

No. 667,221.

Patented Feb. 5, 1901.

A. S. HYDE.
VEHICLE WHEEL.

(Application filed Aug. 28, 1900.)

(No Model.)

Fig. 1

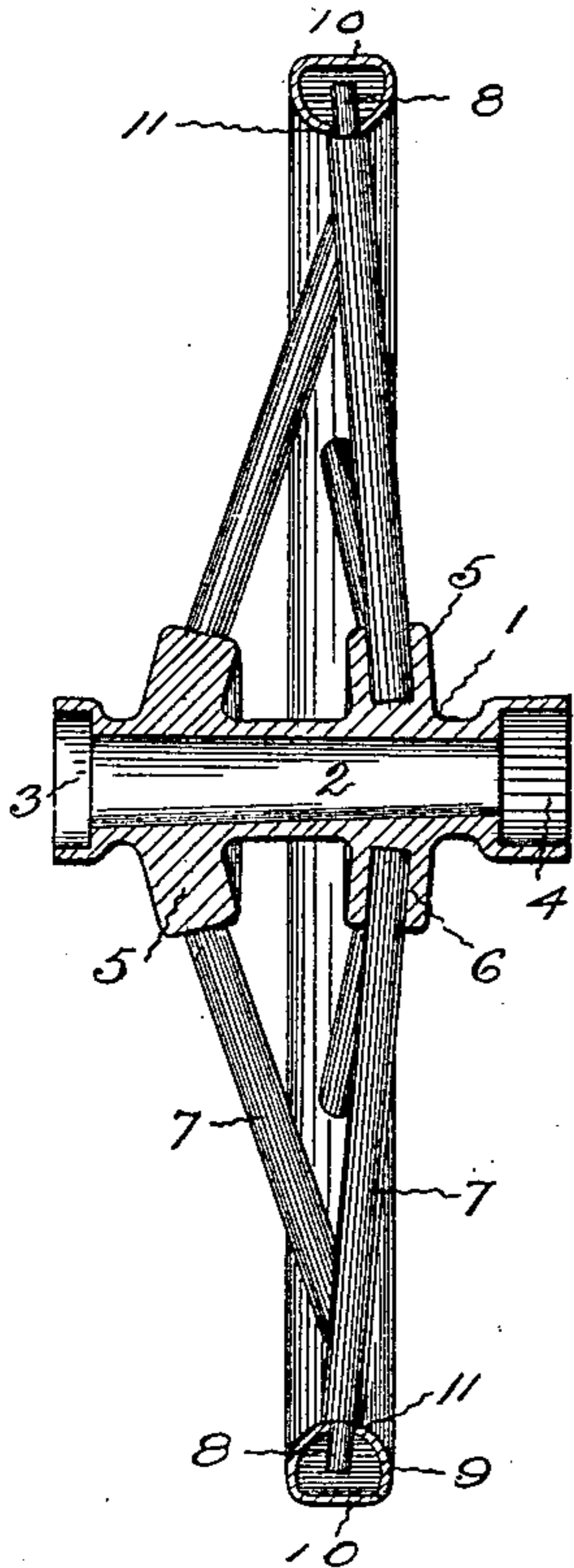


Fig. 2

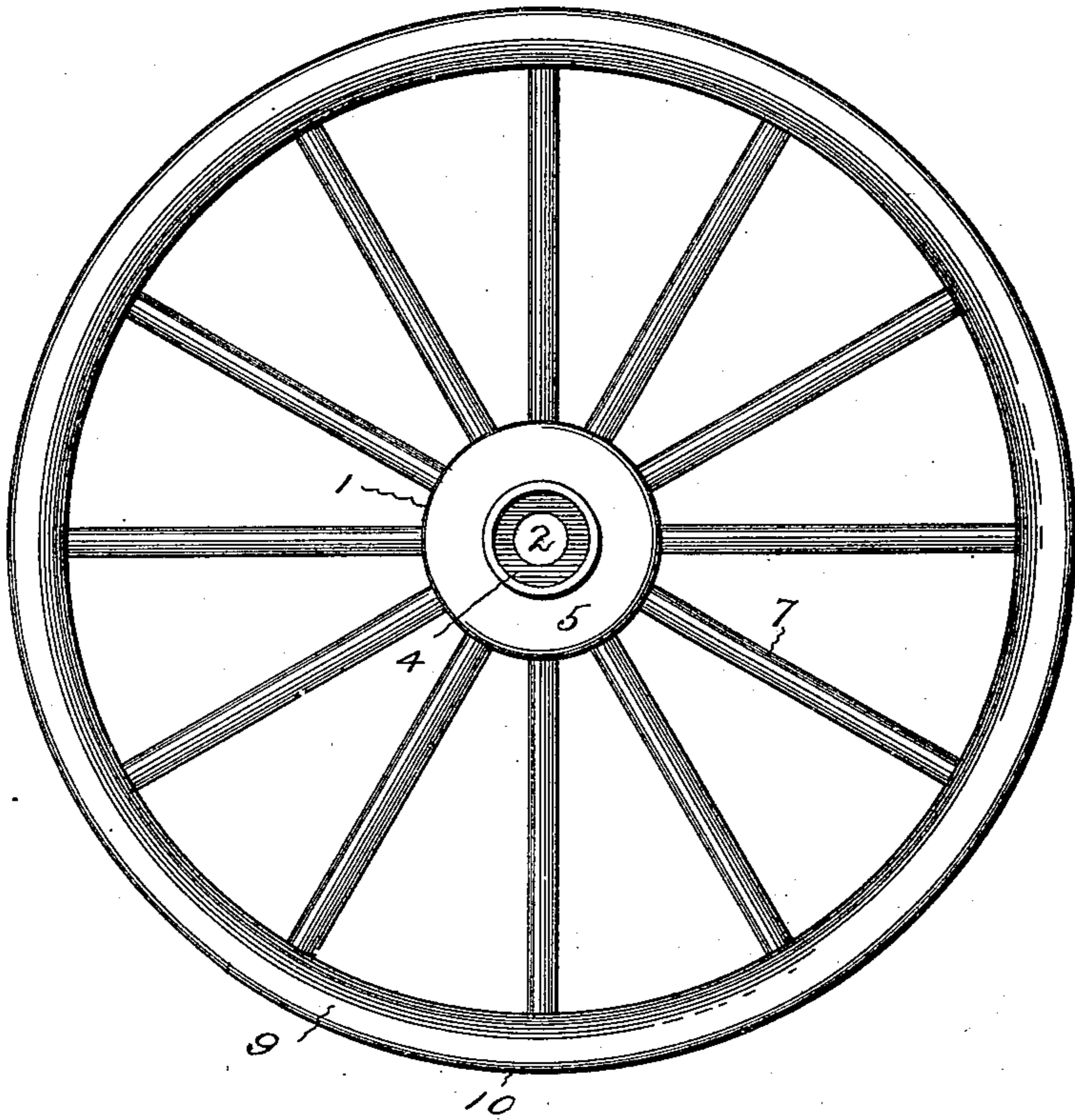


Fig. 3

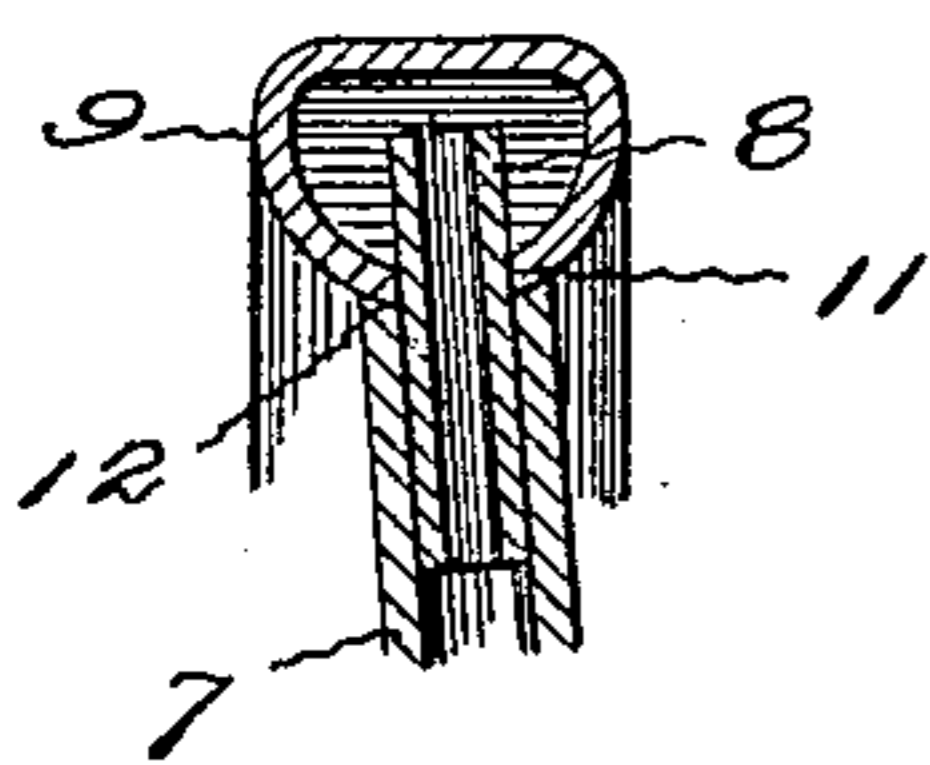
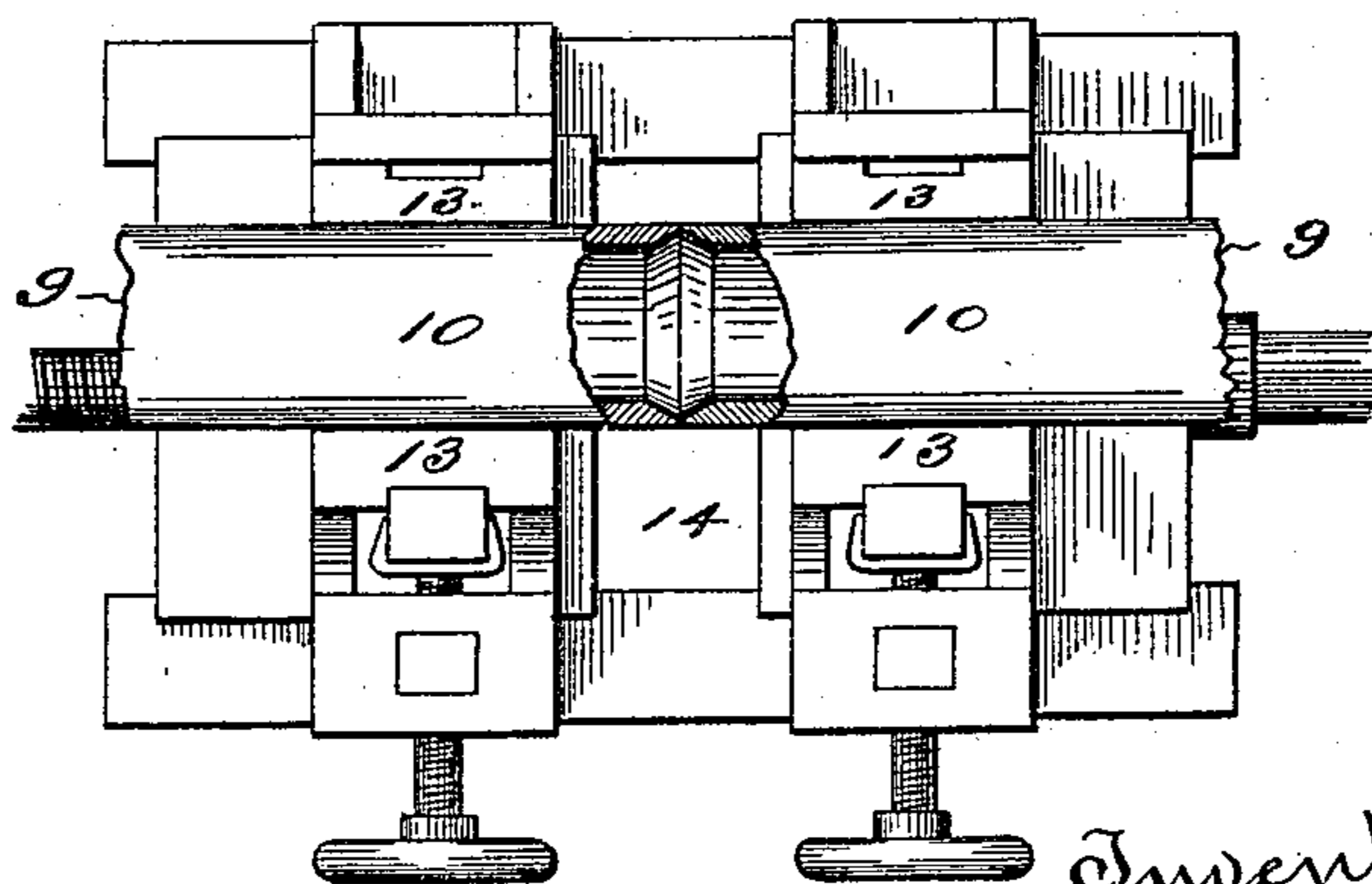


Fig. 4



Witnesses:
V. R. H. H. H. H.
Thomas L. Healy

Inventor,
Arthur S. Hyde, by
Harry R. Williams
att.

UNITED STATES PATENT OFFICE.

ARTHUR S. HYDE, OF HARTFORD, CONNECTICUT.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 667,221, dated February 5, 1901.

Application filed August 28, 1900. Serial No. 28,269. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR S. HYDE, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vehicle-Wheels, of which the following is a specification.

This invention relates to a vehicle-wheel which has both its rim and its spokes formed of metallic pipe or tubing.

The object of the invention is to provide a light, strong, and serviceable wheel of this nature which can be cheaply constructed without bolts and nuts, so that the parts will not become loose and rattle when in use.

The embodiment of the invention that is illustrated by the accompanying drawings has a metallic hub with two annular rows of spoke-sockets and tubular spokes, with their inner ends located in the hub-sockets and their outer ends extending into sockets in the inner wall of the tubular rim that is placed about the spokes and then is shortened and made solid by the manipulation of an electric-welding machine, as more particularly hereinafter described, and pointed out in the claims.

Figure 1 of the drawings is a diametrical section of a wheel that embodies the invention. Fig. 2 is a side view of the same wheel. Fig. 3 is a detail enlarged sectional view showing the method of connecting the spoke and the rim; and Fig. 4 is a plan of an electric-welding machine, showing the method of shortening the rim and securing all of the parts firmly in position.

The hub 1 that is shown is formed of metal, with the ordinary tapering spindle-perforation 2, sand-box 3, and nut-chamber 4. This hub has two annular flanges 5, which are provided at intervals with spoke-sockets 6. The inner ends of the spokes 7 are inserted into the sockets in the hub-flanges. The sockets are so arranged that the spokes alternate in the two flanges. These spokes are made of pipe or tubing of suitable weight and diameter, and they may be round, oval, or any other desired shape in cross-section, and while they are shown in the drawings as staggered on the hub it is not necessary to the invention that they be thus arranged.

A plug 8, which may be a short piece of tubing, is secured in the outer end of each spoke.

The rim 9 is formed of a metal pipe or tubing of suitable weight and diameter. The rim-tube is preferably flattened on the outer side, so as to provide a broad tread-surface 10, and through the inside wall of the rim-tube at suitable distances apart are openings 11 of a size that will just receive the plugs 8 at the ends of the spokes. This rim-tube is bent around the spokes and the plugs inserted in the rim-openings, so that the inner wall of the rim will bear against the shoulders 12, formed at the ends of the spokes. The ends of the rim-tube are then secured in terminal clamps 13 of a common electric welding-machine 14. These ends, which are preferably scarfed, as shown in Fig. 4, are brought together by the terminal clamps and the heating-current is applied for welding the abutting ends in the usual manner. As the metal of the rim-tube fuses at the joint between the abutting ends the clamps are caused to force the ends together, so as to shorten the rim-tube until the spokes are forced toward the hub with great pressure. The fused metal at the joint is allowed to set before the rim is removed from the machine. If desired, the ends of the spokes may be fused to the hub and the rim. Of course the abutting ends of the rim-tube could be heated by other means than by electricity and put into a clamp that could be caused to put the rim under tension and then the joint welded by hand without departing from the invention.

By the employment of this method a wheel can be built that is light and very strong. As the rim of the wheel is practically a homogeneous ring and may be made practically homogeneous with the spokes and hubs, the parts are held together very tightly at all times, so that there will never be any loosening that will permit racking and rattling. Wetting and drying has no swelling and shrinking effect upon this wheel, and there are no nuts, bolts, or other threaded parts to work loose and rattle or to work off and allow the wheel to collapse.

I claim as my invention—

1. A vehicle-wheel having a metallic hub, a homogeneous metallic tubular rim and metallic tubular spokes with their inner ends inserted into sockets in the hub, and their outer ends entering sockets in the inner wall of the

rim, the whole being held together by the compressional strains of the tubular rim without nut or bolt, substantially as specified.

2. A vehicle-wheel having a metallic hub,
5 a metallic tubular rim and metallic tubular spokes with their inner ends connected with the hub, and their outer ends connected with the rim the spokes being forced toward the hub by the compression of the tubular rim,
10 substantially as specified.

3. The method of building a vehicle-wheel which consists of forming a metallic hub with outwardly-opening sockets, inserting the inner ends of metallic tubular spokes in the
15 hub-sockets, bending a metallic tubular rim

around the outer ends of the spokes and inserting the outer ends of the spokes in sockets in the inner wall of the rim-tube, and forcing the ends of the rim-tube together and simultaneously fusing the ends by the appli- 20 cation of electric current, whereby a tubular wheel is produced in which the spokes are held tightly by the compressional strains of the tubular rim without the employment of bolts and nuts, substantially as specified. 25

ARTHUR S. HYDE.

Witnesses:

V. R. HOLCOMB,
H. R. WILLIAMS.