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PATENTED DEC. 4, 1906.

T. O'HORA.  
HUB NUT WRENCH FOR VEHICLES.  
APPLICATION FILED NOV. 9, 1905.

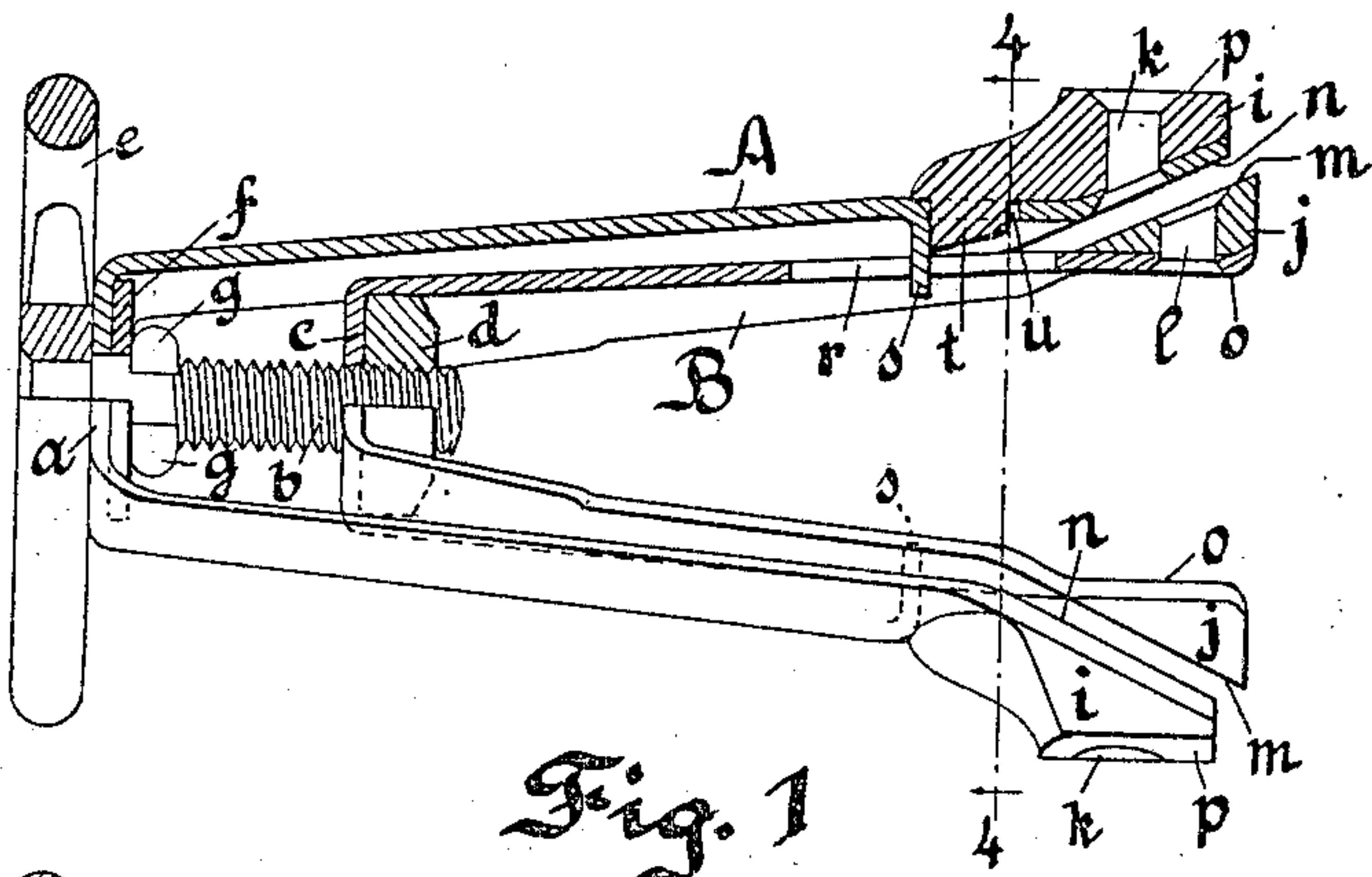


Fig. 1

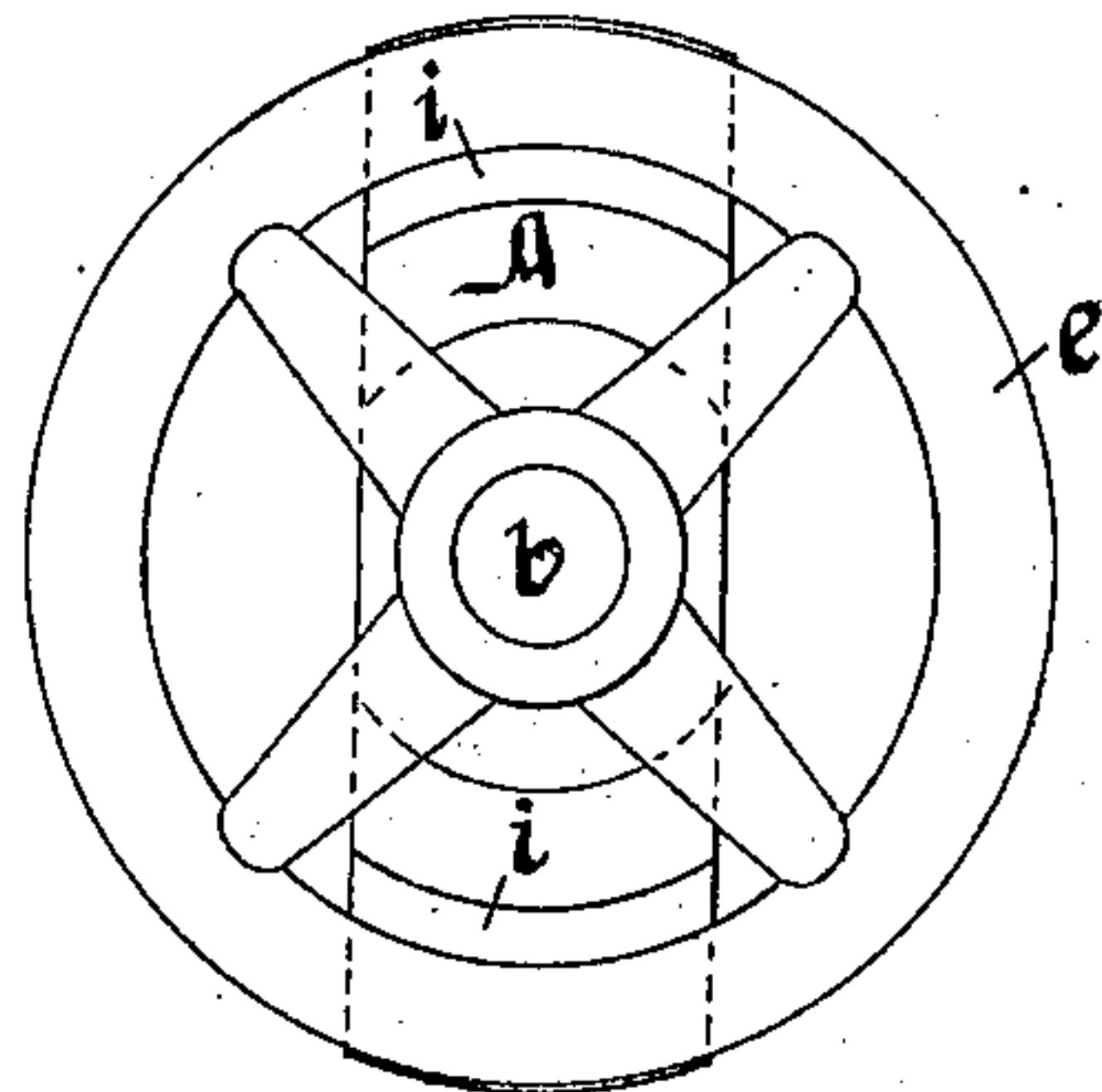


Fig. 2

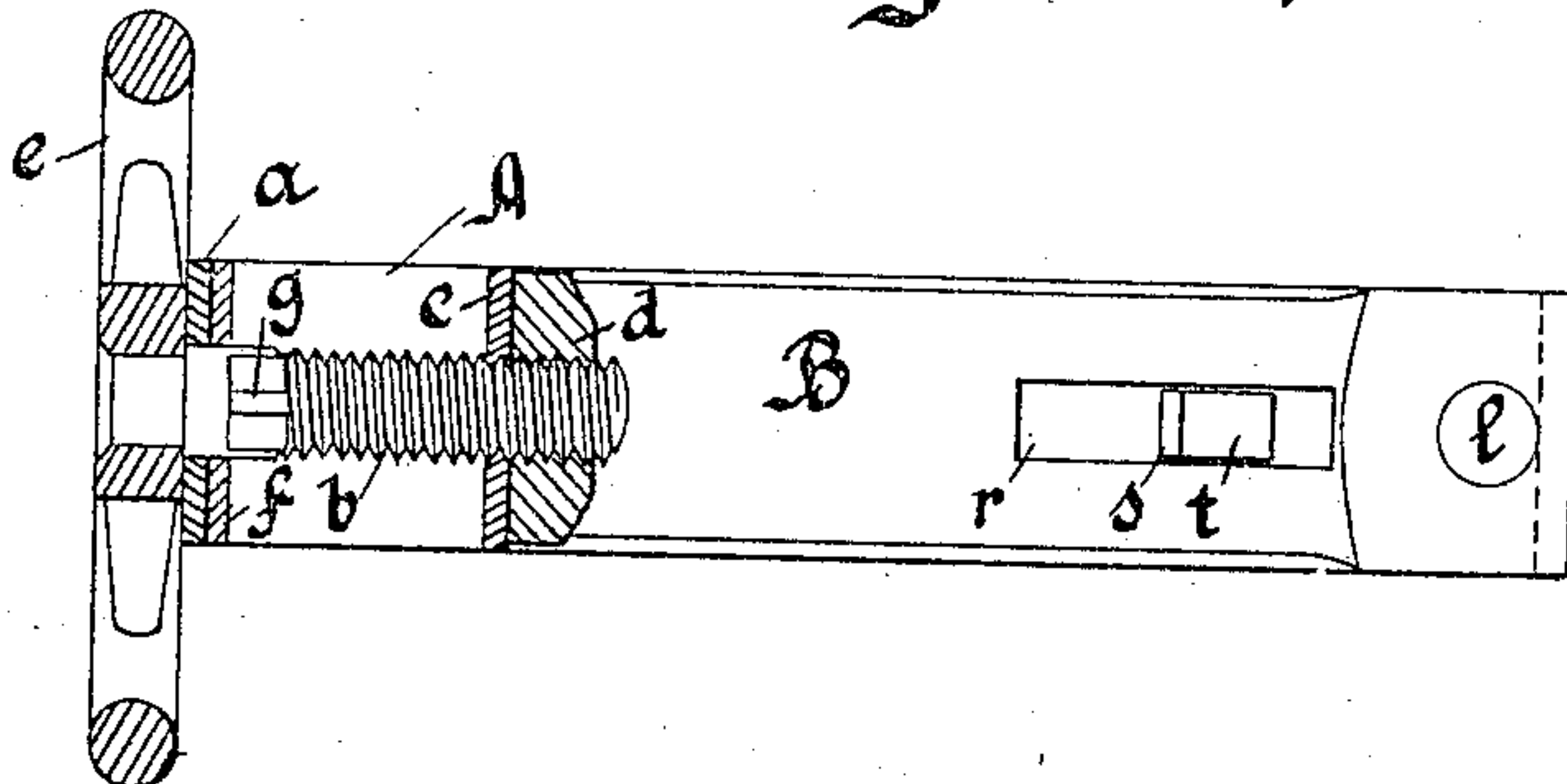


Fig. 3

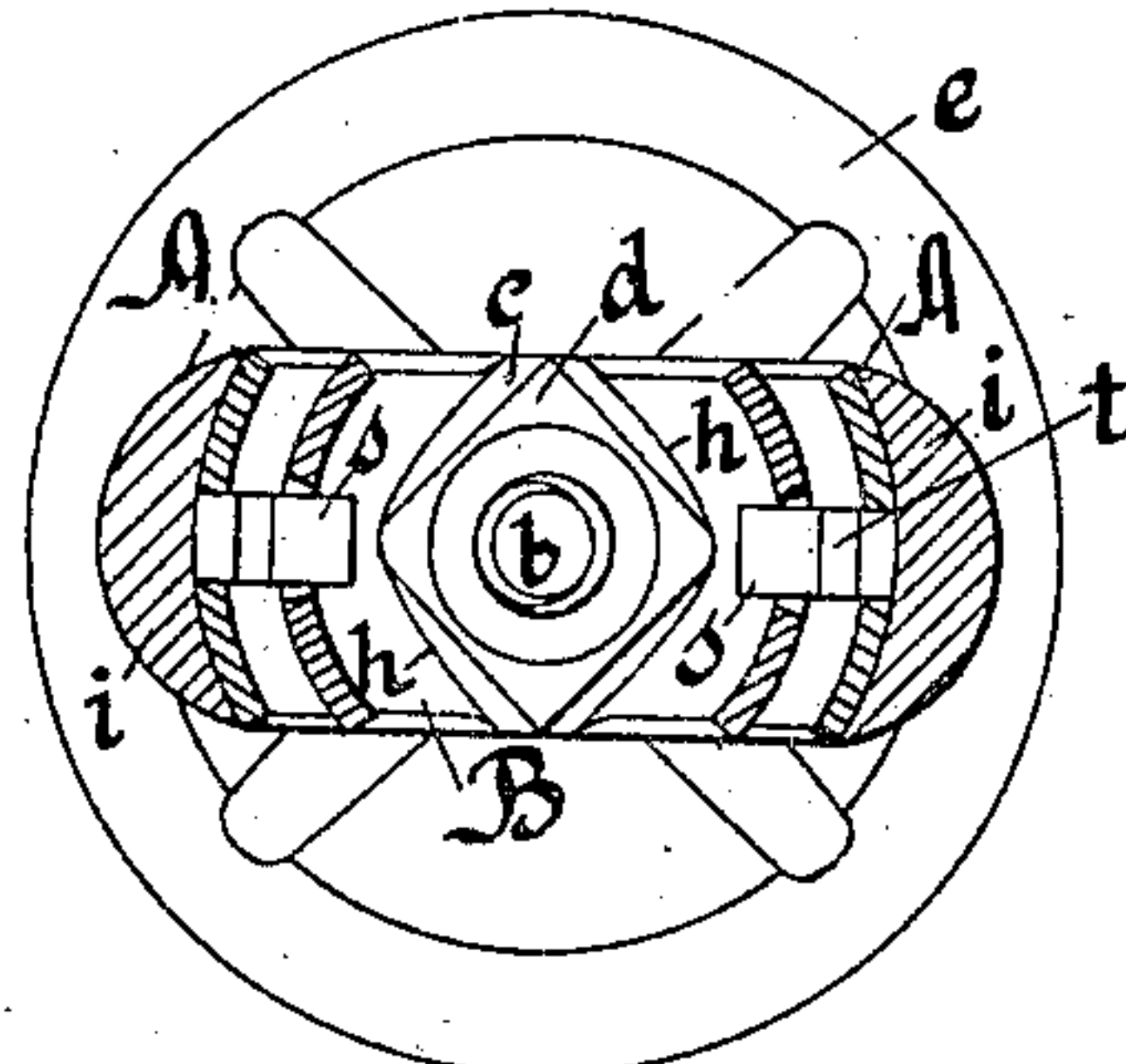


Fig. 4

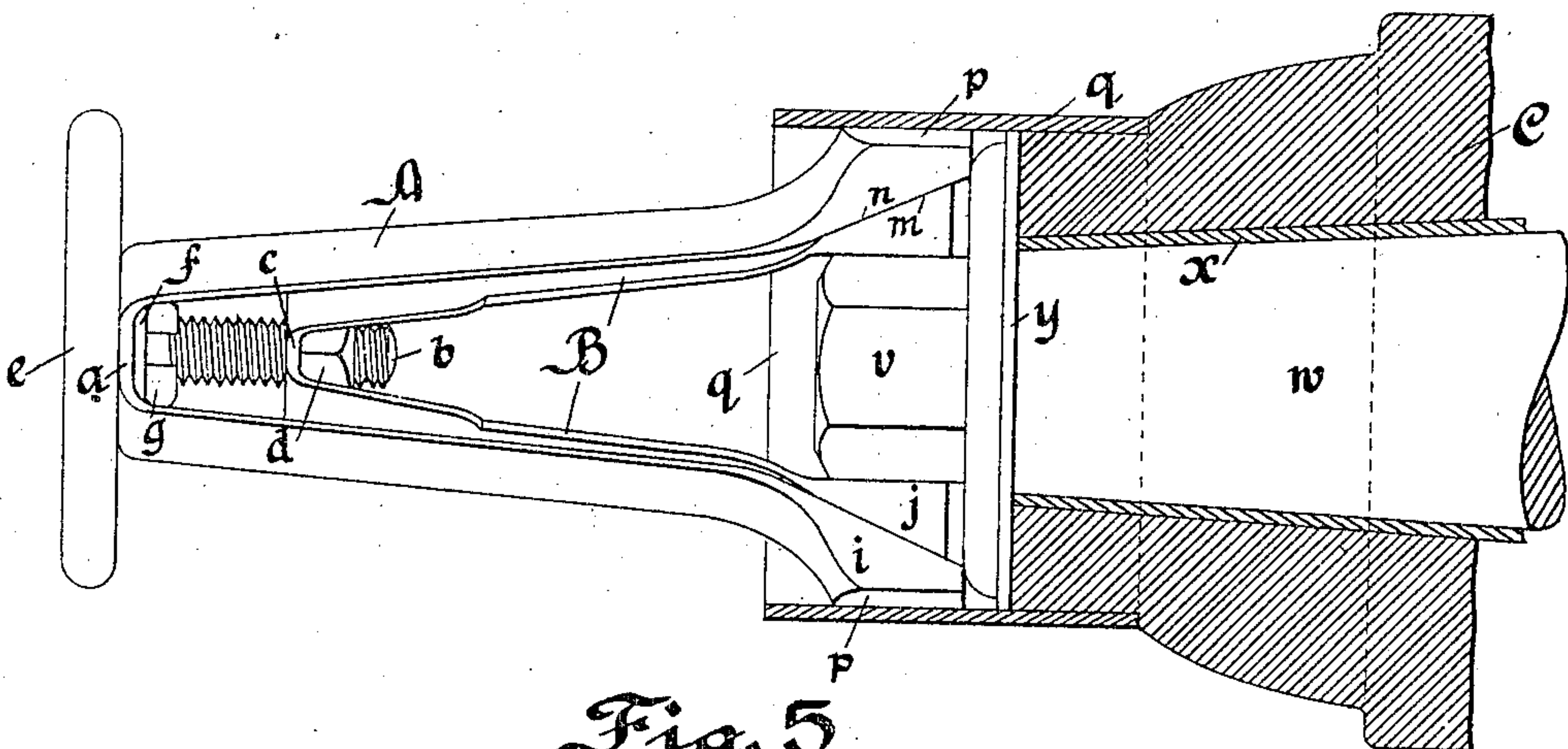


Fig. 5

Thomas O'Hora, Inventor

Witnesses

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# UNITED STATES PATENT OFFICE.

THOMAS O'HORA, OF AVOCA, WISCONSIN.

## HUB-NUT WRENCH FOR VEHICLES.

No. 837,493.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed November 9, 1905. Serial No. 286,481.

*To all whom it may concern:*

Be it known that I, THOMAS O'HORA, of Avoca, Iowa county, Wisconsin, have invented a Hub-Nut Wrench for Vehicles, of which the following is a specification.

The device forming the subject of my present invention is intended for use in unscrewing the hub-nuts of vehicles, whereby the wheels thereof may be removed from the axles from time to time to be greased or lubricated.

The object of my invention is to improve this class of devices by providing means for quickly clamping the axle-nut fast to the hub-guard of the wheel, so that when the latter is raised from the ground and rotated in a backward direction the hub-nut is carried around with it and unscrewed.

Various further advantages will appear from my construction by the consideration of the following description and the accompanying drawings.

I also propose to provide a device more simply and cheaply constructed than those heretofore invented and more conveniently operated.

My invention consists of the constructions and combinations, which will appear from the following description and are pointed out in the claims.

In the drawings hereto annexed, Figure 1 is in its lower half a side elevation and in its upper half a longitudinal section of my wrench. Fig. 2 is an end elevation thereof from the handle end. Fig. 3 is a longitudinal median section in a plane at right angles to that of Fig. 1. Fig. 4 is a transverse section on the line 4 looking in the direction of the arrow; and Fig. 5 is a view of my invention in connection with a wheel-hub, showing its application for unscrewing the hub-nut.

My invention comprises in the main a U-shaped outer member A, having a flattened base or central portion *a*, in which is rotatably mounted a screw-stem *b*, and an inner U-shaped member B, which telescopes within the member A and whose base has an aperture *c*, through which the screw-stem *b* passes, and a nut *d*, which engages with the threads of the stem *b*. The screw-stem *b* has on its front or outer end a handle *e*, riveted or otherwise fixed thereto, and within the basal portion *a* is set a washer *f*, which forms an abutment for wings *g*, stamped out of the sides of the screw-stem *b*, so as to prevent

endwise motion of the stem *b* in its socket. The nut *d* is held against turning with respect to the member B by pressing the sides of the latter around the edges of the nut, as shown by the lines *h* in Fig. 4, the pressure being preferably such as to hold the nut *d* in position by causing the opposite angles of the nut to be enveloped by the member B, so that it forms a substantially integral piece with the member B.

The legs of the members A and B are somewhat spread, as shown, those of the member A carrying on their ends wedge-blocks *i* and those of the member B carrying wedge-blocks *j*. The blocks *i* and *j* may be either made separately from the members A and B and riveted thereto by means of rivets *k* *l*, as shown in Figs. 1 and 3, or they may be formed integral therewith, as shown in Fig. 5, depending on the greater facility of manufacture. The inner blocks *j* have oblique outer wedge-faces *m*, and the outer blocks *i* or else the inner surfaces of the extremities of the member A have coöperating oblique wedge-faces *n*, while the inner faces *o* of the extremities of the member B are made flat and parallel to the axis, so as to grip the faces of the hub-nut, and the outer faces *p* of the blocks *i* are also parallel to the axis and preferably convex to conform with the inner face of the hub-guard *q*, Fig. 5, which they are adapted to grip. These faces might of course be provided with corrugations or other rugosities; but this is found unnecessary, and I therefore have shown them as smooth.

Both the members A and B are preferably arched transversely along each leg, whereby the legs are stiffened and provided with maximum strength with a minimum of weight. Just above the ends of the blocks *j* the legs of the member B have cut in them longitudinal slots *r*, into which project tongues *s*, of metal, stamped in the legs of the member A and turned inwardly at right angles, as shown, thus acting as guards for the member B and preventing the member B from rotating with respect to the member A. The blocks *i* may, if preferred, have snugs *t* cast thereon, which project into the holes *u* left by the tongues *s* and abut against the bases of said tongues to prevent them from being turned back out of the slots *r*.

In Fig. 5 is illustrated the application of a wrench to the nut *v* of a wheel-hub C, mounted on an axle *w* and having an axle-sleeve *x*.



The instrument is inserted into the hub in such manner that the ends of member B embrace the nut *v* thereof and the blocks *i* lie within the hub-guard *g*. The handle *e* is  
 5 then turned in a right-handed direction, so as to draw the member B within the member A, and the surfaces *m* and *n*, meeting one another, will by continued rotation of the handle *e* force the blocks *j* inwardly and the  
 10 blocks *i* outwardly until the blocks *i* are clamped tight against the hub-guard *g*. The wheel C is then raised from the ground and rotated in a backward direction, carrying the nut *v* with it until it is fully unscrewed from  
 15 the axle, when the wheel may be removed, still carrying the hub-nut *v* in place therein and also the hub-nut wrench. After lubricating the axle the wheel C is then replaced and rotated in a forward direction, the nut *v*  
 20 engaging the threads of the axle and being screwed up into place, when the wrench may be removed. The wrench serves the purpose not simply of forming a ready means of unscrewing the nut, but also of preventing it  
 25 from becoming removed from its place with relation to the wheel, and the nut and washer *y* cannot, therefore, be laid down and lost or pick up grit and dirt, which is subsequently transferred to the bearing. Moreover, the  
 30 nut being held rigidly in alinement with the axle while being screwed on cannot cross threads with the latter and become damaged, and the oil and grease is prevented from becoming smeared on the hands and clothing of  
 35 the operator and also on the outside of the hub.

While I have hereinabove set forth the preferred form of my invention, I do not  
 40 limit myself to the precise mechanical details as shown, but reserve the right to all such modifications as will occur to the skilled mechanic while still embodying the spirit of my invention.

Having thus described my invention, what  
 45 I claim as new, and desire to secure by Letters Patent, is—

1. A hub-nut wrench comprising a pair of members slidable longitudinally one within the other and having wedge portions on the  
 50 ends thereof which are forced against the faces of the hub-nut and hub-guard respectively when the inner member is drawn within the outer member.

2. A hub-nut wrench comprising a pair of  
 55 members slidable longitudinally one entirely within the other and having wedge portions on the ends thereof which are forced against the faces of the hub-nut and hub-guard respectively when the inner member is moved  
 60 longitudinally with respect to the outer member, and a screw member adapted to move said inner member longitudinally with respect to the outer member.

3. A hub-nut wrench comprising a pair of  
 65 members slidable longitudinally one within

the other and having wedge portions on the ends thereof which are forced against the faces of the hub-nut and hub-guard respectively when the inner member is drawn within the outer member, and a screw-stem rotatably mounted with respect to one of said  
 70 members and having a threaded engagement with the other member whereby the inner member may be moved longitudinally with respect to the outer member.

4. A hub-nut wrench comprising a pair of substantially U-shaped members the legs  
 75 whereof have a certain resiliency, each member having abutting wedge-surfaces on the outer faces of the free ends of the inner member and the inner faces of the free ends of the  
 80 outer member, whereby when the inner member is drawn within the outer the legs of the inner member are forced together and the legs of the outer are forced apart; in combination with means for drawing the inner  
 85 member within the outer member.

5. A hub-nut wrench comprising a pair of substantially U-shaped members the legs  
 90 whereof have a certain resiliency, each member having abutting wedge-surfaces on the outer faces of the free ends of the inner member and the inner faces of the free ends of the outer member, whereby when the inner member  
 95 is drawn within the outer the legs of the inner member are forced together and the legs of the outer are forced apart; in combination with a screw-stem rotatably mounted in the base of one of said members and having  
 100 a threaded engagement with the other member.

6. A hub-nut wrench comprising a pair of substantially U-shaped members the legs  
 105 whereof have a certain resiliency, each member having abutting wedge-surfaces on the outer faces of the free ends of the inner member and the inner faces of the free ends of the outer member, whereby when the inner member is drawn within the outer the legs of the inner member are forced together and the  
 110 legs of the outer are forced apart; in combination with a screw-stem rotatably mounted in the base of the outer member and having a threaded engagement with the base of the inner member, and a handle on the outer end  
 115 of said screw-stem.

7. A hub-nut wrench comprising a pair of substantially U-shaped members the legs  
 120 whereof have a certain resiliency, each member having abutting wedge-surfaces formed on the outer faces of the free ends of the inner member and the inner faces of the free ends of the outer member, whereby when the inner member is drawn within the outer member the legs of the inner member are forced  
 125 together and the legs of the outer are forced apart, in combination with means for drawing the inner member into the outer member; the legs of one member having longitudinal slots, and the legs of the other member hav-  
 130



ing tongues projecting into said slots whereby relative rotation of the two members is prevented.

8. A hub-nut wrench comprising a pair of substantially U-shaped members, the legs whereof have a certain resiliency, each member having abutting wedge-surfaces formed on the outer faces of the free ends of the inner member and the inner faces of the free ends of the outer member, whereby when the inner member is drawn within the outer the legs of the inner member are forced together and the legs of the outer member are forced apart, in combination with a screw-stem rotatably mounted in the base of the outer member and having a threaded engagement with the base of the inner member, and a handle on the outer end of said screw-stem, for drawing the inner member into the outer member; the legs of one member having longitudinal slots and the legs of the other member having tongues projecting into said slots whereby relative rotation of the two members is prevented.

9. A hub-nut wrench comprising a pair of U-shaped members whose legs have a certain resiliency, a screw-stem rotatably mounted in the base of one of said members and having

a threaded engagement with the base of the other whereby the inner member is moved longitudinally with respect to the outer member, a handle mounted on the outer end of said screw-stem, means for preventing the relative rotation of said members, a pair of blocks or lugs on the ends of the outer member having oblique inner wedge-surfaces, and a pair of blocks or lugs on the ends of the inner member having coacting oblique outer wedge-surfaces whereby the drawing of the inner member within the outer member causes the legs of the inner member to be brought together, and the legs of the outer member to be forced apart.

10. A hub-nut wrench comprising a pair of members slidable longitudinally one entirely within the other and having wedge portions on the ends thereof which are forced against the faces of the hub-nut and hub-guard respectively when the inner member is moved longitudinally with respect to the outer.

In witness whereof I have hereunto set my hand this 17th day of October, 1905.

THOMAS O'HORA.

In presence of—

H. P. DIETRICH,  
L. P. DIETRICH.