

T. R. SMITH.

Wheel Hub.

No. 94,521.

Patented Sept. 7, 1869.

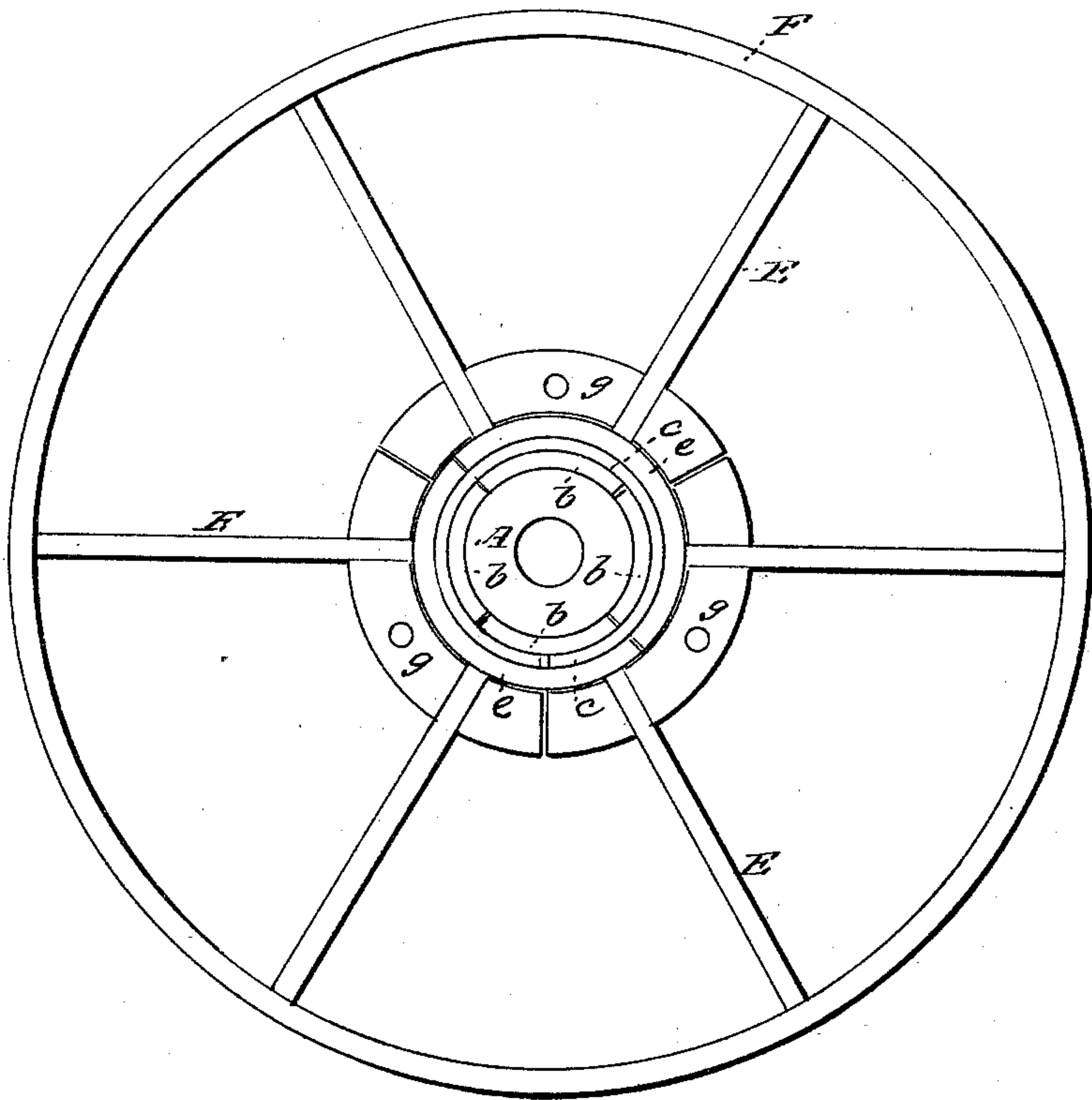


Fig. 1

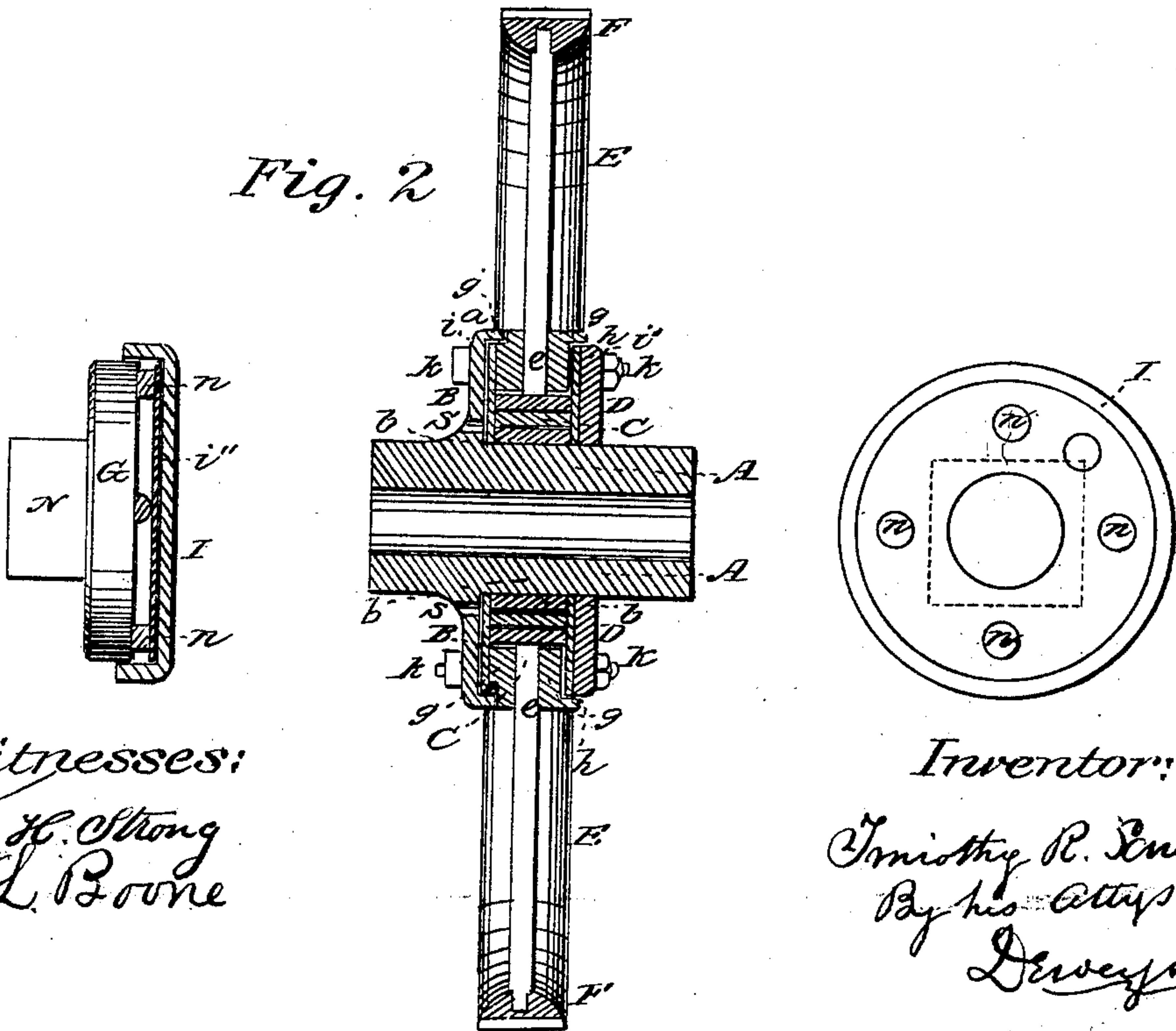


Fig. 2

Witnesses:
Geo H. Strong
J. L. Boone

Inventor:
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United States Patent Office.

TIMOTHY R. SMITH, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 94,521, dated September 7, 1869.

IMPROVED CARRIAGE-WHEEL.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, TIMOTHY R. SMITH, of the city and county of San Francisco, State of California, have invented an Improved Wheel for Wagons and other Vehicles; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use my said invention or improvement without further invention or experiment.

My invention relates to an improvement in wagon-wheels, and consists in the use of a sectional hub, each section holding two of the spokes, which are hollow, and also of a series of elastic bands and washers, so arranged as to sustain the different portions of the wheel, and relieve it from the jar and strain consequent upon heavy loads and rough roads.

With the exception of the elastic bands, the whole wheel, including the felloe, is made of iron, and is lighter than an equally strong wooden wheel, while its construction gives it much greater endurance.

Referring to the accompanying drawings for a fuller explanation of my invention—

Figure 1 is a vertical section of the wheel.

Figure 2 is an end view of the hub.

Similar letters of reference in each of the figures indicate like parts.

A is the box or pipe in which the axle turns.

This pipe is made of iron, and has the side B, of the hub, cast with it in one piece, or it may be cast separate and bolted to the pipe.

A flange, *a*, is cast around the inner rim of the side B.

The pipe is surrounded by a steel band made in segments, *b b*, and placed against the side B, each segment being separated from the other by a small space.

Outside of the segments *b b* is an elastic band, *c*, of any suitable thickness, entirely surrounding them, leaving a small space between its ends for expansion; and surrounding this elastic band is a steel band, *e*, having its ends also separated. These form three successive layers, two of steel and one of an elastic band, which will yield to any sudden jar or strain.

The outside portion of the hub is formed of segments, *g g*.

A rubber packing, *i*, is placed around the side B, outside the steel band *e*, between it and the flange *a*, against which the segments *g* are placed. Each of the segments *g g* is provided with two semicircular openings, which, when the segments are placed together, form round holes, through which the spokes pass and bear upon the steel band *e*. Each of these segments is intended to receive two spokes, and may be multiplied as desired for adding any number of spokes to the wheel.

The segments *g* are constructed or cast with flanges, *h*, on one side, and are placed with their opposite sides upon the segments *g'*, after the spokes have been inserted, leaving the flanges *h* on the outside. A rubber packing, *i*, is then placed around the ring formed by the segments inside of the flange, and a cap, *D*, placed over the end. The whole is then drawn firmly together by bolts and nuts, *K K*, the bolts working loosely in the segments, and passing through from side to side, one being passed through each section of the hub between the spokes, thus drawing the segments together and fixing the spokes in their places. Small holes, *s s*, are made in the side B of the hub, opposite each of the segments *b b*, so that by removing the cap *D*, and inserting any small tool, the segments may be removed to repair any portion of the hub.

The spokes *EE* are made of iron, and are hollow, thus rendering them comparatively light and sufficiently strong. Gas-pipe of the proper size may be used for this purpose. As before stated, one end of this pipe or spoke passes between the segments *g g* and bears upon the steel band *e*. The opposite end is turned down and fitted tightly in proper-sized holes in the iron felloe *F*. These holes should not be drilled entirely through the felloe, but only a portion of the way, and the felloe is drawn tightly upon the spokes by a tire shrunk around it in the usual manner of placing tires upon wooden wheels.

By this means an elasticity in the hub is obtained that will relieve any sudden jar and prevent any of the castings from being broken.

To give the wheel an elastic lateral support upon the outside, I provide a washer, consisting of the block or ring *G*, having, on one side, the projections *n*; the elastic ring *i'* resting upon said projections, and the cap or cover *I*.

The ring *i'* may be made of India rubber or other elastic material, and the projections *n* may also be made of an elastic material if preferred.

These plates or rings are all provided with corresponding openings through them, adapted to fit upon the pipe of the hub, so that the cap *I* may rest fairly against the cap *D* of the hub, while the opposite ring *G* is supported or held in place by the linchpin, or by the usual nut upon the end of the axle.

In the drawing, the projection *N* is intended to represent a nut, so applied, and this nut may either be of one piece with the ring *G*, or separate from it, as may be preferred. If, then, one wheel be raised so as to throw the weight of the load suddenly in an oblique direction upon the opposite wheel, the shock will be materially lessened by the yielding or elastic washer above described.

A wheel made entirely of iron has often been attempted, but inventors have always failed in render-

ing them practicable, owing to their liability to break on being subjected to a sudden jar or strain. I avoid this in my manner of construction, as by the use of the rubber and the segmental bands, an elasticity is derived in all directions from which a strain can come.

The utility of a wheel made of iron or metal is quite apparent:

First, it will always retain its shape, no matter how long it may be used.

Second, it is not liable to break down, which, on long journeys especially, is often the cause of much and frequent annoyance, and, in this wheel, should any portion be broken, it will only be necessary to replace the part broken.

Third, the tire will not require upsetting, and the heat will not affect it, as the contraction and expansion of every part will be equal.

Fourth, the felloe and tire being made of wrought-iron, can be easily repaired, should either become bent at a distance from any blacksmith's shop, by the use of a hammer or other heavy instrument, without any great trouble or delay.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The construction and arrangement of the parts forming the hub, namely, the flanged side B, cap D, segments *g'*, and the flanged segments *g*, provided with recesses to form openings for the spokes, all secured together by the bolts K, substantially as described.

2. In combination with the above-claimed hub, the packing-rings *i* and *i'*, arranged substantially as described.

3. The elastic washer formed of the ring G, having projections *n*, the elastic ring *i''*, and the cap I, arranged and applied substantially as described.

In witness whereof, I have hereunto set my hand and seal.

TIMOTHY R. SMITH. [L. S.]

Witnesses:

J. L. BOONE,

W. R. BOONE.