

No. 863,678.

PATENTED AUG. 20, 1907.

W. W. VAN ETEN & L. BROWN.

VEHICLE WHEEL.

APPLICATION FILED DEC. 3, 1906.

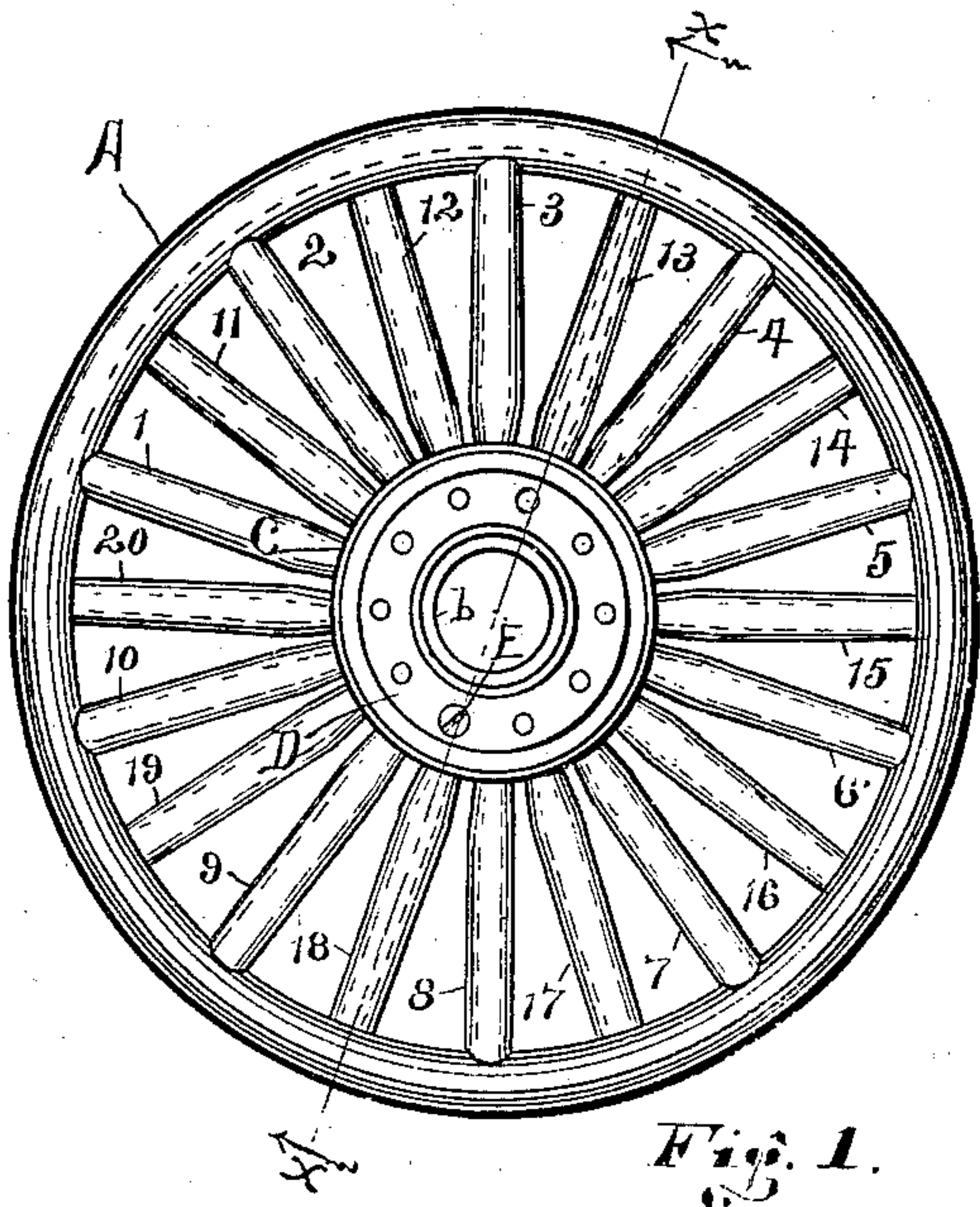


Fig. 1.

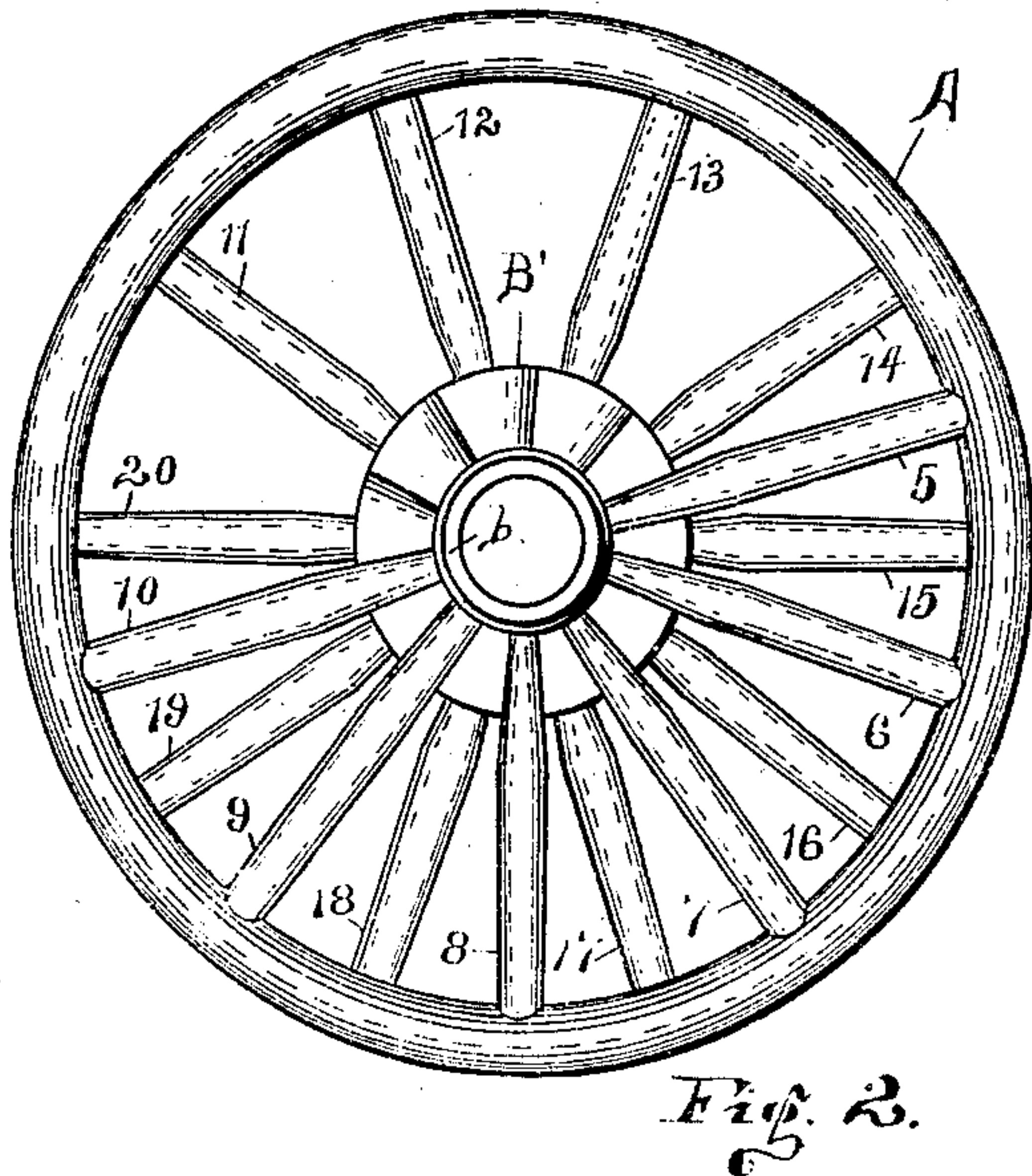


Fig. 2.

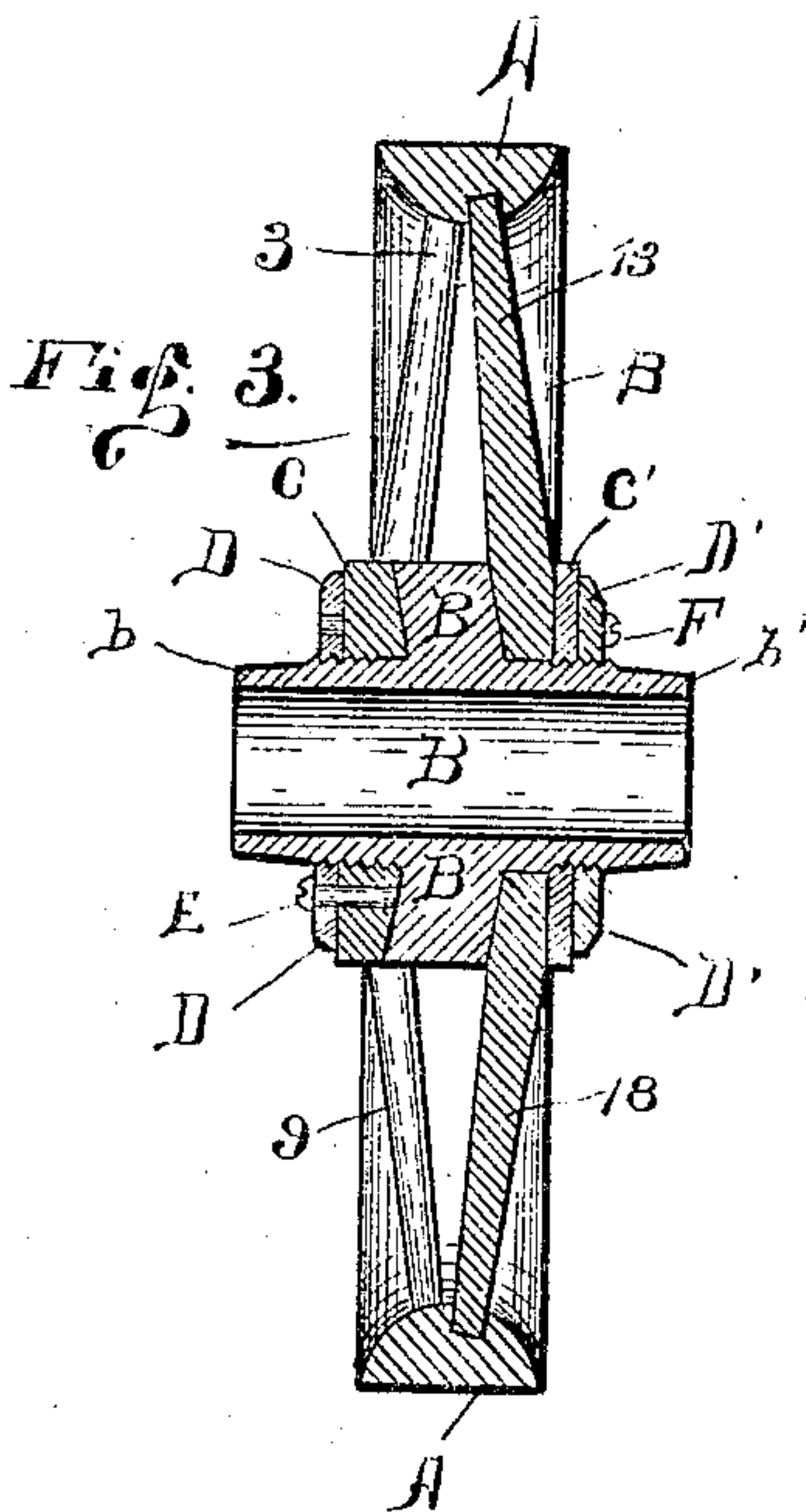


Fig. 3.

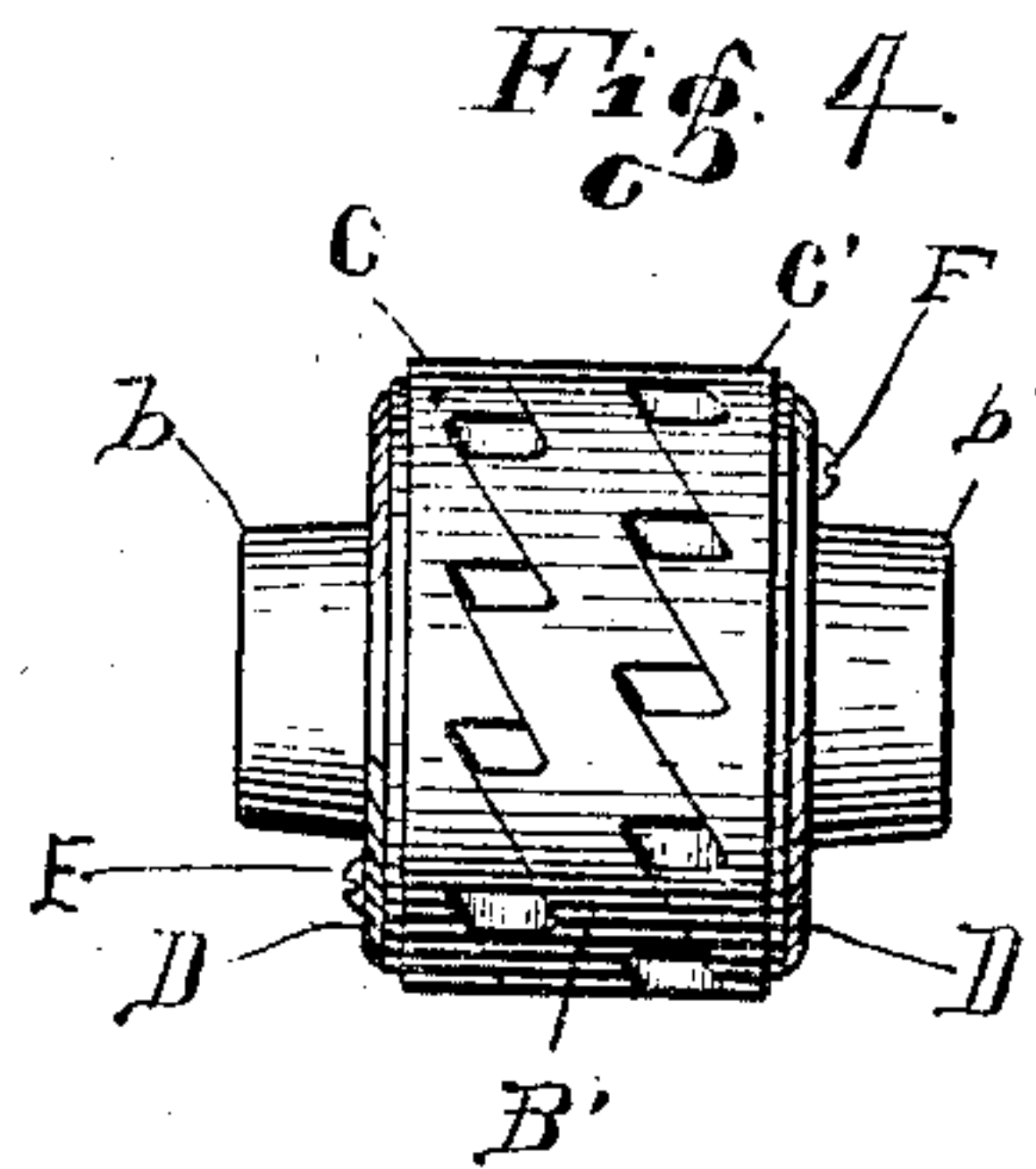


Fig. 4.

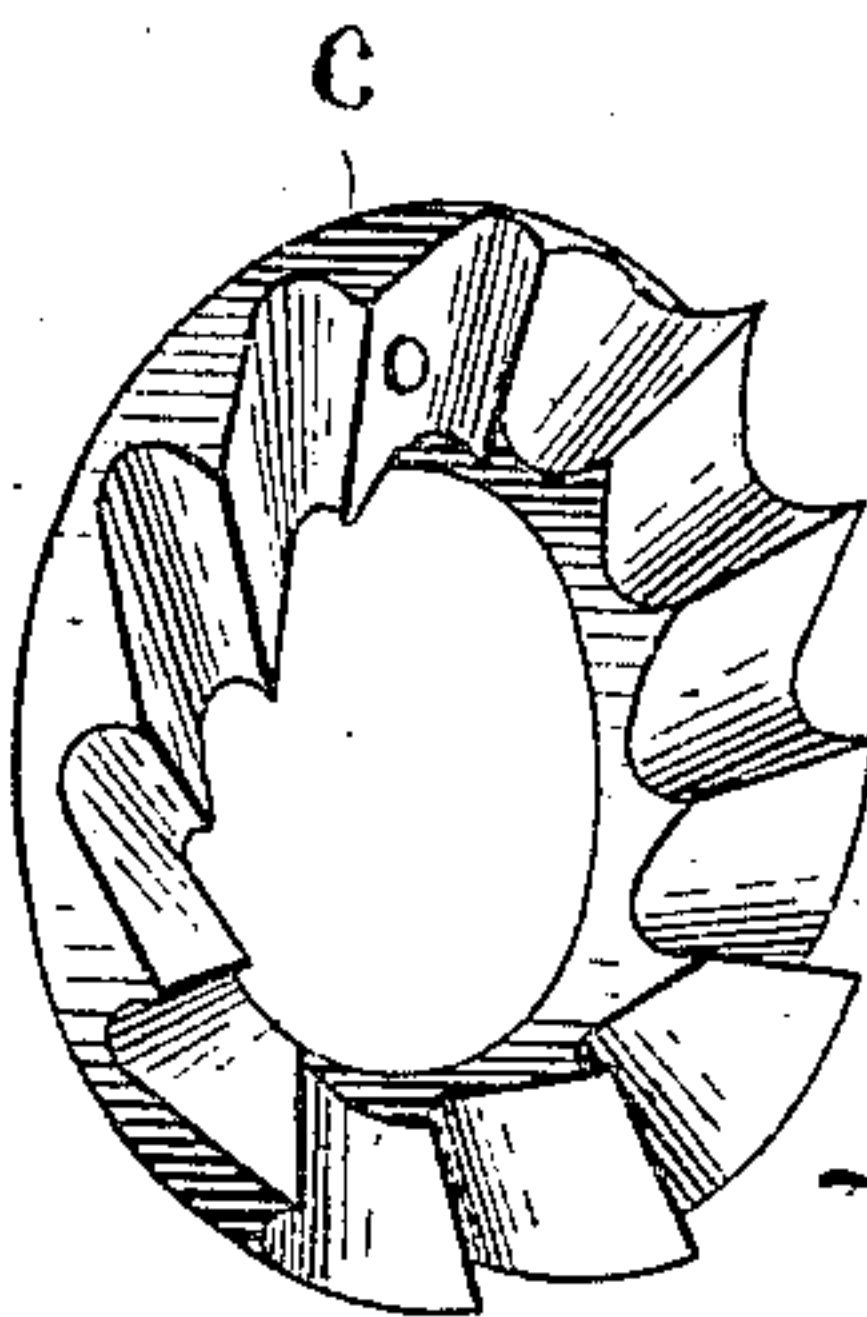


Fig. 5.

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UNITED STATES PATENT OFFICE.

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VEHICLE-WHEEL.

No. 863,678.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed December 3, 1906. Serial No. 346,022.

To all whom it may concern:

Be it known that we, WILLIAM W. VAN ETEN and LEVI BROWN, both of the city of Richmond, in the county of Wayne and State of Indiana, have invented
5 new and useful Improvements in Vehicle-Wheels, of which the following is a full, clear, and exact description and specification, being such as will enable others skilled in the art to which our invention relates to make and use the same with exactitude.

10 Our invention relates to vehicle-wheels, being more particularly intended for automobiles or the like.

The object of our invention, broadly speaking, is to provide a wheel of strong and durable construction, simple in its several elements, and capable of a wide scope
15 of usefulness and efficiency.

More specifically speaking our object is to provide a wheel in which any one or all of the spokes may be removed or renewed without disturbing the rim of the wheel; to provide a wheel having a solid, endless, or
20 one-part felly or rim; and to provide a solid hub, with means for securely seating, clamping, and holding the spokes in position.

Other particular objects and advantages will be brought out in the course of the ensuing specification, and the essential features will be accentuated in the
25 appended claims.

The preferred embodiment of our invention is shown most clearly in the accompanying drawings, in which—

Figure 1 shows our wheel in elevation and containing
30 our several improvements. Fig. 2 shows our wheel partly dismembered, and showing how the spokes may be removed and replaced. Fig. 3 is a central sectional view of our wheel, as taken on the line X—X of Fig. 1. Fig. 4 is a plan view of the hub of our wheel detached
35 from other parts. And Fig. 5 is a detail perspective view of one of the retaining-rings.

Similar indices denote like parts throughout the several views.

Our invention consists in the arrangement, construction, and the combinations of the several parts, together with the relative disposition of the several parts one to the other, all of which will be set forth in concrete detail hereinafter.

In order that our invention and its operation may be
45 the more fully understood, we will now take up a detail description thereof, in which we will describe and refer to the several parts of our invention as briefly and as compactly as we may.

The letter A designates our wheel-rim or felly, formed
50 of one continuous piece of material, adapted to receive a suitable tire, and having cavities located around its inner face to receive the outer ends of the spokes.

The spokes of our wheel are divided into two sets adapted to counterbalance each other, as shown in Fig.

3. One set being designated by the numerals 1 to 10, 55 inclusive; and the other set being designated by the numerals 11 to 20, inclusive.

The hub of our wheel includes the central body portion B, having the outwardly extending and slightly tapering ends *b* and *b'*, with a central aperture extending longitudinally through said parts for the vehicle axle. Extending out around the central portion of the hub, projecting therefrom, and formed integral therewith, is the zig-zag abutment B', formed by L-shaped notches which are provided in each of the opposite
60 faces of said abutment, as shown in Fig. 4, thereby forming pockets, each to inclose one-half of the base of a spoke, as indicated in Fig. 3.

The letters C and C' denote each a retaining ring, each having its inner face provided with L-shaped
70 notches adapted to engage with said notches of said abutment, said notches of each ring being oppositely disposed to the corresponding notches in said abutment. The retaining-ring C has a central aperture to receive therethrough the end *b* of the hub; and in like manner
75 the locking-ring C' has a central aperture to receive therethrough the end *b'* of the hub. The diameter of said retaining rings is equal to the diameter of the hub, as is indicated in the drawings. When the said retaining-rings are in position, as in Figs. 3 and 4, the angular
80 faces of the notches of the abutment and of the locking rings will engage each other, and said rings are free to move on the ends *b* and *b'* of the hub to vary the spaces between the faces formed parallel with the axis of the hub and formed by the abutment and by said retaining rings or plates, said spaces being shown in Fig.
85 4. By the above it is apparent that the more said locking-rings are moved centerward the less will become the spaces between them and the abutment. Said spaces are provided for receiving the inner ends of the spokes,
90 as shown in the first three figures of the drawings.

The letters D and D' designate locking-disks which are adapted to contact with the outer faces of the retaining rings C and C', respectively, as shown in Figs. 3 and 4. Said locking-disks have central apertures to
95 receive the ends of the hub. Said apertures being threaded to engage the exteriorly threaded portion of the hub, as indicated in Fig. 3. Each of said locking-disks is provided with a plurality of smooth-bore screw-holes located around their central aperture, as shown in
100 Fig. 1. Formed in an axial direction through each of the said retaining-rings is a single, threaded, screw-hole located opposite said screw-holes of the locking-ring.

The letters E and F denote screws, the former being adapted to be inserted in one of said screw-holes in the
105 locking-disk D and screwed into the threaded screw-hole in the retaining-ring C; and the latter being adapted to be inserted in one of said screw-holes in the

locking-disk D' and screwed into the threaded screw-hole in the retaining ring C', all as indicated in the drawings.

Operation: Now suppose the wheel to be dismembered, and that it is desired to assemble the wheel, 5 The outer ends of the spokes are inserted in the sockets therefor in the wheel-rim, and the inner ends of the spokes are abutted against the body of the hub, each being seated in one of the notches formed in the faces 10 of the abutment B', in the manner shown in Fig. 2, it being apparent that the spokes may be forced into position by reason of their inner ends being caused to travel inwardly on the tapering periphery of the ends *b* and *b'*. After the spokes have been positioned as described the 15 retaining rings are then placed in position as shown in Fig. 4; after which the disks D and D' are screwed onto the hub ends *b* and *b'* from opposite directions, for which purpose a spanner wrench (not shown) may be employed which may engage in two of said holes in either 20 of the disks, whereby said disks will be clamped against their respective retaining-rings thereby causing the latter to clamp and securely hold the inner ends of the spokes, as shown in Fig. 3. After the disks have been tightened as desired then the screws E and F are to be 25 inserted, thereby preventing the disks from turning or becoming inadvertently disengaged. Should it become necessary, for any reason, to remove any one or more of the spokes, for instance the spoke 13, I have only to remove the screw F, unscrew and remove the 30 disk D', and then remove the retaining-ring C', after which the spoke may be easily pulled outward and downward and thereby removed, and reversely a new one may be replaced as indicated.

We desire that it be understood that various changes 35 may be made in the details of construction without departing from the spirit of the invention which is claimed as new.

Having now fully shown and described our invention and the best manner of its construction to us known at this time, what we claim as new and desire to secure 40 by Letters Patent of the United States, is—

1. In a vehicle wheel, the combination of a solid rim felly, spokes fitted in said felly, a hub against which the inner ends of the spokes abut, an abutment integral with the hub and dividing the alternate spokes on each side 45 thereof, retaining rings adapted to contact on the sides of the abutment and in connection with the faces of the abutment forming cavities therebetween for containing the inner ends of the spokes, disks threaded on the hub and contacting with their respective retaining-rings, and 50 means for locking said disks in position in connection with their respective rings, all substantially as shown and described.

2. A vehicle wheel having a single felly rim, a hub having tapering ends, a zig-zag abutment extending out 55 around the center of the hub, a pair of retaining-rings adapted to surround the hub and contact with opposite sides of said abutment and having notches on their inner faces to engage the notches of the abutment, a locking-disk for each of said retaining-rings and adapted to be 60 clamped thereagainst by reason of their being threaded on the periphery of the hub, all substantially as shown and described.

3. The combination with the hub proper, of the abutment B' having angular notches on each side thereof, 65 retaining disks to fit over the ends of the hub and having notches on their inner faces to interact with the notches of the abutment to form a plurality of cavities for the reception of the ends of the spokes, means for varying the size of said cavities by the lateral movements of said 70 retaining disks, outer disks adapted to be run on the periphery of the hub and contact with said retaining disks, and means for securing said outer disks to said retaining disks, all substantially as shown and described.

In testimony whereof we have hereunto signed our 75 names in the presence of two subscribing witnesses.

WILLIAM W. VAN ETTEN.
LEVI BROWN.

Witnesses:

ROBERT W. RANDLE,
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