

No. 749,845.

PATENTED JAN. 19, 1904.

J. COOMBER.
CUSHION TIRE.

APPLICATION FILED FEB. 18, 1903.

NO MODEL.

Fig. 1.

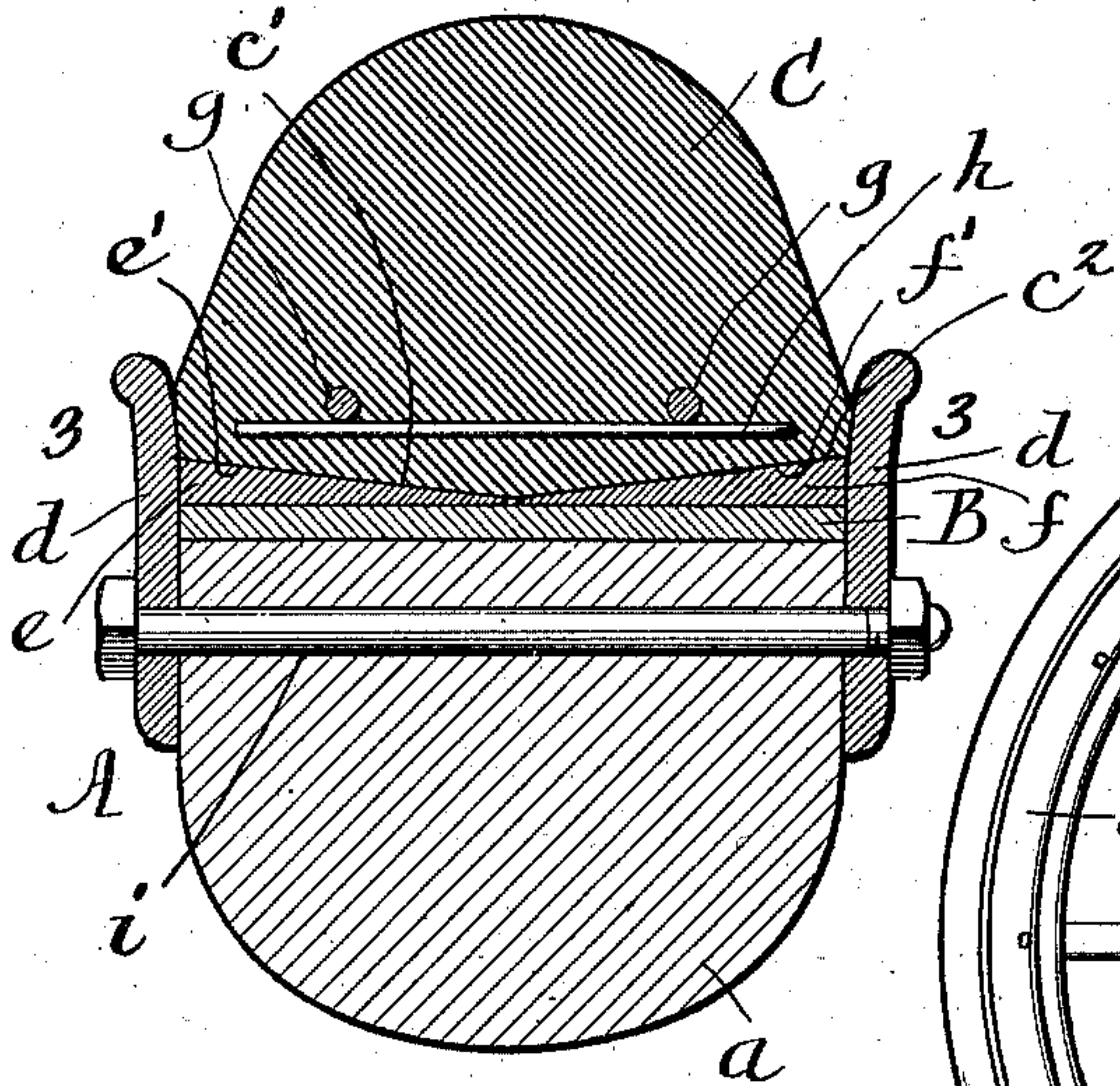


Fig. 2.

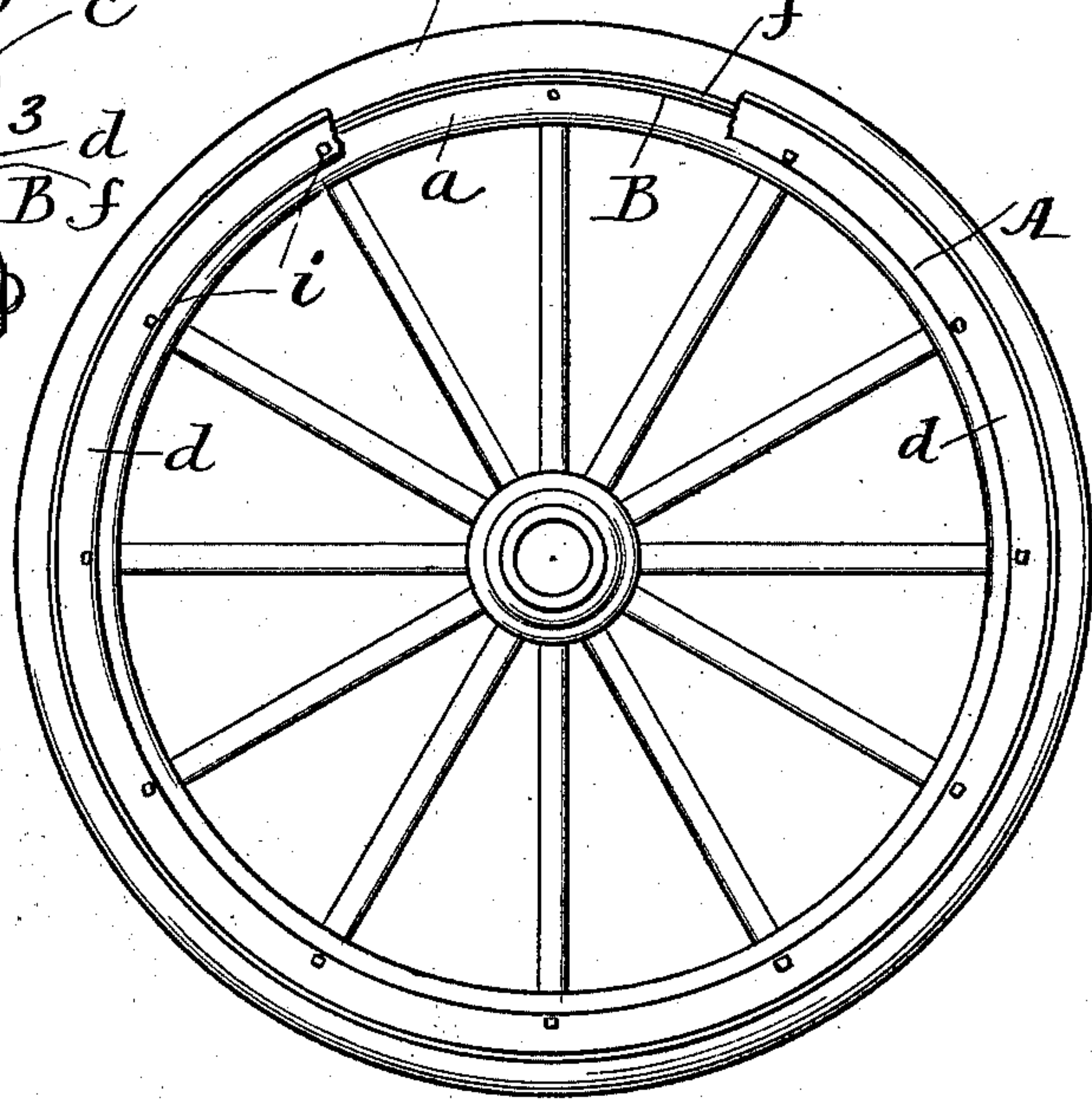
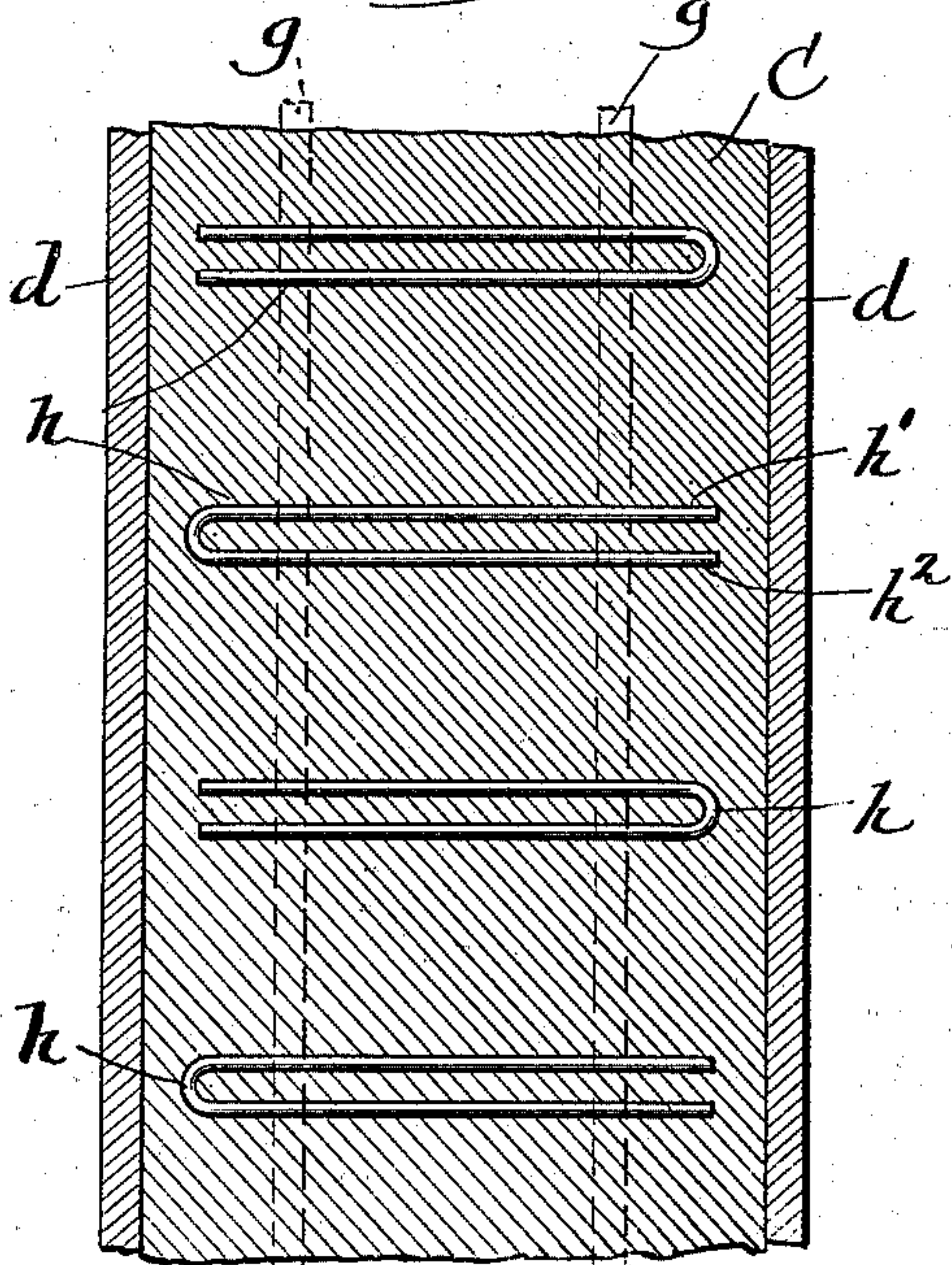


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CUSHION-TIRE.

SPECIFICATION forming part of Letters Patent No. 749,845, dated January 19, 1904.

Application filed February 18, 1903. Serial No. 143,950. (No model.)

To all whom it may concern:

Be it known that I, JAMES COOMBER, a resident of the city of New York, in the county and State of New York, have invented certain
5 new and useful Improvements in Cushion-Tires, of which the following is a full, clear, and exact description.

The invention relates to vehicle-tires, and more particularly to that class known as
10 "cushion-tires."

The invention designs to provide an elastic tire of improved form and construction and which is of especial advantage in tires employed upon heavy vehicles and subjected to
15 severe strains.

With these objects in view the invention consists in the several novel features hereinafter described, illustrated in the accompanying drawings, and more particularly defined by
20 claims at the conclusion hereof.

In the drawings, Figure 1 is a view in cross-section of a tire embodying the preferred form of the invention. Fig. 2 is a side elevation of a wheel having the improved tire applied there-
25 to, part of the rim being broken away. Fig. 3 is a view in horizontal section through the elastic strip and showing the improved cross-stays and the retaining-bands.

A denotes a wheel-rim comprising a felly *a*,
30 usually formed of wood or similar material. A metallic band *B* fits around the periphery of the felly and forms a peripheral bearing-surface. A channel for an elastic strip or body *C* is formed between side plates or rings
35 *d*, and the base of the channel is formed by wedge rings or strips *e* and *f*, having straight inner peripheries fitting against the outer periphery of band *B* and their outer surfaces inclined, as at *e'* and *f'*, respectively, which form
40 a reversely and inwardly tapering seat, against which the inclined portions *e'* *e''* of the base of elastic strip or body are respectively seated. Retaining-bands *g* of any suitable form or desired number extend longitudinally
45 through the elastic strip or body and secure the strip within the rim-channel. Cross-stays

h are embedded in the elastic strip and extend substantially across the strip and form a cross-support for the retaining band or bands. Each cross-support is formed of a strip of wire
50 bent to form a staple having a pair of integral arms *h'* *h''* in close proximity to each other and extends across the elastic strip and forms a bearing or support for the retaining band or bands. The staples are preferably arranged
55 alternately, (see Fig. 3,) so the connecting portions and free ends of adjacent staples will be arranged at one side of the elastic body.

It has heretofore been proposed to employ a cross-stay formed of wire extending trans-
60 versely through the elastic strip. In practice it has been found that constant compression and creeping of the elastic strip cause the wire cross-stay to become loose in the rubber, so that the cross-stay will after having become
65 loose wear that portion of the elastic strip between the retaining-band and the rim. A desideratum in cross-stays for retaining-bands is to provide a form of cross-support which distributes the strain of the retaining-band
70 throughout the entire width of the rubber and which does not interfere even in a slight degree with the elasticity of the strip or body. For that reason cross-stays independent of
75 each other and of the retaining-band and usually formed of wire have been deemed of advantage over constructions in which a strip of wire has been extended continuously back and forth across the elastic strip. The present
80 invention provides a form of cross-stay which is formed of wire and which can be embedded in the elastic strip and which is so formed that it is impossible for the cross-stay to become loose and wear the elastic strip, while
85 preserving the advantages of independent cross-stays. The cross-stay being formed of a wire staple having a pair of arms is secured against all danger of rolling or loosening, because there is a plurality of bearing portions
90 or contacts between each stay and each retaining-band which entirely overcome all tendency of the wire cross-stay to revolve or

creep. Furthermore, that end of the cross-stay at which the arms are connected together renders the cross-stay unusually rigid.

In practice the elastic strip is usually formed to fit rather snugly around the rim. When the tire is to be applied to the rim, the thin edges of the wedge strips or rings are first inserted between the outer edge of the inclined portions of the base of the elastic strip. Side plates *d* are then secured to the felly by bolts *h*, which extend through the felly and through both of the side rings or flanges. As the side rings are forced into position adjacent the side of the felly wedge-strips *e* and *f* will be forced inwardly thereby. The inward movement of the wedge-rings will force the base portion of the elastic strip outwardly and insure a snug fit of the elastic body within the rim, outward movement of the base portion of the tire being restricted by the cross-supports and the retaining-bands. The employment of wedges to insure a snugly-fitting elastic body and rim is of unusual advantage in tires upon heavy vehicles and when employed in an elastic body having retaining-bands and cross-stays provides a tire which possesses longevity and in which all danger of displacement either by a vertical or lateral strain is entirely overcome.

The sides of the rim may be formed as a continuous ring or can be formed of sections. If desired, also the wedges *e* and *f* may be circular strips bent to fit around the felly. The invention is not to be understood as restricted to the precise details described unless such are specifically defined in the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cushion-tire, the combination with a rim comprising side plates and a peripheral bearing-surface, of means for securing said side plates in position to form a channel therebetween, an elastic body within said rim, and having its base inclined, and a wedge movable laterally into position between said bearing-surface and said elastic body or strip, said wedge having an inclined surface fitting against the base of said strip or body and an inner straight surface engaging said bearing-surface.

2. In a cushion-tire, the combination with a rim comprising side plates and a peripheral bearing-surface, of means for securing said side plates in position to form a channel therebetween, an elastic body within said rim having a base reversely inclined, and a pair of wedges, movable laterally into position between said bearing-surface and said elastic strip or body, each of said wedges having an inclined surface fitting against the base of said strip or body and an inner straight surface engaging said bearing-surface.

3. In a cushion-tire, the combination with a

rim comprising side plates and a peripheral bearing-surface of means for securing said side plates in position to form a channel therebetween, an elastic body within said rim, and having its base inclined, a wedge movable laterally into position between said bearing-surface and said elastic strip or body, and a separate wedge-strip shifted by one of the said plates, said strip having an inclined surface fitting against the base of said body, and an inner straight surface, engaging said bearing-surface.

4. In a cushion-tire, the combination with an elastic body having a longitudinal retaining-band, and a series of independent cross-stays supporting said band and extending across the elastic body, of a rim, having a channel therein, and a wedge-strip movable into and out of position between said rim and said body, and whereby the base portion of the elastic strip or body will be caused to fit snugly within said rim under restriction of the retaining-bands and cross-supports.

5. In a cushion-tire, the combination with an elastic body having a longitudinal retaining-band and a series of independent cross-stays supporting said band, and extending across the elastic body, of a rim comprising a peripheral bearing-surface, side plates and wedge-strips movable laterally into and out of position between said body and said bearing-surface, each of said wedge-strips having an inclined surface fitting against the strip and a straight surface fitting against said bearing-surface, and whereby said strip or body will be held snugly within the rim-channel and whereby the base of the elastic body will be forced outwardly under restriction of the retaining-band and cross-stays.

6. In a cushion-tire, the combination with a rim having a channel therein, of an elastic strip or body, seated in said rim, a longitudinally-extending retaining-band, independent of the rim, and a plurality of independent cross-supports for the retaining-band, each of said supports being formed of a U-shaped strip extending transversely across, and embedded in the elastic body.

7. In a cushion-tire the combination with a rim having a channel therein of an elastic body seated in said rim, a longitudinal retaining-band extending longitudinally around said body and independent of said rim and a plurality of independent cross-supports, for said band and embedded in the elastic body, each of said supports being formed of a strip of metal having a pair of connected arms in close proximity to each other, and extending transversely across the elastic body and terminating within the elastic body.

8. In a cushion-tire, the combination with a rim comprising side plates and a peripheral bearing-surface, of an elastic strip within said

rim, a longitudinal retaining-band, a series of
wire staples independent of each other and
independent of said retaining-band, said strip
having its base formed with reversely-inclined
5 surfaces and a pair of wedge-rings fitting be-
tween said strip and said bearing-surface and
movable laterally into and out of position and

having an inclined surface engaging the base
of the elastic strip or body and a straight sur-
face engaging said bearing-surface.

JAMES COOMBER.

In presence of—

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