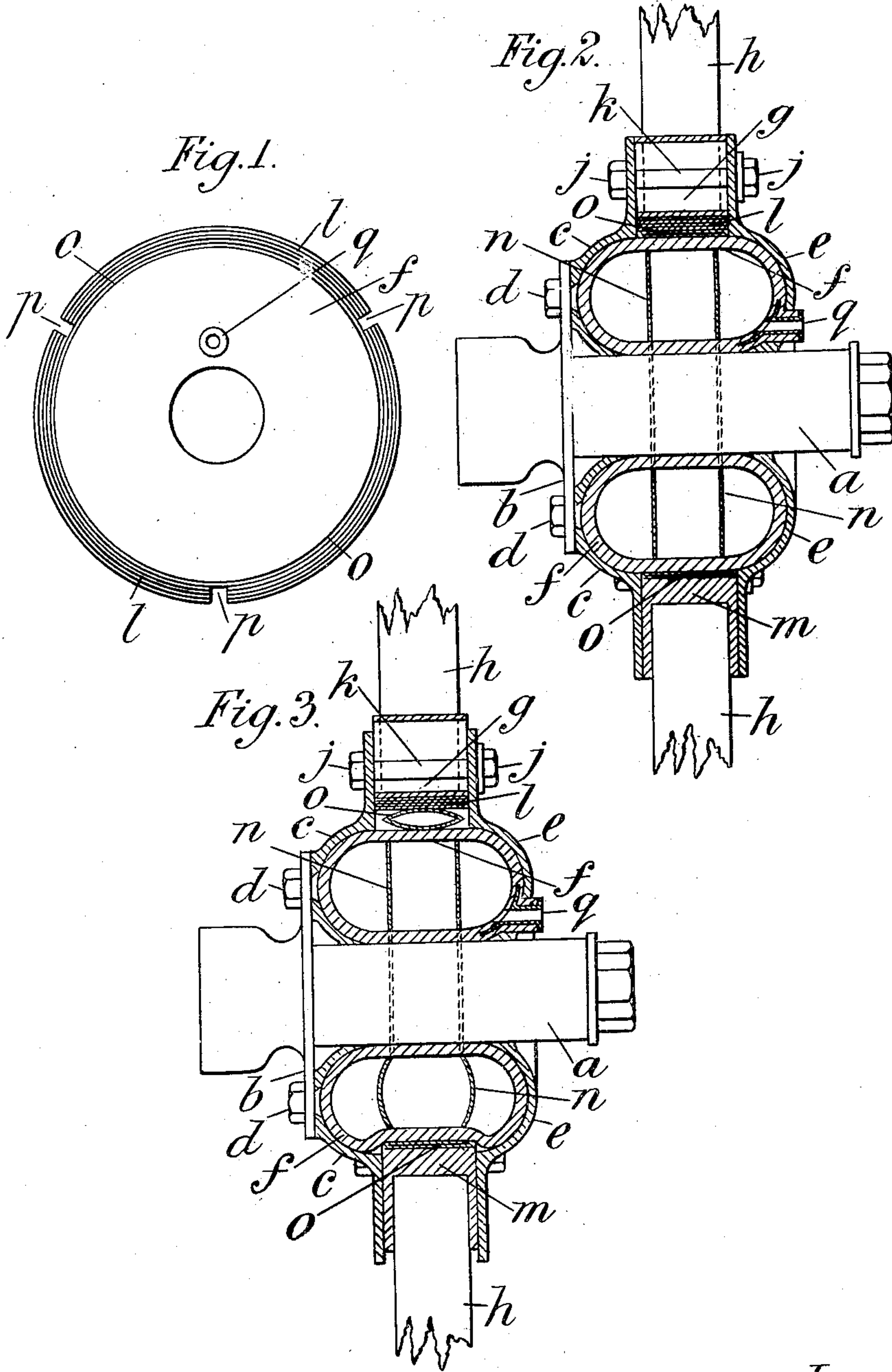


No. 845,135.

PATENTED FEB. 26, 1907.

W. S. H. SMITH.
PNEUMATIC HUB FOR WHEELS.
APPLICATION FILED SEPT. 10, 1906.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM SAMUEL HADGRAFT SMITH, OF CROYDON, ENGLAND.

PNEUMATIC HUB FOR WHEELS.

No. 845,135.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed September 10, 1906. Serial No. 333,993.

To all whom it may concern:

Be it known that I, WILLIAM SAMUEL HADGRAFT SMITH, a subject of the King of Great Britain, residing at 212 Whitehorse road, Croydon, in the county of Surrey, England, have invented certain new and useful Improvements in Pneumatic Hubs for Wheels, of which the following is a specification.

10 This invention relates to improvements in the pneumatic hubs described in the specification of the Patent No. 819,942, dated 8th of May, 1906.

15 It is found if the pneumatic tube is made of comparatively thin rubber that as the lower part of the tube is compressed the upper part tends to expand into the space between the guides for the nave, and the tube is consequently apt to become worn or cut. To prevent this, I fix in the pneumatic tube an annular diaphragm or diaphragms of canvas or the like parallel to the plane of the wheel. Such a diaphragm, while preventing the tube from expanding, in no way hinders its compression.

20 In the hub described in the said former specification the tube is surrounded by a thick band of canvas, leather, or the like, which lies between the guides for the nave. When this band is fixed to the tube, as is desirable when torsional strains have to be provided for, it is apt to drag the tube up between the guides. In order to prevent this, I connect the band to the tube or, preferably, to a canvas jacket inclosing the tube by a flat tube of canvas or the like, the points of connection to the band and the pneumatic tube being respectively at the middles of the two opposite flattened sides of the tube, so that when the band tends to move away from the pneumatic tube it is free to do so, the flattened tube simply opening in a bellows-like way.

25 In place of carrying the inflation-tube out between the spokes, as before, I now carry it out through one of the flanges on the axle and as near as may be to the axle, as I find that at this place the pneumatic tube is practically stationary relatively to the axle, and no rubbing, therefore, takes place.

Figure 1 is a side elevation of a pneumatic

tube and surrounding band constructed according to this invention. Fig. 2 is a section of the hub with the tube in place; and Fig. 3 is a similar view to Fig. 2, showing the position the parts assume when the axle is weighted.

30 *a* is the axle-box, if the wheel revolves on a fixed axle, or the end of the axle itself, if the axle revolves in bearings. In this specification it will for brevity be called the "axle."

b is a flange fixed to the axle.

c is a plate fixed to the flange *b* by bolts *d*.

e is a plate similar to *c* and fitting loosely on the axle *a*.

65 *f* is a pneumatic tube of more or less oval section, and *g* is the nave of the wheel, which receives the spokes *h*. The plates *c* and *e* are connected together by bolts *j* and distance-tubes *k*, which pass through tubes of the nave *g*, so that the nave is free to move freely up and down between the plane surfaces of the plates *c* and *e*.

70 *l* is a band, of leather, interposed between the pneumatic tube *f* and the nave *g*. It is prevented from moving relatively to the latter by lugs *m*, which enter into holes in it. All this is exactly as described in the said former specification.

80 According to the present invention the tube *f* has fixed inside it diaphragms *n*, which, as shown at the upper part of Fig. 3, prevent the tube from expanding, but, as shown at the lower part of Fig. 3, allow it to be compressed.

85 The band *l*, surrounding the pneumatic tube, is connected to it by the flat tube *o*, the middles of the flattened sides of which are fixed to the band *l* and pneumatic tube *f*, as shown at the upper part of Fig. 3. The band *l*, as before, has notches *p* in it to engage with the corresponding projections *m* inside the nave.

90 *q* is the inflation-tube, which instead of projecting radially outward from the tube *f*, as described in the former specification, is placed as close as possible to the axle and parallel to it.

What I claim is—

1. The combination with an annular pneumatic tube of a radial diaphragm of extensible material fixed inside it.

2. The combination of an annular pneumatic tube, a band surrounding it and a flat tube between and fixed to the pneumatic tube and the band.

5 3. The combination of an annular pneumatic tube, a radial diaphragm fixed inside it, a band surrounding it and a flat tube be-

tween and fixed to the pneumatic tube and the band.

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Witnesses:

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