

(No Model.)

J. A. ASHFORD.
VEHICLE WHEEL.

No. 443,034.

Patented Dec. 16, 1890.

Fig. 1.

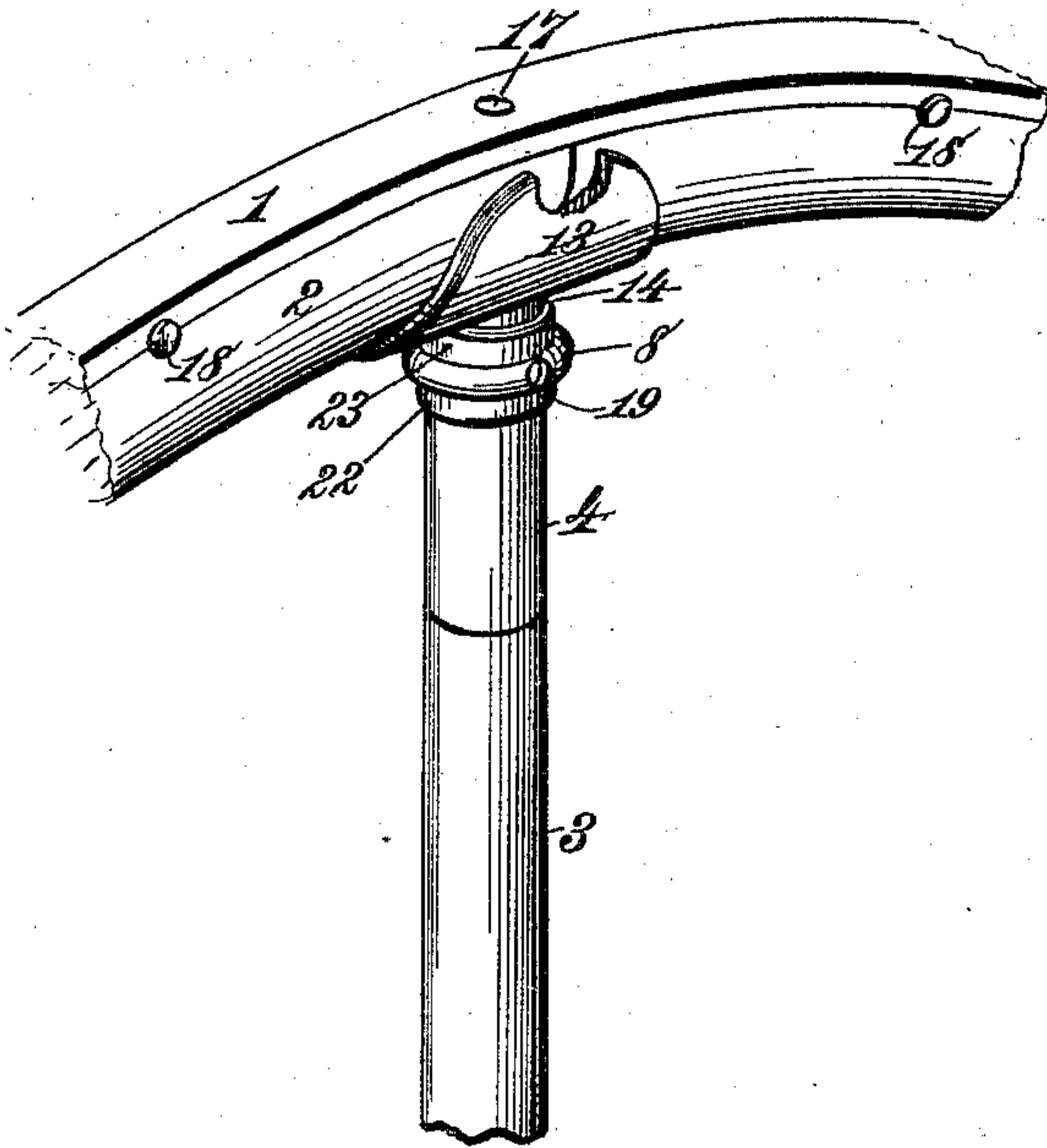


Fig. 2.

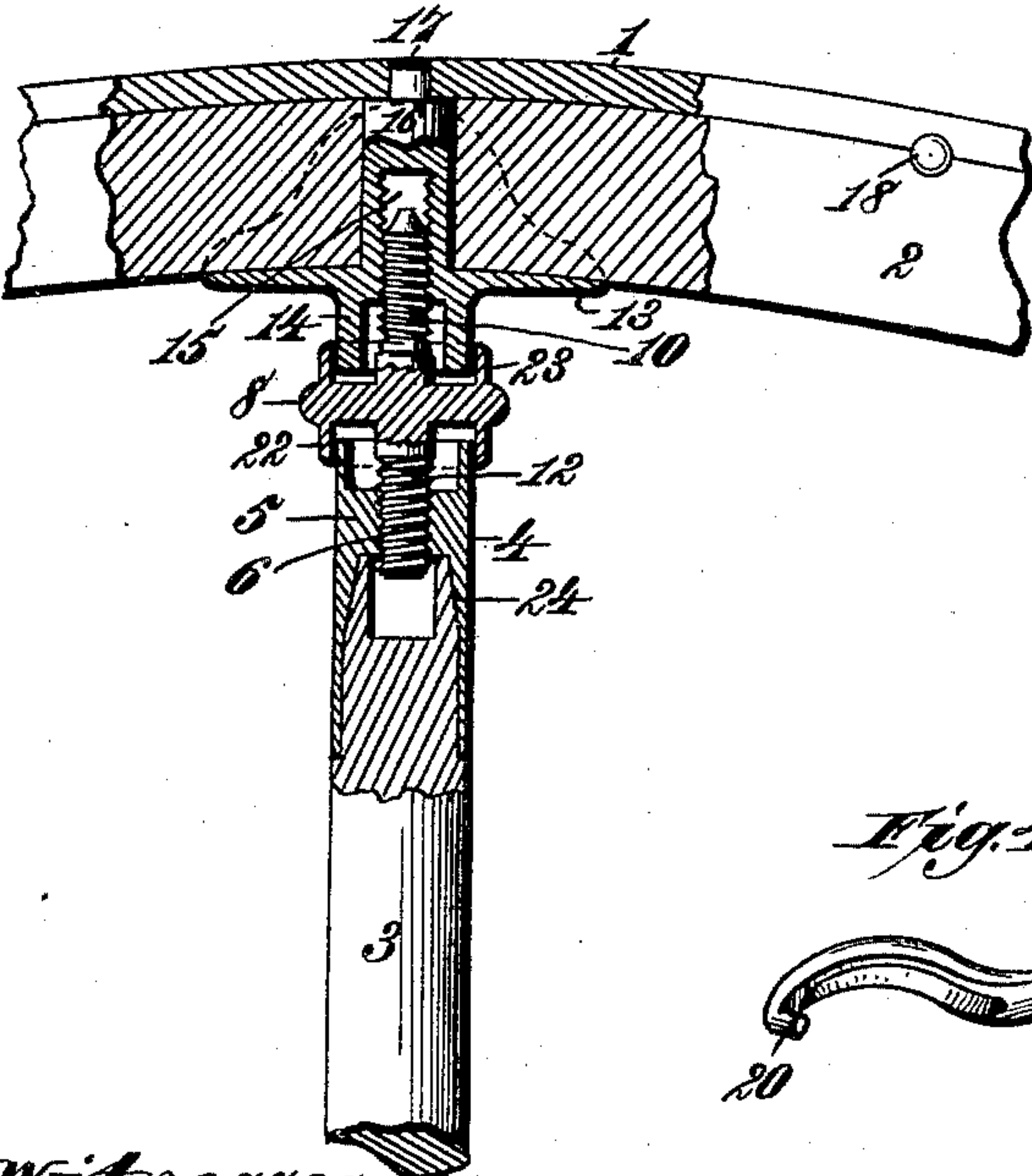


Fig. 3.

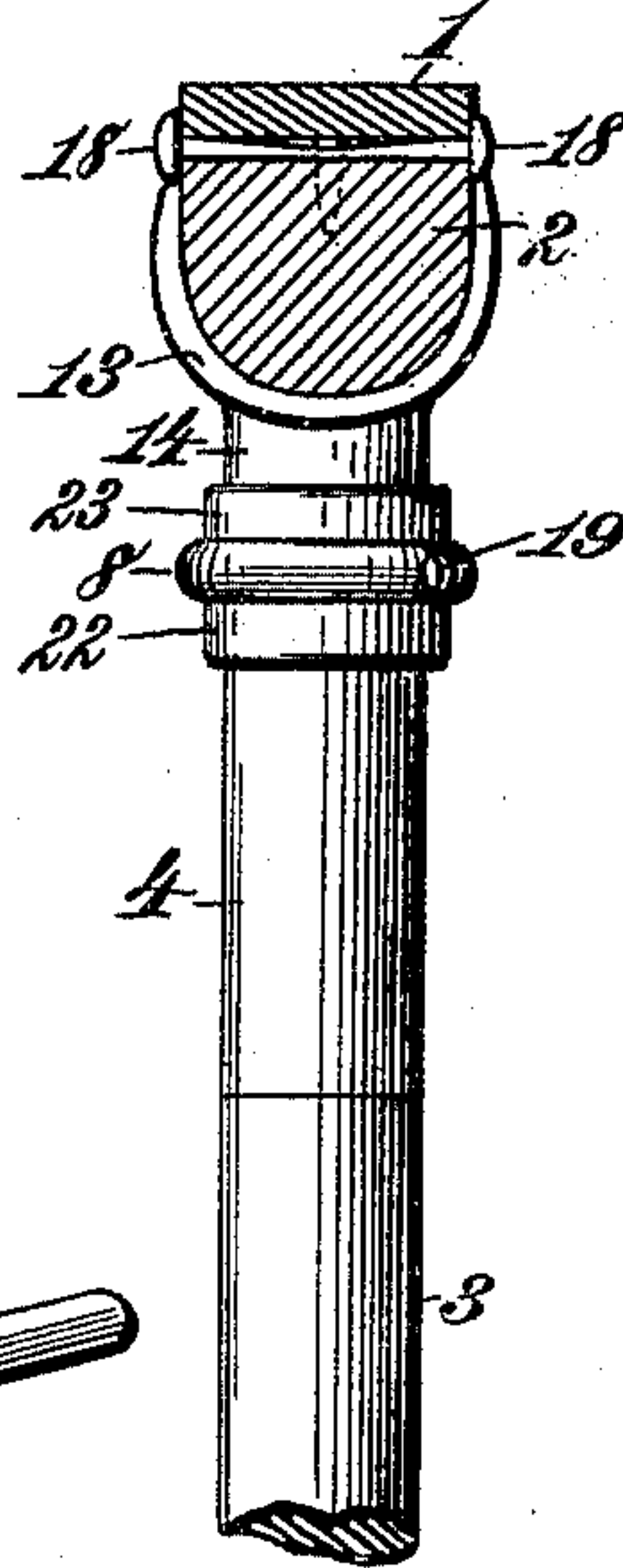
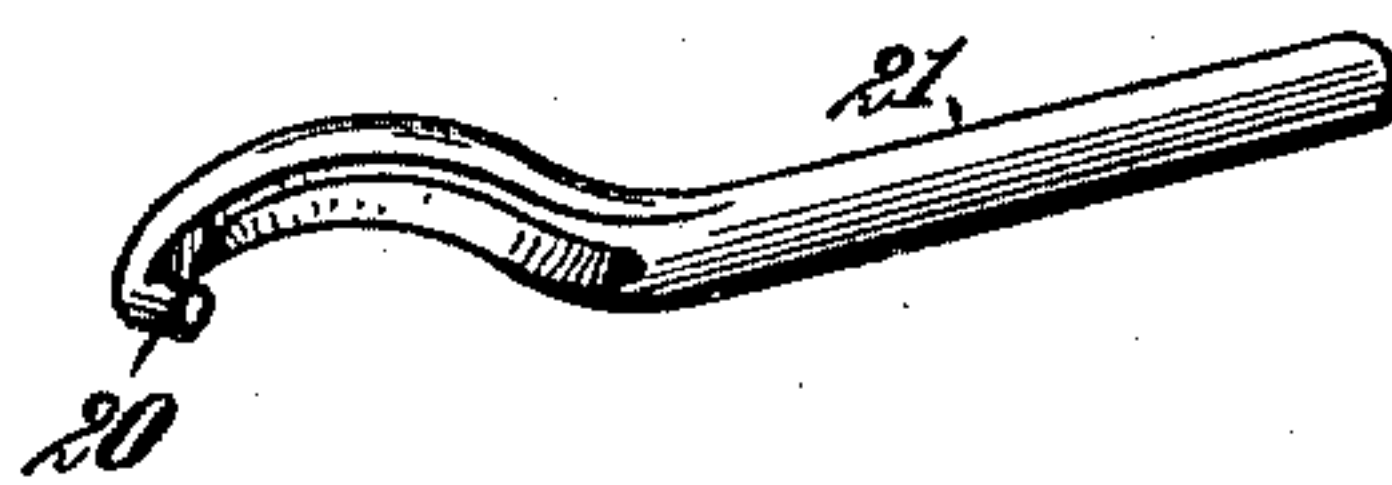


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 443,034, dated December 16, 1890.

Application filed April 21, 1890. Serial No. 348,779. (No model.)

To all whom it may concern.

Be it known that I, JAMES A. ASHFORD, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented new and useful Improvements in Vehicle-Wheels, of which the following is a specification.

This invention relates to that type of vehicle-wheels having spokes connected with the felly through the medium of a screw-threaded contrivance for tightening the tire by expanding the felly.

The objects of my invention are to improve the felly-expanding devices, to provide a strong, durable, and efficient metallic connection between the spoke and felly, to provide novel means whereby the expanding movement of the felly is amplified by a partial rotation of a screw, and to otherwise improve vehicle-wheels.

To accomplish all these objects my invention involves the features of construction, the combination or arrangement of parts, and the principles of operation hereinafter described, and set forth by the claims, reference being made to the accompanying drawings, in which—

Figure 1 is a perspective view of such portion of a vehicle-wheel as is deemed sufficient to exhibit the invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a similar view taken at right angles to the plane of section shown by Fig. 2. Fig. 4 is a perspective view of a wrench for adjusting the tightening device.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a portion of the metallic tire; 2, a portion of the wooden or other felly, and 3 a spoke having at its outer end a rigidly-attached metallic tube 4, containing a thickened part 5, which is provided with a central screw-threaded orifice 6.

The outer end of the tube is seated in a sleeve 22, formed at one side of a circular rotating head 8, which is provided at its side with a similar sleeve 23, in which is seated the cylindrical extension 14 of a socket-piece 13. The rotating head 8 is provided with oppositely-projecting stems 10 and 12, one hav-

ing a right-hand and the other a left-hand screw-thread. The socket-piece 13 is shaped to fit and embrace the adjoining ends of two felly-sections, and is formed on its upper side with a cylindrical tenon 16, extending between the ends of the felly-sections and having a reduced stud or projection 17, engaging a recess or orifice in the tire. The felly may, if desired, have side lips 18, formed as circular heads on transverse pins to engage the edges of the tire and prevent lateral displacement thereof.

The tubular extension 14 and the tenon 16 are provided with an internal screw-thread, which is engaged by the screw-stem 10 of the rotary head, while the other screw-stem 12 engages the screw-threaded orifice in the tube 4, secured to the spoke.

I have only illustrated by the drawings a portion of one spoke and its connections with a part of the felly; but it will be understood that all the spokes are in practice constructed and applied in a manner similar to that shown and described.

The rotary head 8 can be fashioned in any suitable manner to be engaged by an instrument—such as a wrench—for turning the head to tighten the tire; but for a symmetrical appearance I prefer to make the head circular and provide it with a recess 19 to receive the toe 20 of the tool or device exhibited in Fig. 4 in such manner that by moving the tool in the proper direction the head will be rotated and by its screw-stem 12 caused to advance outwardly, while at the same time the screw-stem causes the socket-piece 13 to move outward, thereby expanding the felly and tightening the tire thereupon. The socket-piece is held stationary by reason of its side flanges clasp ing or embracing the felly, and consequently the socket-piece cannot partake of the rotary movement of the screw-stem 10.

To avoid the possibility of the tube 4 partaking of the rotary movement of the screw-stem 12, I provide such tube with an internal wedge-shaped seat, as at 24, and form the spoke with a wedge-shaped extremity, so that when the spoke is driven in the tube the engaging faces of the wedge-shaped parts prevent axial rotation of the tube.

The screw-threads of the tube and socket-piece constitute screw-nuts, respectively en-

gaging the right and left hand screws of the rotary head, and the sleeves on the latter serve to brace, support, and strengthen the tubular extension on the socket-piece and the
 5 outer end of the tube; and, further, the sleeves subserve the important and desirable purpose of avoiding the openings or spaces which would otherwise appear when the felly is expanded by the right and left hand screw-
 10 stems. The tenon on the socket-piece provides a strong metallic support for the felly, and the right and left hand screw-threaded stems secure considerable expanding move-
 15 ment by a partial revolution of the rotary head, whereby a rapid tightening of the tire is effected with the least possible manipulations or movements of the head.

In practice the tire is placed in position without being heated, and therefore the se-
 20 rious objections arising from charring of the felly are avoided. A partial rotation of the rotary head for every spoke—say one-quarter of a revolution—will expand the felly to bind it firmly against the tire, and when by use or
 25 other causes the tire becomes too large or the felly too small another quarter-revolution of each rotary head will tighten the parts. The screw-stems will stand in their adjusted position, for the socket-piece and tube are
 30 forced in reverse directions, and in the use of the wheel the pressure is distributed upon the two screw-stems, whereby the forces counteract each other and the screws must stand stationary. In assembling the parts I pass
 35 the shank of the socket-piece between the adjoining ends of the felly-sections, and for this purpose the ends of the felly-sections are each provided with a semicircular or half-round hole, and consequently there are no
 40 weakening perforations in the felly between the spokes.

In my invention the holes originally formed in the tire for the tenons correspond at all times therewith, and as the tire is never cut
 45 or shrunk it will not be necessary to form at any time new holes in the tire or felly.

Having thus described my invention, what I claim is—

1. The combination of a non-rotating nut having a tenon to engage a wheel-felly, a tube
 50 having a non-rotating nut and adapted to engage a wheel-spoke, and a rotary head having right and left hand screw-threaded stems rigidly projecting therefrom in opposite di-
 55 rections and engaging the nuts for expanding a felly to tighten a wheel-tire, substantially as described.

2. The combination, with a screw-threaded tire, felly, and spoke, of a socket-piece engag-
 60 ing the felly, a screw-threaded tube engaging the spoke, and a rotary head having right and left hand screw-threaded stems rigidly projecting therefrom in opposite directions and engaging the socket-piece and tube, sub-
 65 stantially as described.

3. The combination, with a tire, felly, and spoke, of a tube rigid on the spoke and hav-
 70 ing a screw-threaded orifice, a socket-piece engaging the felly and containing a screw-threaded orifice, and a rotary head provided with oppositely-projecting right and left hand screw-threaded stems and having sleeves which overlie portions of the tube and socket-
 75 piece, substantially as described.

4. The combination, with a tire, felly, and
 80 spoke, of a socket-piece having a nut and a shank extending through the felly and provided with a tenon entering an orifice in the tire, a tube having a nut and secured to the spoke, and a rotary head having right and
 85 left hand screw-threaded stems rigidly projecting therefrom in opposite directions and engaging said nuts, substantially as de-
 90 scribed.

In testimony whereof I have affixed my sig-
 95 nature in presence of witnesses.

JAMES A. ASHFORD.

Witnesses:

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