

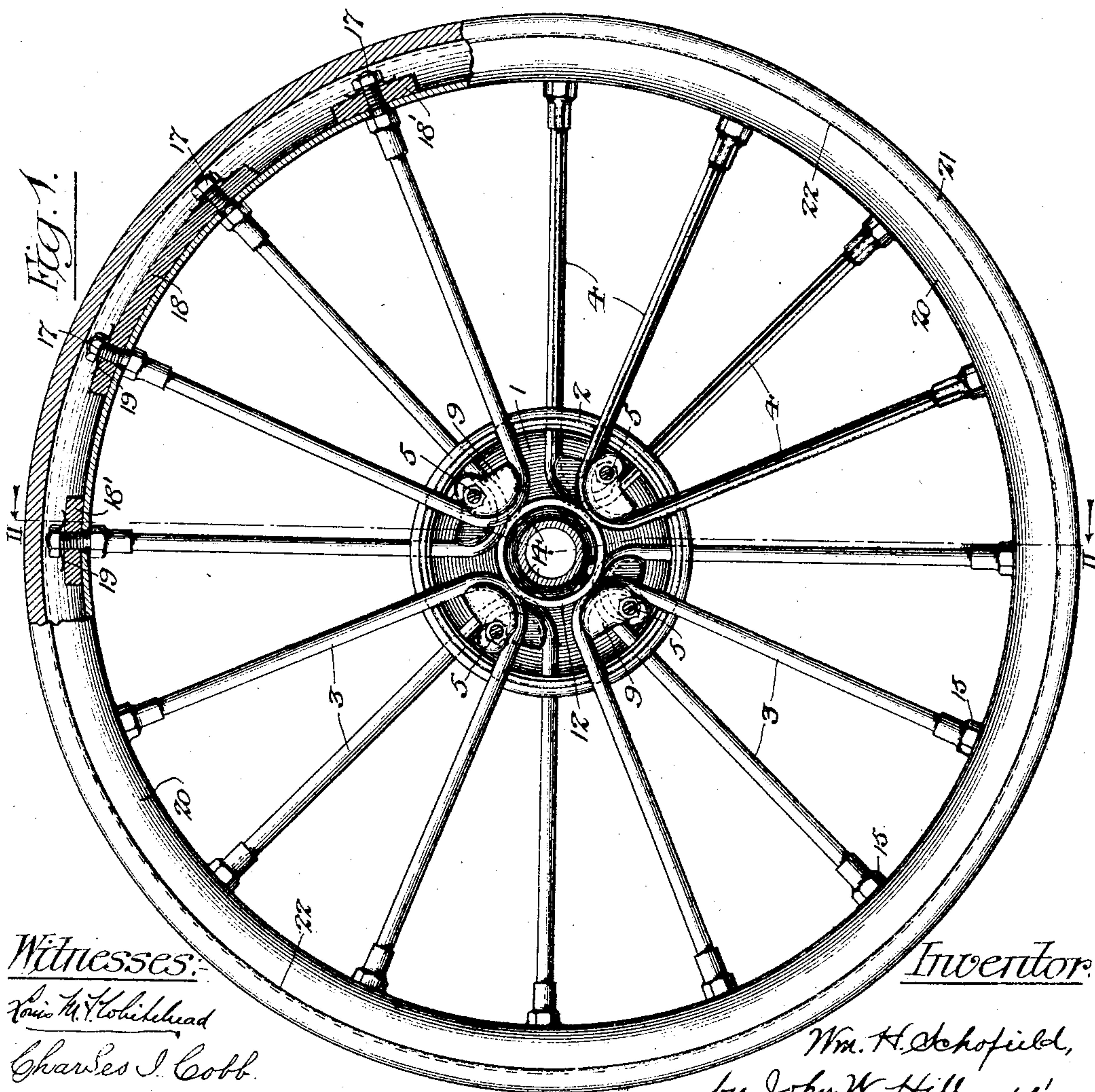
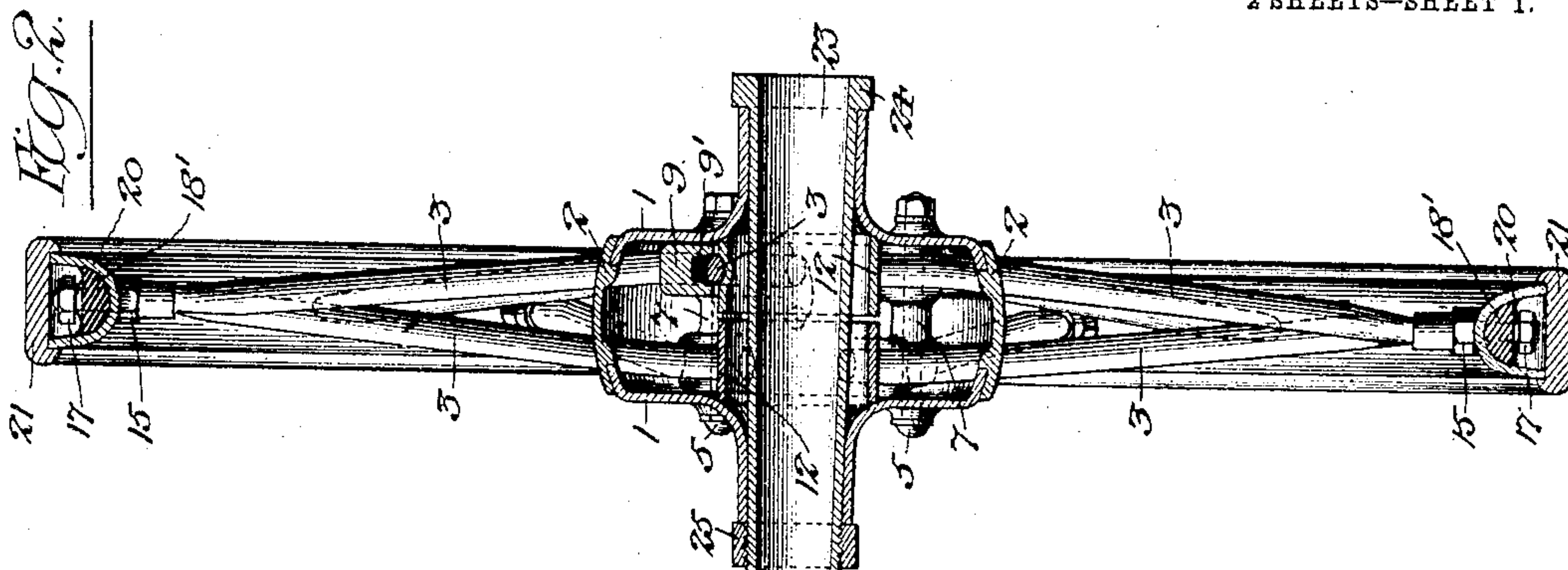
No. 779,807.

PATENTED JAN. 10, 1905.

W. H. SCHOFIELD.
VEHICLE WHEEL.

APPLICATION FILED NOV. 16, 1903. RENEWED DEC. 9, 1904.

2 SHEETS—SHEET 1.



Witnesses:

John M. Colclough

Charles J. Cobb

Inventor:

Wm. H. Schofield,
by John W. Hill, atty.

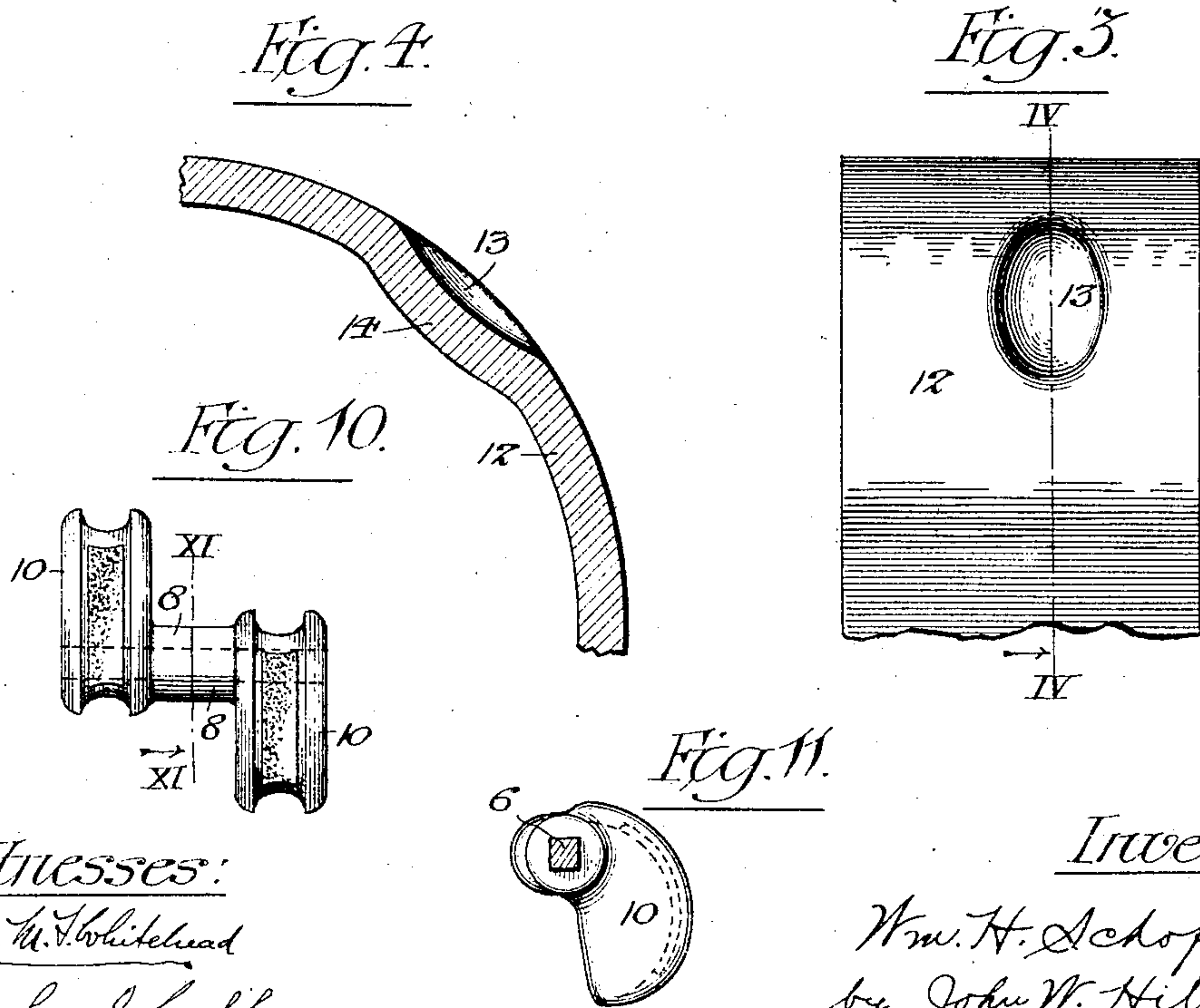
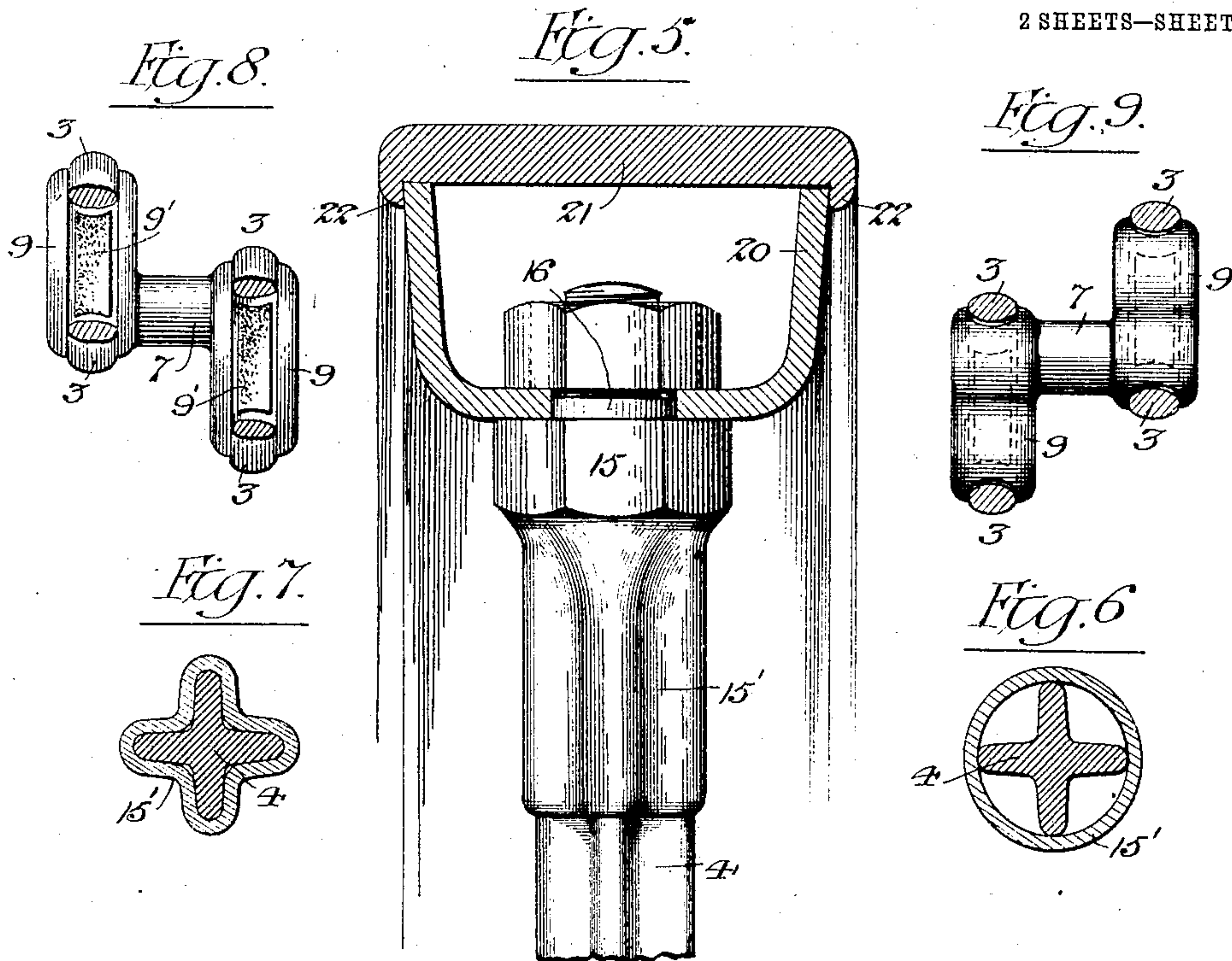
No. 779,807.

PATENTED JAN. 10, 1905.

W. H. SCHOFIELD.
VEHICLE WHEEL.

APPLICATION FILED NOV. 16, 1903. RENEWED DEC. 9, 1904.

2 SHEETS—SHEET 2.



Witnesses:

Louis M. Whitelhead

Charles J. Cobb.

Inventor:

Wm. H. Schofield,
by John W. Hill,
att'y.

UNITED STATES PATENT OFFICE.

WILLIAM H. SCHOFIELD, OF CHICAGO, ILLINOIS.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 779,807, dated January 10, 1905.

Application filed November 16, 1903. Renewed December 9, 1904. Serial No. 236,256.

To all whom it may concern:

Be it known that I, WILLIAM H. SCHOFIELD, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vehicle-Wheels, of which the following is a description.

My invention relates to vehicle-wheels; and the object of my invention is to provide certain specific improvements in wheels of the compression type in which the spokes are subjected to longitudinal compression in assembling the wheel, this compression being effected by means of nuts which are placed on the spokes against the inner side of the felly and forced outwardly against the same; and my invention consists in the use of such nuts in themselves and in combination with other novel devices hereinafter described and claimed.

In the drawings, wherein like reference characters indicate like or corresponding parts, Figure 1 is a partly-sectional elevation of a wheel provided with my improvements, a few of the spokes being shown as ribbed and the remainder as round or elliptical in section. Fig. 2 is a section of the wheel on line II II of Fig. 1. Fig. 3 is an enlarged view of a portion of one of the hub-rings. Fig. 4 is a section on line IV IV of Fig. 3. Fig. 5 is an enlarged view of a portion of a ribbed spoke, its compression-nut, a section of the rim, and jam-nut. Fig. 6 is a transverse section of a ribbed spoke and the sleeve of its compression-nut before the crimping of the latter, and Fig. 7 is a similar section taken after that operation. Fig. 8 is an enlarged detail view showing padded or cushioned spoke-saddles; and Fig. 9 is an opposite view of the same parts, showing two spokes in section. Fig. 10 illustrates a divided sleeve otherwise similar to that shown in Fig. 8; and Fig. 11 is a section on line XI XI, showing a square bolt or rivet passing through the sleeve.

Referring now to Figs. 1 and 2, it will be seen that the outer shell of the hub is preferably composed of lateral (or end) members 1 1, between the outer edges of which is held a spacing-ring 2, through which extend the

spokes 3 or 4. The hub members 1 are drawn together with bolts 5 or with rivets, if preferred. Upon the bolts are mounted sleeves 7, having integral pairs of saddles 9 formed thereon, as most clearly shown in Figs. 8 and 9. The spokes, as shown, are of the "hair-pin" type and pass around the curved inner faces of the saddles 9. Said faces may be provided with pads or blocks, as 9', of cushioning material, as rubber or the like, (see Figs. 2 and 8;) but such pads or cushions may be dispensed with in a wheel of this type, in which the spokes are normally under longitudinal compression. To form resilient bearings for the inner ends or bent portions of the spokes, I provide one or more resilient rings 12, which are of the type shown in and covered by my Letters Patent No. 697,950, of April 15, 1902. In case two rings are employed I form in each ring a plurality of equally-spaced depressions 13, which are preferably formed by pressing or swaging the metal inwardly, thereby forming interior projections 14, corresponding to the depressions. The spokes being seated in these depressions, the rings are held in position concentrically by the saddles 9 on their sleeves 7, which are in turn prevented from slipping laterally by the contact of the hub-shells 1 1, as shown in Fig. 2.

In shop practice it was formerly impossible to head rivets or upset bolts 5 in my hub construction without bending some of the bolts or rivets. This was because my sleeve 7 had not been employed nor even thought of at that time. These sleeves by closely embracing the bolts or rivets effectually prevent any bending of the latter, and also by having their ends in contact with the hub-shells they prevent any buckling or bending of said shells when the rivets are headed or the bolts "upset," as the case may be.

In Fig. 2 is shown a skein or spindle box 23, which in order to adapt it for connection to my improved hub is provided at the inner end with a flange 24, which bears against the inner hub-shell 1, and upon its outer end with a screwed ring or collar 25, which is run up snugly against the outer hub-shell and there secured in any suitable manner.

The spokes are strained inwardly against the rings 12 by means of nuts, the preferred form of which is shown in Figs. 1, 2, and 5 and marked 15. In section the spokes may be of any preferred form. I prefer a ribbed spoke, as 4 in Fig. 1, or an elliptical spoke, as 3 in Figs. 1 and 2. The nuts 15 after being sufficiently tightened against the felly 20 may be crimped in around the spokes, as shown in Figs. 1, 5, and 7, thereby enhancing the appearance of said nuts and, what is more important, effectually locking them in their adjusted positions, whereby they cannot be jarred loose nor tampered with by the use of a wrench. In Fig. 5 the compression-nut 15 is shown as provided with an extension 16, which serves to protect the threads of the spoke from the edges of the hole in the steel felly. The outer nuts 17 (shown in Figs. 1 and 2) are or may be employed in order to resist any occasional tendency to pull a spoke inwardly through the felly due to extraordinary shock to the wheel. Cushions or pads, as 18 or 18', may be placed between these nuts and the felly, and "spring-washers" 19 or other washers may be employed, if so desired, in case the cushioning material be soft and yielding.

The spacing-sleeves which carry the saddles 10 may be divided, as shown in Fig. 10, and mounted on either a round or a square bolt. 8 8 indicate the two parts of a divided sleeve. In Fig. 11 a square bolt or rivet 6 is shown. This may be employed, if it be found desirable to employ divided sleeves, and still maintain torsional connection between the spoke-saddles 10.

I claim as a feature of my invention the form of tire shown in Figs. 1, 2, and 5. The peculiarity of this tire consists in its two inwardly-directed flanges 22, and its superiority is due to the fact that it obviates the use of bolts or clips, which are now employed for securing ordinary steel tires to the felly. In Fig. 5, 20 is a metal rim or felly of a form especially adapted to receive this flanged tire. In order to place this tire upon the rim, the tire is first expanded by heating it sufficiently to permit of its being slipped over or upon the felly, and in cooling it shrinks upon the felly, tightly fitting the same when cold, as shown. Thus it will be readily understood that no bolts or clips are needed.

In the claims by the term "saddles" or "spoke-saddles" I mean to cover my devices for engaging the bent portions of the spokes and all equivalents thereof. By the word "inner" as referring to the felly or nuts upon the spokes I mean the side nearest the hub, and by the word "outer" as referring to said parts I mean the side nearest the tire. The

concavity of the felly being directed outwardly, the said words might be otherwise misunderstood. By the term "bolts" in the claims I mean to include rivets and equivalent means having the same function.

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

1. In a vehicle-wheel the combination of "hair-pin" spokes, spoke-saddles for the bent parts of the spokes, an inner hub-ring having seats therein to receive the bent portions of the spokes, and nuts arranged upon the spokes and bearing against the inner face of the felly; substantially as described.

2. In a vehicle-wheel the combination of "hair-pin" spokes, an inner hub-ring having spaced spoke-seats therein, bolts 5, spoke-saddles mounted upon said bolts, hub-shells which sustain said bolts and are connected thereby, and nuts arranged upon the spokes and bearing upon the inner face of the felly; substantially as described.

3. The combination, with a spoke the main portion of which is non-circular in section, the end portion of which is rounded and threaded, of a nut having an unthreaded sleeve portion; the said portion being adapted to be crimped around the end of the non-circular portion of the spoke, and the head of the nut being adapted to engage the threaded portion of the spoke and bear against the inner face of the felly; substantially as described.

4. The combination, with a felly having a spoke-hole therethrough, and a spoke the main portion of which is non-circular in section, the end of which is rounded and threaded, of a nut having an unthreaded sleeve portion, the head of said nut being adapted to engage the threaded portion of the spoke, and the sleeve portion of the nut being adapted to be crimped around the end of the non-circular portion of the spoke; substantially as described.

5. In a wheel-hub, a pair of hub-shells, bolts connecting the same, and sleeves mounted thereon, said sleeves being provided with means formed thereon and constructed to engage the spokes; substantially as described.

6. In a wheel-hub, a pair of hub-shells, bolts connecting the same, and sleeves mounted thereon, said sleeves being provided with counterbalancing-saddles extending on either side of the sleeves; substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM H. SCHOFIELD.

Witnesses:

K. M. IMBODEN,

CHARLES I. COBB.