

No. 612,323.

Patented Oct. 11, 1898.

W. FRASER.
CYCLE OR LIKE WHEEL.

(Application filed Mar. 26, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

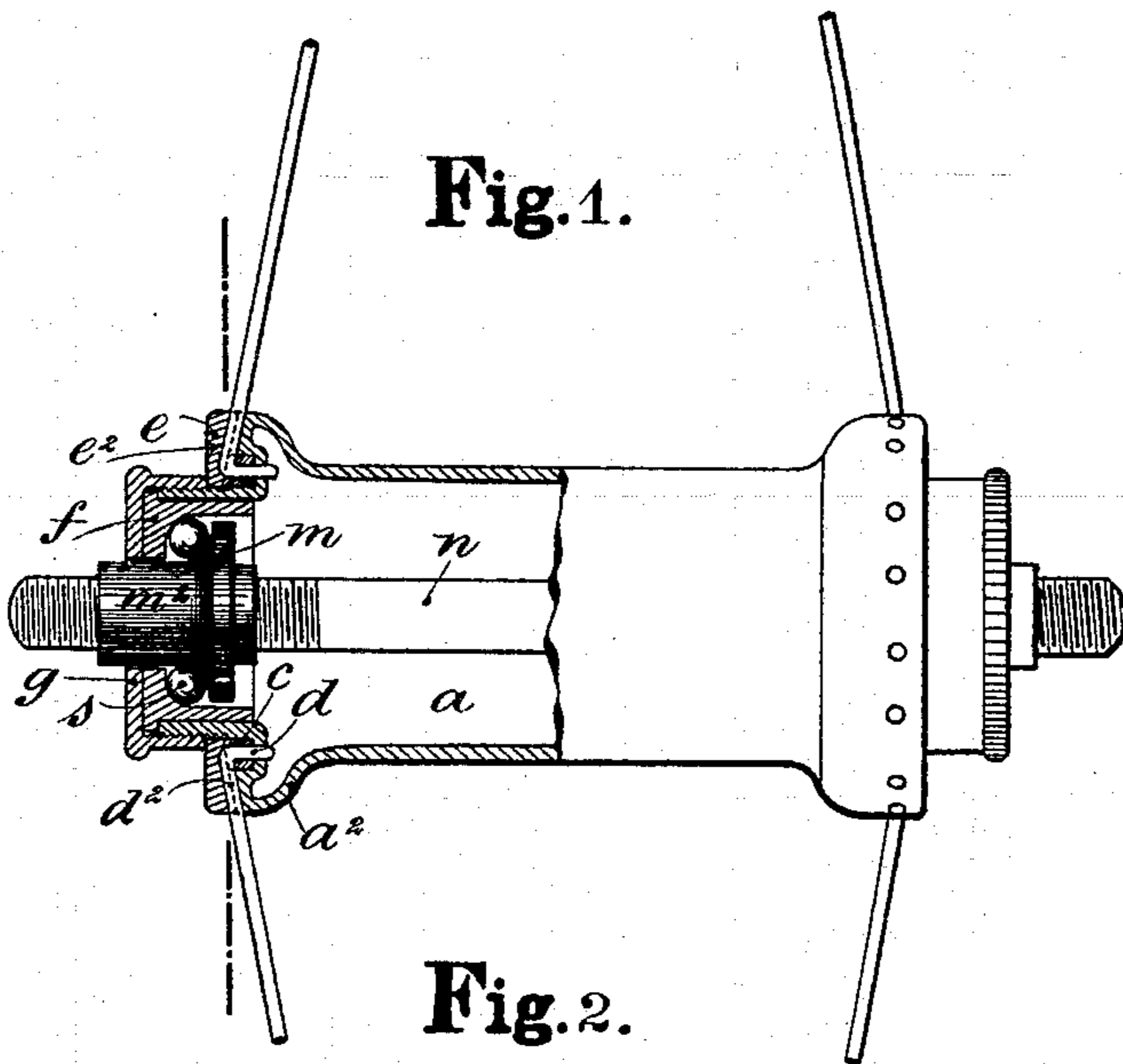
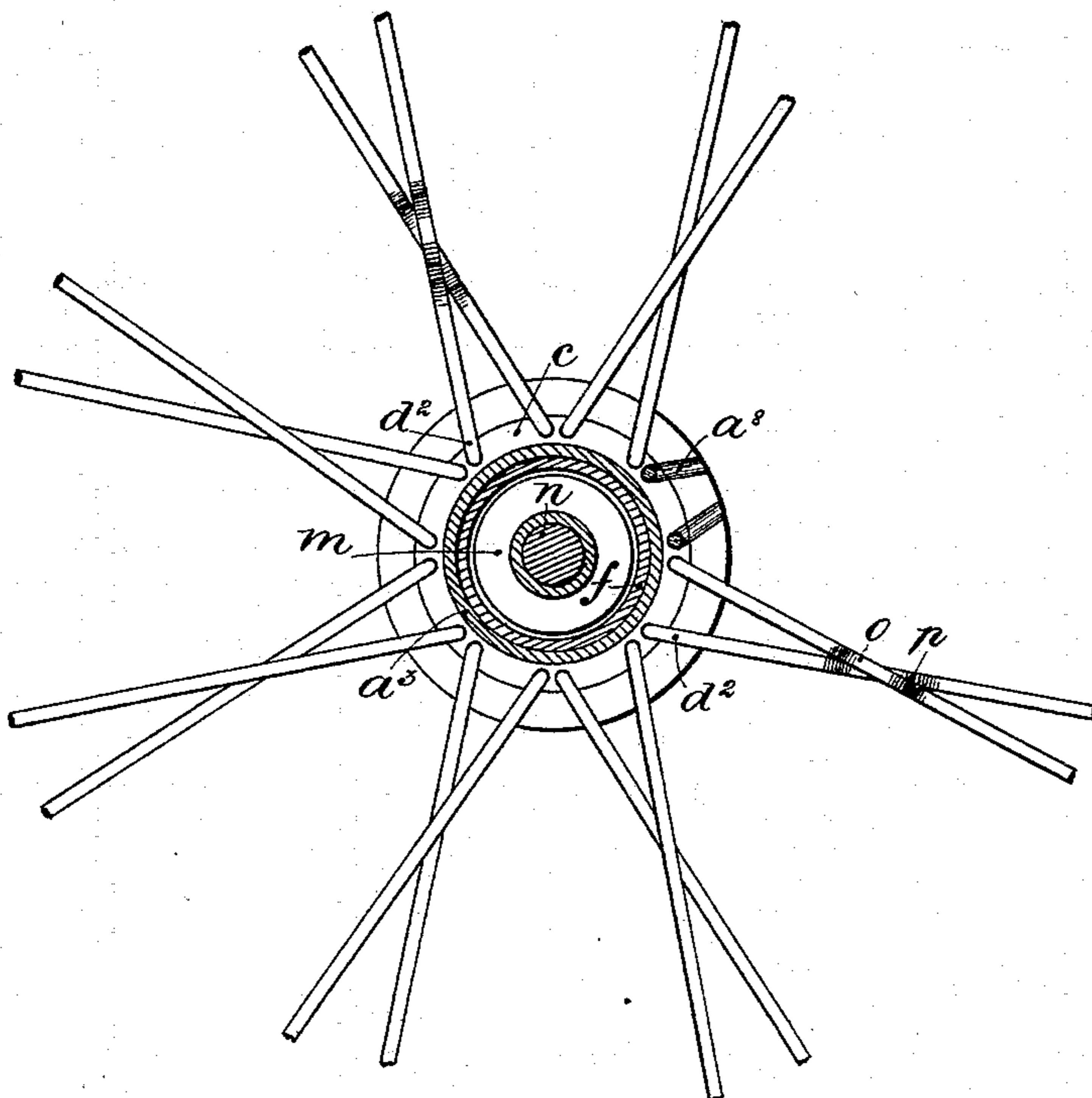


Fig. 2.



Witnesses

Geo. H. H. Riddle

Inventor

William Fraser

No. 612,323.

Patented Oct. 11, 1898.

W. FRASER.
CYCLE OR LIKE WHEEL.

(Application filed Mar. 26, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.

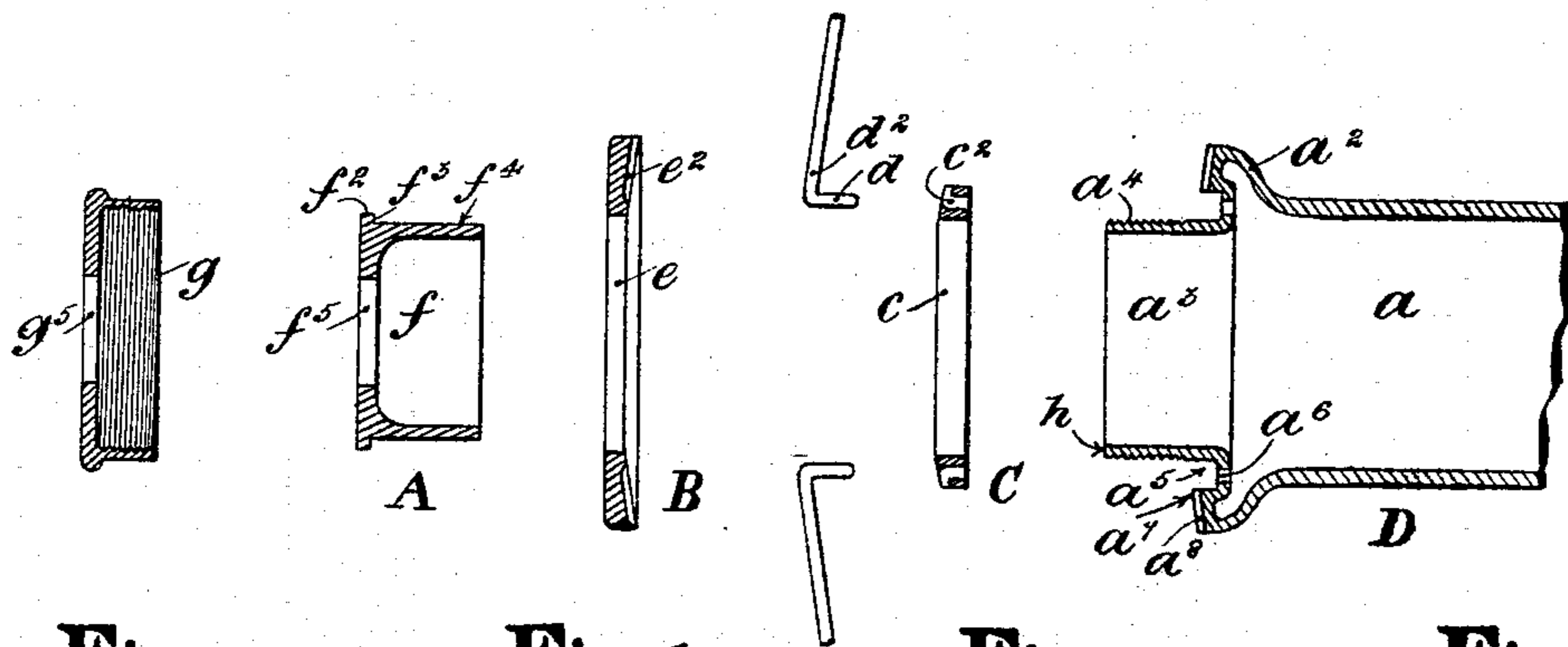


Fig. 4.

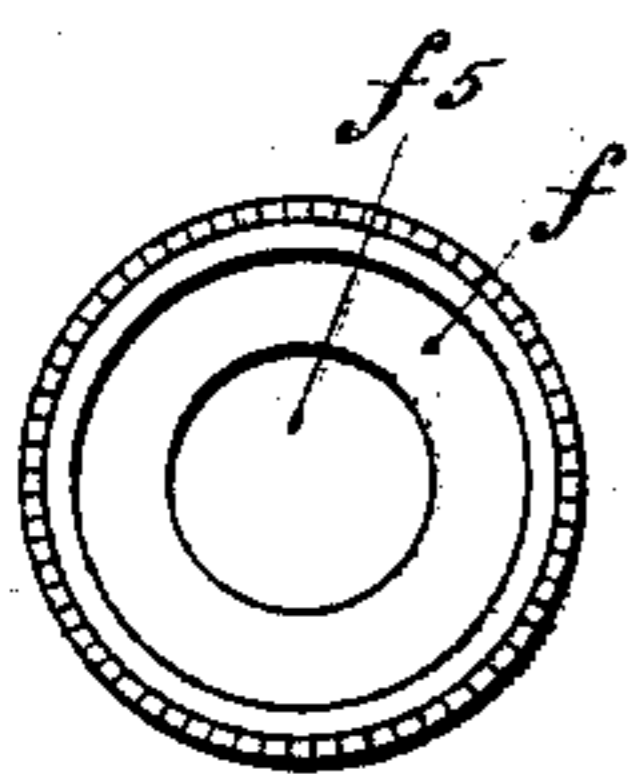


Fig. 5.

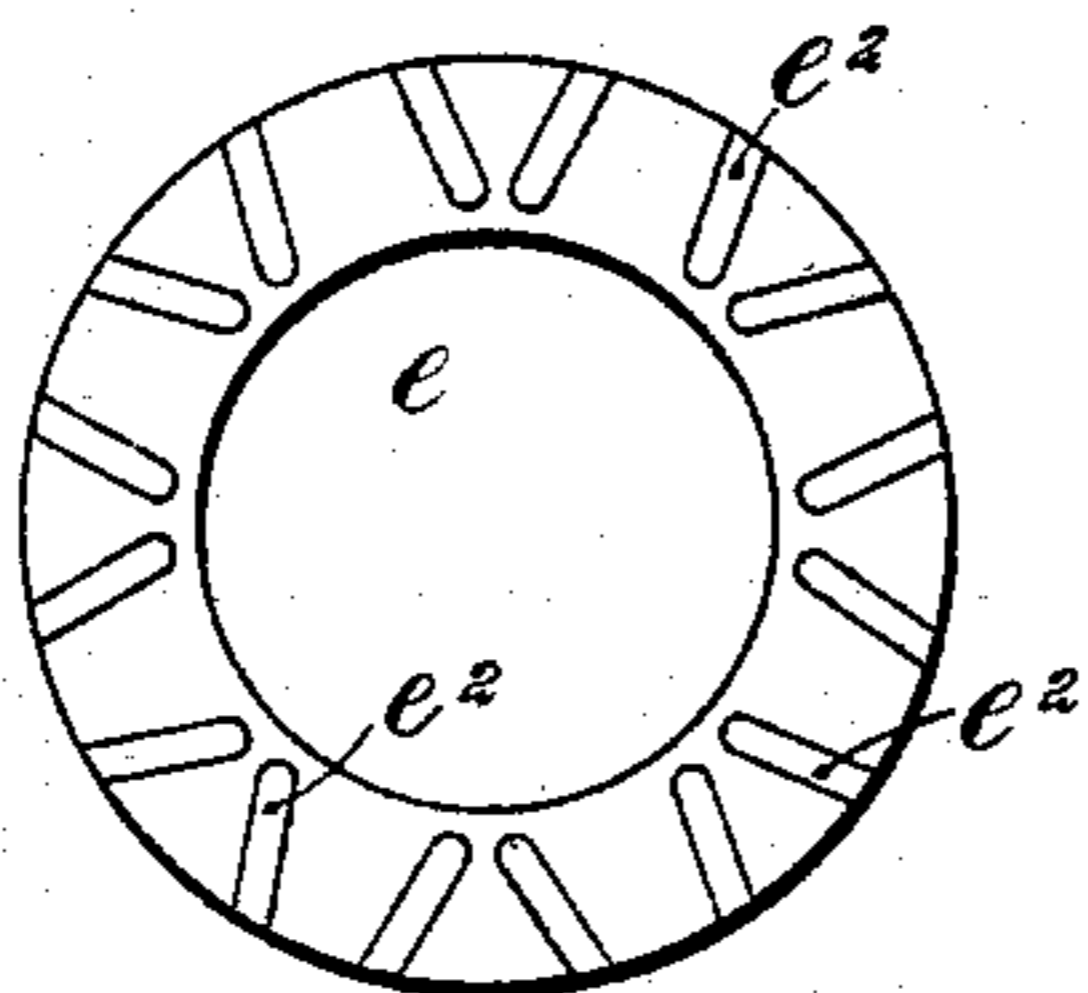


Fig. 6.

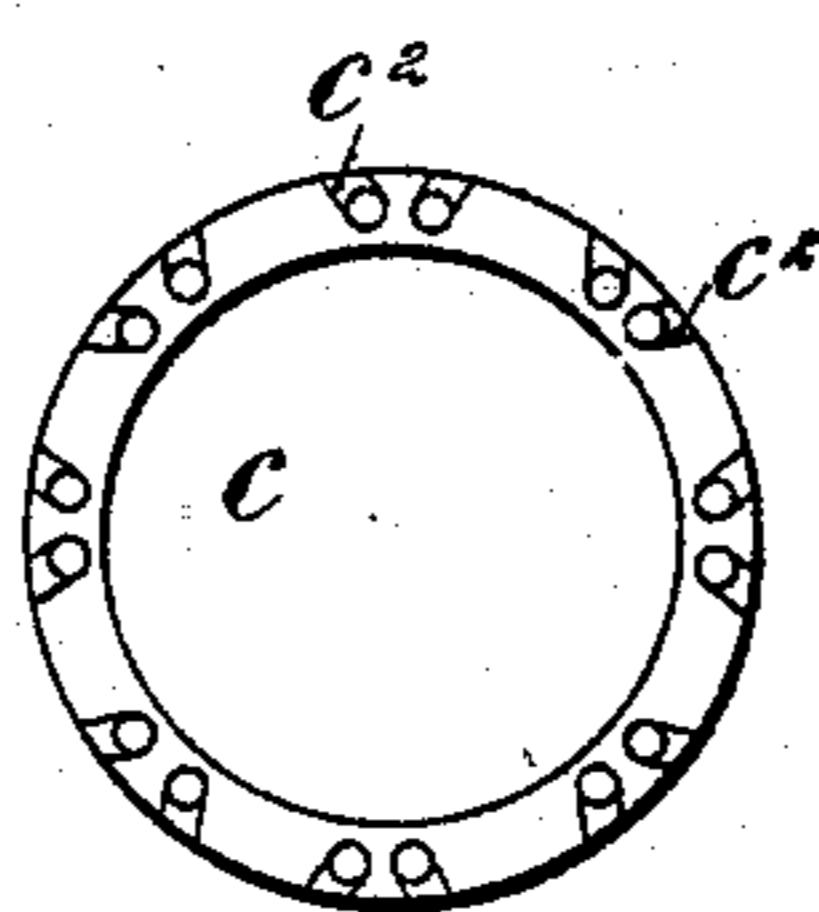


Fig. 7.

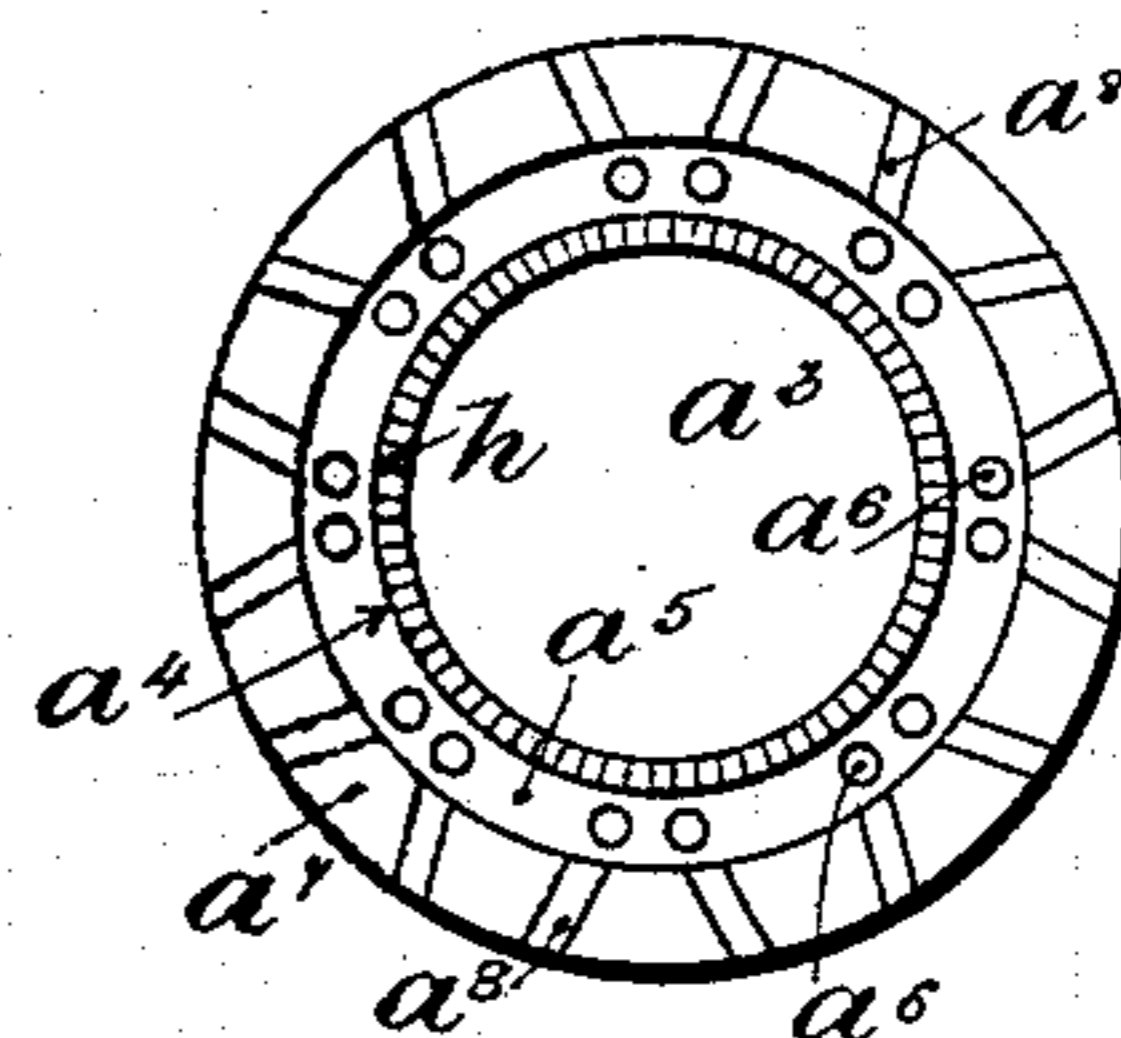


Fig. 9.

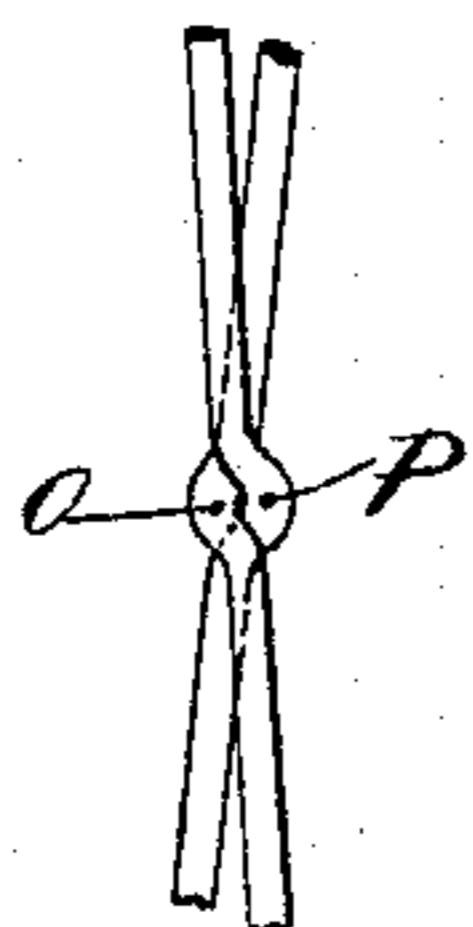


Fig. 8.



Witnesses

Geo. A. Riddle
A. Riddle

Inventor

William Fraser

UNITED STATES PATENT OFFICE.

WILLIAM FRASER, OF BIRMINGHAM, ENGLAND.

CYCLE OR LIKE WHEEL.

SPECIFICATION forming part of Letters Patent No. 612,323, dated October 11, 1898.

Application filed March 26, 1898. Serial No. 675,339. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FRASER, engineer, a subject of the Queen of Great Britain, residing at "Dovedale" School road, Moseley, Birmingham, in the county of Warwick, England, have invented certain new and useful Improvements in Cycle or Like Wheels, of which the following is a specification.

10 This invention relates to the wheels of cycles and such like vehicles, and has for its object certain improvements in the hub parts or centers and in the attachment thereto of the spokes which render the said hubs or centers more neat in their appearance, more dust-proof in their rotating parts, and also enable a layman to fit to the said wheel new spokes to replace broken or bent ones when necessary in a simple but efficient manner.

20 In the sheets of drawings forming part of this specification the invention is shown as applied to the front-wheel hub or center of a cycle, and it will be evident from Figure 1, which is a part longitudinal section and elevation of the hub and attached spokes, how neat is the hub when fitted, the spokes attached thereto seeming, as it were, to emanate from the solid heads of the hub, but, in reality, they are easily removable therefrom. 25 Fig. 2 is a side sectional view on the dotted line, Fig. 1, which removes the spokes, clamping-ring, and the major part, two of the spokes being absent in this view in order to illustrate the holes in the hub parts with which their ends engage and the sinkings wherein the parts adjacent to them lie. Fig. 3 represents separated the parts of this invention as shown in the sectional half in Fig. 1, while Figs. 4, 5, 6, and 7 set forth, respectively, 30 face and end elevations of the separated parts A, B, C, and D, Fig. 3. Fig. 8 shows a means for tying together two spokes at their point of crossing or bisection, which adds materially to the strength of the lacing and also obviates the necessity of soldering them at this joint, as is now usual. Fig. 9 shows the hub end of a spoke built up by returning the wire length and forming two spokes from the length instead of one.

50 In carrying the invention into effect in connection with the front-wheel hub or center

the said hub's body is preferably made from a tubular length, the head parts a^2 being spun up from the waist or middle part a by suitable spinning-tools, and their exterior portions are formed into tubular necks a^3 , standing out from the said heads. The outer portions of the tubular necks are externally screwed at a^4 , and between the said necks and the hub-heads are formed annular cavities or recesses a^5 , through the bottom walls of which a number of small holes a^6 of a size equivalent to the size of the spokes are made. The outer faces a^7 of the hub-heads a^2 are set up with sinkings a^8 of a thickness equal to the size of the holes a^6 , and these diverge toward the peripheries of the faces, the purpose of the sinkings being to constitute seatings for the adjacent parts d^2 of the spoke ends d and that of the holes a^6 to engage the said spoke ends.

The ring-collars c , which are principally for strengthening the spoke end's connection and also the hub-heads on which they exert a pull, fit over the tubular necks a^3 and lie in the annular cavities a^5 , and their walls are pierced and sunken at c^2 for the passage of the spoke ends and the partial seating of the parts d^2 adjacent to them. Clamping-rings e , having formed upon their inner faces sinkings e^2 , which are the counterpart to those of the hub-heads, are slipped over the tubular necks a^3 after the spoke ends are in position within the holes and seatings before described to constitute the medium for locking the engagement of the spoke ends and also the facing to the hub-heads. These spoke-clamping rings e are set up by end caps g , which screw upon the externally-screwed parts a^4 of the tubular necks and constitute the terminals to the hub-ends; but these caps have also another function, and that is to affix the ball-cups f internally within the bores of the said tubular necks, the same not being adjustable. These ball-cups have each a concentric flange f^2 , the inner side f^3 of which is formed with teeth or with a milling, as shown in Fig. 4, and their exterior diameters f^4 are plain and made to nicely fit the bores of the tubular necks. The edges h of these latter are also formed with teeth or a milling to engage those like parts of the

flanges of the ball-cups, and by this means the said ball-cups are prevented from turning. Axial holes f^5 g^5 are formed within the ball-cups f and the end caps g to permit the protruding of the shanks m^2 of an outwardly-adjusting cone m and a fixed cone carried upon the ends of the spindle n of the hub a , the said cone m being the means for adjusting the races of the balls s . The end caps may be either set up by the fingers or by the spanner.

The tying of the spokes where they cross each other or bisect, as shown in Figs. 2 and 9, is accomplished by indentations or crankings o p , one being formed in each spoke. These indentations or crankings embrace or lie within and upon each other and give lateral rigidity to the spokes when tensioned up between the hub and the wheel circumference.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination in a wheel-center, a tubular hub whose head parts are provided with side holes a^6 , annular recesses a^5 , adjacent to them, and outwardly-extending tubular necks a^3 , ring-collars having perforations c^2 through their walls, and which are adapted to fit within the said recesses, spokes having cranked ends which engage the said holes and perforations, clamping-rings adapted to fit upon the tubular necks and to abut against the spoke ends, and end caps which screw

onto the said tubular necks and effect the clamping, substantially as described.

2. In combination in a wheel-center a tubular hub whose head parts are provided with side holes a^6 , annular recesses a^5 adjacent to them, face-sinkings a^8 , and outwardly-extending tubular members a^3 , ring-collars having perforations c^2 through their walls, and which are adapted to fit within the said recesses, spokes having cranked ends which engage the said holes and perforations, clamping-rings adapted to fit upon the tubular necks and to abut against the spoke ends and which have sinkings e^2 , and end caps which screw onto the said tubular necks and effect the clamping, substantially as described.

3. In combination in a wheel hub or center a tubular neck a^3 , having an externally-screwed part a^4 and a hollow bore and also a toothed edge h , a ball-cup f adapted to fit the bore of the said neck and which has a toothed flange to engage the part h , an end cap g which screws onto the said neck and locks together the parts a^3 and f , and an adjustable or affixed adjusting-cone m or n which is carried upon the hub-spindle, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM FRASER.

Witnesses:

GEO. AVERY,
A. T. BIDDLE.