J. WHIPP.

MEANS FOR ATTACHING WHEELS TO SHAFTS.

APPLICATION FILED NOV. 2, 1911.

1,050,190. Patented Jan. 14, 1913.

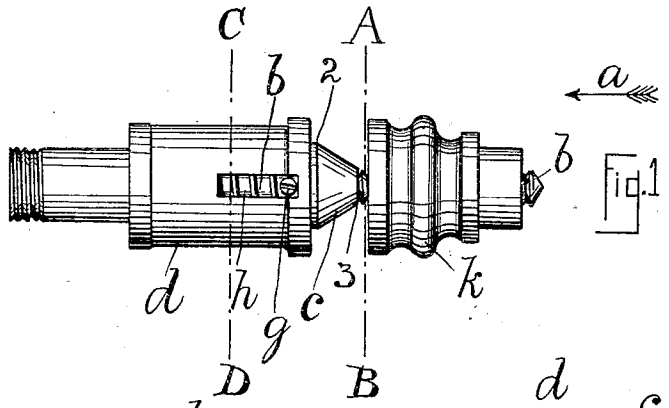

Fig. 1

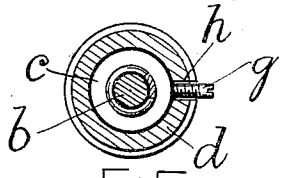

Fig. 5

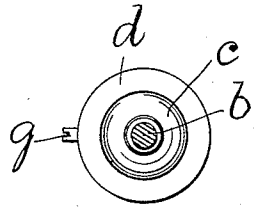

Fig. 4

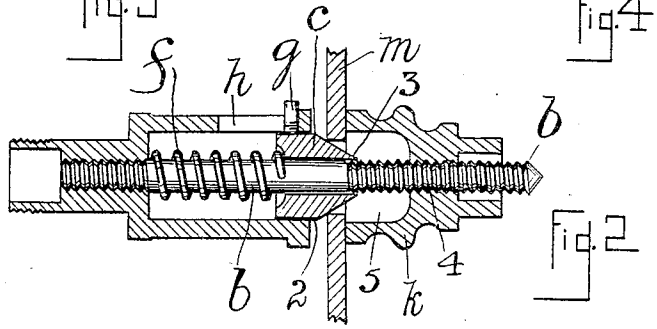

Fig. 2

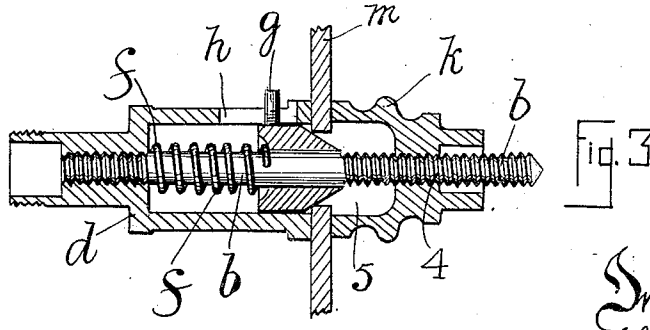

Fig. 3

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UNITED STATES PATENT OFFICE.

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MEANS FOR ATTACHING WHEELS TO SHAFTS.

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Application filed November 2, 1911. Serial No. 658,241.

To all whom it may concern:

Be it known that I, JOHN WHIPP, a subject of the King of Great Britain, and resident of The Elms, Yorkshire street, Rochdale, in the county of Lancaster, England, have invented a certain new and useful Improvement in Means for Attaching Wheels to Shafts, of which the following description, together with the annexed sheets of drawings, is a specification.

In the mounting of disks (which term includes those disks that have radiating arms and therefore may form wheels) upon their rotary spindles especially where such disks have to be interchangeable, should any variation in the sizes of the axial openings in said disks occur, those having openings larger in diameter than that of the spindle upon which they have to fit entail the exercise of considerable care in overcoming the difficulties in adjusting them centrally thereto so that they shall be evenly balanced in order not to set up unnecessary vibrations during their rotary actions. To provide a spindle with parts or fixing devices which will enable said disks to be readily mounted thereon, whether they have large or small central openings and yet when fixed in position, shall be held firmly and centrally, is the object of my present invention, and this I attain by making use of a conical bush of well known formation for centering saws, bearings and the like, but with the parts in combination therewith constructed and arranged as hereinafter explained.

In order to enable my invention to be readily understood I have hereunto appended a sheet of drawings illustrative thereof to which by figures and letters reference is made in the following description.

Figure 1 is an elevation showing the formation or construction of my improved part. Fig. 2 is a sectional view of parts shown by Fig. 1 and shows same in position as when a disk having a central opening larger than the spindle is being mounted thereon. Fig. 3 is a similar view to Fig. 2 but shows the parts in position as when the fixing devices are brought together to secure the disk in position between them. Fig. 4 is a sectional end elevation on line A—B as seen in the direction indicated by the arrow *a*. Fig. 5 is also a sectional end elevation on line C—D of Fig. 1 as seen in the direction opposite to that indicated by the arrow *a*.

To attain the object of my invention I arrange the spindle *b* to have a conical part *c* mounted thereon the same being formed so that it will taper from its largest diameter at 2 to its smallest diameter at 3 at which part its said diameter approximates that of the spindle *b*. This part *c* is arranged to slide freely upon the spindle *b* upon which spindle *b* is also fixed a hollow sleeve *d* so that a spring *f* also mounted upon the spindle *b* may extend within said sleeve *d* in such a manner that the inner end of said spring *f* will abut against the inner end of the sleeve, while the other end of the spring *f* will abut against the sliding conical piece *c*. Thus at all times said spring *f* will tend to force the conical part *c* toward the outside of the sleeve *d*, such position of the conical part *c* being shown by Figs. 1 and 2.

Extending from the part *c* is a stop pin *g* which extends through a slot *h* made in the wall of the sleeve *d* said stop pin being arranged to permit the conical part *c* to slide within the sleeve *d* but to prevent it from being pushed beyond said sleeve *d* by coming in contact with the outer end of its slot which is illustrated by Figs. 1 and 2.

The outer end 4 of the spindle *b* is screw threaded to receive a fixing nut *k* which is made to extend over said screw and mesh therewith so that by being rotated it may be screwed on or off same, while the inner end 5 of said nut *k* is made hollow or is recessed to extend over the extending end 3 of the conical part *c* whenever same is forced to enter therein. On the outer end of the sleeve *d* and the inner end of the nut *k* appropriate fixing surfaces are produced so that any disk as *m* placed in position between the nut *k* and the sleeve *d* and upon the conical part *c*, when the nut *k* is screwed up or rotated, said disk *m* is forced on to the conical part *c* which will enter the opening in said part *d* centrally and therefore determine the position of said opening relatively with the axis of the screw *b* in order that when the nut *k* is finally tightened up said disk *m* will be securely and firmly held in position concentrically with the spindle *b* and between the end surfaces of the sleeve *d* and nut *k* as is shown by Fig. 3.

Although the part *m* is referred to as a disk it is obvious that any size of disk having an opening that will suit the conical part *c* and of not too large a width to extend over the spindles *b* may be gripped and fixed in the positions stated whether such

disk has radiating arms, thus forming a wheel, or otherwise, and by the term disk I wish it to be understood that I mean the part merely gripped between the sleeve *d* and the nut *k* as set forth.

Such being the nature and object of my invention, what I claim is:—

1. The combination of a shaft, a sleeve rigidly mounted thereon, a spring mounted on said shaft, internally of the sleeve, a conical collar normally pressed by said spring, slidable longitudinally of said shaft, and a fixing device adapted to secure a disk centrally of the said shaft.

2. The combination of a shaft, a cup mounted thereon opening toward the adjacent end of said shaft, a spring mounted therein, a conical collar pressed by the said spring longitudinally slidable on said shaft and within said cup, and a nut provided with a cylindrical depression centrally thereof adjacent to the outward end of the sleeve when the parts are assembled and adapted to secure a disk centrally of the shaft.

3. The combination of a shaft, a cup integral therewith and opening toward the end thereof provided with a clamping shoulder at its open end, a collar longitudinally slidable on said shaft and within said cup, a collar conical shaped on its outer extremity, a spring mounted within said cup normally impelling said collar outwardly upon the shaft, and a nut provided centrally with a cylindrical depression adapted to fit over the collar and bind the disk centrally of the shaft against the clamping shoulder on the cup when the parts are assembled.

4. In a journal bearing, a spindle, a cup centrally mounted on the spindle and opening toward the adjacent end thereof, a rim formed on said cup and providing an annular binding shoulder, a conical collar longitudinally slidable on the spindle, a stop piece formed with the collar and projecting through a longitudinal slot in the cup, a spring within the cup-mounted on the shaft, normally pressing the collar outwardly of the shaft, and a nut threaded to the shaft, and provided with a cylindrical depression adapted to fit over the conical collar and bind the disk centrally of the shaft against the annular shoulder on the cup.

5. In a journal bearing, a shell, a rim formed on said shell and providing an annular binding shoulder, a shaft mounted in the shell, a conical collar within the shell and longitudinally slidable on the shaft, the stop piece of the collar limiting the extent of its outward displacement, a spring within the shell bearing against the collar, and a nut on the end of the shaft provided with a cylindrical depression and adapted to fit over the conical collar and bind the disk centrally of the shaft against the annular shoulder on the shell.

In testimony whereof I have hereunto affixed my signature in presence of two witnesses.

JOHN WHIPP.

Witnesses:
JOHN WHITEHEAD,
JOHN WILLIAM THOMAS.