

No. 844,490.

PATENTED FEB. 19, 1907.

R. C. WILLIAMS.
ADJUSTABLE SLEEVED AXLE NUT.
APPLICATION FILED NOV. 3, 1905.

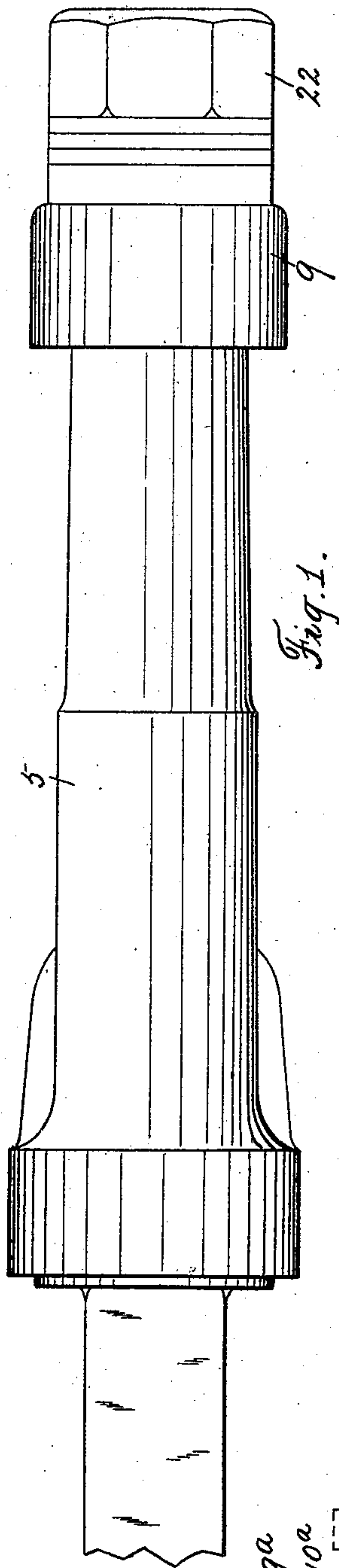


Fig. 1.

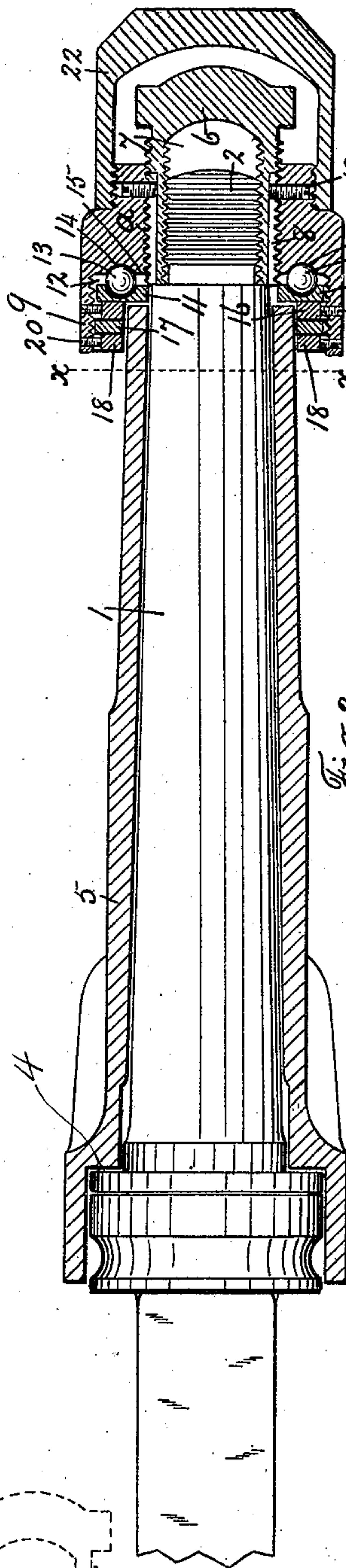


Fig. 2.

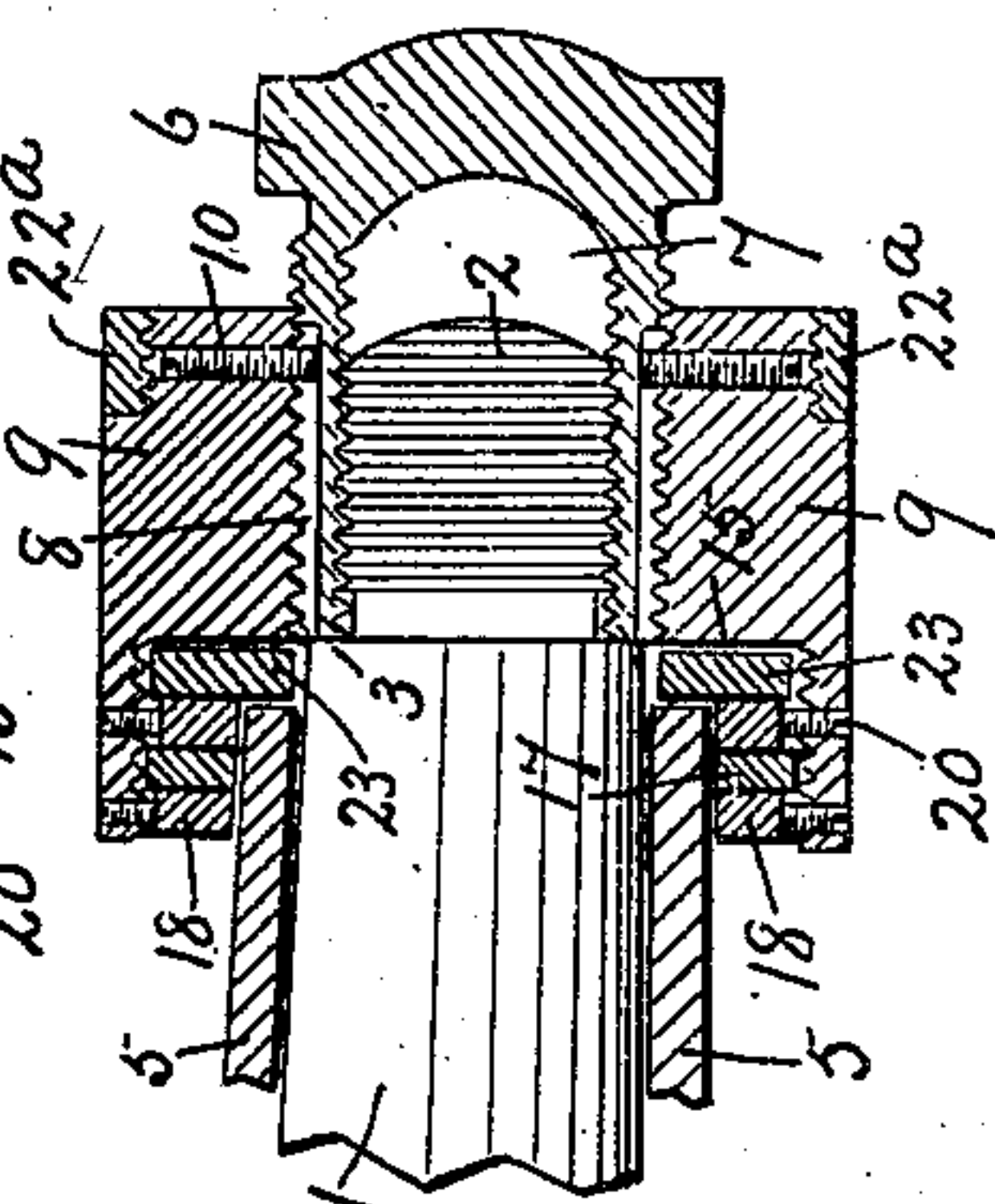


Fig. 3.

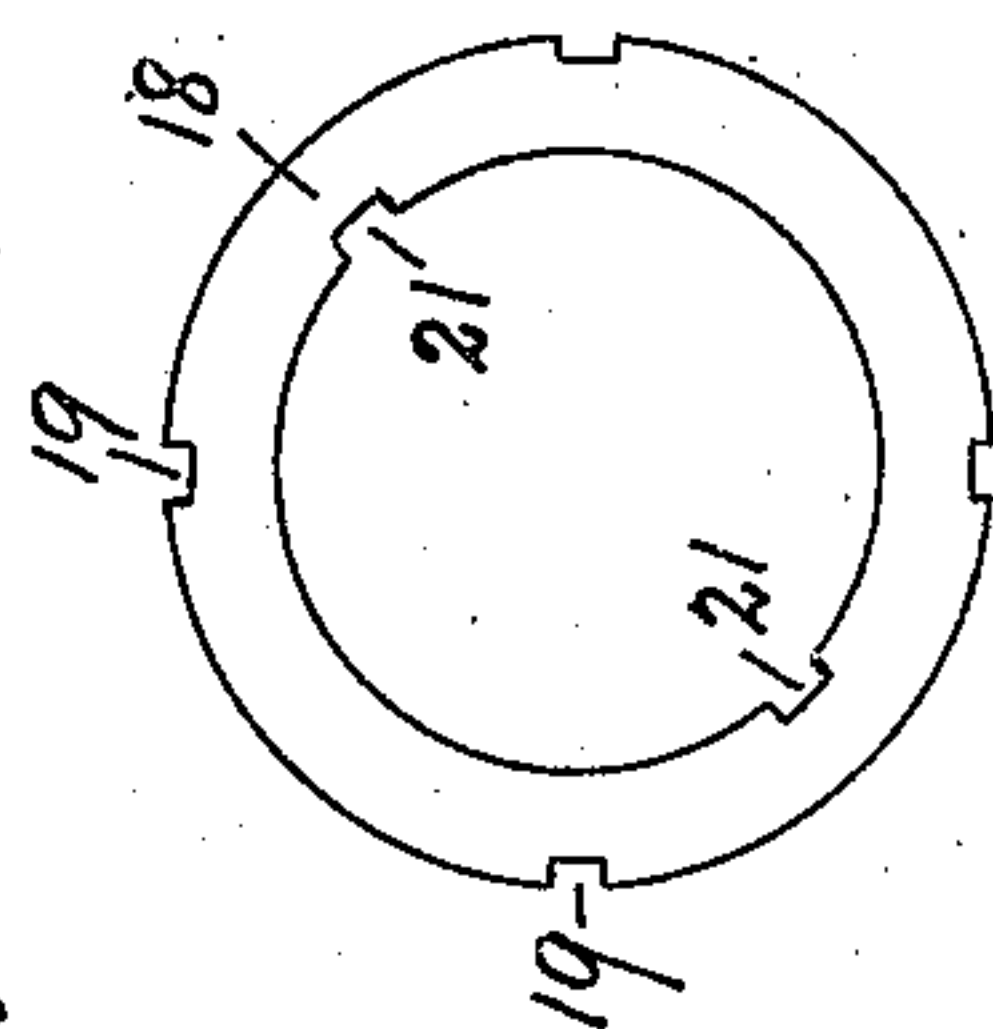


Fig. 4.

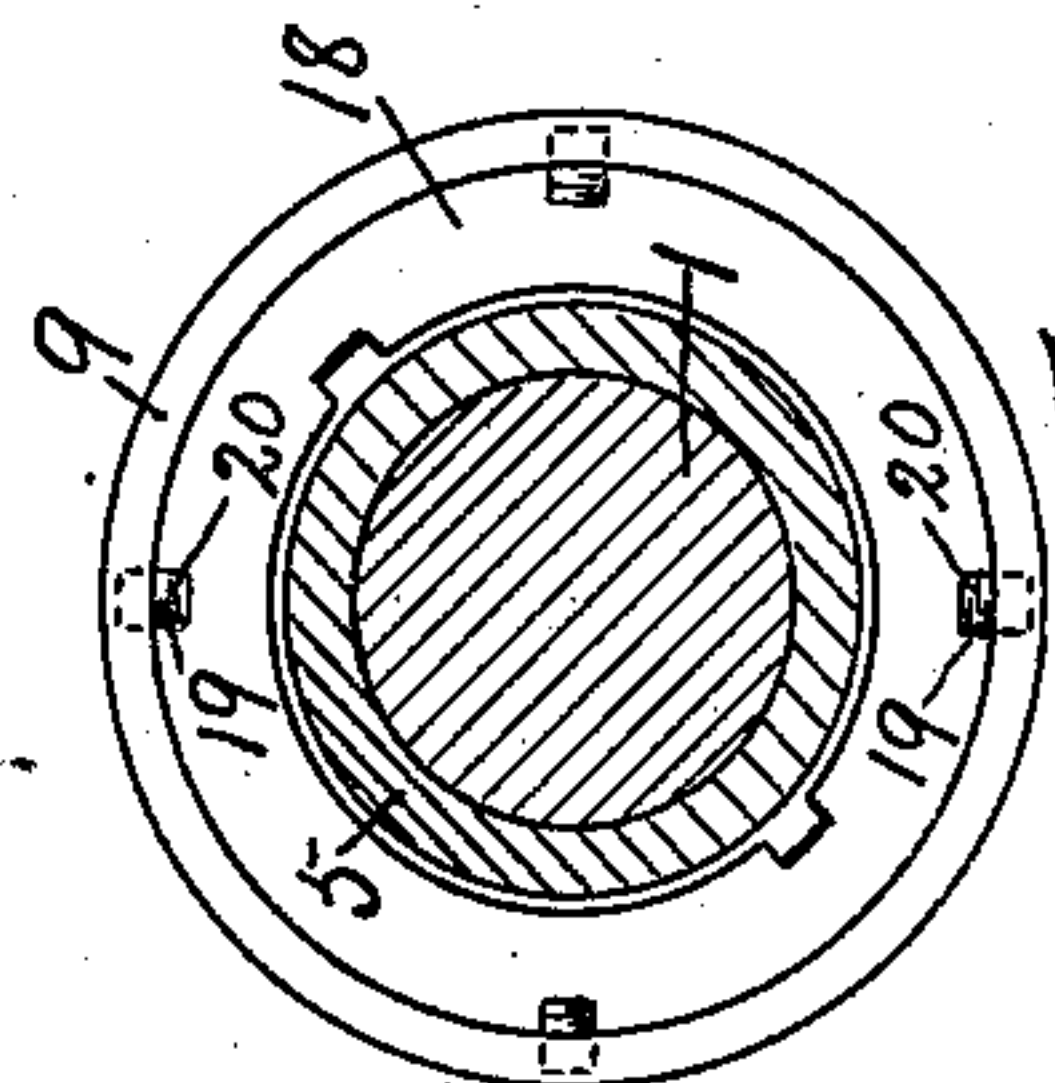


Fig. 5.

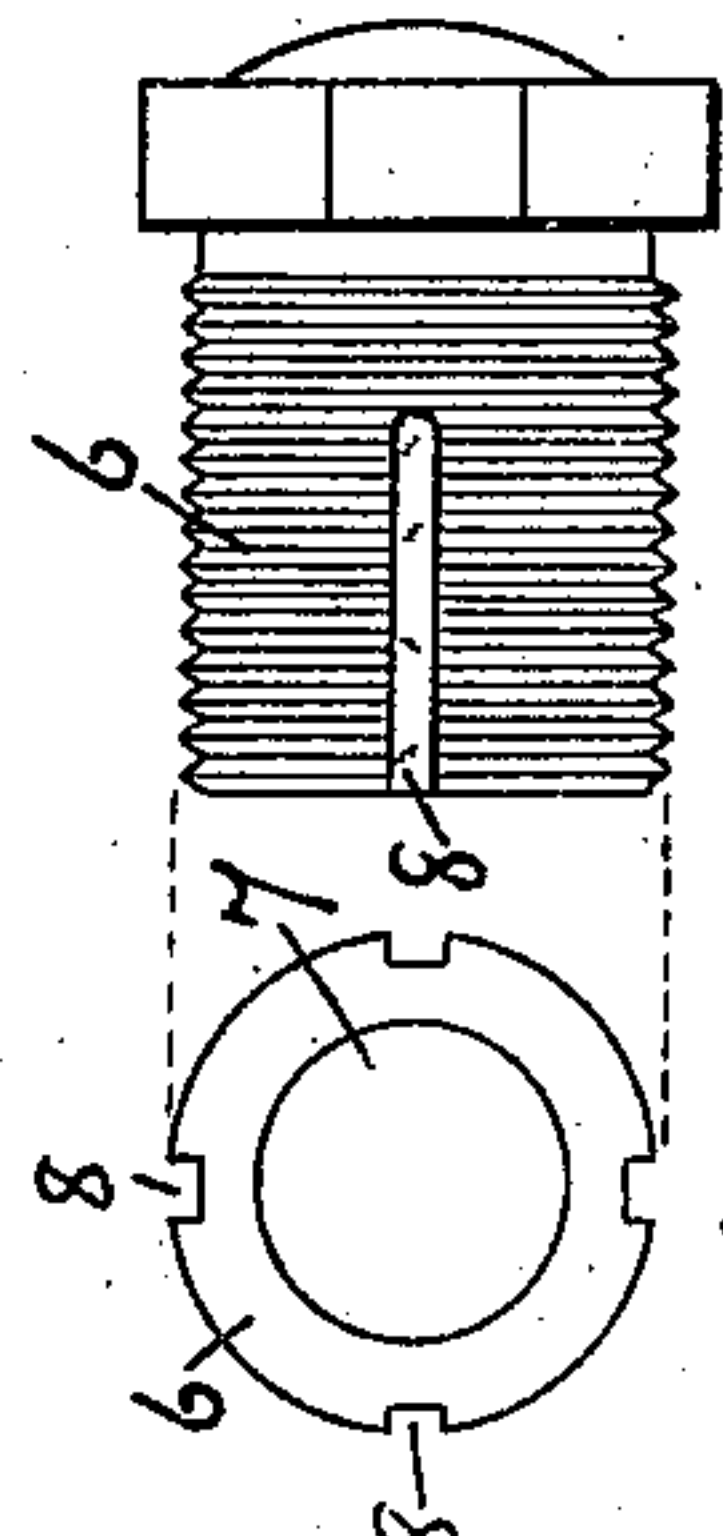


Fig. 6.

Witnesses
J. S. Edmunds
A. Byrick

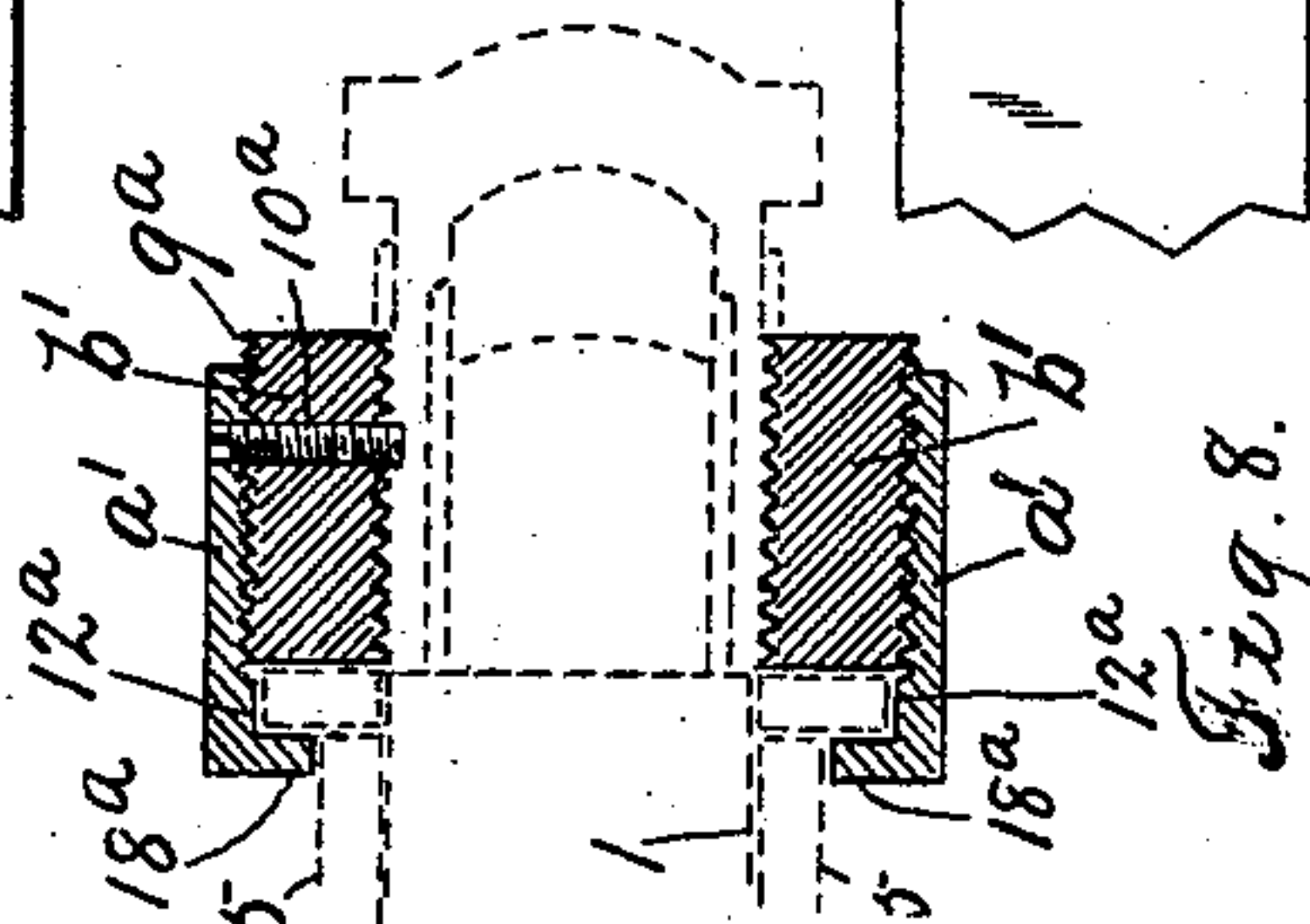


Fig. 8.

Inventor
Richard C. Williams
By P. J. Edmunds
Attorney

UNITED STATES PATENT OFFICE.

RICHARD C. WILLIAMS, OF LONDON, ONTARIO, CANADA.

ADJUSTABLE SLEEVED AXLE-NUT.

No. 844,490.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed November 3, 1905. Serial No. 285,797.

To all whom it may concern:

Be it known that I, RICHARD C. WILLIAMS, a subject of the King of Great Britain, and a resident of the city of London, in the county of Middlesex, in the Province of Ontario, Canada, have invented a new and useful Adjustable Sleeved Axle-Nut, of which the following is a specification.

This invention relates to a device for holding a wheel on a vehicle.

The object is to provide a simple, strong, durable, efficient, and inexpensive device that can be readily, easily, and instantly installed and adjusted to hold the vehicle-wheels in proper position on the axle, so that they will track perfectly, and thus avoid all mud and dust throwing, all wobbling of the wheels, and all unnecessary wear caused by the vehicle-wheels in ordinary use not being properly held; one that can be instantly adjusted to take up any slight wear of the vehicle-wheel, and one the use of which will avoid and completely prevent grit working into the operating parts of the axle-box and spindle, as well as prevent the escape of the oil from the axle-box; and it consists of a sleeve adjustable on an axle-nut or extension of the axle-spindle to hold the wheel in proper position thereon, and of means for holding said sleeve at the position to which it is adjusted; and it also consists of the improved construction and novel combination of parts of the same, as will be hereinafter first fully set forth and described and then pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a side elevation of the spindle end of a vehicle-axle and axle-box embodying my invention. Fig. 2 is a central longitudinal sectional view of same. Fig. 3 is another similar view to and of a portion of that shown in Fig. 2, illustrating a modification in the construction of my invention. Fig. 4 is a detail side elevation of the axle-nut. Fig. 5 is an end view of Fig. 4. Fig. 6 is a cross-sectional view on the line *x x* of Fig. 2. Fig. 7 is a detail side view of one of the nuts which are located internally in the sleeve. Fig. 8 is a detail central longitudinal sectional view of a modification in the construction of the sleeve.

In the accompanying drawings, the numeral 1 designates an axle-spindle formed with a reduced threaded portion 2 and with

shoulders 3 and 4. 5 designates the axle-box fitted to and rotating freely on said axle-spindle 1.

6 designates an axle or spindle nut constituting an extension of the spindle, which spindle-nut is removable, and said nut 6 is formed with a central longitudinal socket or opening 7, with internal and external screw-threads, and with longitudinal grooves 8 at suitable intervals on its outer face.

9 designates a sleeve the interior face of a portion of which is screw-threaded, which screw-threaded portion *a* is fitted to and adapted to engage with the external screw-threaded face of the spindle-nut 6.

10 designate set-screws which extend through corresponding screw-threaded sockets in the sleeve 9, and the inner end of said set-screws are fitted to and adapted to be inserted in the grooves 8 in the spindle-nut 6. 11 designates a race-plate for a ball-bearing, which plate is inserted in a recess 12, formed in one end of said sleeve 9, the outer face of a portion of which plate abuts against the end of the axle-box 5, and 13 designate bearing-balls interposed between said race-plate 11 and the ball-bearing 14, formed in the shoulder 15 of said sleeve 9. 16 and 18 designate annular internal nuts which engage with the internal screw-threaded face of the recess 12 of said sleeve 9, and said nuts 16 and 18 are supported around, but clear and separated and independent from the axle-box. 17 designates a packing-ring, of rubber or other suitable material, placed in said recess 12 between the nuts 16 and 18. 19 designate grooves formed in the exterior face of said nuts 16 and 18. 20 designate set-screws which extend through corresponding screw-threaded sockets arranged at suitable intervals in the sleeve 9, the inner ends of which set-screws are fitted to and adapted to be inserted in the grooves 19 in said nuts 16 and 18. 21 designate interior grooves or recesses formed in the interior face of the annular nuts 16 and 18, with which suitable means may be engaged to turn them in or out of said sleeve 9, to turn them out to remove the bearing-balls 13 or washer 23, or to turn them in to hold these parts in place or to compress the packing 17, so that it will abut against the axle-box 5, and thus prevent the egress of oil from or the ingress of grit to the working parts of the axle-box or spindle.

22 designates a cap a portion of the interior face of which is screw-threaded and engages with a screw-threaded portion of the exterior face of the sleeve 9, as shown in Fig. 2, and this cap 22 incloses the spindle-nut 6 and extends over the set-screws 10 in the sleeve 9 to prevent said set-screws from becoming loose or working out, and in Fig. 3, where no cap is used, a ring 22^a, with a screw-threaded interior face, engages with the screw-threaded exterior face of the sleeve 9 at the point where the set-screws 10 are located for the same purpose.

23 designates a washer formed of a metal-lubricating or other antifriction material, which may be inserted between the shoulder 15 of the sleeve 9 and the end of the axle-box 5 in lieu of the ball-bearings 13, if preferred.

In the modification shown in Fig. 8 the sleeve 9^a is formed in two sections *a'* *b'*, and the adjacent faces of these sections are screw-threaded to adapt the section *a'* to be adjusted on the section *b'*, and the latter is the portion or section of the sleeve that is adjustable on the spindle-nut 6, the same as hereinbefore described. 18^a designates a flange formed on the internal face of the section *a'*, which is used in lieu of the internal nut 18. 10^a designates a set-screw which extends through screw-threaded sockets in both sections *a'* and *b'* of the sleeve 9^a and engages with a groove in the spindle-nut 6, similar to the set-screws 10 in Figs. 2 and 3, and 12^a designates a recess formed in the sleeve 9^a between the internal flange 18^a of the section *a'* and the adjacent end of the section *b'* of said sleeve 9^a.

The device shown in Figs. 2 and 3 is placed in position by inserting the bearing-balls 13 or washer 23, whichever is preferred, in the recess 12 of the sleeve 9 and securing either in place, as well as the packing-ring 17, by the nuts 16 and 18. The portion *a* of the sleeve 9 is then screwed on the spindle-nut 6 until the end of the latter projects through and slightly beyond said sleeve. The spindle-nut 6 is then screwed on the reduced screw-threaded end 2 of the spindle 1 until its inner end abuts against the shoulder 3 on said spindle. The sleeve 9 is then adjusted inward until the outer ball-race 11 or washer 23 abuts against the end of the axle-box 5, when the latter, as well as the vehicle-wheel, (not shown,) which is supported thereon, will be properly held between the shoulder 4 on the inner end of the axle-spindle and the ball-race 11 or washer 23, whichever is used.

The practical advantages of holding a vehicle-wheel in place by means of the device herein shown and described are that the device may be readily, easily, and instantly installed on the axle-spindle and adjusted to hold the wheels in proper position on the axle-spindle, so that they will track perfectly, and thus prevent them from throwing mud

or dust, prevent them from wobbling and from all unnecessary wear which occurs when the wheels are not properly held, and the use of the outer nut 18 and packing-ring 17 avoids and completely prevents grit from working in between the axle-box and spindle, as well as prevents the escape of oil from the axle-box, all of which make the draft on the vehicle one-half lighter and greatly increases the life of the vehicle.

While in the drawings forming part of this specification there is illustrated one form of construction embodying this invention which is preferred, it is understood that the elements therein shown may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. In a device of the class described, a spindle, and a wheel-carrying axle-box on said spindle, in combination with a spindle-nut carried by said spindle, a sleeve adjustable on said spindle-nut, a washer interposed between a shoulder on said sleeve and the end of said axle-box, and a nut secured in said sleeve to hold said washer in place, substantially as shown and described and for the purpose specified.

2. In a device of the class described, a spindle, and a wheel-carrying axle-box on said spindle, in combination with a spindle-nut carried by said spindle, a sleeve adjustable on said spindle-nut, the end of which abuts against the end of said axle-box, a packing-ring located in said sleeve around said axle-box, and an annular nut secured in said sleeve around said axle-box and compressing said packing-ring on said axle-box, substantially as shown and described and for the purpose specified.

3. In a device of the class described, a spindle, and a wheel-carrying axle-box on said spindle, in combination with a spindle-nut carried by said spindle a sleeve adjustable on said spindle-nut, a washer interposed between a shoulder on said sleeve and the end of said axle-box, a packing-ring in said sleeve around said axle-box, and annular nuts for holding said washer and said packing-ring in place and for compressing the latter on the axle-box, substantially as shown and described and for the purpose specified.

4. In a device of the class described, a spindle formed with a reduced screw-threaded portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face secured to the reduced screw-threaded portion of said spindle, in combination with a sleeve formed in two sections and provided with a screw-threaded interior face which engages with and is adjustable on the exterior screw-

threaded face of said spindle-nut, and means for securing said sleeve at the position to which it is adjusted on said spindle-nut, substantially as shown and described and for the purpose specified.

5. In a device of the class described, a spindle formed with a reduced screw-threaded portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face secured to the reduced screw-threaded portion of said spindle, in combination with a sleeve provided with a screw-threaded interior face which engages with and is adjustable on the exterior screw-threaded face of said axle-nut, means for securing said sleeve at the position to which it is adjusted on said axle-nut, a washer interposed between a shoulder on said sleeve and the end of said axle-box, and an annular nut in said sleeve for holding said washer in place, substantially as shown and described and for the purpose specified.

6. In a device of the class described, a spindle formed with a reduced screw-threaded portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face, with longitudinal grooves in its outer face and secured to the reduced screw-threaded portion of the outer end of said spindle, in combination with a sleeve formed in two sections and provided with a screw-threaded interior face, which engages with and is adjustable on the exterior screw-threaded face of said axle-nut, and set-screws extending through said sleeve and engaging with said axle-nut, substantially as shown and described and for the purpose specified.

7. In a device of the class described, a spindle formed with a reduced screw-threaded portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face, with longitudinal grooves in its outer face and secured to the reduced screw-threaded portion of the outer end of said spindle, in combination with a sleeve provided with a screw-threaded interior face which engages with and is adjustable on the exterior screw-threaded face of said axle-nut, set-screws extending through said sleeve and engaging with said axle-nut, a washer interposed between a shoulder on said sleeve and the end of said axle-box, an annular nut in said sleeve for holding said washer in place, and set-screws extending through said sleeve and engaging with said annular nut, substantially as shown and described and for the purpose specified.

8. In a device of the class described, a spindle formed with a reduced screw-thread-

ed portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face, with longitudinal grooves in its outer face and secured to the reduced screw-threaded portion of the outer end of said spindle, in combination with a sleeve provided with a screw-threaded interior face, which engages with and is adjustable on the exterior screw-threaded face of said axle-nut, set-screws extending through said sleeve and engaging with said axle-nut, a washer interposed between a shoulder on said sleeve and the end of said axle-box, a packing-ring in said sleeve around said axle-box, nuts for securing said washer and said packing-ring in place and for compressing the latter on the axle-box, and set-screws extending through said sleeve and engaging with said nuts, substantially as shown and described and for the purpose specified.

9. In a device of the class described, a spindle formed with a reduced screw-threaded portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face, with longitudinal grooves in its outer face and secured to the reduced screw-threaded portion of the outer end of said spindle, in combination with a sleeve provided with a screw-threaded interior face, which engages with and is adjustable on the exterior screw-threaded face of said axle-nut, set-screws extending through said sleeve and engaging with said axle-nut, and a ring secured to said sleeve over said set-screws, substantially as shown and described and for the purpose specified.

10. In a device of the class described, a spindle formed with a reduced screw-threaded portion at its outer end, a wheel-carrying axle-box mounted on said spindle, and a hollow spindle-nut formed with screw-threads on its interior and exterior face, with longitudinal grooves in its outer face and secured to the reduced screw-threaded portion of the outer end of said spindle, in combination with a sleeve provided with a screw-threaded interior face which engages with and is adjustable on the exterior screw-threaded face of said axle-nut, set-screws extending through said sleeve and engaging with said axle-nut, a ring secured to said sleeve over said set-screws, a washer interposed between a shoulder on said sleeve and the end of said axle-box, a packing-ring inserted in said sleeve around said axle-box, nuts secured in said sleeve to hold said washer and said packing-ring in place and to compress the latter on said axle-box, and set-screws extending through said sleeve and engaging with said nuts, substantially as shown and described and for the purpose specified.

11. In a device of the class described, a

spindle-nut, in combination with a sleeve formed in two sections and adjustable on said spindle-nut, and means for securing said sleeve at the position to which it is adjusted
5 on said spindle-nut, substantially as shown and described and for the purpose specified.

12. In a device of the class described, a spindle-nut formed with screw-threads on its interior and exterior face, in combination
10 with a sleeve formed in two sections and provided with a screw-threaded interior face, which engages with and is adjustable on the exterior screw-threaded face of said spindle-nut, and means for securing said sleeve at the
15 position to which it is adjusted on said spindle-nut, substantially as shown and described and for the purpose specified.

13. In a device of the class described a spindle-nut, in combination with a sleeve
20 formed in two sections, a' , b' , the section b' , adjustable on said spindle-nut, and the section, a' , adjustable on the section, b' , and provided with an internal flange, and means

for securing said sections a' , b' , at the position to which they are adjusted on one another and on said spindle-nut, substantially
25 as shown and described and for the purpose specified.

14. In a device of the class described a spindle-nut, formed with screw-threads on
30 its interior and exterior face, in combination with a sleeve formed in two sections a' , b' , the section b' , adjustable on said spindle-nut, and the section, a' , adjustable on the section, b' , and provided with an internal flange, and
35 means for securing said sections a' , b' , at the position to which they are adjusted on one another and on said spindle-nut, substantially as shown and described and for the
40 purpose specified.

In testimony whereof I have signed in the presence of the two undersigned witnesses.

RICHARD C. WILLIAMS.

Witnesses:

P. J. EDMUNDS,
A. BYRICK.