

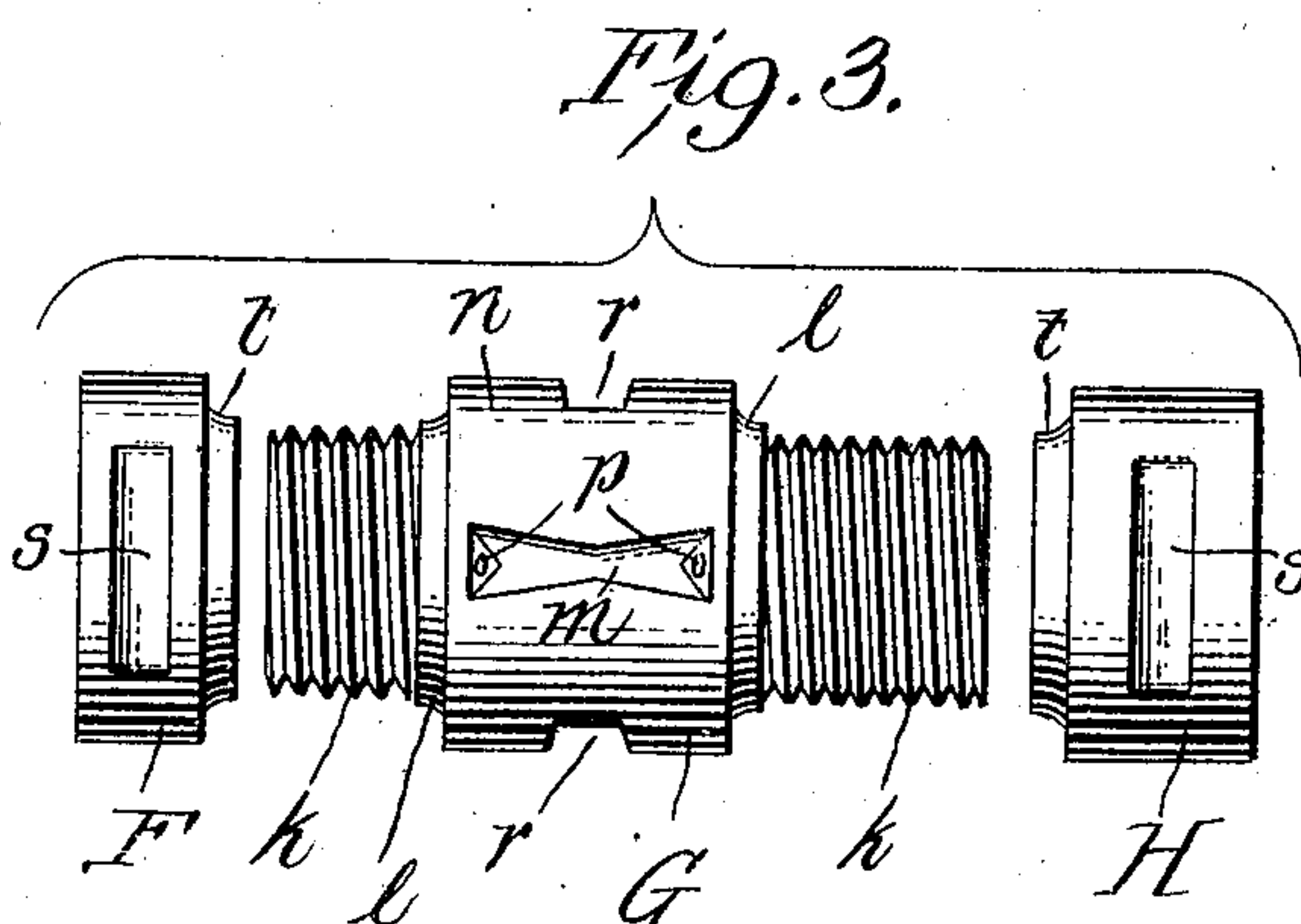
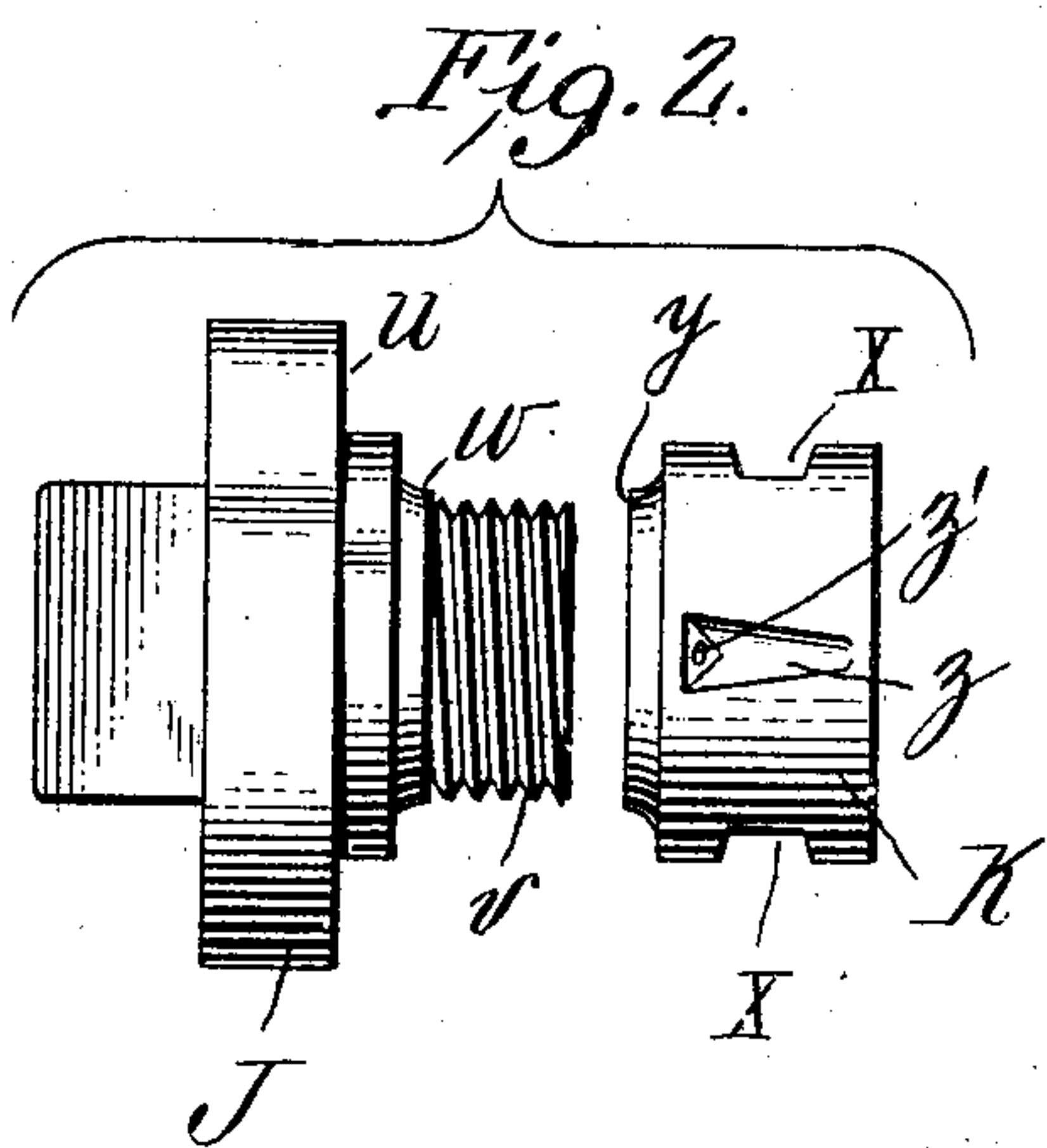
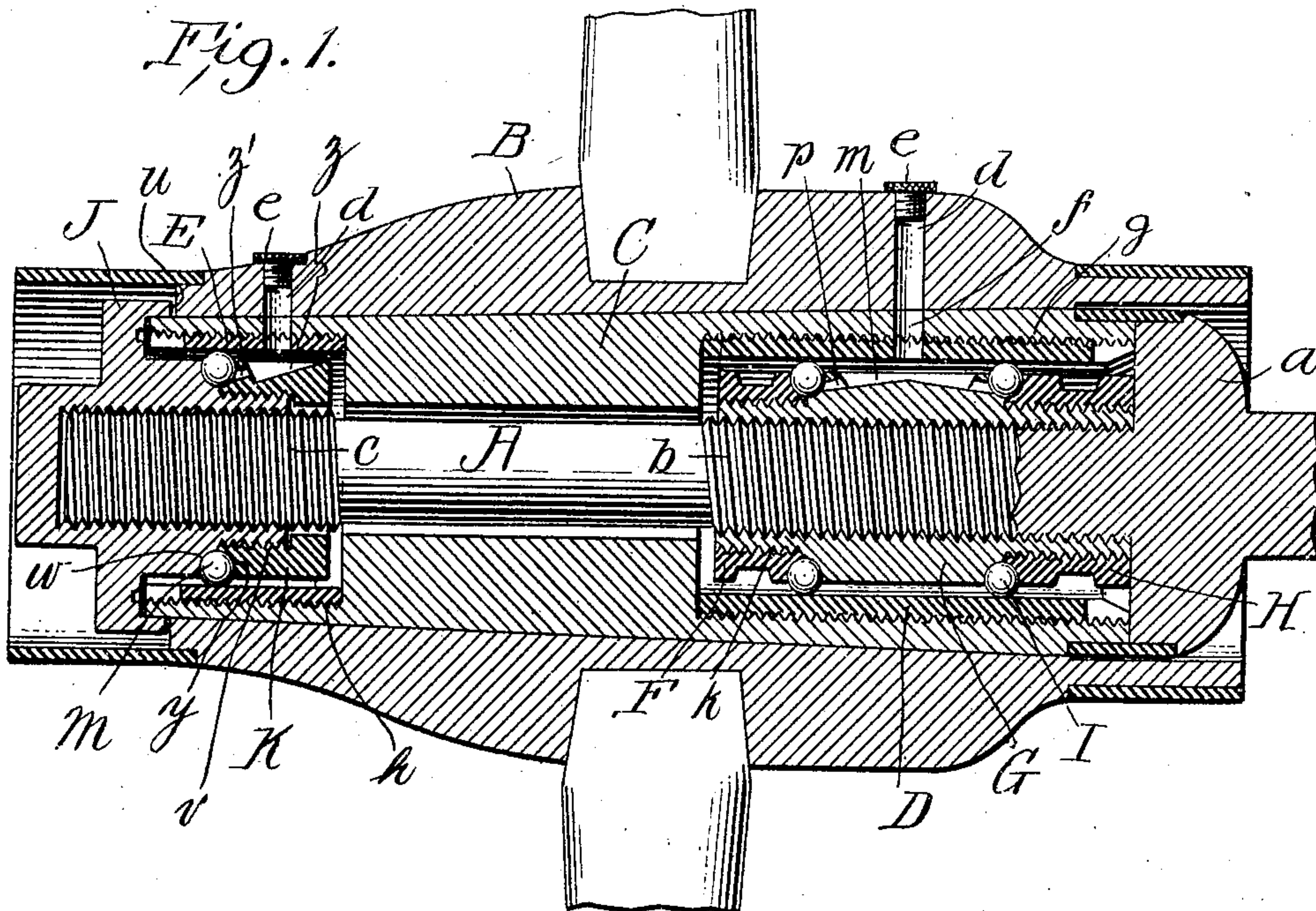
No. 844,122.

PATENTED FEB. 12, 1907.

W. F. GRAFFIS.

AXLE BOX.

APPLICATION FILED AUG. 13, 1906.



Witnesses

O. W. Holmes  
T. E. Turpin

By

W. F. Graffis  
James J. Shuchy  
Attorney



# UNITED STATES PATENT OFFICE.

WILLIAM F. GRAFFIS, OF MANITO, ILLINOIS.

## AXLE-BOX.

No. 844,122.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed August 13, 1906. Serial No. 330,463.

*To all whom it may concern:*

Be it known that I, WILLIAM F. GRAFFIS, a citizen of the United States, residing at Manito, in the county of Mason and State of Illinois, have invented new and useful Improvements in Axle-Boxes, of which the following is a specification.

My invention pertains to axle-boxes or boxes for wheel-hubs; and it contemplates the provision of a simple, durable, and efficient ball-bearing axle-box and one which may be readily and thoroughly lubricated when necessary.

Other advantageous features of the invention will be fully understood from the following specification and claim when the same are read in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a diametrical section illustrating a wheel-hub equipped with the axle-box constituting the present and preferred embodiment of my invention. Fig. 2 comprises disconnected elevations of the sections forming the outer ball-race of the axle-box, and Fig. 3 comprises disconnected elevations of the sections forming the inner ball-races of the box.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is an axle-spindle. This spindle merges at its inner end into the usual collar *a*, and it is provided at its inner end with a thread *b* and at its outer end with a thread *c*.

B is a wheel-hub provided with lubricant-ducts *d*, normally closed by plugs *e*, and C is a boxing, preferably but not necessarily of cast-iron, snugly arranged in the hub B and having apertures *f* registered with the ducts *d* of the hub. Said boxing C is also provided at its inner end with a threaded chamber *g*, and in its outer end with a comparatively small threaded chamber *h*. These chambers receive exteriorly-threaded shells D and E, which shells are of chilled steel or other material compatible with their purpose. In addition to the elements named the axle-box comprises the inner ball-race sections F, G, and H, the antifriction-balls I complementary thereto, the outer ball-race sections J and K, and the antifriction-balls M employed in combination therewith.

By reference to Figs. 1 and 3 it will be observed that the section G has reduced the threaded ends *k*, ball-race portions *l* at the

inner ends thereof, an oil-pocket *m* in the perimeter of its intermediate portion *n*, and passages *p*, leading from the ends of the pocket *m* to the ball-race portions *l*, so as to conduct to the ball-races the lubricant received in the said pocket *m*. The said section G is tubular and interiorly threaded to permit of its being screwed on and off the threaded portion *b* of the spindle A, and it is further provided with recesses *r* at opposite points, designed to afford a hold for a spanner, wrench, or the like during the turning of the section on or off the spindle A. The sections F and H are screwed on the threaded ends of the section G and are provided with spanner-holds *s* and ball-race portions *t*, the latter serving, in combination with the portions *l* of the sections G, to retain the antifriction-balls I. Thus it will be seen that when necessary the section G may be turned off the spindle A, and then the sections F and H may be turned outward on the ends of the section G to permit of the removal of the balls I for cleaning or for any other purpose.

The section J, Figs. 1 and 2, is in the form of a nut and is preferably provided with an inwardly-directed band *u*, which loosely receives the outer end of the boxing C. Said section J is interiorly threaded to screw on and off the threaded portion *c* of spindle A, and it is provided with an exteriorly-threaded inner end *v* and a ball-race portion *w*. The section K is adapted to screw on and off the end *v* of section J and is provided with wrench or spanner holds *x*, a ball-race portion *y*, and a lubricant-pocket *z*, the latter being connected by an aperture *z'* with the said ball-race portion. It will be noted from the foregoing that when the section K is properly positioned on the section J the balls M will be retained between the two sections, also that subsequent to the removal of section J from spindle A the section K may be turned outward on the threaded end of section J to permit of the balls M being readily cleaned or for any other purpose.

All of the parts of the novel axle-box, excepting the boxing C, are preferably of chilled steel or other metal adapted to withstand frictional wear.

In the practical use of the axle-box the lubricant-pockets *m* and *z* are arranged under the lubricant-ducts, Fig. 1, and hence it will be apparent that when lubricant is supplied to said ducts it will be conducted directly to



the antifriction-balls and the ball-races, where it is most needed. It will also be apparent that because of the hard-metal shells D and E bearing on the balls I and M the turning of the boxing C and hub B will be attended by but a minimum amount of friction.

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

The combination in an axle-box, of a spindle having threaded portions, a boxing surrounding the spindle, an interiorly-threaded ball-race section secured on the inner threaded portion of the spindle and having exteriorly-threaded end portions, interiorly-

threaded end ball-race sections mounted on the first-mentioned section, balls arranged in the races formed by said sections, an interiorly and exteriorly threaded ball-race section mounted on the outer threaded portion of the spindle, an interiorly-threaded section mounted on the latter section, and antifriction-balls held between the two latter sections.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM F. GRAFFIS.

Witnesses:

HEROD HUNT,  
JAMES S. MEIGS.