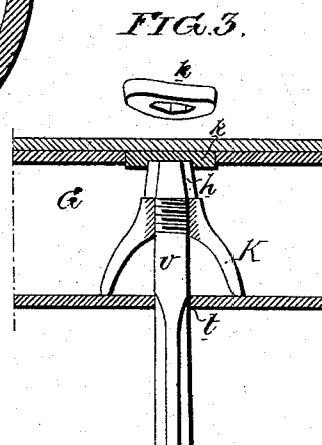
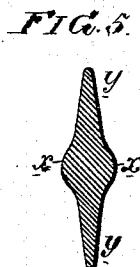
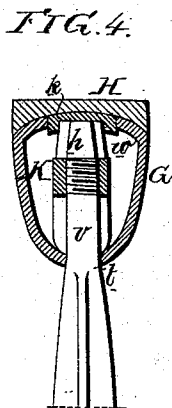
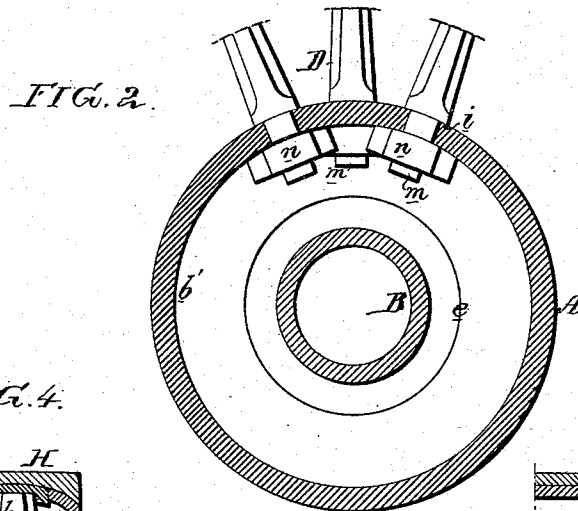
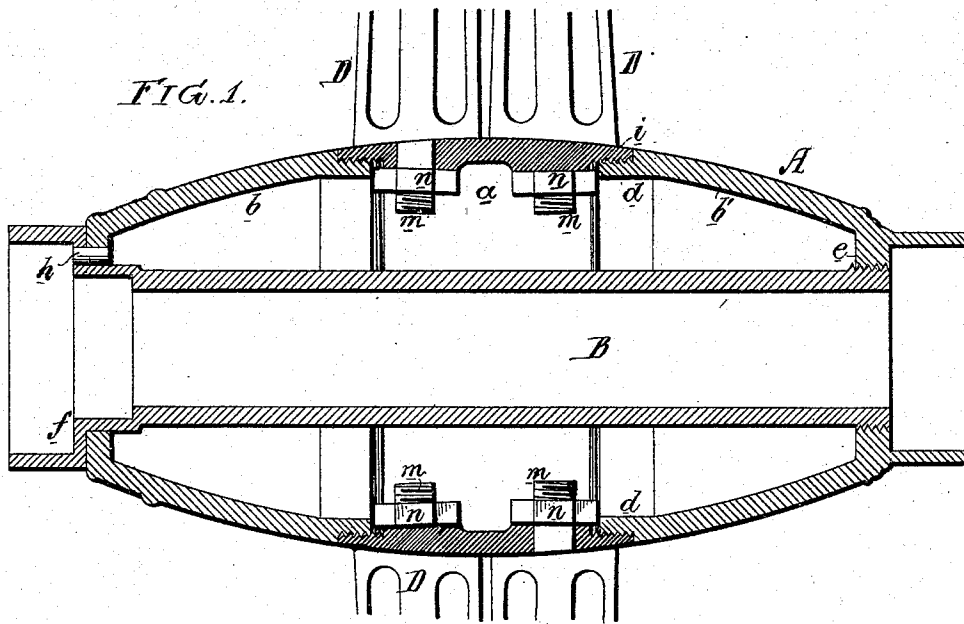


S. VREELAND.
METALLIC WHEEL.

No. 172,213.

Patented Jan. 11, 1876.



Witnesses,
Harry Smith
Hubert Howson

Simon Vreeland
by his Atty.
Howard M. Smith

UNITED STATES PATENT OFFICE.

SIMON VREELAND, OF SALAMANCA, NEW YORK.

IMPROVEMENT IN METALLIC WHEELS.

Specification forming part of Letters Patent No. **172,213**, dated January 11, 1876; application filed June 8, 1875.

To all whom it may concern:

Be it known that I, SIMON VREELAND, of Salamanca, Cattaraugus county, New York, have invented certain Improvements in Metallic Wheels, of which the following is a specification:

My invention relates to improvements in the construction of metallic wheels for vehicles; and the main objects of my invention are, first, to afford facilities for the ready and secure fastening of the spokes to the hub; second, to so construct the spokes of wrought-iron or steel that, while they are comparatively light, they shall be better adapted to the purpose than ordinary round spokes of metal; and, third, to afford the means of readily and firmly securing the spokes to and adjusting them in respect to the rim. These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a vertical section of the hub of my improved metallic wheel; Fig. 2, a transverse vertical section of the hub; Fig. 3, a section of the rim, showing the mode of securing the spokes to the same; Fig. 4, a transverse section of Fig. 3; and Fig. 5, a transverse section of one of the spokes drawn to an enlarged scale.

The hub A consists of three parts—namely, the central ring or section *a* and the opposite tubular end sections *b* and *b'*, which are screwed to the central ring, as shown in Fig. 1, the whole being made of steel, malleable cast-iron, or other appropriate metal or alloy. The journal-box B extends through this hollow hub, is screwed into an internal flange, *c*, of the section *b'* of the hub, and has a shoulder, *f*, bearing against the end of the section *b*. The journal-box thus aids in confining the sections of the hub together. After this journal-box has been screwed tight to its place a steady-pin, *h*, is driven through the box, and through the section *b* of the hub, so that there can be no displacement of the several parts. Each spoke D has at its base a shoulder, *l*, and a projecting threaded stem, *m*, provided with a nut, *n*, by screwing which tight the spoke is secured firmly to the central section *a* of the hub, the nuts being prevented from turning by an annular ring, *d*, on the inner edge of

each of the sections *b b'*, these rings bearing against the edges of the nuts *n*, and locking the same in the positions to which they have been adjusted.

It will be understood that all the spokes of the wheel are secured to this section *a* before the latter is attached to the other sections, so that every facility is afforded for gaining access to the nuts by a suitable wrench. In fact, the main object of making the hub in three sections is the proper tightening of these nuts.

The spokes are made of steel or wrought-iron, and each spoke is made of the sectional form shown in Fig. 5—that is, with two opposite ribs, *x x*, midway between the opposite edges of the spoke, and two tapering ribs, *y y*—the spoke being made with a gradual taper from the base, or from a point very near the base, to the point *t*, where the outer end of the spoke passes into the rim.

A steel or wrought-iron spoke thus constructed is much better adapted to resist the shocks and jars to which it must necessarily be subjected than a round spoke, and can be made quite as light as the latter. At the same time the spoke, while sufficient rigidity in a lateral direction is imparted to it by the ribs *y y*, has, in the opposite direction, an elasticity which is not possessed by a round metal spoke of proper strength.

The rim G of the wheel is made hollow, of wrought-iron or steel, and of the sectional form shown in Fig. 4; and this rim may be made in one or more pieces, properly secured together. The upper portion *w* of the rim may be made separately from the remaining portion, and secured to the latter by brazing or otherwise. The periphery of the rim, however, should in all cases be slightly rounded, so as to properly retain the tire H, which should be shrunk onto the rim in the usual manner.

The end *v* of each spoke, where it projects into the rim, is made round by preference, and is threaded for the reception of a nut, *h*, which bears against the support K, the latter being fitted to the interior of the rim, as shown. A tube or washer may, however, be substituted for this support.

A suitable socket-wrench may be applied to

the nut, in the absence of the tire, after detaching a small plate, K, and thus exposing an opening in the periphery of the rim for the reception of the wrench, this plate being held in place by the tire. I prefer to let the nut project into such a recess in the plate as will prevent the nut from turning.

It will be evident that every facility is afforded for the tightening and adjustment of the spokes by the above mode of securing them to the rim.

I do not desire to claim, broadly, a fluted spoke of metal; but

I claim as my invention—

1. A metallic wheel having a hub in which are combined the central section or ring *a*, adapted for the reception of the inner ends of the spokes, and the outer or end sections *b b'*, screwed directly into the opposite ends of the section *a*, as and for the purpose set forth.

2. The combination of the hollow hub, made in three sections, with the axle-box B, threaded

at one end for attachment to the end section *b'*, and provided at the opposite end with a collar, *f*, and pin *h*, for attachment to the end section *b*, as set forth.

3. The within-described fluted spoke, made tapering and of wrought-iron or steel, as set forth.

4. The combination of the spoke, the hollow rim G, the support K, and detachable plate *k*, adapted to an opening in the said rim, all substantially as described.

5. The combination of the nuts *n* with the annular rings *d d* of the sections *b b'* of the hub, as and for the purpose set forth.

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

SIMON VREELAND.

Witnesses:

HUBERT HOWSON,
HARRY SMITH.