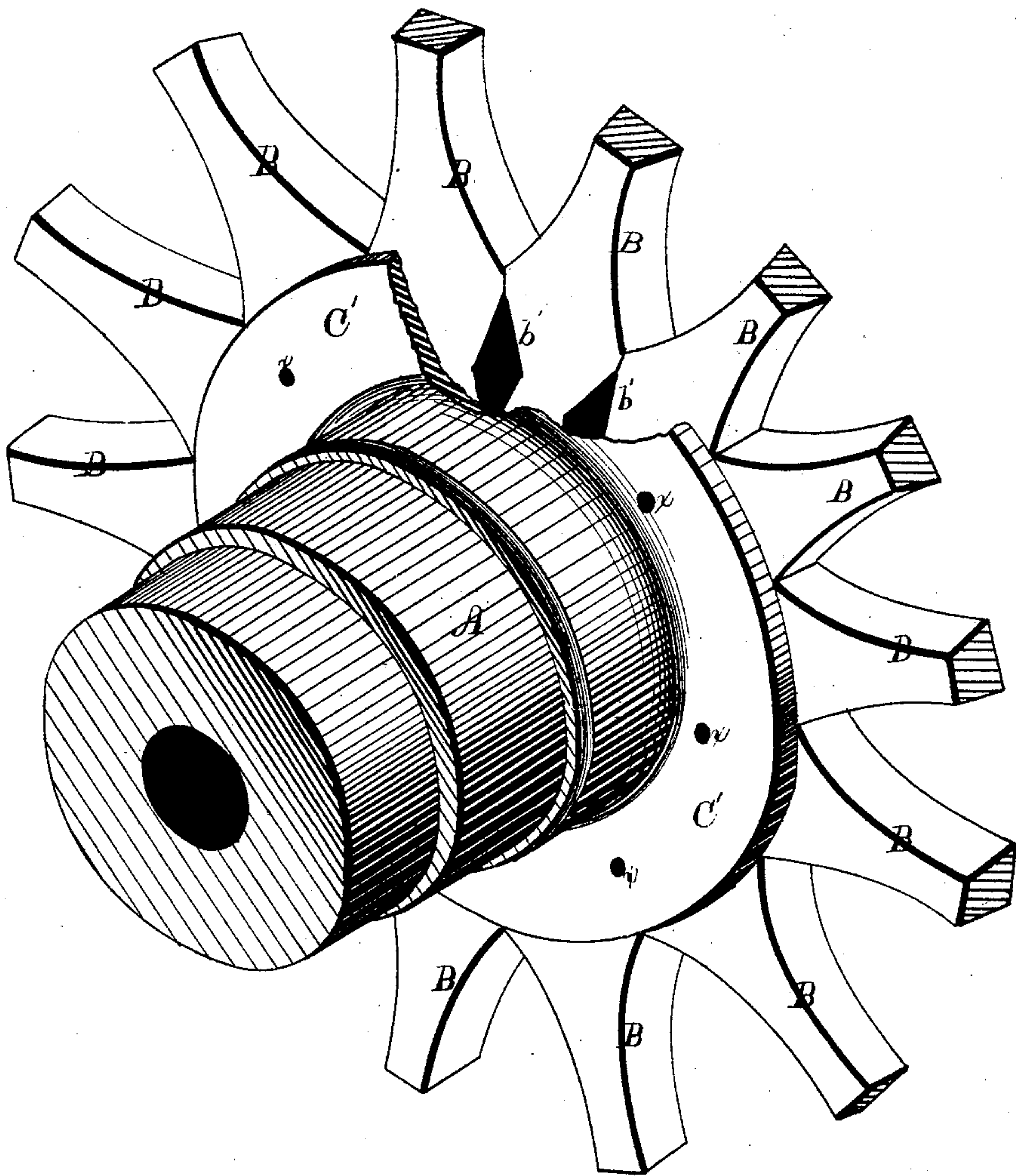


A. BUCHHOLZ.
Wheels for Vehicles.

No. 145,393.

Patented Dec. 9, 1873

Fig. I.



WITNESSES:

*Jas. E. Hutchinson
 Harry Coleman,*

INVENTOR.

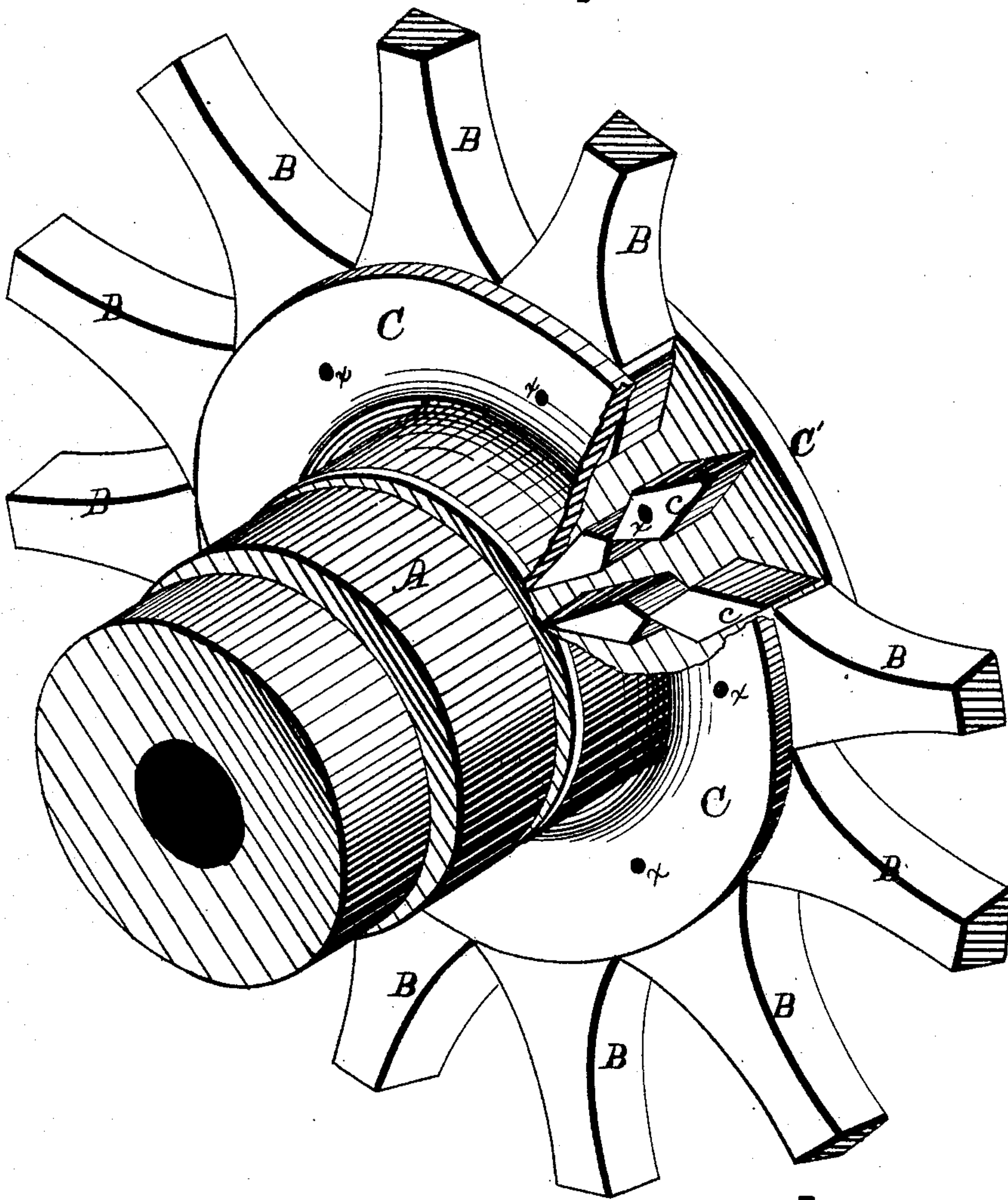
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Fig. 2.



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The diagram illustrates a complex geometric structure, likely a cross-section of a crystal or a mathematical model. It features a central circular region with a smaller circle inside it, labeled 'A'. Surrounding this central region are eight large, curved, shaded regions labeled 'B'. These regions are arranged in a circular pattern, with their outer edges being irregular and jagged. Between the large regions 'B' are smaller, shaded, diamond-shaped regions labeled 'b' and 'b'.

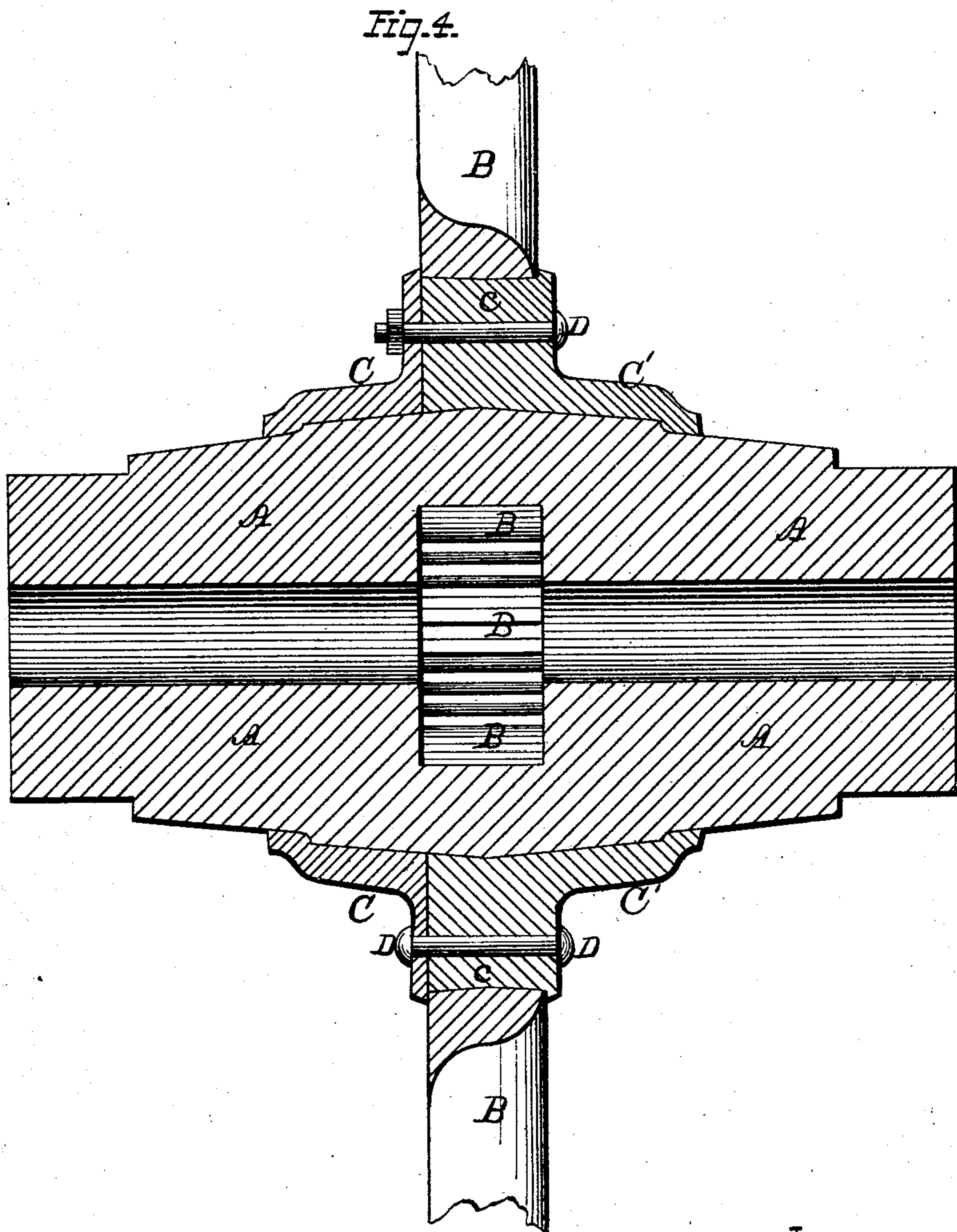
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UNITED STATES PATENT OFFICE.

ALEXANDER BUCHHOLZ, OF JANESVILLE, WISCONSIN.

IMPROVEMENT IN WHEELS FOR VEHICLES.

Specification forming part of Letters Patent No. **145,393**, dated December 9, 1873; application filed September 25, 1873.

To all whom it may concern:

Be it known that I, ALEX. BUCHHOLZ, of Janesville, in the county of Rock and in the State of Wisconsin, have invented certain new and useful Improvements in Wagon-Wheels; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a perspective view of the central portion of one side of a wheel containing my improvements. Fig. 2 is a like view of the opposite side of said center, the flange or collar being broken away and two spokes removed so as to show the lugs of the opposite flange. Fig. 3 is a central section of said wheel-center upon a line with its plane of motion, and Fig. 4 is a like view upon a line having a right angle to said plane.

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

The design of my invention is to produce a stronger, better, and more durable connection between the spokes and hub of a wheel; and it consists, principally, in the peculiar shape of the contiguous edges of the spokes and their combination, with the lozenge-shaped lugs, with one of the metal collars, substantially as and for the purpose hereinafter specified.

In the annexed drawings, A represents the hub of my wheel provided with a series of equidistant radial mortises, *a*, into each of which is fitted the corresponding tenon *b* of a spoke, B, in the usual manner. From the periphery of the mortised portion of the hub A the contiguous edges of the spokes B extend outward upon radial lines, and within each edge is formed a recess or notch, which, combined with the corresponding opposite notch of the adjacent spoke, forms a diamond or lozenge shaped opening, *b'*, that extends horizontally through said spokes, and has its longitudinal axis upon a radial line. Upon each end of the hub A is placed a flanged collar, C, which closely embraces the periphery of said hub and

extends upward against the sides of the spokes B. Upon one flange of one of the collars, C', is provided a number of lugs, *c*, which correspond in size, shape, and position to, and closely fit into, the openings *b'*, said lugs having such length as to cause them to nearly meet the inner face of the opposite flange. A rod, D, passed through suitable openings in the flanges and each alternate lug, is provided upon one end with a head, *d*, and upon its opposite threaded end with a nut, *d'*, by means of which said flanges may be drawn closely against the sides of the spokes. If desired, the nut *d'* may be dispensed with and the end of the rod riveted down upon its flange. In order that the positions of the flanged collars C may be insured longitudinally upon the hub the opening through each is reduced in size near its outer end so as to form a shoulder, *c'*, which fits against a corresponding shoulder, *a'*, formed upon said hub when said collar is drawn to place.

The parts thus constructed and combined possess more than ordinary strength, it being impossible for the spokes to move in any direction within their hub; and, while possessing such advantages, said construction does not increase materially the cost of a wheel.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

The notched and tenoned spokes B, fitted within the mortised wooden hub-core A, and forming, between their contiguous edges, the openings *b'*, in combination with the flanged collars C and C', the latter of which is provided with the lugs *c* and *c*, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of September, 1873.

ALEXANDER BUCHHOLZ.

Witnesses:

ED. F. CARPENTER,
J. B. CASSADAY.