

No. 848,461.

PATENTED MAR. 26, 1907.

W. S. HADLEY.
VEHICLE WHEEL.
APPLICATION FILED MAR 21, 1906.

2 SHEETS—SHEET 1

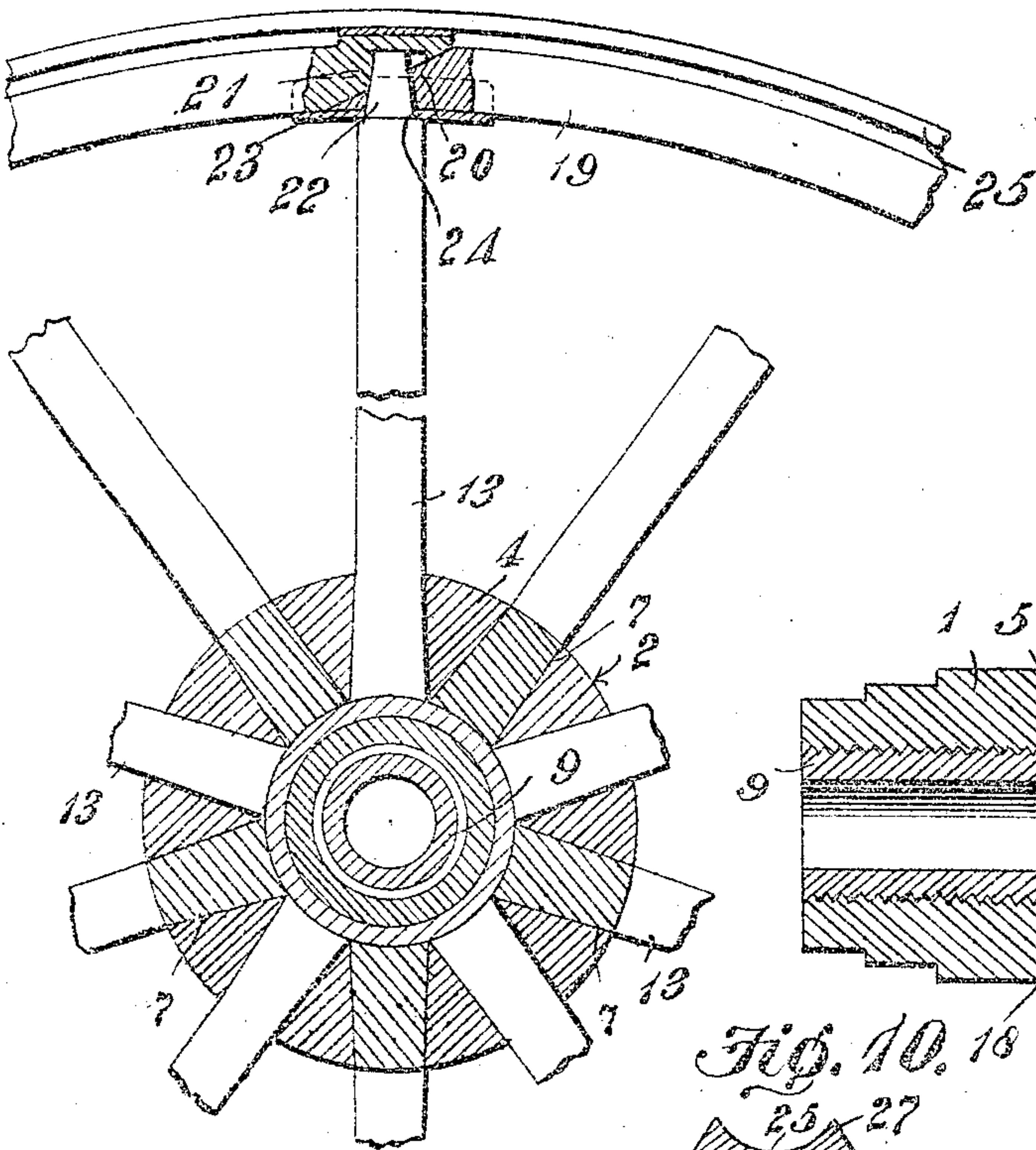


Fig. 1.

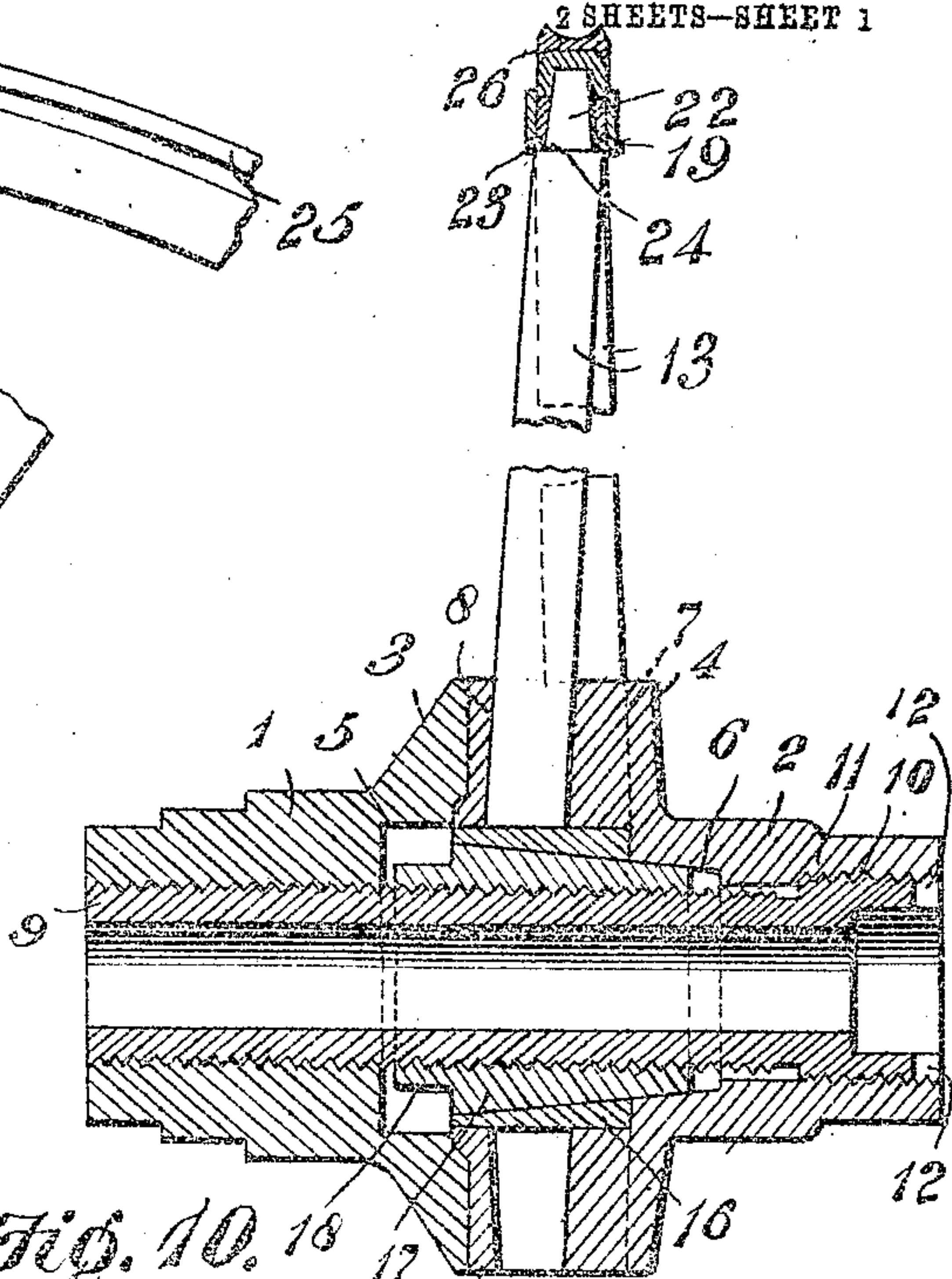


Fig. 2.

Fig. 9.

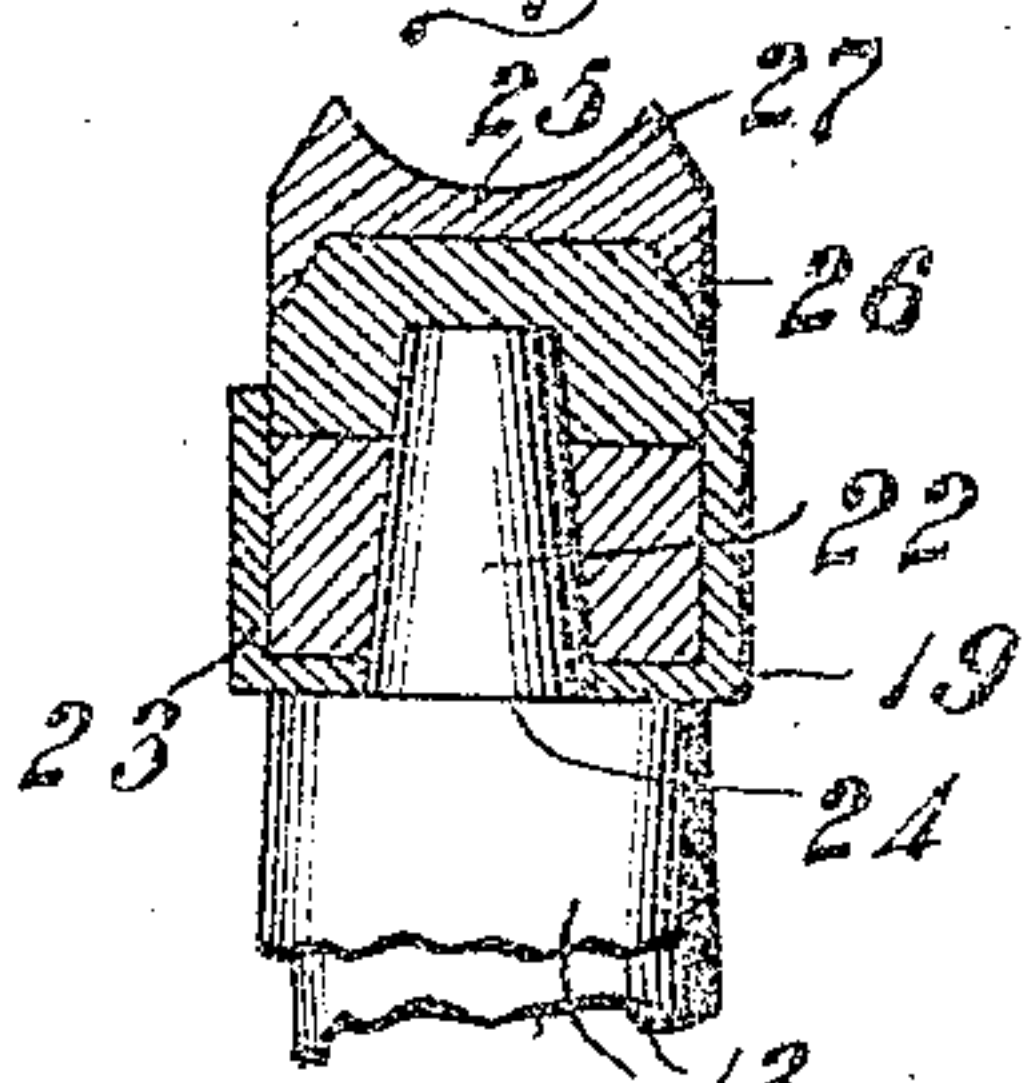
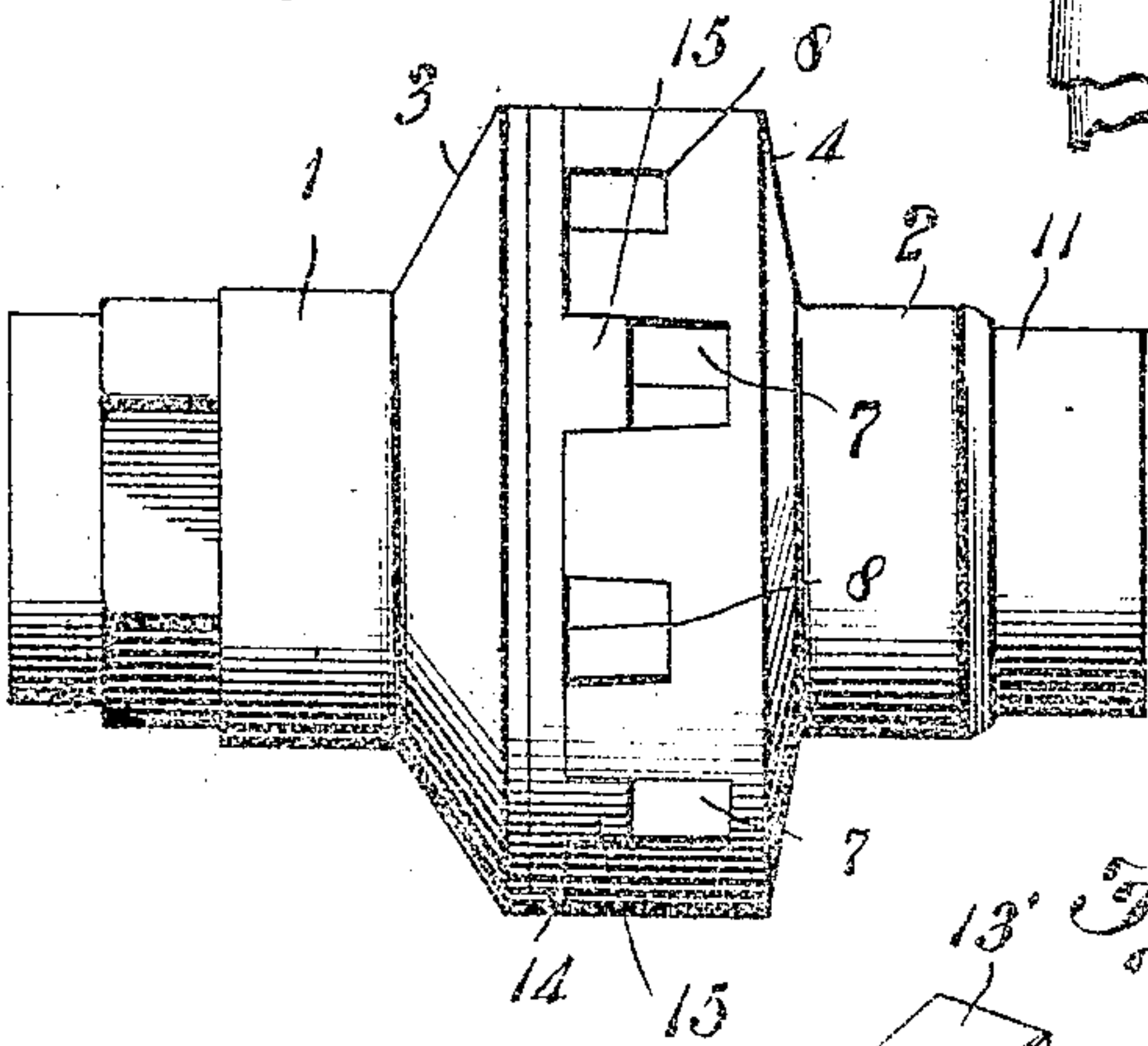


Fig. 8.

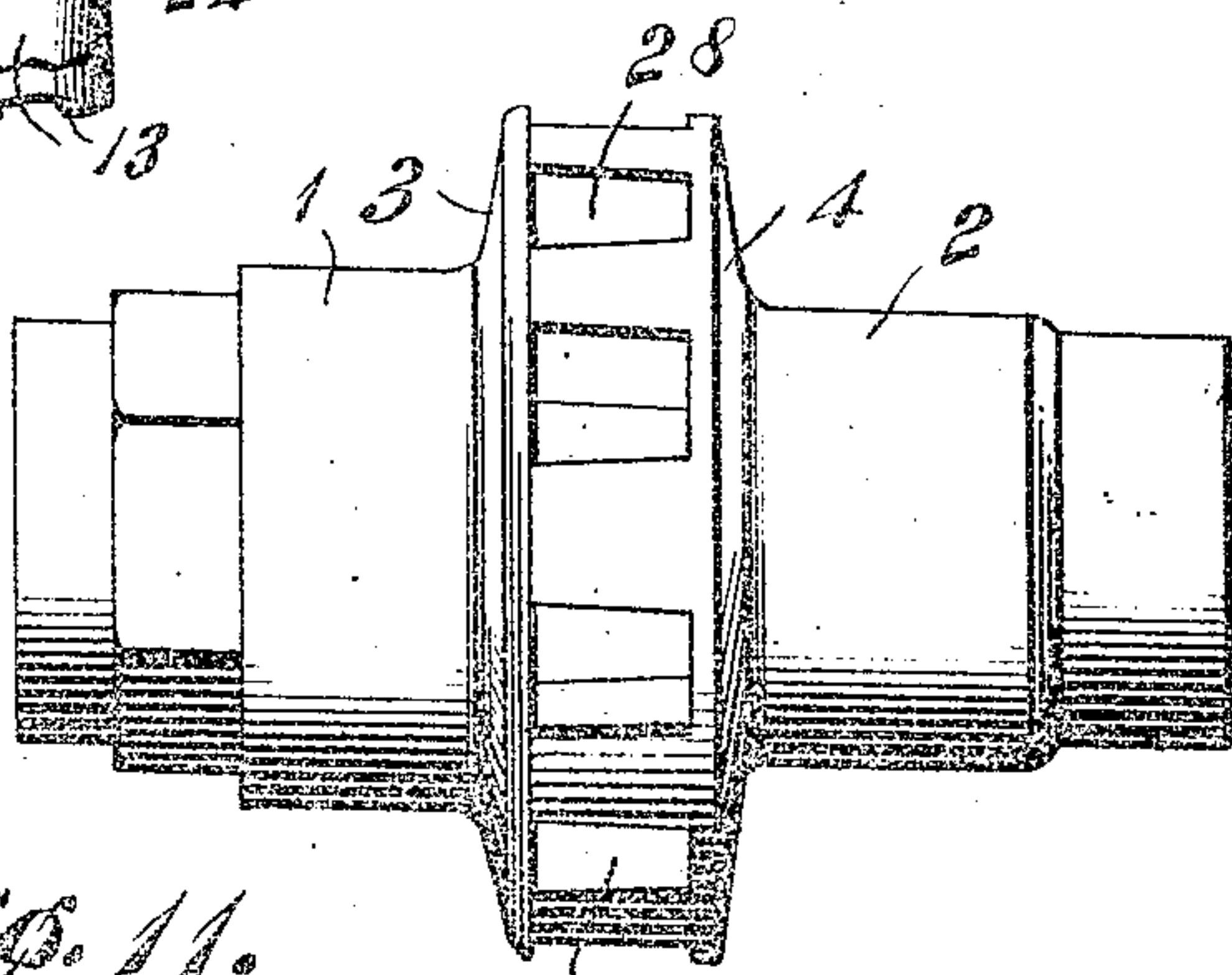
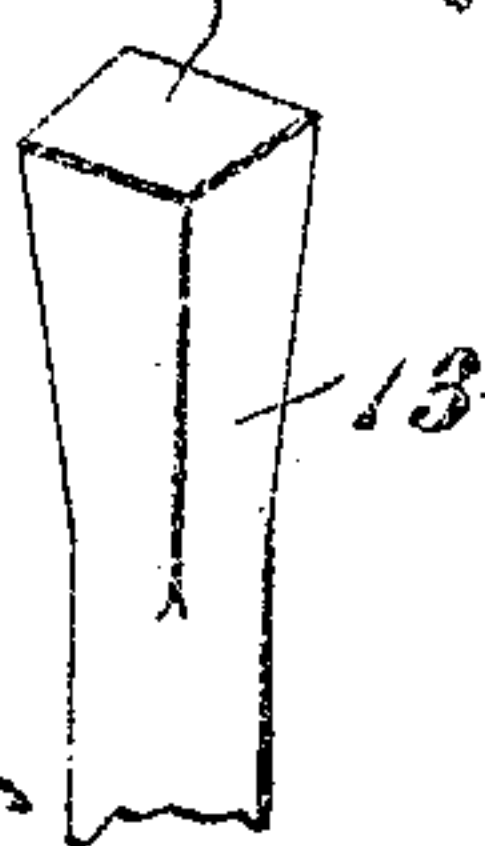


Fig. 11.

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2 SHEETS—SHEET 2.

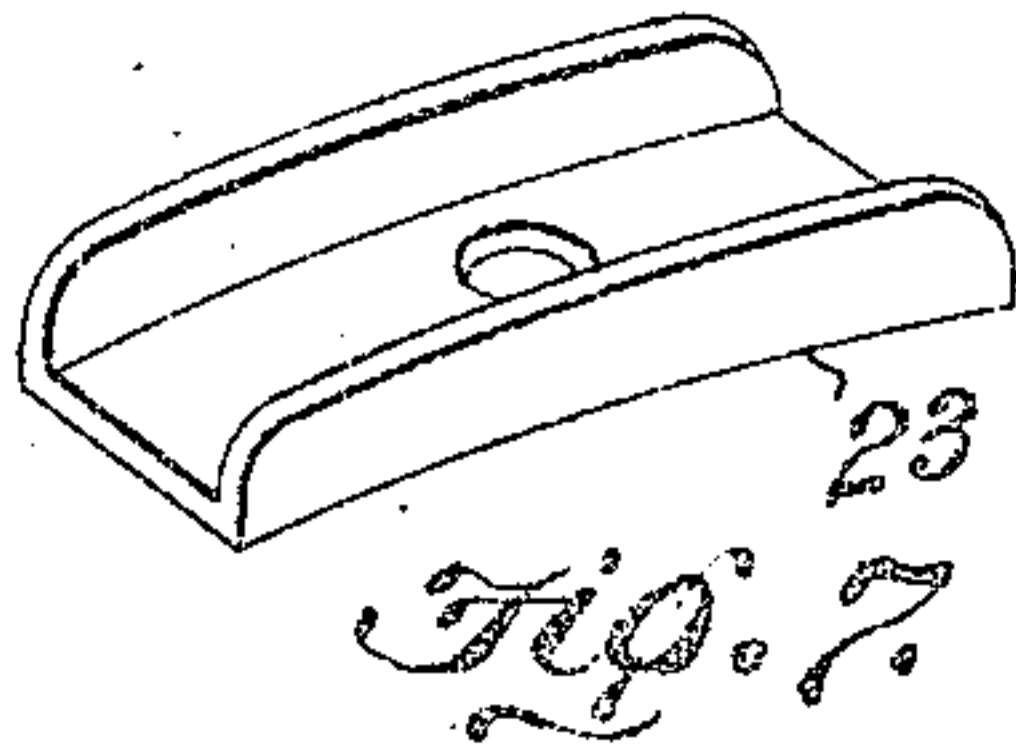
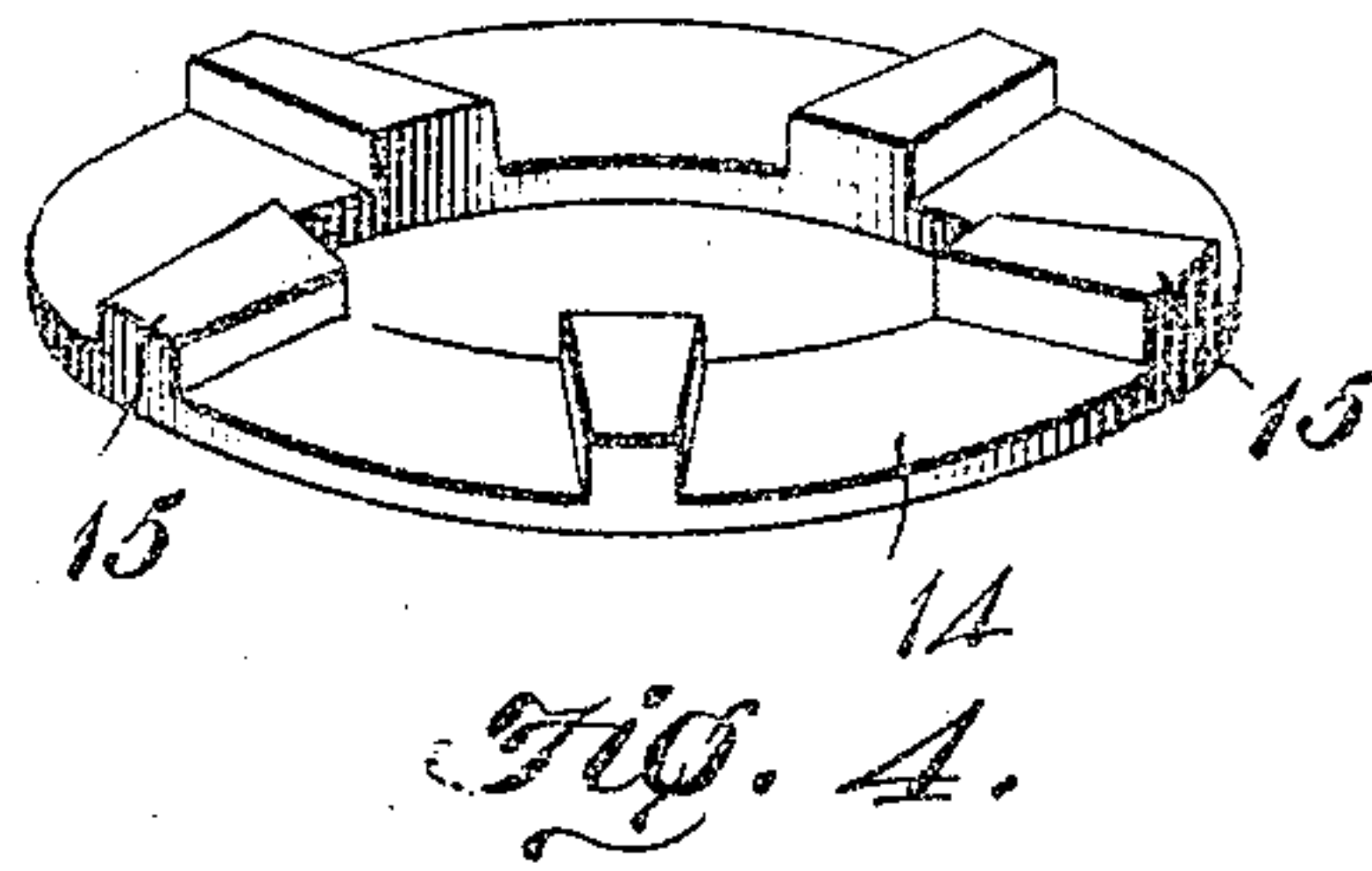
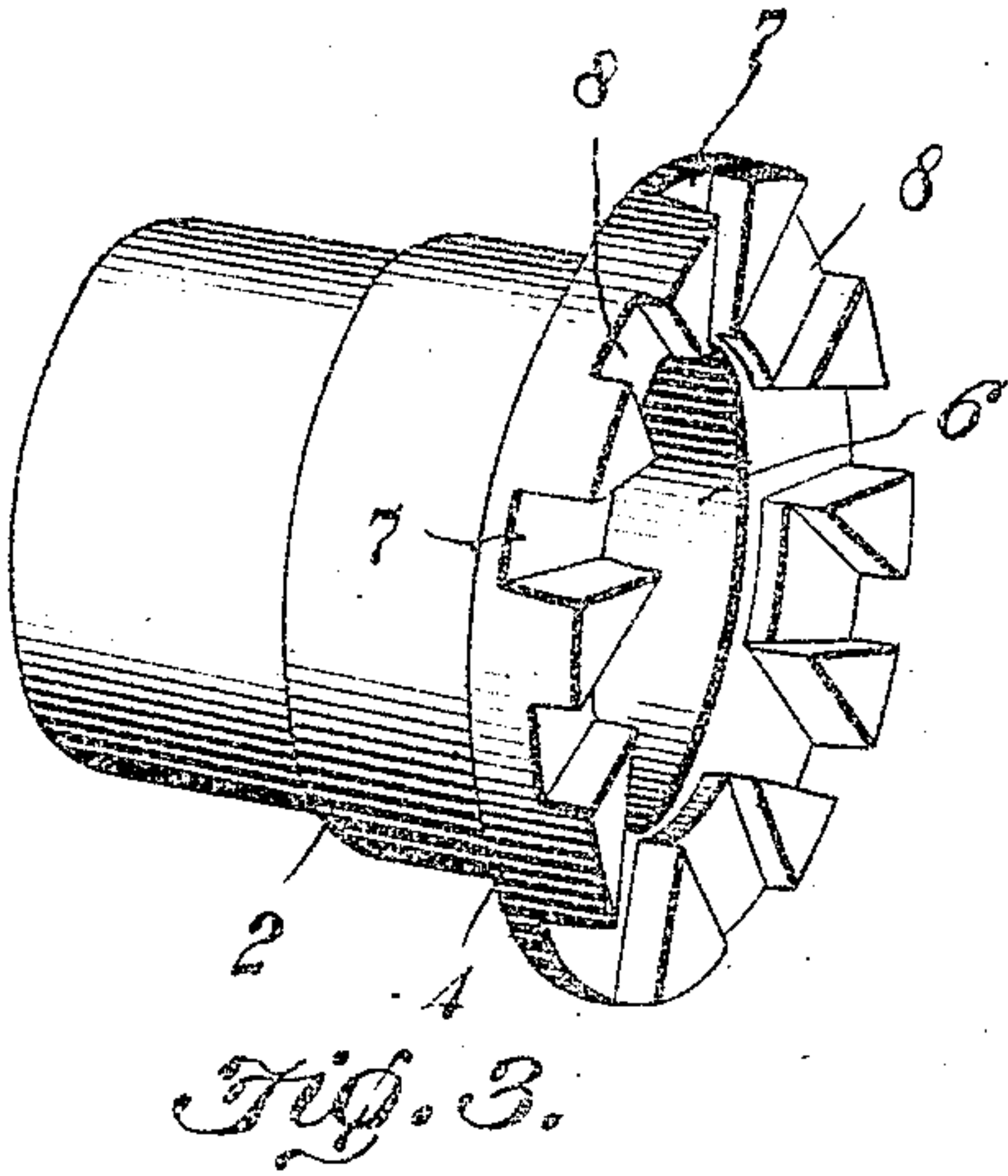


Fig. 5.

Fig. 6.

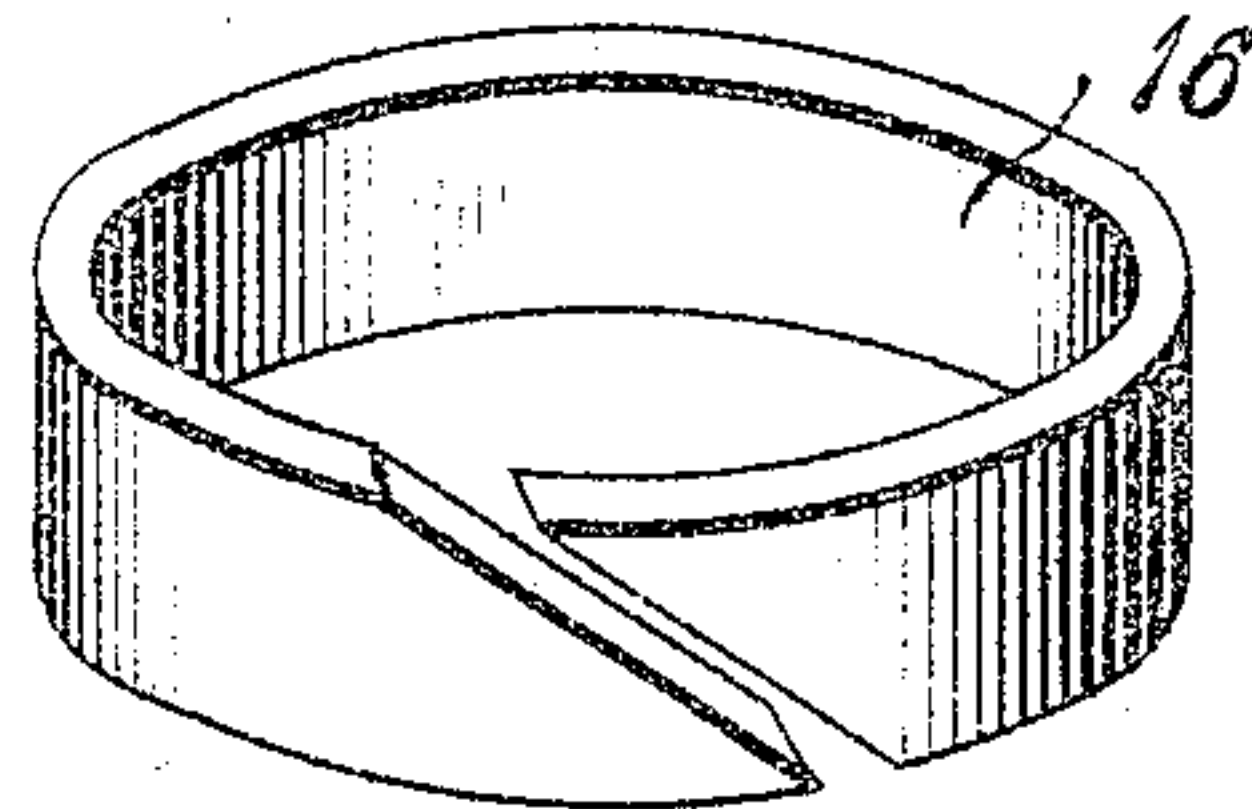
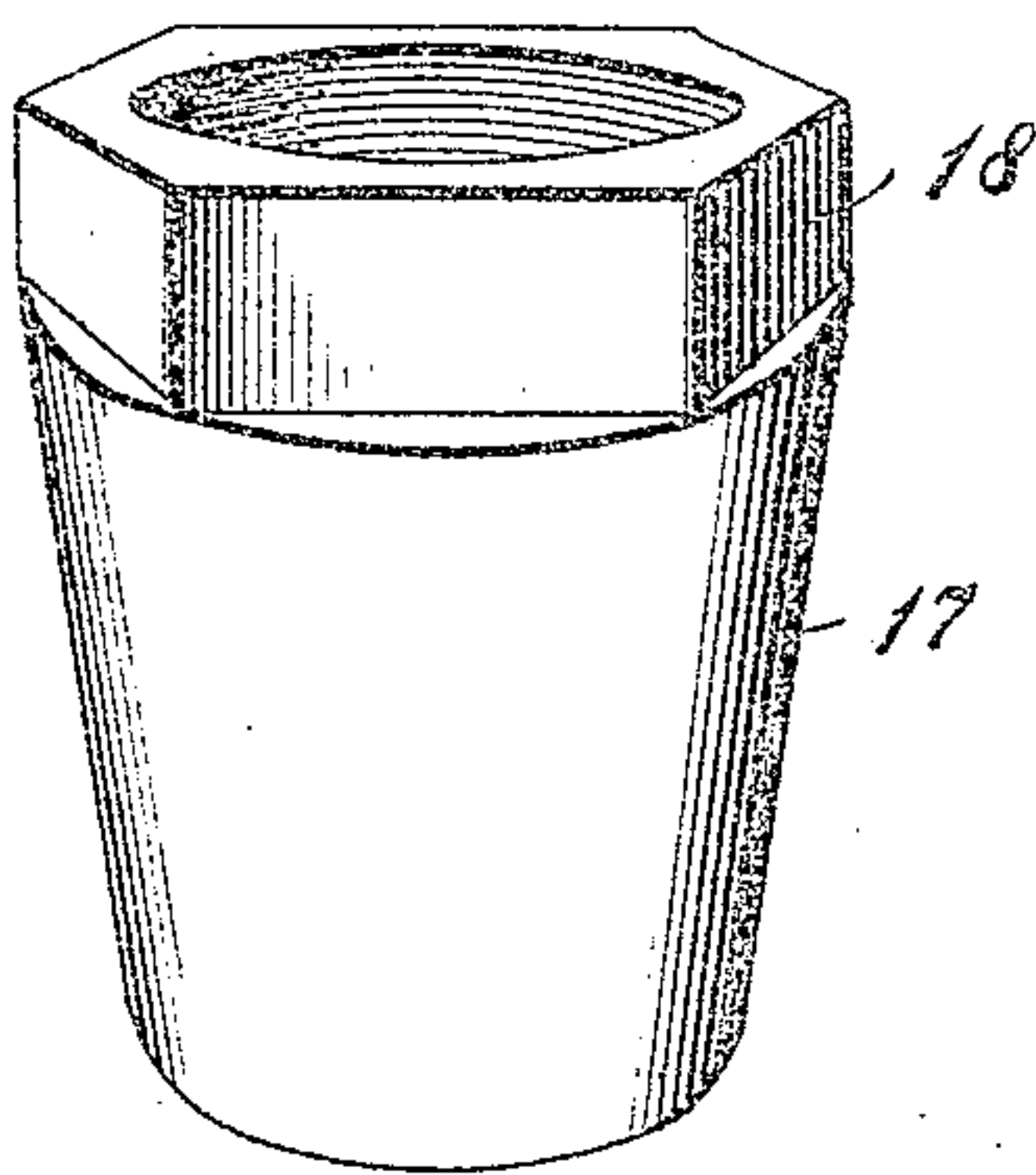
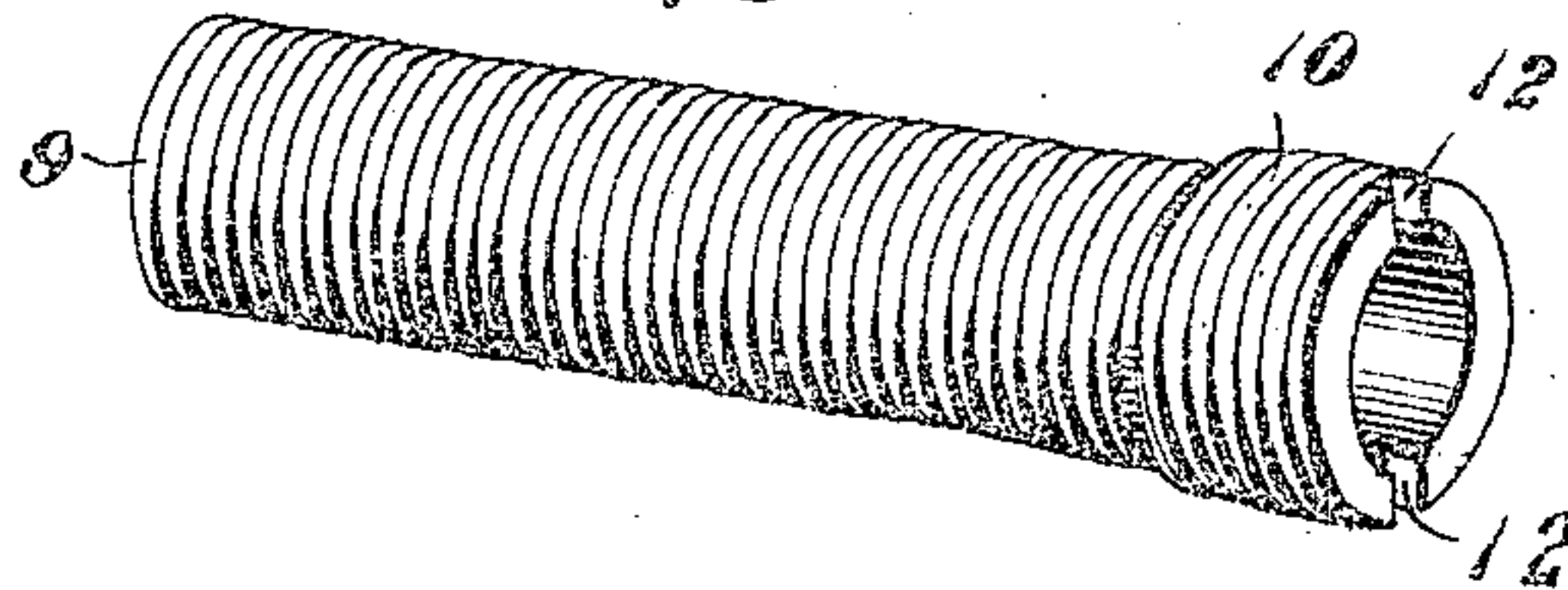


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM SWAIN HADLEY, OF SAN ANTONIO, TEXAS, ASSIGNOR OF ONE-FOURTH TO JOHN H. BENSON, OF CLEBURNE, TEXAS.

VEHICLE-WHEEL.

No. 848,461.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed March 21, 1906. Serial No. 307,246.

To all whom it may concern:

Be it known that I, WILLIAM SWAIN HADLEY, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Vehicle-Wheel, of which the following is a specification.

This invention relates to vehicle-wheels, and has for its object to provide a novel assemblage of parts whereby the wheel may be conveniently set up and taken apart and any worn or broken elements may be readily substituted.

A further object of the invention is to provide for adjusting the elements of the wheel, so as to tighten the same, and to enable convenient access to the tightening element. In this connection it is proposed to have the several parts of the hub and wheel assembled with wedge-shaped joints, whereby the tightening of one portion of the hub effects a simultaneous tightening of the remaining portions of the wheel.

It is also a very important object of the invention to dispense with the employment of bolts, rivets, and other extraneous fastenings, which are liable to become loosened and also broken and displaced.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a sectional view taken through the hub of the present wheel and a portion of the rim. Fig. 2 is a sectional view at right angles to Fig. 1. Fig. 3 is a perspective view of one of the hub ends. Fig. 4 is a perspective view of a detail element of the hub. Fig. 5 is a detail perspective view of the tightening-wedge. Fig. 6 is a detail perspective view of the expanding-ring for engagement with the inner ends of the spokes. Fig. 7 is a detail perspective view of the clip for embracing contiguous ends of the rim of the wheel. Fig. 8 is a side

elevation of the hub arranged to bring the spokes in the same plane. Fig. 9 is a side elevation of the form of hub shown in Fig. 2. Fig. 10 is an enlarged detail cross-sectional view of the tire and rim. Fig. 11 is a detail perspective view of one end of one of the spokes. Fig. 12 is a detail perspective view of the hub-box.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

The hub of the present invention includes opposite tubular hub end members 1 and 2, which are internally threaded and are provided at their inner ends with external annular flanges 3 and 4, respectively. The inner end of the hub member 1 is provided with a smooth internal enlargement 5, and a similar enlargement 6 is provided in the inner end of the member 2. As embraced in Figs. 1, 2, and 3, the flange portion 4 of the member 2 is provided with an annular series of substantially radial seats or sockets tapering inwardly, one socket 7 being deep and the next socket 8 being shallow, the remaining sockets alternating in the relation described throughout the entire series of sockets.

For the purpose of connecting the hub ends 1 and 2 there is an internally-smooth and externally-threaded hub-box 9, upon which the members 1 and 2 are fitted, the inner end of the box being externally enlarged, as at 10, to form a head and the outer end of the bore of the member 2 being internally enlarged, as at 11, to receive the head 10 and limit the movement of the box through said member. The headed end of the sleeve or box is provided with a pair of diametrically opposite notches 12 for the reception of a suitable wrench to screw the box into and out of the head.

The spokes 13 have their inner ends tapered outwardly and received within the successive spoke-sockets of the hub member 2, whereby the spokes are staggered, as indicated in Fig. 2 of the drawings. A spoke-retaining ring 14 is interposed between the spokes and the hub member 1 and is provided with a series of shoulders 15 to fit within the open ends of the deep spoke-sockets 7, so as to close the same and hold the adjacent spokes within the backs of said sockets, it of

course being understood that the hub ends 1 and 2 are screwed up tight, so as to rigidly hold the spokes between them.

In the annular space between the box or sleeve 9 and the inner ends of the spokes there is a split ring 16, which is tapered transversely upon its inner periphery for engagement by a tubular wedge 17, which is tapered upon its exterior and interiorly threaded to fit the box or sleeve 9, the large end of the wedge being non-circular, as at 18, so as to form a wrench-head for convenience in adjusting the wedge. When the wedge is forced inwardly, the ring 16 is expanded and the spokes thereby forced radially outward, so as to tighten the tire.

As thus far described, it will be seen that the present hub is made up of a plurality of elements which may be conveniently assembled and readily replaced when worn or damaged. By removing the hub member 1 access may be conveniently had to the wedge 17 to enable tightening and removal thereof without dismantling the entire hub.

As best shown in Fig. 1 of the drawings, it will be noted that the felly 19 has its ends skived or connected obliquely, so as to overlap, said ends being provided with corresponding openings 20 and 21 for the reception of the tapered tenon 22 upon the outer end of the adjacent spoke. By preference the opening 21 does not extend entirely through the adjacent felly end and is elongated to permit of the necessary endwise movement of said end of the felly when the spokes are forced radially outwardly to tighten the wheel. A flanged metallic clip 23 embraces the joint of the felly and is provided with a central opening 24 for the reception of the tenon 22. A metallic tire 25 embraces the felly and is provided at its inner side with flanges 26, embracing the felly, so as to prevent edgewise displacement of the rim. The outer side of the rim is also flanged, as at 27, the innersides of the flanges being beveled, so as to form a concaved socket for the reception of a rubber tire. (Not shown.) When it is desired to have the spokes lie in the same plane instead of being staggered, as in Fig. 7 of the drawings, the spoke-sockets (shown at 28 in Fig. 8) are all of the same depth and the ring 14 is omitted, whereby the flange 3 of the member 1 closes the open ends of the sockets and holds the spokes against lateral looseness therein. By reason of the tenon 22 being tapered and lying against the closed end of the opening 21 prevents water from getting into the socket and splitting the felly.

By reference to Fig. 11 of the drawings it will be noted that the butt 13' of each spoke is not only tapered longitudinally, but is also tapered transversely, so as to fit snugly the walls of the spoke-sockets of the hub, each of which sockets is tapered transversely in addi-

tion to its longitudinal taper, so that when the hub member 1 is set up against the hub member 2 the spokes will be forced laterally into the spoke-sockets, and thereby be wedged therein.

Having thus described the invention, what is claimed is—

1. A wheel-hub comprising opposite tubular internally-threaded hub ends having their inner terminals adapted to embrace spokes and provided with internal terminal enlargements, an externally-threaded hub-box upon which the hub ends are threaded, an internally-threaded tubular wedge fitting the box and received within the enlarged portions of the hub ends, a split ring engaging the wedge for forcing the spokes outwardly, and a member supported on the ring and located between the hub ends for cooperating therewith to hold the spokes.

2. A hub comprising tubular internally-threaded hub ends provided with internal terminal enlargements, the inner extremity of one of the hub ends being provided with an annular series of substantially radial spoke-sockets which contract in an outward direction and are closed by the other hub end, an externally-threaded hub-box upon which the hub ends are fitted, and an internally-threaded tubular wedge carried by the middle portion of the hub-box within the enlargements of the hub ends and adjustable upon the box across the inner open ends of the spoke-sockets to move the latter outwardly and wedge them in their sockets.

3. A hub comprising opposite hub ends, the inner terminal of one of the hub ends being provided with an annular series of substantially radial spoke-sockets, and a ring interposed between the hub ends and provided with shoulders entering certain of the sockets.

4. A hub comprising opposite hub ends, one of which is provided at its inner terminal with an annular series of substantially radial spoke-sockets intersecting the inner and outer peripheries of the hub end and its inner terminal, with alternating sockets deeper than the other sockets, and a ring interposed between the hub ends and provided with an annular series of shoulders entering and closing the open outer ends of the deep sockets.

5. A hub comprising an externally-threaded hub-box, and opposite tubular internally-threaded hub ends fitted upon the threaded box, the inner face of one of the hub members being provided with radial and outwardly-contracting spoke-sockets which are tapered transversely and are open throughout their outer sides and outer ends, and the other hub member being adapted to close the open sides of the sockets.

6. A hub comprising an externally-threaded hub-box, opposite internally-threaded hub ends fitted upon the box, the inner face

of one of the hub ends being provided with radial open-ended sockets which are tapered longitudinally and transversely with their outer sides open, the other hub end being
5 adapted to close the open sides of the sockets, and means between the hub ends which enter alternate sockets and are tapered to correspond with the latter.

In testimony that I claim the foregoing as my own I have hereto affixed my signature to in the presence of two witnesses.

WILLIAM SWAIN HADLEY

Witnesses:

TYLER A. BAKER,
ERWEN D. ADAMS.