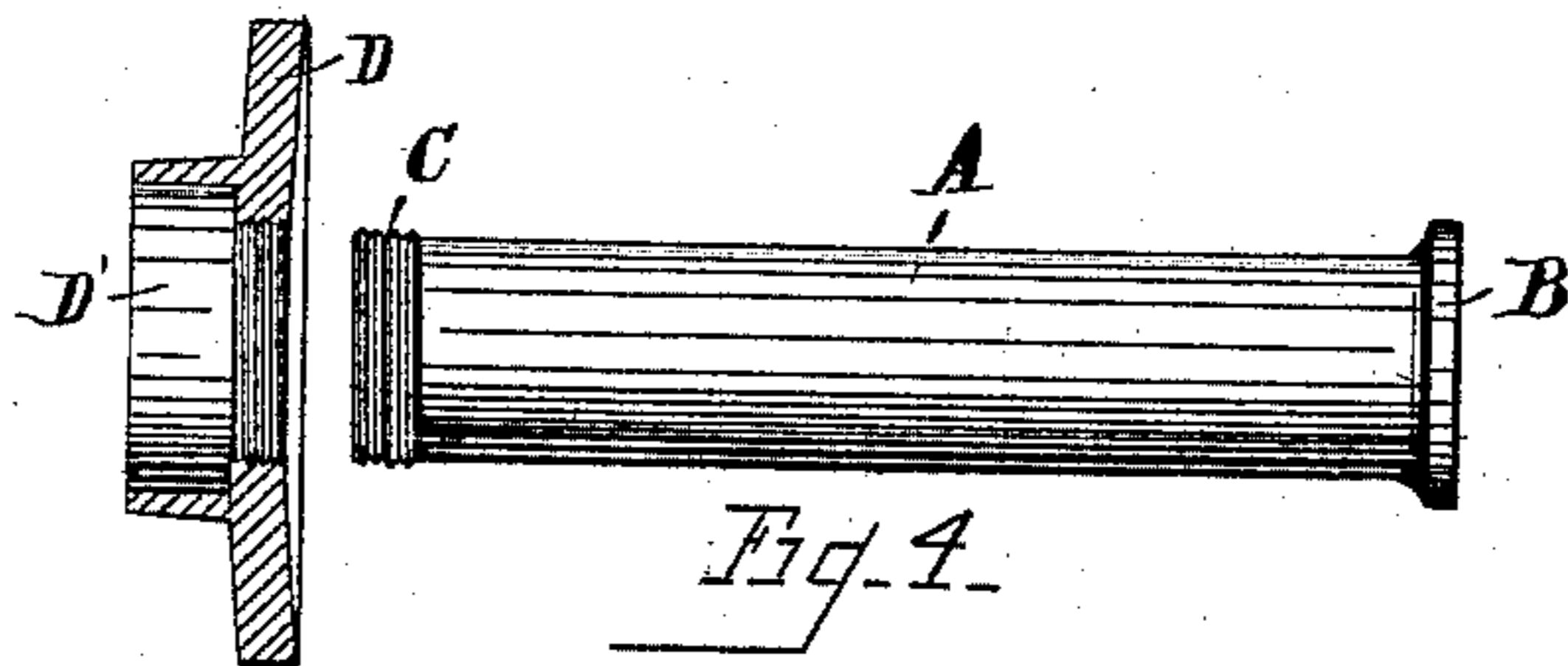
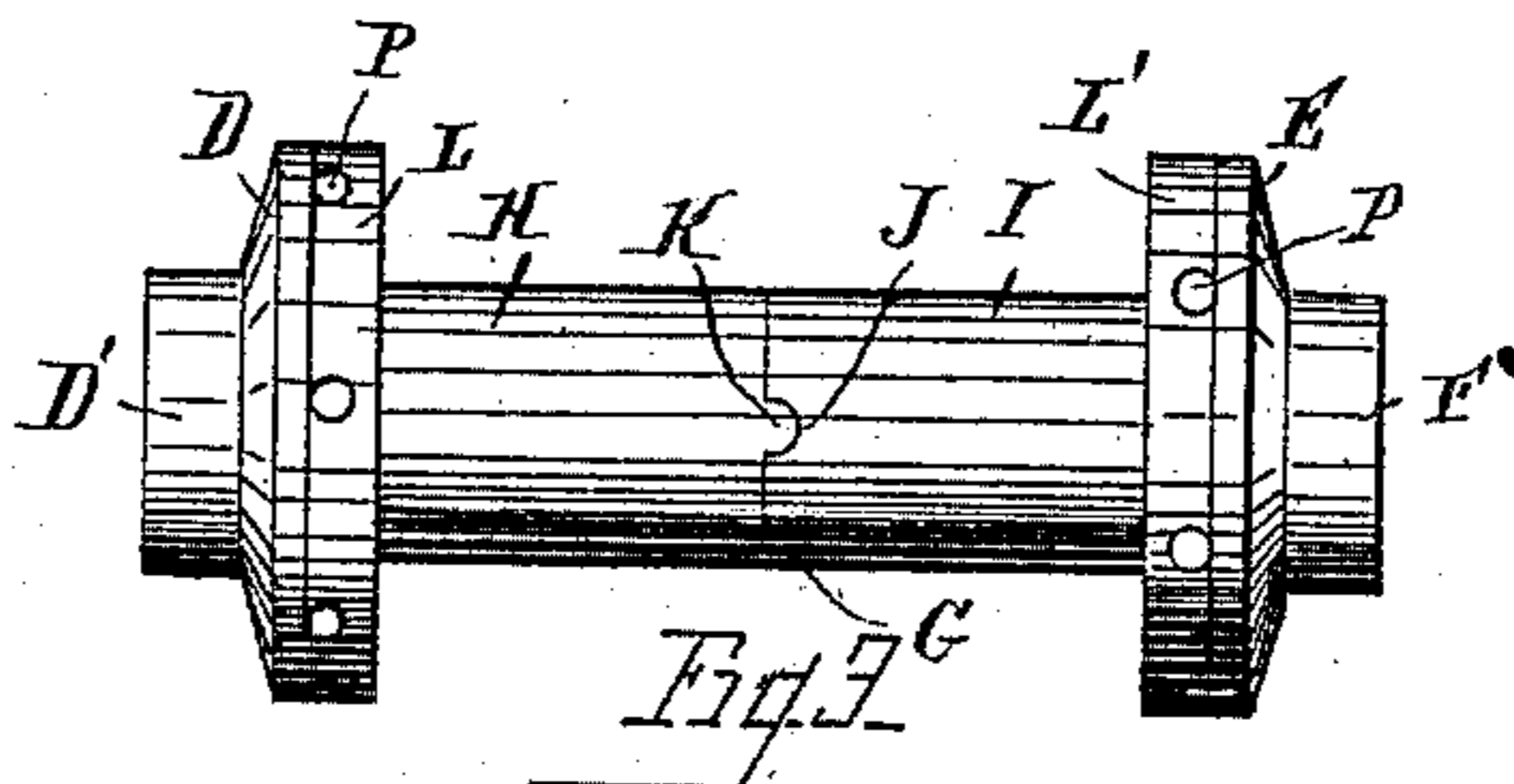
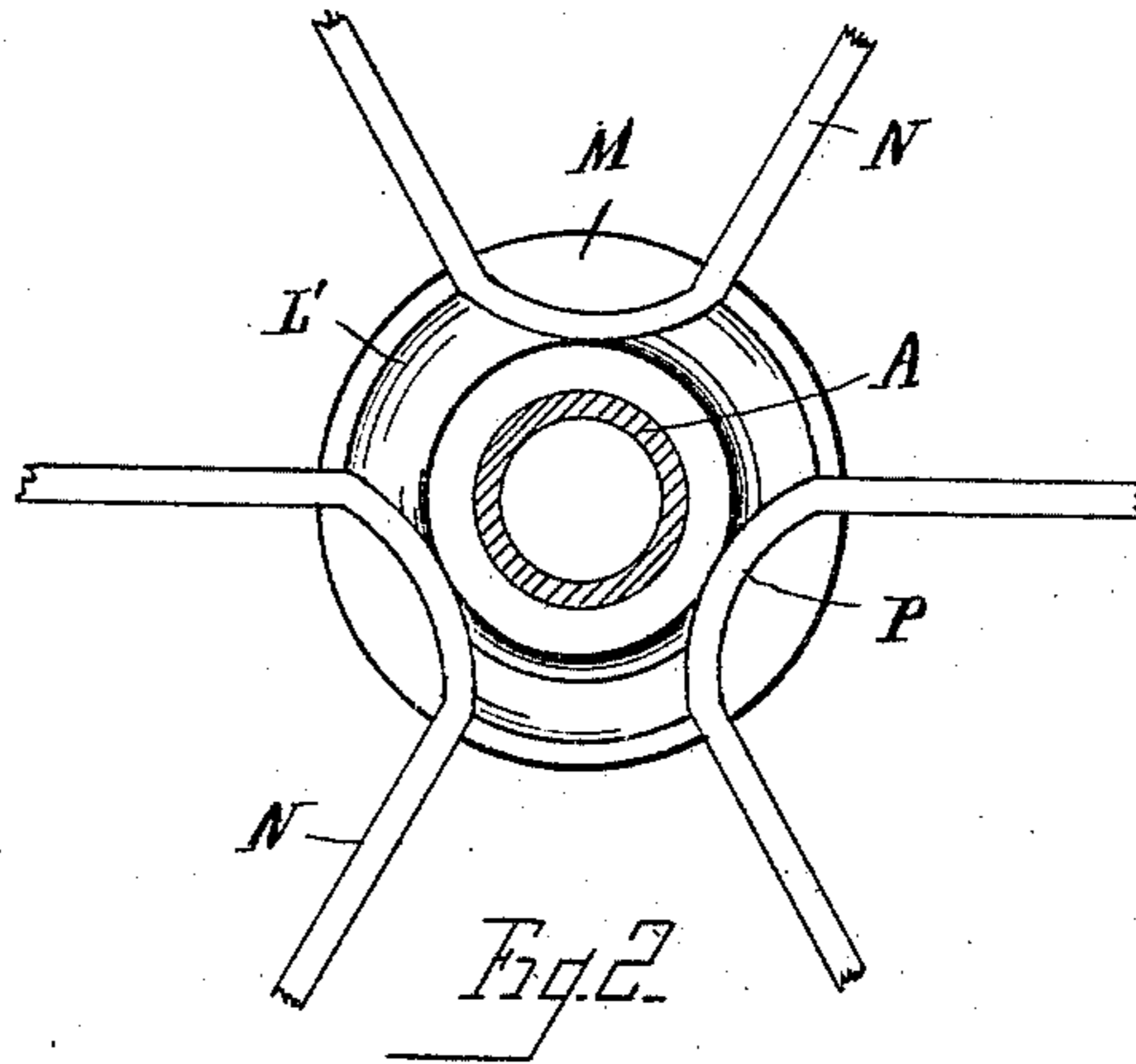
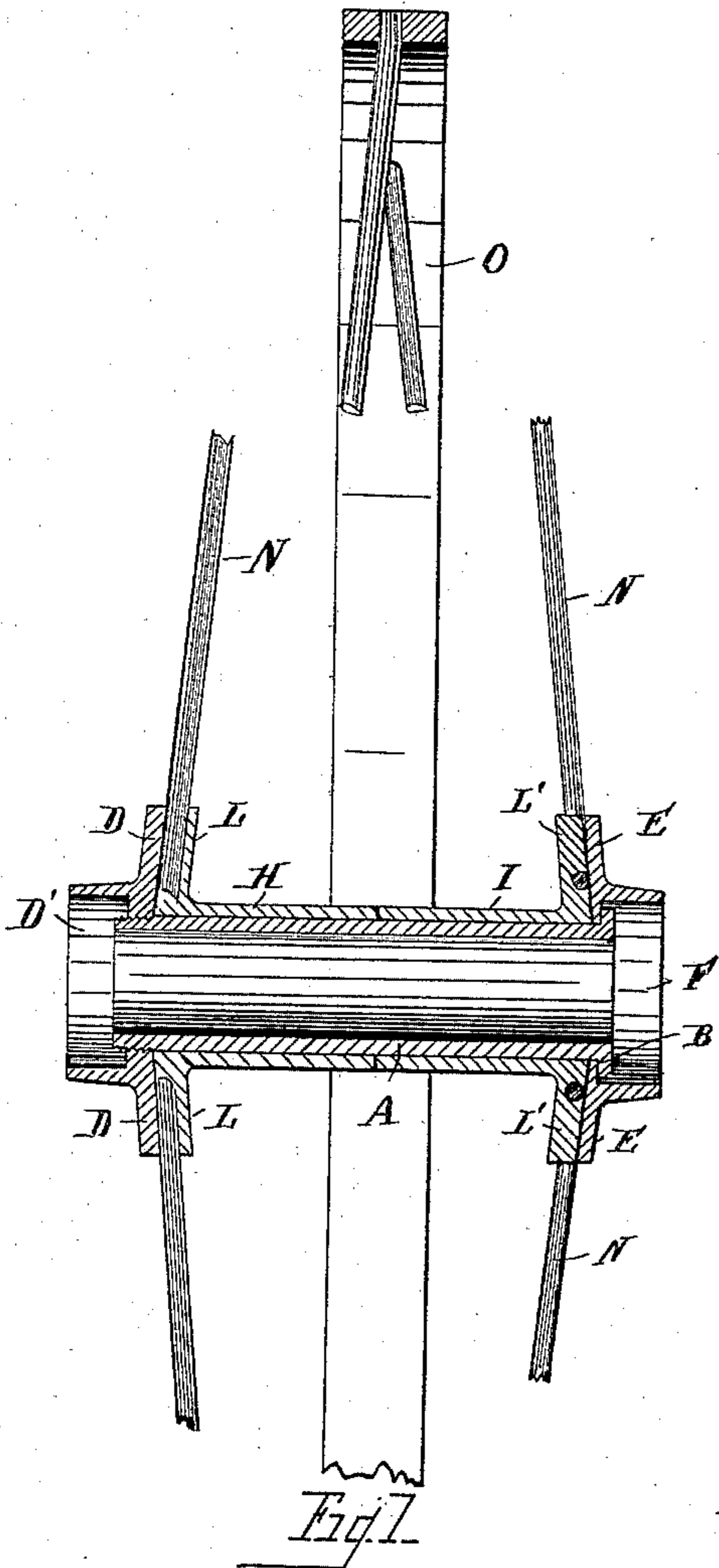


(No Model.)

W. F. YOUNG.
METAL WHEEL.

No. 426,631.

Patented Apr. 29, 1890.



WITNESSES

Carroll J. Webster.
Anna J. Lohaney

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UNITED STATES PATENT OFFICE.

WILLIAM F. YOUNG, OF TOLEDO, OHIO, ASSIGNOR OF ONE-HALF TO ROBERT E. ADAMS AND GEORGE A. HOLLISTER, BOTH OF SAME PLACE.

METAL WHEEL.

SPECIFICATION forming part of Letters Patent No. 426,631, dated April 29, 1890.

Application filed February 17, 1890. Serial No. 340,745. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. YOUNG, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Metal Wheels; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to metal wheels of that character used upon children's carriages and vehicles of heavier characters, being especially adapted for use upon agricultural implements, such as cultivators, drills, horse-rakes, &c.

The object of the invention is to construct a wheel of few parts and with sufficient strength and rigidity to withstand the severe strain to which it may be subjected, whether of a size for use upon a child's toy or upon a heavy article.

Another object is to so construct the wheel that broken or imperfect spokes may be removed and new ones substituted without injury to the remainder of the wheel.

A further object is to provide for compensating for the wear of the spokes where secured in the hub by means of an adjustment of the parts that clamp the spokes.

A further object is to provide a solid tubular boxing for the wheel to prevent leakage of lubricant along the length of the hub.

A further object is to provide transversely-divided middle sections of the hub formed with coating surfaces to insure a correct assembling of the parts to cause the spokes to be in staggered relation.

The invention consists in the parts and combination of parts hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is an edge view of a transverse section of the wheel. Fig. 2 is a plan view of one of the hub-sections with the spokes in engagement with the flange thereof. Fig. 3 is a plan view of the hub with the spokes omitted. Fig. 4 is a plan

view of the tubular box, the combined clamping-disk, nut, and sand-band that screws thereon being shown in section.

A designates the tubular box of the hub, formed with a flange B at one end and screw-threaded at C at the opposite end to receive a screw-threaded disk D.

E designates a concaved disk formed with a central opening of a size to closely fit the box when the same is pushed through the opening until the flange B rests against the outer side of the disk, there being a sand-band F formed upon the outer side of the disk concentric to and of a diameter to receive the flange B, thereby entirely concealing the same and presenting a finished appearance. Disk D is also concaved and formed with a sand-band D', having an interior diameter of sufficient size to allow the nut upon the axle to rest therein and be concealed thereby, thus adding to the appearance of the vehicle upon which the wheel is used.

G designates the central portion of the hub, formed of two sections, each section comprising a tubular portion H and I, respectively, one of the sections being formed with one or more recesses J, into which a projection K enters to cause the parts to assemble correctly to form the spokes into staggered relation, as will be more fully described.

Upon the opposite ends of the sections H and I are formed concaved disks L and L', respectively, each disk being formed with shoulders M, upon which the bends of the return-spokes N engage, the opposite ends being secured to the rim O, preferably by riveting. In forming the shoulders M a preferred way is to cast U-shaped grooves P in the disks of a size to receive the bend of the spokes and cause the same to rest within the grooves with a sufficient portion projecting therefrom to allow of the disks bearing against the same when forced into position in forming the wheel.

In assembling the parts to form a wheel the box A is passed through disk E and sections H and I of the central portion of the hub. The sections are now turned to cause projection K to enter recess J which causes the openings of the grooves P at the periph-

ery of disks L and L' to be out of alignment longitudinally of the hub, thereby causing the spokes to extend radially to the rim in staggered order. Spokes N are now placed
 5 in position with the return-bend thereof engaged with lugs or bearings M, and the sections H and I are moved longitudinally upon the box to cause disk L' to fit against the disk E, thereby holding the spokes in place,
 10 after which the spokes are engaged upon the lugs upon disk L and the disk D is secured upon the end C of box A, thereby drawing the disks E and D firmly against disks L' and L, respectively, and in this manner closing
 15 the parts firmly together and securing the spokes rigidly in place.

Should it be desired to replace a broken or imperfect spoke, it is only necessary to unscrew disk D and separate either disks D and
 20 L or E and L' to remove the spoke and substitute a new one in place thereof. Should the use of the wheel cause the spokes to work loose by means of frictional grinding of the surface, by tightening the disk D the wear is
 25 compensated for and the parts firmly clasped.

It will be seen that all the parts may be of cast or malleable cast iron, and that I have dispensed with all expensive fittings of the parts, thereby cheapening the product, and
 30 that by reason of the concavity of the disks D, E, L, and L' the proper inclination of the spokes is given. It will be also understood that in some classes of wheels I may form the sections H I in one piece, and that, if desired,
 35 in some forms of wheels I may use a single spoke formed with an enlarged portion to be clamped between the disks, as the frictional

engagement therewith of the end of the spoke will hold the same in position to properly suspend the tire. 40

What I claim is—

1. In a metal wheel, the combination, with a tubular box flanged at one end and exteriorly screw-threaded at the other end, of two tubular hub-sections having inwardly-in- 45 clined spoke-disks, spokes placed therein, a flanged disk having an integral sand-band, said disk bearing against the spokes and the flange on the box, and an interiorly-screw-threaded disk on the screw-threaded end of 50 the box, said disk being formed with an integral sand-band, all substantially as described, and for the purposes set forth.

2. In a wheel of the class described, the combination, with the tubular box A, of the 55 hub-section H, having an integral radially-grooved spoke-disk L and formed with a projection K in line with one of the spoke-grooves in said disk, and the hub-section I, having an integral radially-grooved spoke-disk L' and 60 formed with a recess J on a line drawn between two of the spoke-grooves in said disk L', whereby in assembling the parts and bringing the projection K into engagement with recess J the spokes will be arranged in stag- 65 gered order, as described.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

WILLIAM F. YOUNG.

Witnesses:

WILLIAM WEBSTER,
 ANNA J. LEHANEY.