

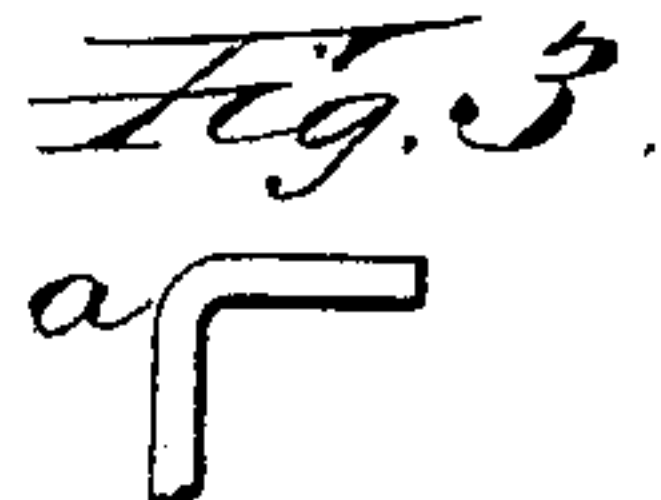
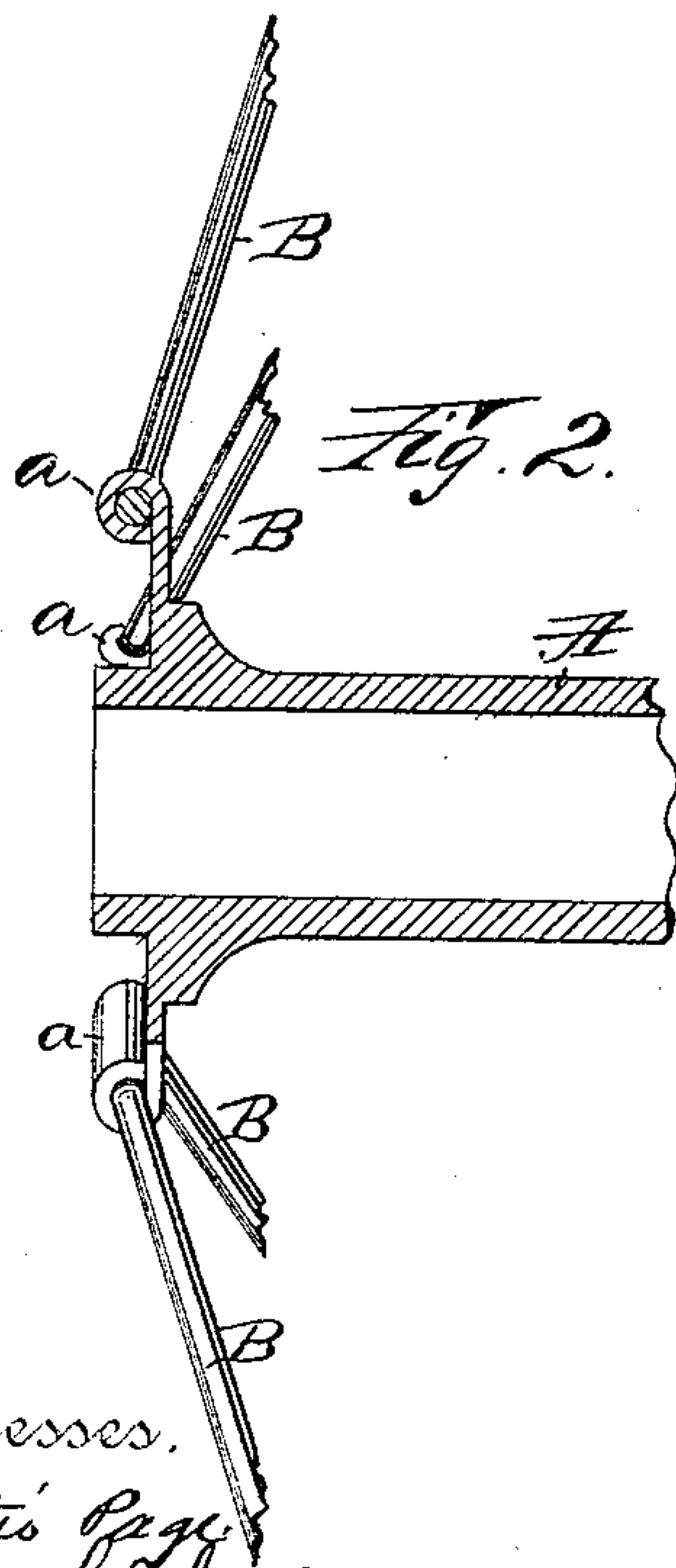
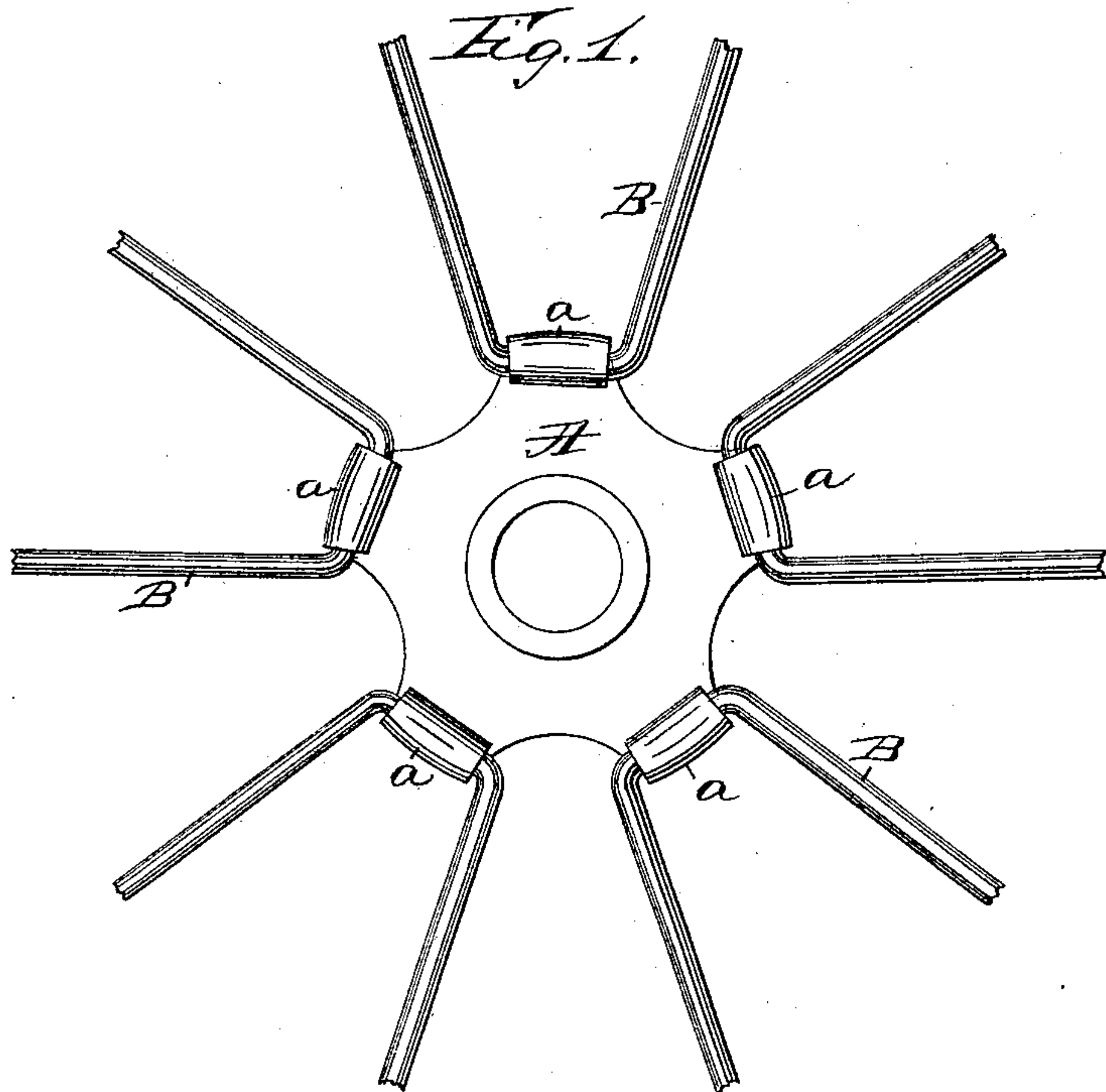
(No Model.)

G. E. WHITMORE.

WHEEL.

No. 379,841.

Patented Mar. 20, 1888.



Witnesses.
Horatio Page
Leonard S. Wheeler.

Geo. E. Whitmore
Inventor.

UNITED STATES PATENT OFFICE.

GEORGE E. WHITMORE, OF NEW HAVEN, CONNECTICUT.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 379,841, dated March 20, 1888.

Application filed June 6, 1887. Serial No. 240,375. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. WHITMORE, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Vehicle-Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in vehicle-wheels of the class usually used in constructing bicycles, tri-cycles, and velocipedes. Its object is to serve the double purpose of providing a simple and
15 efficacious mode of fastening the spokes or radial arms to the hub-section and in the operation of fastening to strain the spokes from the periphery centerward to an even tension of any required degree. To accomplish this
20 I provide a hub suited to the kind of vehicle or machine above mentioned, having cast or fixed upon either end a plate provided with any required number of arms extending outward from a point equidistant from the hub
25 proper or from the center of the sleeve-cavity into which the axle is inserted. Upon the extremes of these arms is formed an ear or shoulder extending outward any required length suited to the diameter or thickness of
30 the spoke. This ear is formed at nearly a right angle to the arm, so that the spokes are formed in pairs—that is to say, each single piece of wire being so formed as to make two radial arms or spokes connected at the
35 point of their interior fastenings to the hub-section proper, and being so bent as to form a loop having a straight bar-piece of sufficient length to be carried over the projecting shoulder or ear, as more fully explained in the accompanying drawings, forming a part of this
40 specification, and on which similar letters of reference indicate the same or corresponding features.

Figure 1 represents the exterior face of a
45 plate with projecting arms. *a a a* represent the arms as they appear after the ears or shoulders formed upon their extremes have been forced over and around the straight bar-pieces of the loops in the wires forming the spokes
50 *B B* in pairs to a point of contact with the metallic face of the arms. Fig. 2 represents a

diametrical sectional view of the same; and Fig. 3, a sectional view of the extreme of a projecting arm with the ear or shoulder formed upon the same, ready to receive the loop in the
55 wire forming the spokes in pairs as aforesaid.

The extremes of the spokes, which are cut to an even length, are first secured to the periphery of the wheel by riveting or otherwise, and after being drawn over the shoulder or
60 ear of the projections *a a a* the ear is folded over upon them, and in this process the spokes are brought to the required tension—an important feature in all wire-spoke wheels.

It is obvious that the plate *A* and arms *a a a*
65 should be shouldered upon the hub proper or otherwise firmly secured thereto, and should be of sufficient strength and thickness to hold the spokes firmly in place, thus forming unyielding retaining sockets or receptacles for
70 the spokes at their converging fastenings to the said arms of the plate *A*, which is either formed upon the hub or is formed separately and firmly secured thereto.

I am aware that similar retaining-lips have
75 been heretofore formed upon plates in their relation to vehicle-wheels and folded over upon the spokes proper; but the object heretofore served has been merely to hold the spokes in place upon separate shoulder pieces
80 or rests, thus operating as a guard or key to prevent the spokes from becoming detached therefrom. They differ essentially from mine, in that my invention makes the radial arm itself serve all these purposes. Again, the
85 process as heretofore in use of straining the spoke to the required tension from the center outward and fastening it to the periphery of the class of vehicle-wheels to which my invention relates has not only been troublesome,
90 but attended with the expenditure of considerable time and labor, which are obviated and saved by my method of straining the spokes to a tension from the periphery inward, as hereinbefore described.
95

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a vehicle-wheel, in combination with the hub and spokes, a metallic plate, part, or section
100 forming a part of the hub proper, and having a number of arms of equal length

terminating in a shoulder or projection nearly
at right angles, suited to and formed to receive
the spokes proper in pairs, which are secured
to the hub by being encompassed by and held
5 within the said projections by having the same
turned over upon them in such manner as to
form a permanent rest or socket without other
fastening, and in the operation of fastening

straining the spokes to any required tension
from the rim or periphery of the wheel in- 10
ward toward the center, in the manner and for
the purposes hereinbefore set forth.

GEO. E. WHITMORE.

Witnesses:

HORATIO PAGE,
LEONARD S. WHEELER.