

No. 798,005.

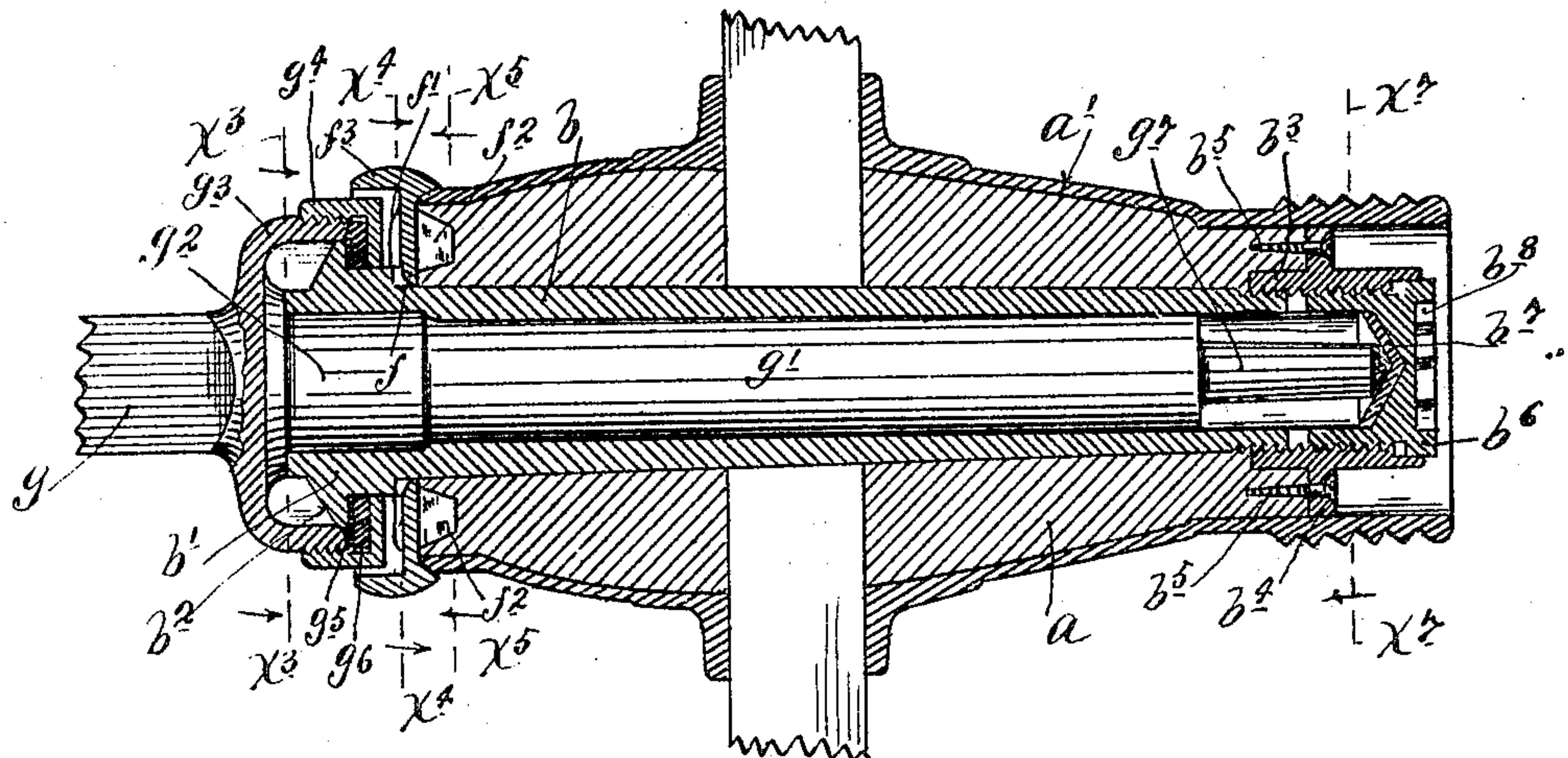
PATENTED AUG. 22, 1905.

D. E. BARTON.  
HUB AND AXLE.

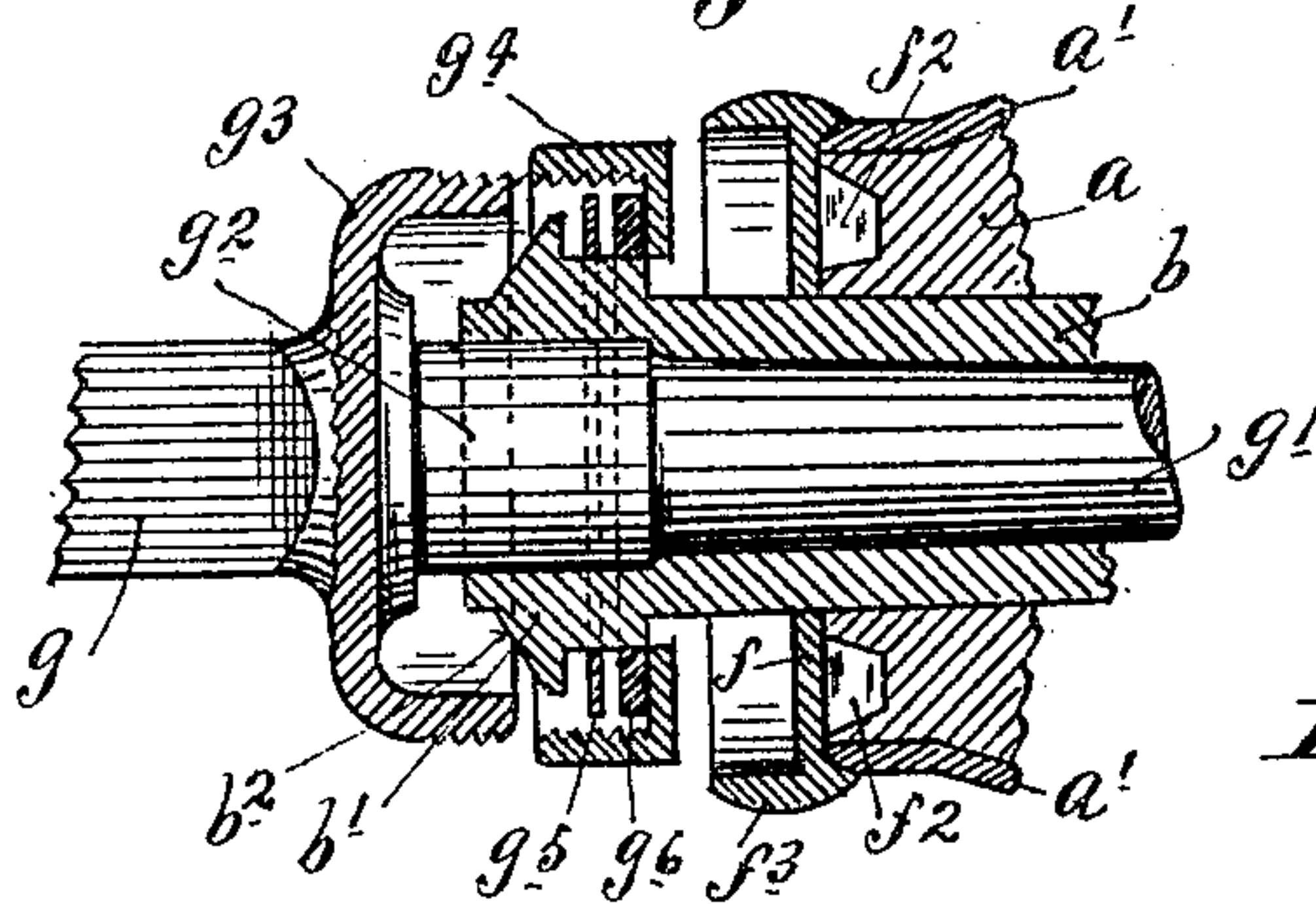
APPLICATION FILED NOV. 10, 1904.

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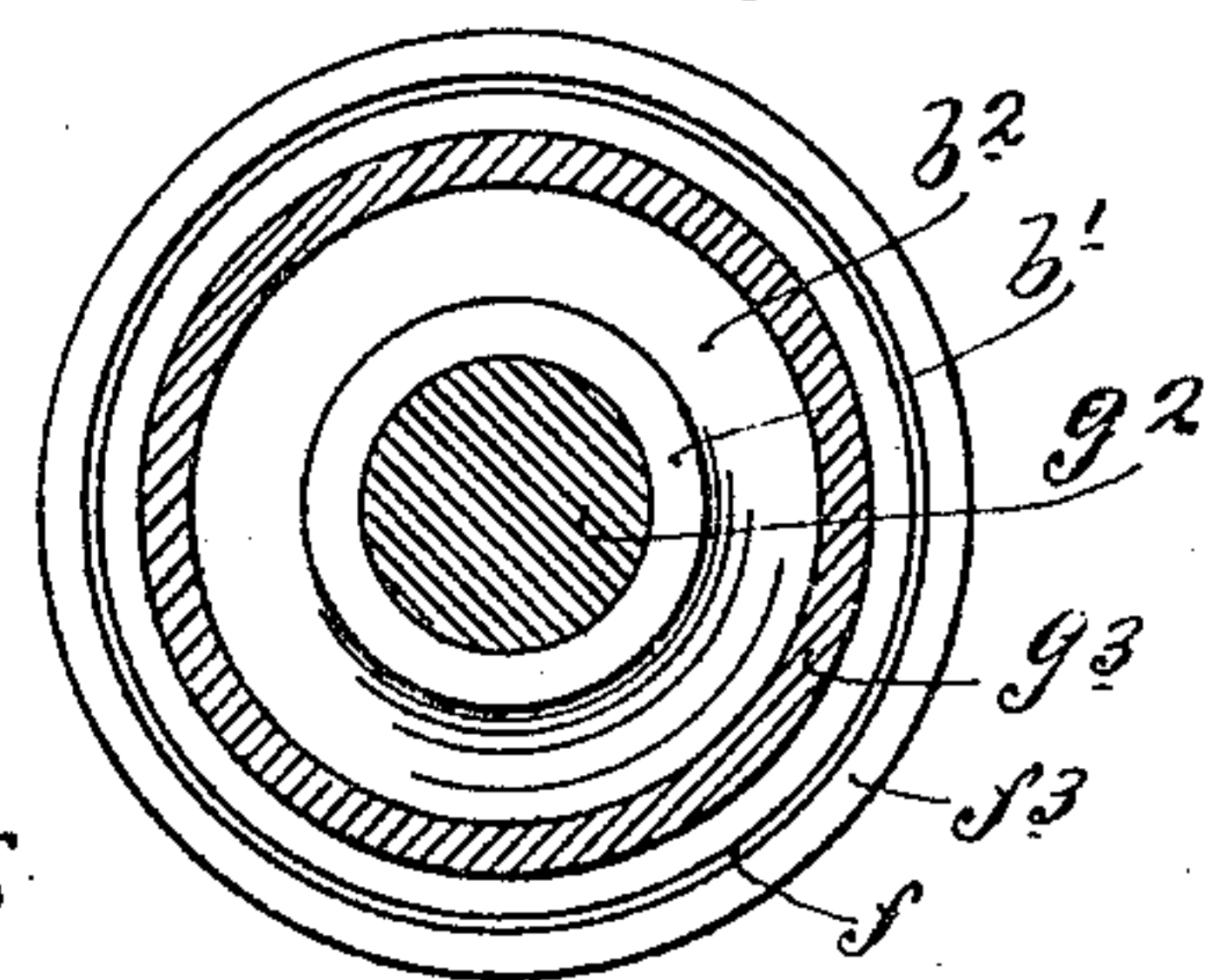
*Fig. 1.*



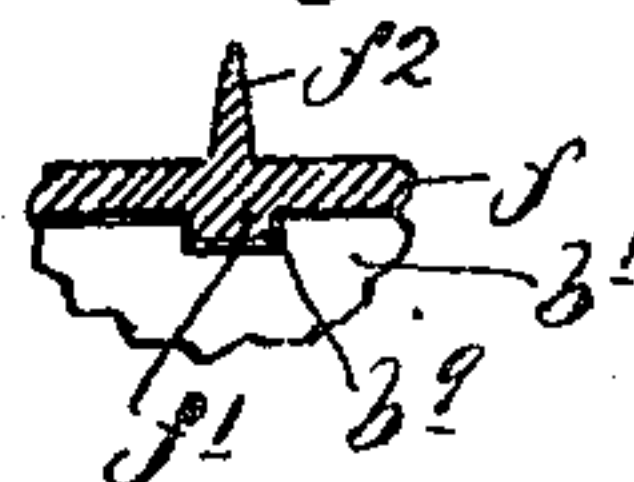
*Fig. 2.*



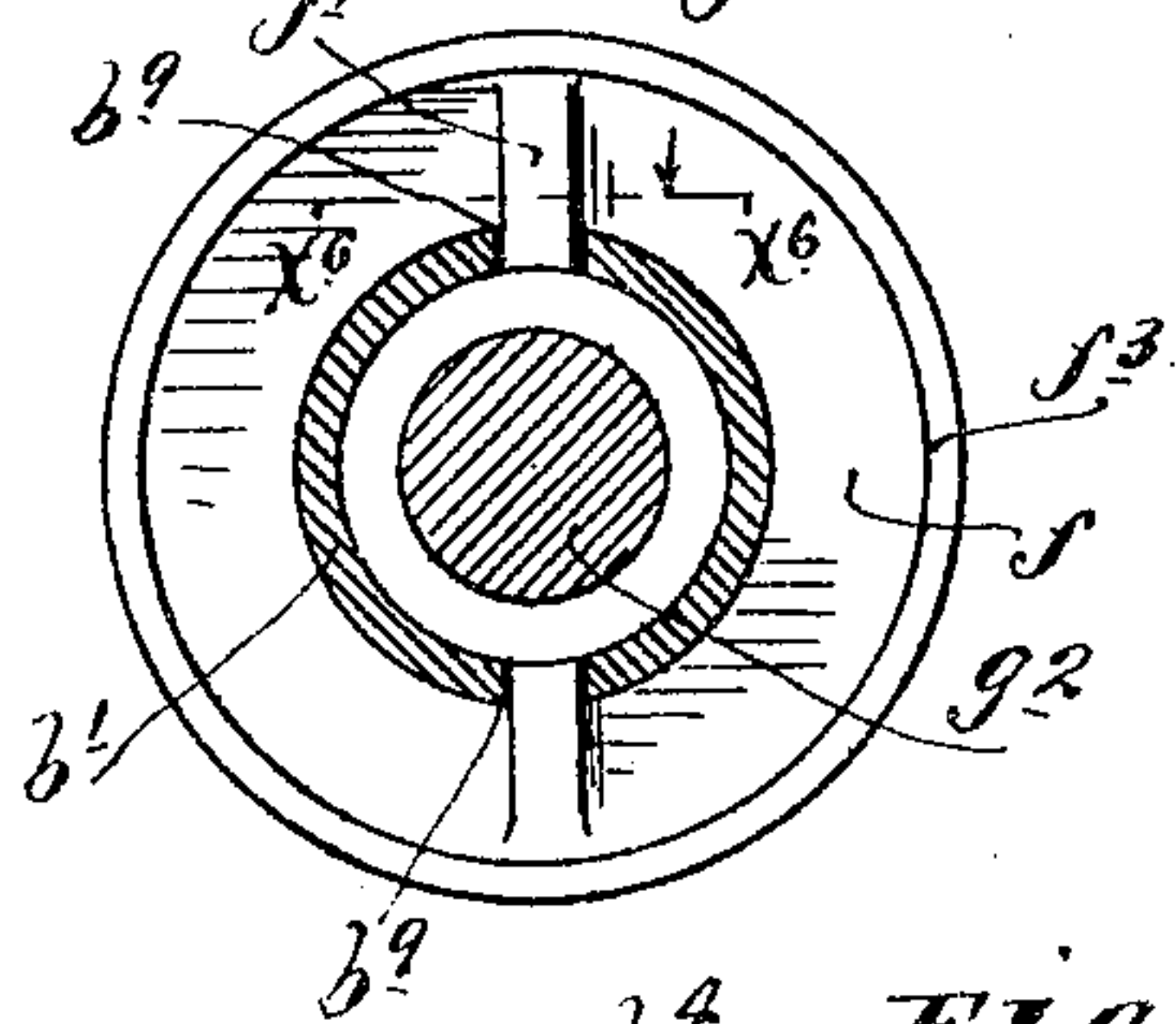
*Fig. 3.*



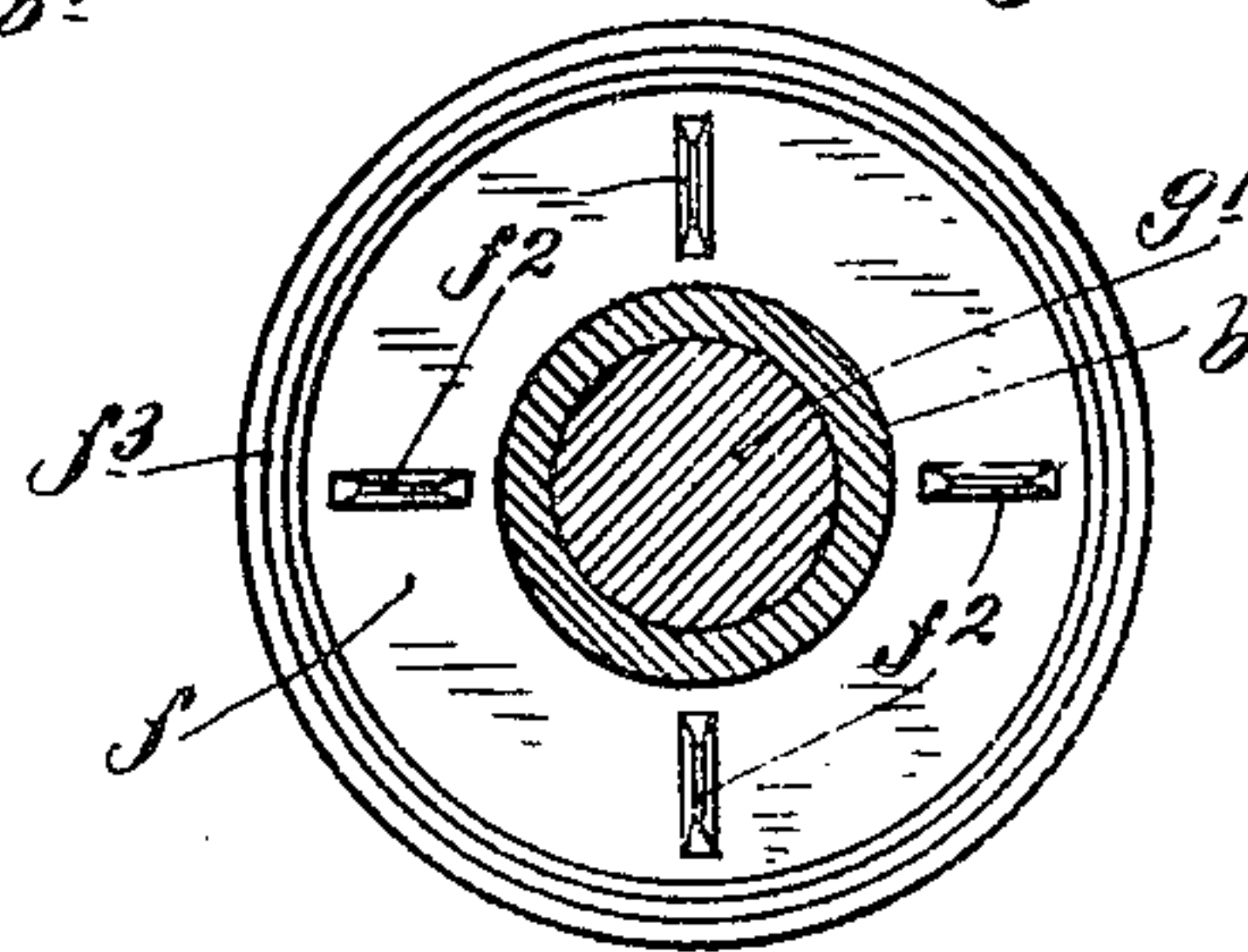
*Fig. 6.*



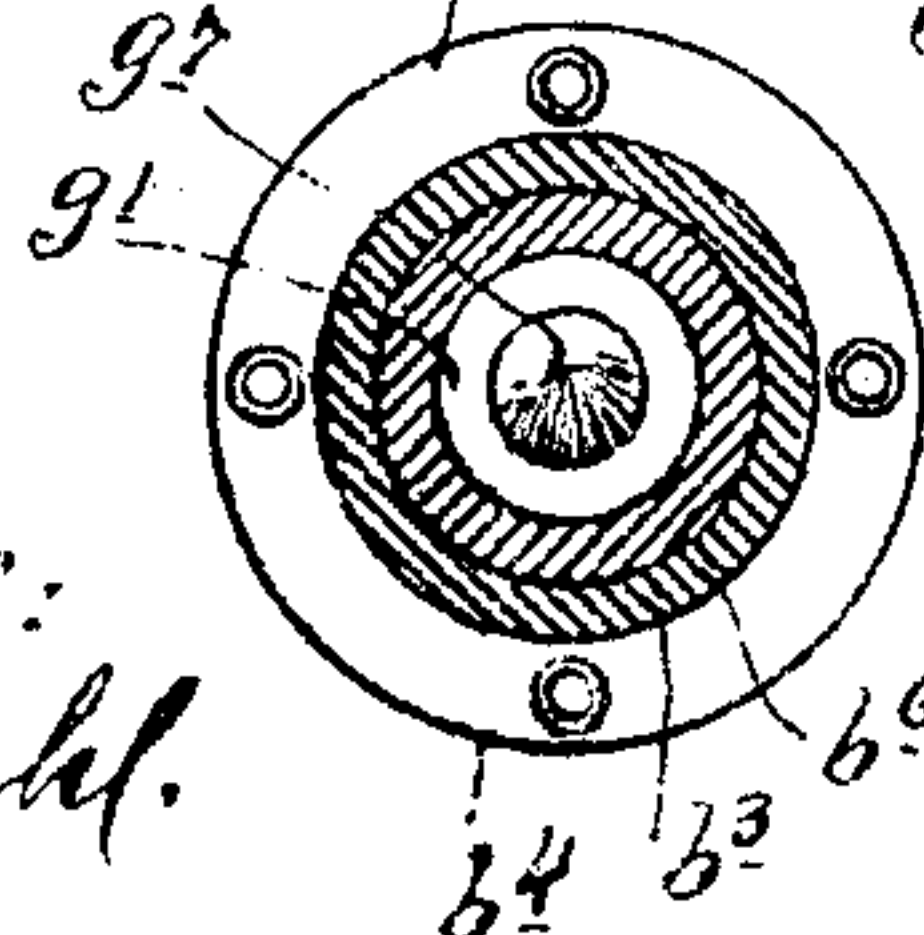
*Fig. 4.*



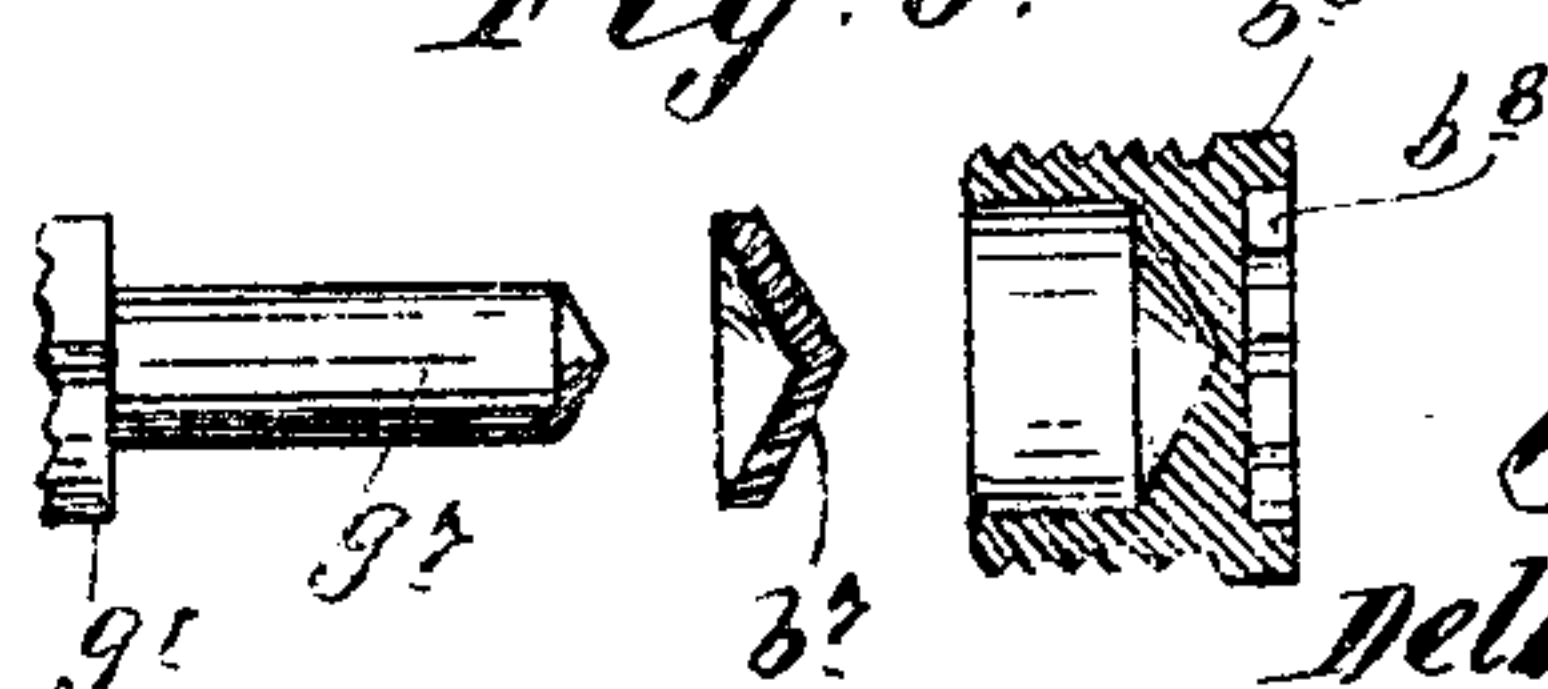
*Fig. 5.*



*Fig. 7.*



*Fig. 8.*



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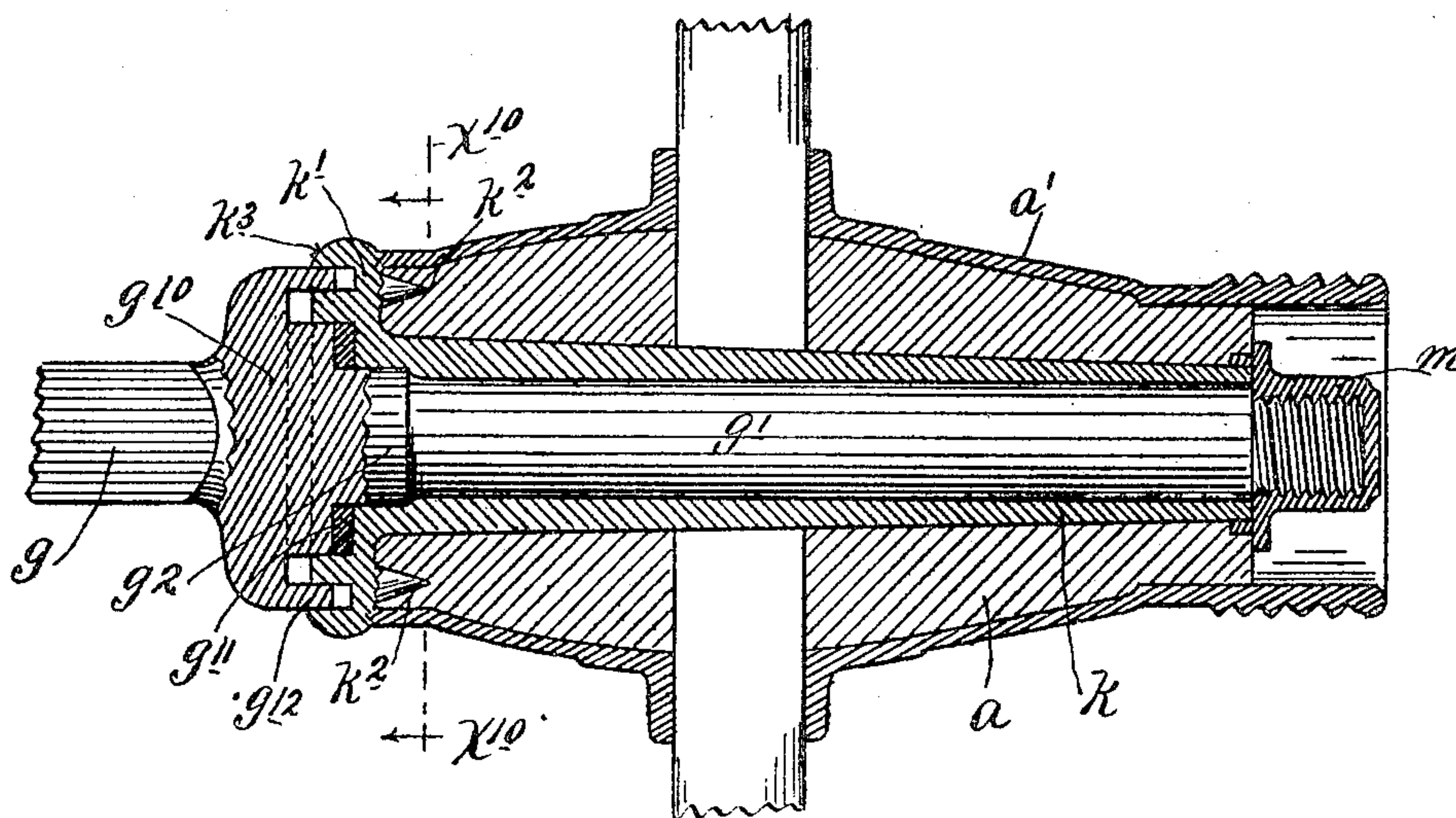
D. E. BARTON.

HUB AND AXLE.

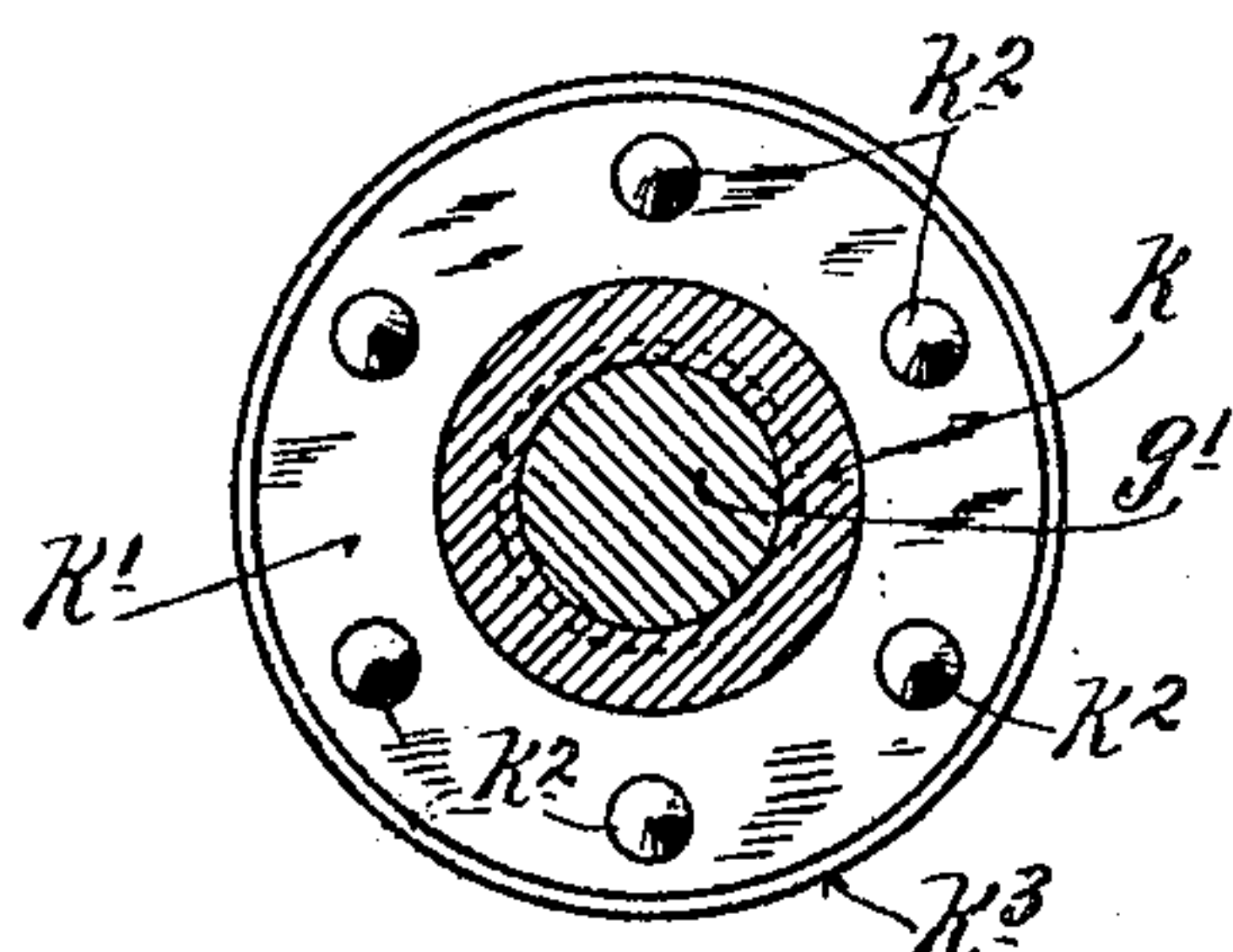
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2 SHEETS—SHEET 2.

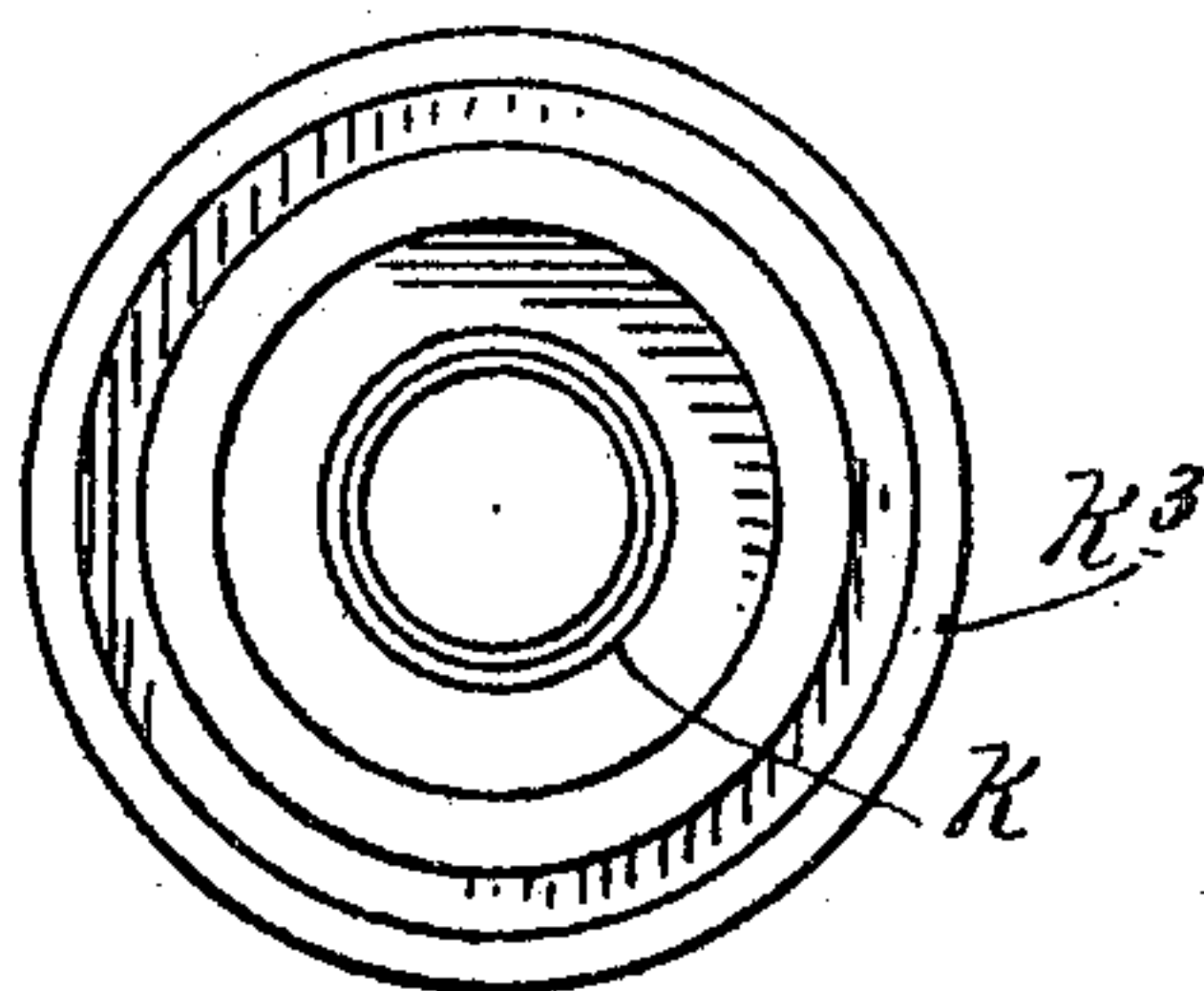
*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



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# UNITED STATES PATENT OFFICE.

DELBERT E. BARTON, OF RACINE, WISCONSIN.

## HUB AND AXLE.

No. 798,005.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed November 10, 1904. Serial No. 232,127.

*To all whom it may concern:*

Be it known that I, DELBERT E. BARTON, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Hubs and Axles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to wheel boxes and axles of the character set forth and claimed in my prior United States patent, No. 680,110, of date August 6, 1901, and has for its object to improve the same in the several particulars hereinafter noted.

The invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

In the accompanying drawings like characters indicate like parts throughout the several views.

Figure 1 is a view, chiefly in horizontal section, but with some parts shown in full plan and with others broken away, illustrating my invention as applied to a vehicle the wheels of which have wooden hubs. Fig. 2 is a similar view to Fig. 1, but with certain of the parts shown in Fig. 1 broken away and with certain of the parts shown slightly separated or drawn apart. Fig. 3 is a transverse vertical section on the line  $x^3 x^3$  of Fig. 1. Fig. 4 is a transverse vertical section on the line  $x^4 x^4$  of Fig. 1. Fig. 5 is a transverse vertical section on the line  $x^5 x^5$  of Fig. 1, portions of the hub being removed. Fig. 6 is a detail in section on the line  $x^6 x^6$  of Fig. 4. Fig. 7 is a transverse vertical section on the line  $x^7 x^7$  of Fig. 1. Fig. 8 is a view, partly in horizontal section and partly in plan, showing the outer end of one of the axle-spindles and certain other parts which coöperate therewith, said parts being shown as separated. Fig. 9 is a view corresponding to Fig. 1, but showing a modified construction in which one feature of my invention is applied to connect an otherwise ordinary axle-box to an ordinary wooden hub. Fig. 10 is a transverse vertical section on the line  $x^{10} x^{10}$  of Fig. 9, and Fig. 11 is an elevation looking at the inner end of the axle-box.

Attention will first be given to the construction illustrated in Figs. 1 to 8, inclusive. The wooden hub  $a$  has the usual metal covering  $a'$ , which projects at its outer end to form a sand-guard. The axle-box  $b$  closely fits the

axial seat or bore of the hub  $a$  and at its inner end projects beyond the hub, and this projecting end is enlarged at  $b'$  and is formed with an annular retaining flange or bead  $b^2$ . At its outer end the axle-box  $b$  is provided with a supplemental section or sleeve  $b^3$ , which has screw-threaded engagement therewith, and is provided with a projecting flange  $b^4$ , which bears against the outer end of the hub  $a$ . Screws  $b^5$  pass through perforations in said flange  $b^4$  and are screwed into the hub  $a$ , holding the sleeve  $b^3$  against rotation with respect to said hub. A plug nut or cap  $b^6$  is screwed into the sleeve  $b^3$ . In its inner face the plug  $b^6$  is provided, as shown, with a conical bearing  $b^7$ , and in its outer face it preferably is formed with an angular depression  $b^8$ , into which the head of a wrench of special construction, but not shown, may be inserted to turn the said plug. The said plug or cap acts as a thrust-resisting device or stop, as will hereinafter fully appear. An anchoring-head of novel construction holds the hub  $a$  against rotation on the axle-box  $b$ . In this preferred construction this anchoring-head is in the form of a perforated disk or annular plate  $f$ , provided in its inner face with lugs  $f'$ , which interlock with seats or notches  $b^9$ , formed in the enlarged end  $b^2$  of the axle-box  $b$ , as best shown in Figs. 4 and 6, but also in Fig. 1. The outer face of the said anchoring-head  $f$  bears directly against the inner end of the hub  $a$ , and it is provided with a plurality of laterally-projecting wedges or chisel-like flanges  $f^2$ , which are driven or pressed into the abutting end of said hub. These anchoring projections  $f^2$ , it is important to note, engage only the extreme end of the hub and do not cut away the wood of the hub. This is an important feature, especially for small hubs. With small hubs the axle-box frequently approaches the diameter of the wooden portion of the hub at its inner end, and under the old plan the wooden portions had to be cut away to provide for the longitudinally-extended anchoring-ribs formed on the old axle-box, and hence the hub was weakened to a damaging extent. With my improvement the full body, and hence the full strength of the wooden hub, is preserved throughout. Moreover, my improvement permits the axle-box to be turned for its entire length when machining the same in a lathe. The presence of the anchoring-ribs in the old form of box made it impossible to turn the box rearward of the outer end of the ribs. Said detachable anchoring-head  $f$



therefore securely locks the axle-box to the hub at the rear end of the hub, and the sleeve  $b^3$ , having screw-threaded engagement with the box and being anchored to the outer end of the hub, secures the hub and box together at the outer end. The hub and axle-box are therefore rigidly locked together for common rotation with each other. The axle  $g$  is turned down in the usual way to afford a spindle  $g'$ , which fits the axle-box  $b$  and, as shown, is formed at its inner portion with an enlargement  $g^2$ , which fits in an enlargement in the bore of said axle-box. At the junction of the spindle  $g'$  with the bar-section of the axle is rigidly secured a cup-like flange  $g^3$ , which extends concentric with the enlargement  $g^2$  of the spindle and is adapted to receive the retaining flange or bead  $b^2$  of the axle-box. A retaining-nut  $g^4$ , which is angular in cross-section, is screwed onto the flange  $g^3$  and, together therewith, constitutes an oil-well or lubricating-box. Between the annular flange of the clamping-nut  $g^4$  on the one side and the end of the flange  $g^3$  and outer face of the axle-box-retaining flange  $b^2$  on the other is placed one or more washers, preferably a thin metallic washer  $g^5$  and a pliable washer  $g^6$ . The said washers form a tight joint between the flange  $g^3$ , retaining-nut  $g^4$ , and the enlarged portion  $b'$  of the axle-box, and the said clamping-nut  $g^4$ , acting through said washers and upon the retaining-flange  $b^2$ , holds the axle-box against outward axial movements. As shown, the said flange  $g^3$  is formed integral with the axle; but it may be separately formed and otherwise rigidly secured thereto, either adjustably or otherwise. The outer end of said spindle is reduced to form a stud-like projection  $g^7$ , the outer end of which is conical and is adapted to run against the concaved side of the conical bearing  $b^7$  and, together therewith, resist the inward thrusts or axial movements of the hub. These end thrusts are of course thrown against the screw-threaded plug or cap  $b^6$ , so that the latter becomes a thrust-resisting member. The anchoring-head  $f$  is provided on its inner face with an annular flange  $f^3$ , which telescopes around the retaining-nut  $g^4$ , and constitutes a sand-guard.

In the construction illustrated in Figs. 9, 10, and 11 the hub  $a$ , like the hub previously described, is shown as provided with a metallic covering  $a'$ . The axle-box  $b$  in this construction has the anchoring head or flange  $k'$  formed integral therewith and provided on its inner face with anchoring-brads  $k^2$ , which, like the anchoring-wedges  $f^2$  of the construction previously described, enter only into the abutting end of the hub. The axle  $g$ , like the axle previously described, has a spindle  $g'$ ,

which fits the axle-box; but in this construction the axle is formed at the junction of its spindle and bar portion with a solid head  $g^{10}$ , between which and the inner end of the axle-box washer  $g^{11}$  is shown as placed. The head  $g^{10}$  is shown as provided with an annular flange  $g^{12}$ , which works in a groove formed in the inner face of the anchoring-head  $k'$  between annular flanges  $k^3$  thereof, which flanges serve as sand-guards. A flanged nut  $m$  is screw-threaded onto the projecting outer end of the spindle  $g'$  and its flange overlaps the outer ends of the hub  $a$  and axle-box  $k$ , thus holding the said parts together against axial movements, while permitting their free rotation.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a hub and an axle-box, seated in the bore thereof, of an anchoring-head provided with lateral anchoring projections which enter into seats formed only in the abutting end of said hub, means for holding said anchoring-head in working position with respect to said hub, and means interlocking said head for rotation with said axle-box, substantially as described.

2. The combination with a hub and an axle-box seated in the bore thereof, of an annular anchoring-head extending in a plane at approximately a right angle to the axis of said box and hub, anchoring devices directly connecting the said annular head to the abutting end of said hub, whereby the two are interlocked for common rotation, means holding said head in working position, and means interlocking said head for rotation with said axle-box, substantially as described.

3. The combination with a hub and an axle-box seated in the bore thereof, of a detachable annular anchoring-head interlocked to the abutting end of said hub, whereby it is held for common rotation therewith, and means holding said head in working position and interlocking the same for rotation with said axle-box, substantially as described.

4. The combination with a hub and an axle-box seated in the bore thereof, of a detachable annular anchoring-head provided with lateral anchoring projections which enter into seats formed only in the abutting end of said hub, means holding said annular anchoring-head in working position with respect to said hub and means interlocking said head for rotation with said axle-box, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DELBERT E. BARTON.

Witnesses:

W. S. MOREY,

ALBERT E. EMMETT.