

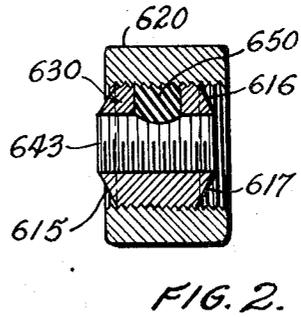
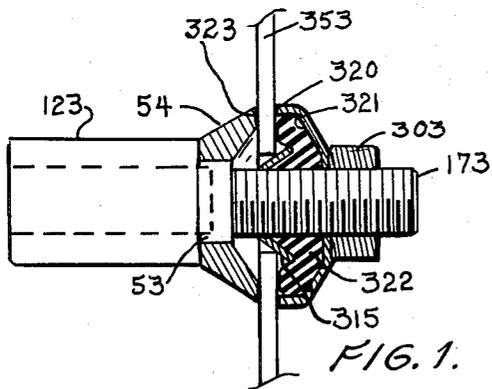
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MOTOR ARBOR

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## MOTOR ARBOR

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4 Claims. (Cl. 51-168)

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This invention relates to arbors for mounting rotary tools and the like on the small motors commonly used in home workshops. Devices heretofore employed for such purpose have consisted of arbor spindles secured to the motor shaft or grinding head shaft provided with two clamp washers secured on the threaded spindle by a nut, and, if safety is observed, a wrench tight lock nut. Such prior devices have required the central hole of a rotary tool (such as turnings, grinding wheels and sanding discs) to be an exact fit on the arbor spindle and truly round and truly central in the tool disc, whereas tools of this nature are commonly merchandised with central holes varying substantially in diameter, out of round and sometimes of square or oval shape. This has necessitated employment of a multiplicity of arbors and centering wedges, nuts, adapters, plugs or bushings either purchased separately or constructed hurriedly, from paper or wood which often mount the rotary tool in an off-center, insecure and dangerous manner while rapid interchange on a single arbor has become substantially impossible.

The herein disclosed invention provides means for instant automatic centering of rotary work and tools having varying diameter with central holes of round, oval, square or other shape. It further provides independent clamping for the centered tool and simultaneous locking of the centering and clamping means whereby the tool is securely clamped and safely held without increasing or expanded centering action but with a side clamping pressure which does not apply the dangerous outward pressure common to former arbors of the taper type, all of this being accomplished with substantial saving of time of application and without wrenches or other tools commonly employed.

Referring to the attached drawings:

Fig. 1 discloses a preferred modification of invention embodiment.

Fig. 2 shows a further modification in full section.

Referring to Fig. 1, arbor body 123 adapted to be secured upon a motor shaft after the fashion well known to the art, extends into a threaded spindle 173 and is provided with a shouldered portion 53 whereon seats concaved washer 54 providing the radial clamping surface 323 for the work indicated at 353. Spindle 173 has a nut 303 threading thereon and against the special clamp washer 320 concaved on its inner surface as at 321 to enlarge the compressible member 322, which in turn engages centering cone or taper

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315. Compressible member 322 rides directly upon spindle 173. It being understood that compressible member 322 is preferably made of rubber or the like material which flows under pressure and that such member limits its pressure along the shaft on cone 315 by enlarging outwardly into washer 320 and is directed by the concaved surface 321 forward toward the clamped work piece 353 to exert a resilient pressure around and under the inner edge of washer 320 outer flange.

The operation of this embodiment includes mounting work 353 whose central hole may, or may not fit on spindle 173, application of clamp washer 320, member 322 and cone 315 on the spindle preferably as a single unit which permits the work to be accurately centered, and thereafter nut 303. Tightening nut 303 operates to force centering cone 315 into the central opening of work 353 to center the same and to apply axial pressure through 320 and the outwardly compressed portion of member 322 to finally clamp the work securely against surface 323, the inward flow of pressure in member 322 will at the same time compress lock member 322 against the spindle 173 to stop "backing off" and to lock the whole together. Means is thus provided for a final wholly resilient wheel mounting.

Fig. 2 shows a simplified embodiment of my invention wherein the spindle nut 639 is provided with two conical centering portions 615 and 617, is externally threaded at 643 to engage the usual motor arbor spindle, has an outer clamping ring 620 threaded thereon and includes an internal radial bore containing the compressible plug 650 of material such as that described for member 322 above which preferably simultaneously engages the thread of the motor arbor spindle and the internal thread 616 of the clamping ring 620. It will be understood that clamping ring 620 is here turned to advance the centering cone 615 to center the work on the spindle and then further turned against the resistance of the locking plug 650 to exert parallel clamping pressure against the work, and that in releasing this modification, the ring 620 is turned in a reverse direction and carries with it the centering cones whereupon it may be again applied without moving cone member relative to the ring by simply reversing the whole device on the spindle.

I claim:

1. An arbor clamp for tools including a spindle, a tool centering cone, a relatively soft flowable rubber disc, a cup-shaped washer for receiving the disc having inner surfaces radial to and co-axial with the spindle, and means for moving the

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washer towards the tool, whereby pressure applied to the washer and the disc will cause the soft rubber of the disc to engage the cone and flow radially into contact with the spindle and radially and axially around said cone and into contact with the tool.

2. An arbor clamp for tools having a bore at its center comprising a centering cone, a cup-shaped washer having a curved inner surface, a rubber disc held between the cone and the washer, and means including a spindle to apply pressure to the washer whereby the rubber disc is caused to simultaneously urge the cone into the bore of the tool and to flow radially outwardly around the cone and be directed by the curved surface of the washer into engagement with the tool beyond the centering cone.

3. A tool arbor comprising an abutment against which the tool rests, a spindle for receiving the tool, and means for centering and clamping the tool on the arbor comprising a cone-shaped centering plate engaging the tool, a disc of rubber engaging the plate, a washer contacting the disc of rubber, and means to move the washer towards the tool to compress the rubber disc and hold the plate in centering contact with the tool and on such compression the disc is expanded radially to have frictional engagement with the tool and the spindle.

4. A tool arbor comprising an abutment against

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which the tool rests, a spindle for receiving the tool, and means for centering and clamping the tool on the arbor comprising a cone-shaped centering plate engaging the tool, a disc of rubber engaging the plate, a cup-shaped washer having an inner curved surface directed towards the tool, and means to move the washer towards the tool and to compress the rubber disc and hold the plate in centering contact with the tool and on such compression the disc is expanded radially to frictionally contact the spindle and be guided by the curved surface of the cup-shaped washer into engagement with the tool.

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