

(No Model.)

M. S. MANUM.
VEHICLE WHEEL.

No. 422,136.

Patented Feb. 25, 1890.

Fig. 1.

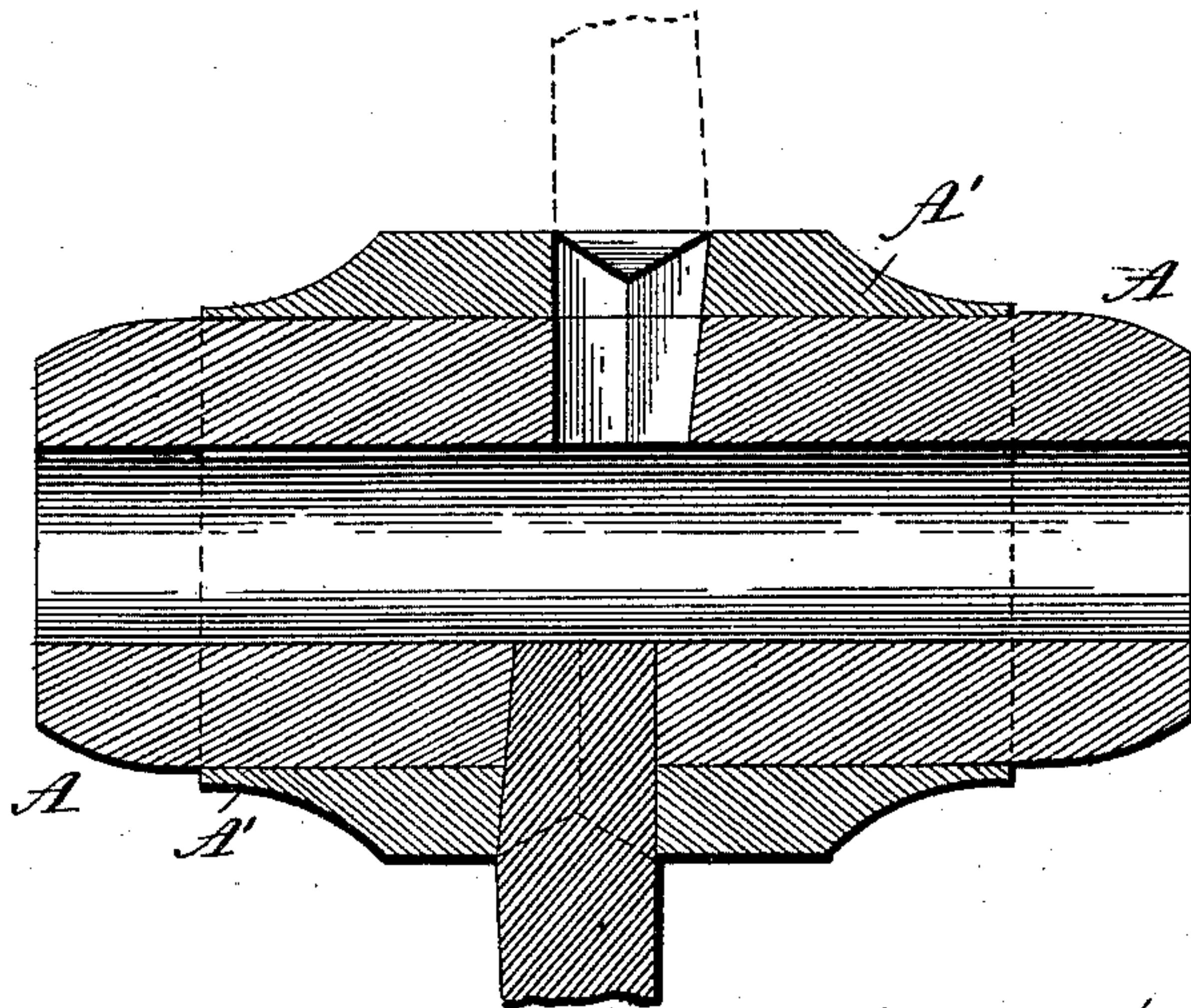
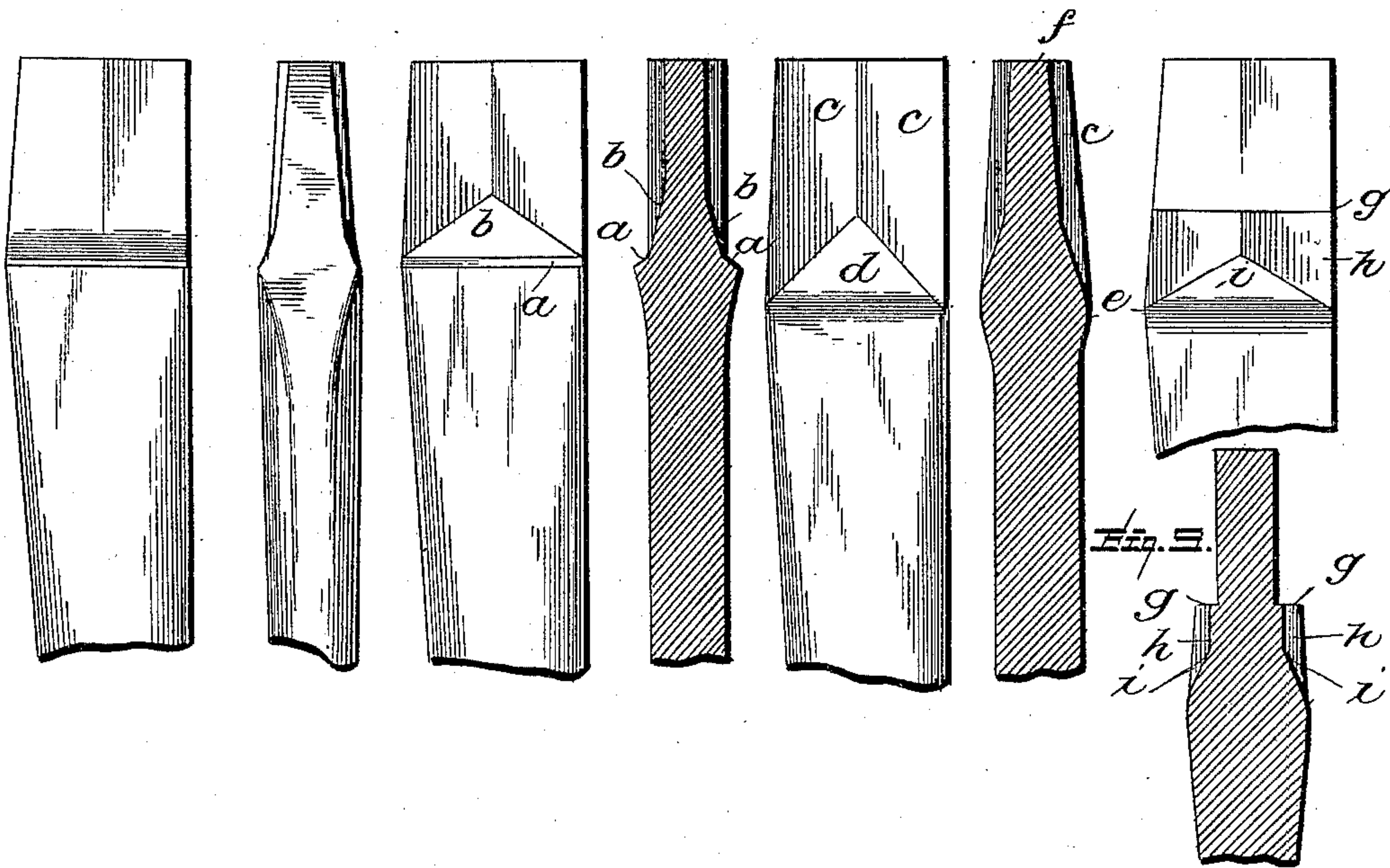


Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6. Fig. 7. Fig. 8.



Witnesses

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MICHAEL S. MANUM, OF HARRISBURG, PENNSYLVANIA.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 422,136, dated February 25, 1890.

Application filed September 21, 1889. Serial No. 324,609. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL S. MANUM, a citizen of the United States, residing at Harrisburg, in the county of Dauphin, State of Pennsylvania, 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, more particularly to the construction of the spokes and their manner of attachment to the hub.

15 It has for its object, among others, to provide a spoke which when once driven into its mortise in the hub will not pull out when the wheel is strained and which tends to make a solid wheel.

20 The novelty in the present instance resides in the peculiarities of construction and the combinations, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the appended claims.

25 The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

30 Figure 1 is a central longitudinal section through the hub of a wheel embodying my improvements. Fig. 2 is a side view of the mortise end of a spoke. Fig. 3 is an edge view of the form of spoke shown in Fig. 2. Fig. 4 is a side view of another form of spoke. Fig. 5 is a longitudinal section through the same. Fig. 6 is a side view of still another form of spoke. Fig. 7 is a longitudinal section thereof. Fig. 8 is a side view of still another form of spoke, designed more particularly for iron hubs; and Fig. 9 is a longitudinal section through the spoke shown in Fig. 8.

40 Referring now to the details of the drawings by letter, A designates a hub, which may be of any suitable construction, provided, preferably, with a band A', preferably of metal; or this portion A' may, if desired, be an integral portion of the hub. This hub is formed with suitable spoke-receiving sockets or mortises, the shape of which will correspond to 50 the shape of the spoke-tenon.

I have shown in the drawings from Figs. 2 to 9 the shape of the various forms of tenons,

but have not shown the various forms of mortises or sockets therefor, as it will be readily understood from the form of tenon what the 55 shape of the mortise would be to receive the tenon.

The spoke shown in Fig. 2 has a tenon which is dovetailed in two directions from a line drawn through the center of the spoke longitudinally, being thickest at the center and tapering from said center in both directions to the edge.

60 The spoke shown in Figs. 4 and 5 is thinnest at the center of its tenon and tapers outwardly from said center in opposite directions, being formed with a shoulder *a* at the outer end of the tenon and upon the sides of the tenon extending from said shoulder toward the end tapered toward the longitudinal center of the spoke and also toward the tenon, as indicated at *b* in Figs. 4 and 5.

70 The form of spoke shown in Figs. 6 and 7 is designed more especially for use in wheels for fire-engines and other like heavy appliances, and is similar to the form shown in Figs. 4 and 5, being tapered from the center outwardly, as shown at *c*, and with the taper *d*, similar to the taper *b*, but is formed without the abrupt shoulder shown in Fig. 5, having instead there- 80 of an enlargement, as at *e*, the longitudinal tapered portions being also tapered longitudinally, as shown at *f* in Fig. 7.

85 In Fig. 8 I have shown a spoke designed more especially to be used in connection with metallic hubs. This has its outer end portion of its tenon similar to the tenon shown in Figs. 2 and 3, being dovetailed in opposite directions from its center, and above said portion is formed a square shoulder *g*, beyond which 90 is a tenon similar to that shown in Figs. 6 and 7, having the double taper *h* and the taper *i*, similar to the tapers *b* and *d*, as shown clearly in said Figs. 8 and 9, thus forming a hub combining the tenons of Figs. 2, 4, and 6. In use 95 this spoke (shown in Figs. 8 and 9) is driven into its socket, the end tenon fitting the wood portion of the hub and the other portion of the tenon (indicated by the reference-letters *h* and *i*) fitting the mortise in the metallic 100 portion, the shoulder *g* engaging a shoulder in the mortise of the hub.

The spoke-tenons are driven into their sockets in the hub in any suitable manner by the

employment of any well-known means and form a very solid wheel, from which the spokes will not pull out when the wheel is under strain, and which are not affected by shrinkage or swelling of the parts. The spokes may
5 be set staggered or otherwise, as preferred, and the spokes may be oval or other desired shape in cross-section.

What I claim as new is—

10 1. A spoke having a tenon tapered in opposite directions from its longitudinal center and with a tapered portion upon opposite sides of the spoke extending toward the end of the spoke and tapered toward the longitudinal
15 center thereof, substantially as described.

2. A spoke having a tenon with a shoulder and tapered in opposite directions from its longitudinal center between said shoulder and the end of the tenon, and with tapered por-
20 tions upon opposite sides of the spokes and

tapered toward the tenon and toward the longitudinal center of the spoke, substantially as described.

3. A spoke having a tenon formed substantially at its longitudinal center with a shoulder *g* and tapered in opposite directions from its longitudinal center, and also tapered upon opposite sides of said shoulder, the tapers *H*, extending in opposite directions from the longitudinal center of the spoke, and the taper *i*,
25 extending toward the end of the spoke and toward said longitudinal center, substantially as shown and described. 30

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL S. MANUM.

Witnesses:

L. R. POFFENBERGER,
EUGENE SNYDER.