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CHUCK AND TOOL HOLDING DEVICE

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Fig. 1.

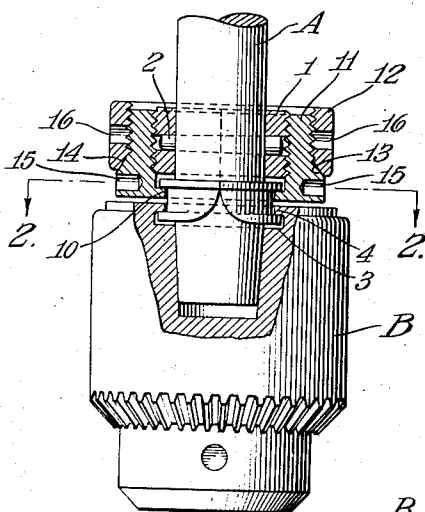


Fig. 2.

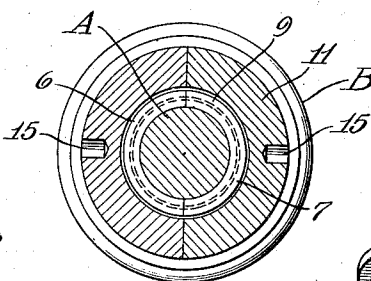


Fig. 3.

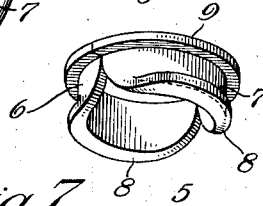


Fig. 7.

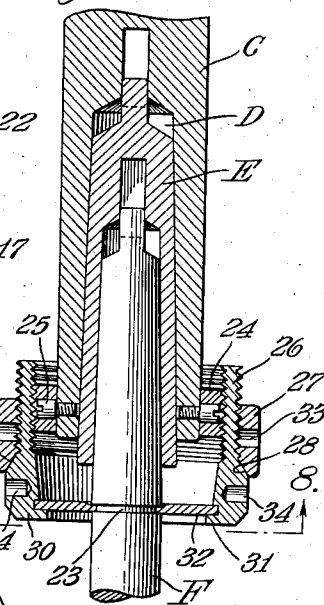


Fig. 4.

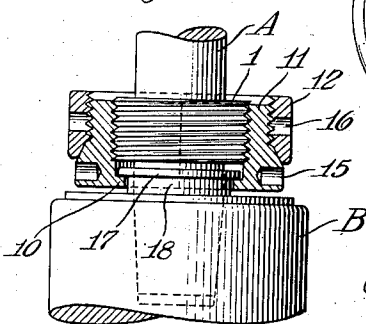


Fig. 6.

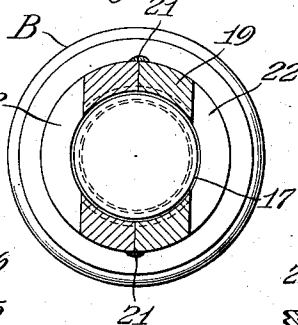


Fig. 8.

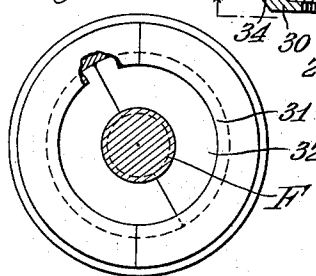
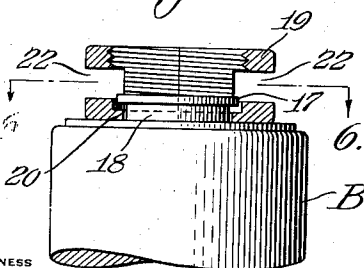


Fig. 5.



WITNESS

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CHUCK AND TOOL HOLDING DEVICE

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2 Claims. (Cl. 287—107)

This invention relates to chucks and tool holding or clamping devices for use on solid and hollow tapered spindles, shafts or heads of lathes, drill presses and like machines, and its general object is to provide a device that will clamp and securely hold chucks, tools or adapters with respect to the spindles etc., against casual removal or displacement, regardless of speed, thus preventing injury to the user and breakage of parts brought about by removal or displacement thereof, yet the device can be applied and removed with respect to the spindles, etc. in an easy and expeditious manner.

A further object is to provide a holding device of the character set forth, that is simple in construction, inexpensive to manufacture, and extremely efficient in operation, use and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a fragmentary view partly in section, illustrating one form of my device in use for holding a chuck on a solid tapered spindle.

Figure 2 is a sectional view taken approximately on line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a perspective view of the removable sectional flanged connector member for use with the form of Figure 1.

Figure 4 is a view partly in section of a slightly modified form.

Figure 5 is a view partly in section of a further modified form.

Figure 6 is a sectional view taken approximately on line 6—6 of Figure 5, looking in the direction of the arrows.

Figure 7 is a longitudinal sectional view taken through a further modified form for use with a hollow spindle of a drill press.

Figure 8 is a sectional view taken approximately on line 8—8 of Figure 7, looking in the direction of the arrows.

Referring to the drawing in detail, and particularly to the form of Figures 1 to 3, the letter A indicates a solid spindle having a tapered chuck receiving end and B a chuck of the usual geared adjustable type, the chuck having a tapered bore for receiving the tapered end of the

spindle therein, and the chuck is fixed to the spindle by my device, as best shown in Figure 1.

The device of the form of Figures 1 to 3 includes an exteriorly threaded collar 1 fixed to the spindle A by a tapered pin 2 and the chuck body has a recess 3 centrally of its inner end about the tapered bore, with an annular rib 4 overhanging the recess to provide a shoulder for receiving and holding an annular connector member 5 within the recess, the connector member including separable half sections 6 and 7, with each section formed to provide an arcuate tongue 8 on its inner end and a flange element on its outer end to provide an annular flange 9, when the sections are associated with each other and mounted in the recess, as shown in Figure 1, which likewise illustrates that the tongues 8 bear against the shoulder to hold the member 5 detachably secured to the chuck body. In order to allow easy application and removal of the connector member sections within the recess, the confronting edges of the sections are outwardly flared in curved formation from the flange elements to the ends of the tongues, as clearly shown in Figure 3.

The flange 9 provides bearing means for the inwardly directed flange 10 at the inner end of a sectional ring 11 that is interiorly threaded to be threaded on the collar 1 and exteriorly threaded for threadedly receiving a lock collar 12, that has a beveled inner edge 13 engaged with a beveled shoulder 14 on the ring 11 to urge the sections of the latter together and in clamping engagement with the collar 1. The sections of the ring 11 each constitute a half thereof, as best shown in Figure 2. Each section has a hole 15 inwardly of the beveled shoulder 14 thereof and the lock collar 12 is likewise provided with holes 16 upon diametrically opposite sides, which together with the holes 15 are for the purpose of receiving a spanner wrench or like tool for threading the ring and collar 12 into and out of use, as will be apparent. By that construction, it will be obvious that casual removal or displacement of the chuck with respect to the spindle A is practically impossible, regardless of the speed of the spindle.

The form of Figure 4 is substantially identical to that of Figure 1, with the exception that the removable connector member 5 is eliminated and the flange 10 of the sectional ring 11 is mounted between a flange 17 and the chuck body to bear against the flange 17, the latter being formed on an annular projection 18 integral with the chuck body about the edge of the bore therein, to pro-

vide a permanent connector member, with the ring 11 swiveled thereon.

The form of Figures 5 and 6 includes a sectional internal threaded ring 19 having an internal annular flange 20 at its inner end for disposal between the flange 17 and the chuck body to bear against the latter flange when the ring 19 is threaded on the collar 1. The lock collar is eliminated in this form, as the sections of the ring 19 are welded or otherwise fixed together as at 21, after the sections of the ring 19 are applied to the projection 18 of the connector member, so that the ring 19 will be permanently attached to the chuck body and swiveled on the projection. The ring 19 is shown as being slotted as at 22 upon diametrically opposite sides for receiving a wrench or knock-off tool, or it may be provided with spanner wrench receiving holes, and the annular portions of the ring 19 are preferably serrated to provide gripping means.

The form of Figures 7 and 8 is designed for hollow spindles of a drill press or the like, and the spindle which is indicated by the letter C is provided with a tapered bore D having mounted therein a tool adapter E which is likewise provided with a tapered bore for receiving the shank F of a drill bit, reamer, milling tool or the like, the shank having an annular groove 23 therein, for a purpose which will be presently described.

The spindle collar 24 of the form of Figures 7 and 8 is secured to the spindle C by screw bolts 25 and the collar 24 is exteriorly threaded for receiving a sectional ring 26 that is provided with a relatively thin skirt portion interiorly threaded to be mounted upon the collar 24 and exteriorly threaded for receiving a lock collar 27 having a beveled end 28 engageable with a beveled shoulder 29 formed on a relatively thick portion 30 of the ring 26 for holding the sections of the latter together and within the threads of the collar 24. The thick portion 30 has an intumed flange 31 on its outer end, and a groove in its inner face at the juncture of the flange therewith for receiving a sectional washer like connector member 32 provided with a central opening having a reduced edge fitting within the groove 23 for holding the shank F within the bore of the adapter E against any possibility of casual removal or displacement when my device is applied to the spindle and the shank, as will be apparent. While I have illustrated the shank F as being mounted within the bore of the adapter E, it will be obvious that it can be mounted directly within the bore D of the spindle C, it depending of course upon the size of the tool to be used.

The lock collar 27 is formed with diametrically

disposed holes 33 and the portion 30 of the ring 26 is provided with like holes 34 which together with the holes 33 are for the purpose of receiving a spanner wrench or the like, as will be apparent.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. A device for holding a chuck against casual removal or displacement on a tapered spindle, comprising a collar secured to the spindle, a sectional ring to be threaded on the collar, said chuck having a bore therein for receiving the spindle and a recess about the outer end of the bore, a rib overlying the recess and providing a shoulder, a sectional connector member removably mounted in the recess and including tongues bearing against the shoulder for holding said connector member within the recess, a flange on the connector member, a flange on the ring to bear against the first flange when the ring is threaded on the collar, and a lock collar threaded on the ring for holding the sections thereof about the connector member and against the spindle collar.

2. A device for holding a chuck against casual removal or displacement on a tapered spindle, comprising a collar secured to the spindle, a sectional ring to be threaded on the collar, said chuck having a bore therein for receiving the spindle and a recess about the outer end of the bore, a rib overlying the recess and providing a shoulder, a sectional connector member removably mounted in the recess and including tongues bearing against the shoulder for holding said connector member within the recess, a flange on the connector member, a flange on the ring to bear against the first flange when the ring is threaded on the collar, a lock collar threaded on the ring for holding the sections thereof about the connector member and against the spindle collar, the sections of the connector member each constituting a half thereof and having outwardly flared confronting faces to facilitate application and removal of the connector member within the recess, said ring and lock collar having tool receiving means therein to facilitate threading the same into and out of use, said ring having a beveled shoulder, and a beveled edge on the lock collar to bear against said shoulder.

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