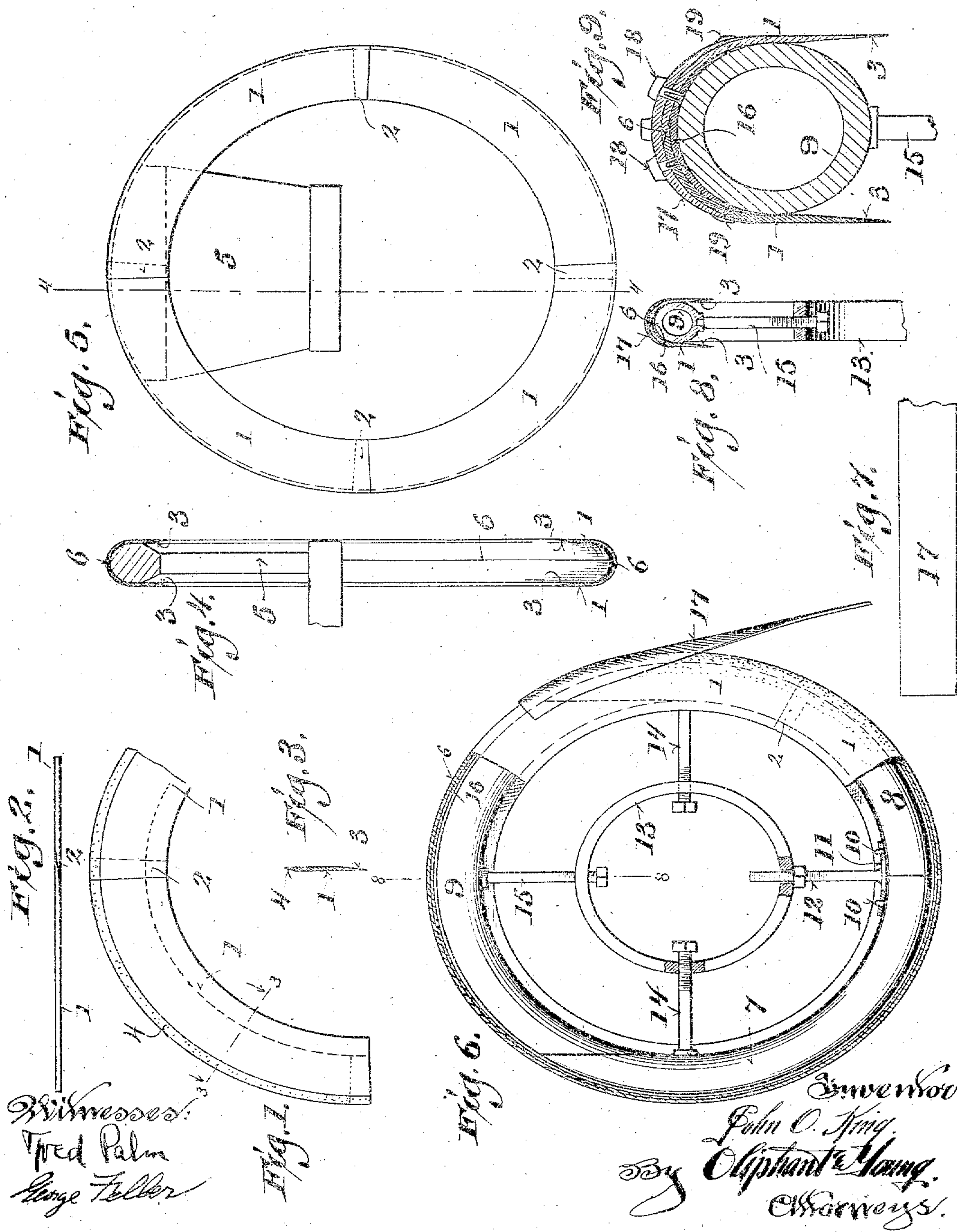


J. O. KING.
 MAKING CASINGS FOR PNEUMATIC VEHICLE TIRES.
 APPLICATION FILED AUG. 1, 1907.

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Fig. 11.

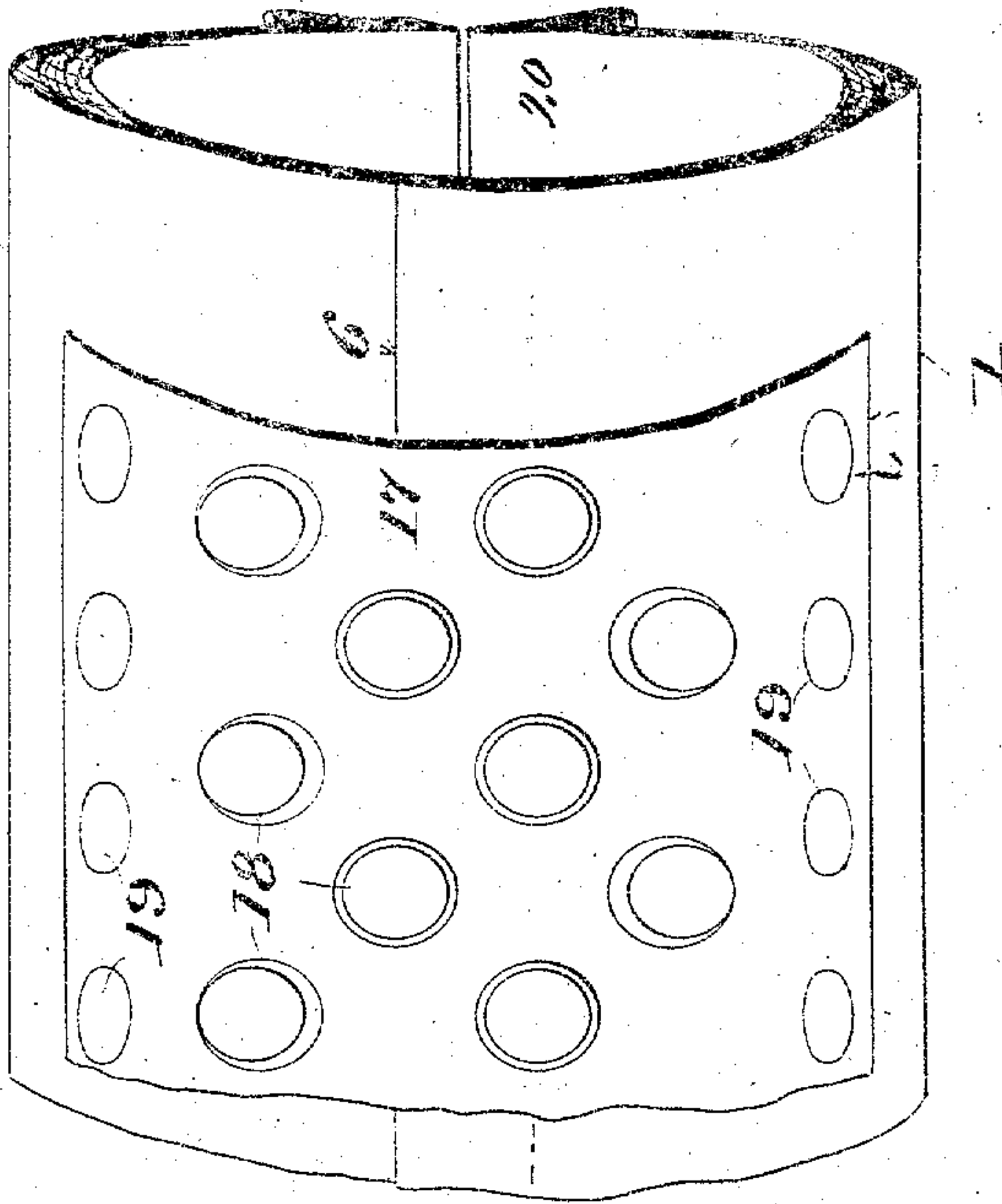
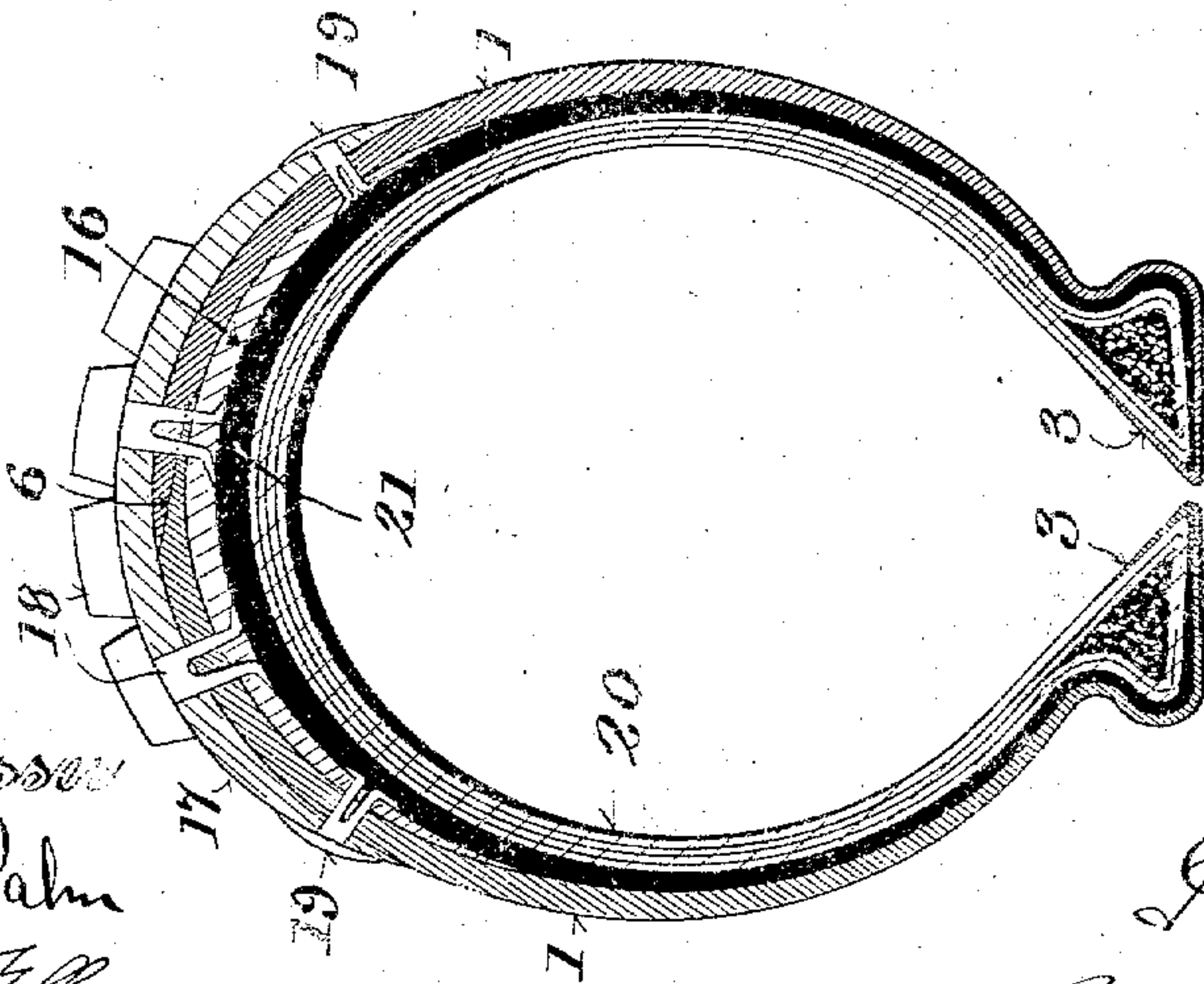


Fig. 10.



Witnesses
 Fred Palm
 George Felber

Inventor
 John O. King
 By Olyphant & Young,
 Attorneys

UNITED STATES PATENT OFFICE.

JOHN O. KING, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO KING LEATHER TIRE CO., OF MILWAUKEE, WISCONSIN.

MAKING CASINGS FOR PNEUMATIC VEHICLE-TIRES.

No. 931,207.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed August 1, 1907. Serial No. 386,621.

To all whom it may concern:

Be it known that I, JOHN O. KING, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Making Casings for Pneumatic Vehicle-Tires; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to an economical production of simple and efficient puncture-proof casings for pneumatic-tires, its object being to provide ordinary clencher-type canvas casing-carasses with adhesive covers of metal-studded soft leather (by which is meant dry finished leather) said covers being formed and applied without appreciable stretching of said leather.

Hence said invention consists in my method of making said tire-casings, the same being hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents an elevation of a fragment of one of a pair of circular leather blanks that go to make up a carcass-cover of a pneumatic-tire casing in accordance with my method; Fig. 2, an edge view of the same showing a flush-joint between sections of said blank; Fig. 3, a cross-section of the blank, the same being indicated by line 3—3 in Fig. 1; Fig. 4, a similar view of the cover on a clenching-block, the blanks being lap-jointed at their outer circumferential edges, this view being indicated by line 4—4 in the next figure in ascending numerical order of the series; Fig. 5, a side elevation of what is shown in Fig. 4; Fig. 6, a partly sectional side elevation illustrating a mandrel and a tire-casing cover thereon; Fig. 7, a plan view of a fragment of a leather tread-strip applicable to said cover; Fig. 8, a cross-section indicated by line 8—8 in Fig. 6; Fig. 9, a similar view on an enlarged scale illustrating a completed cover on the mandrel; Fig. 10, a cross-section of a full sized completed tire-casing, and Fig. 11, a face view of a fragment of same.

Referring by numerals to the drawings, 1 indicates each of a series of sectors that go to make up each of a pair of flat circular blanks of soft, dry, finished leather, said blanks being of predetermined dimensions. The sectors are skived at their ends and lap-

joined whereas the surfaces of the blanks are uninterrupted throughout, the joint 2 being secured by cementing. The circumferential edges of said sectors are also skived as indicated by 3 and 4. The blanks being formed, as above specified, their outer skived edges 4 are lap-joined and the joint 6 secured by cement applied to said edges, the product being a circular shell U-shaped in cross-section, there being no stretching of the leather in the formation of the shell. A contractile mandrel is now inserted into the shell and expanded to its full extent to fill said shell without appreciable stretching of its leather material. The mandrel is shown as comprising a series of rim-sections 7, 8, and 9 annular in cross-section, the first two of these sections being butt-joined and connected by pins 10 with a foot 11 of a screw-threaded spindle 12 that is loose in an aperture of a ring 13 that abuts an adjusting nut on the spindle. Other spindles 14 are in screw-thread engagement with the ring 13 and arranged to oppose the free ends of the spindles 7 and 8. The rim-section 9 of the mandrel is in scarf-joint connection with the other rim-sections and centrally opposed by a spindle 15 having screw-thread engagement with the ring 13, all of the spindles being radially disposed. By adjustment of the spindles 14, 15 and the nut on the spindle 13, the mandrel is readily contracted to permit of its being engaged by the tire-casing cover, and is readily expanded to fill out said cover that is peripherally smoothed on said mandrel and its rim-face given a true semi-circular contour in cross-section without appreciable stretching. For heavy duty tires it is desirable to insert a reinforce leather strip 16 inside the shell back of the rim-face of same, this strip being skived at its edges and cemented in place prior to the insertion of the mandrel in said shell. After shaping the shell, reinforced or otherwise, upon the mandrel, a leather tread-strip 17 having skived edges is cemented on said shell to form a continuous circumferential shoe, and thereafter staple shanks of metal anti-skidding studs 18 are clenched in the structure peripherally of the same. The clenched shanks of the studs aid the cement in holding the reinforcing strip (if any) and the tread strip to the cover, and they also impart rigidity to said cover. The shanks of flat-head nails 19 are also clenched in the

cover to bind the edges of the tread-strip of same in place, all the clenching being done while said cover is on the mandrel, or afterward as may be preferred in practice, a clenching-block 3 being herein shown engaged with said cover after removal of same from the mandrel. All the leather aforesaid is preferably of finished, high-grade, select chrome, capable of retaining its softness and pliability, under various conditions to which a pneumatic-tire is subjected, and while being capable of resisting wear and puncture better than any other suitable known material it will not detract from the resiliency of the tire to which it is applied. The cover being detached from the mandrel it is rubber cemented on an ordinary compound rubber-and-canvas carcass 20, the two being subjected to pressure to insure their adhesion, or said cover may be vulcanized on said carcass to complete the tire-casing. The base of the carcass is divided and the dimensions of the cover may be such, as herein shown, to provide for folding of its skived edges 3 on the edges of said carcass in which said cover-edges are laid close out of the way. The carcass being of the kind for clenchertype tire-casings, care is exercised in a perfect fitting of the cover on the clencherbends of said carcass.

By the method above described I produce a pneumatic-tire casing in which the leather cover is self-conforming to the shape of the carcass, without being molded or pressed into shape or appreciably stretched. Hence I avoid weakening the traction portion of the cover and retain all the flexibility natural to the material of same. Viscol or other suitable material may be used on the leather cover to exclude moisture from the same.

As an article, the tire casing herein shown and described constitutes the subject of my application for patent Serial No. 421,539, filed March 16, 1908.

I claim:

1. A method of making outwardly leather metal studded pneumatic-tire casings, the same consisting in forming a pair of flat circular blanks from sectors of soft, dry finished leather; joining the blanks at their outer circumferential edges to form a transversely U-shaped shell; truing the shell on a mandrel without appreciable stretching; securing metal studs to the trued shell and adhesively attaching the product to an open casing-carass having outwardly beaded ex-

tremities with which said product is made to conform without closing the opening.

2. A method of making outwardly leather metal studded pneumatic-tire casings, the same consisting in forming a pair of flat circular blanks from a series of sectors of soft, dry, finished leather; joining the blanks at their outer circumferential edges to form a transversely U-shaped shell; adhesively securing metal studs to trued shell and shell; truing the reinforced shell on a mandrel without appreciable stretching; securing metal studs to the trued shell, and adhesively attaching the product to an open casing-carass having outwardly beaded extremities with which said product is made to conform without closing the opening.

3. A method of making outwardly leather metal studded pneumatic-tire casings, the same consisting in forming a pair of flat circular blanks from a series of sectors of soft, dry finished leather; joining the blanks at their outer circumferential edges to form a transversely U-shaped shell; adhesively securing an outer leather tread-strip to the shell; truing the reinforced shell on a mandrel without appreciable stretching; securing metal studs to the trued shell, and adhesively attaching the product to an open casing-carass having outwardly beaded extremities with which said product is made to conform without closing the opening.

4. A method of making outwardly leather metal studded pneumatic-tire casings, the same consisting in forming a pair of flat circular blanks from a series of sectors of soft, dry finished leather; joining the blanks at their outer circumferential edges to form a transversely U-shaped shell; adhesively securing inner and outer leather tread-strips to the shell; truing the reinforced shell on a mandrel without appreciable stretching; securing metal studs to the trued shell, and adhesively attaching the product to an open casing-carass having outwardly beaded extremities with which said product is made to conform without closing the opening.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

JOHN O. KING.

Witnesses:

GEO. W. YOUNG,
H. G. MORRIS.

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Signed and sealed this 28th day of September, A. D. 1909.

[SEAL]

C. C. BILLINGS

Acting Commissioner of Patents

Correction in Letters Patent No 931207.

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