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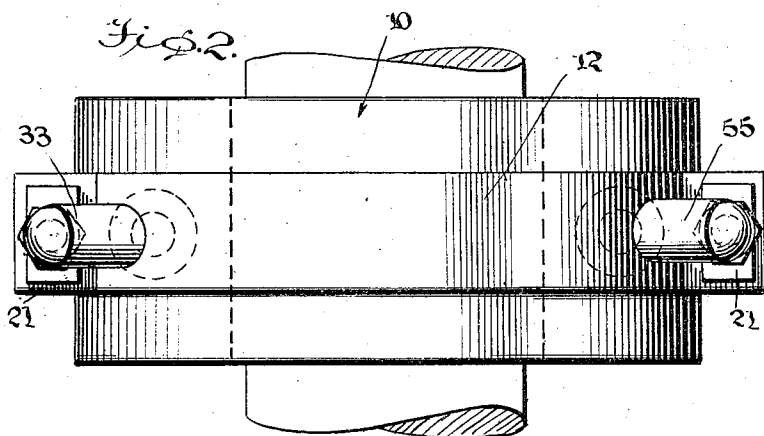
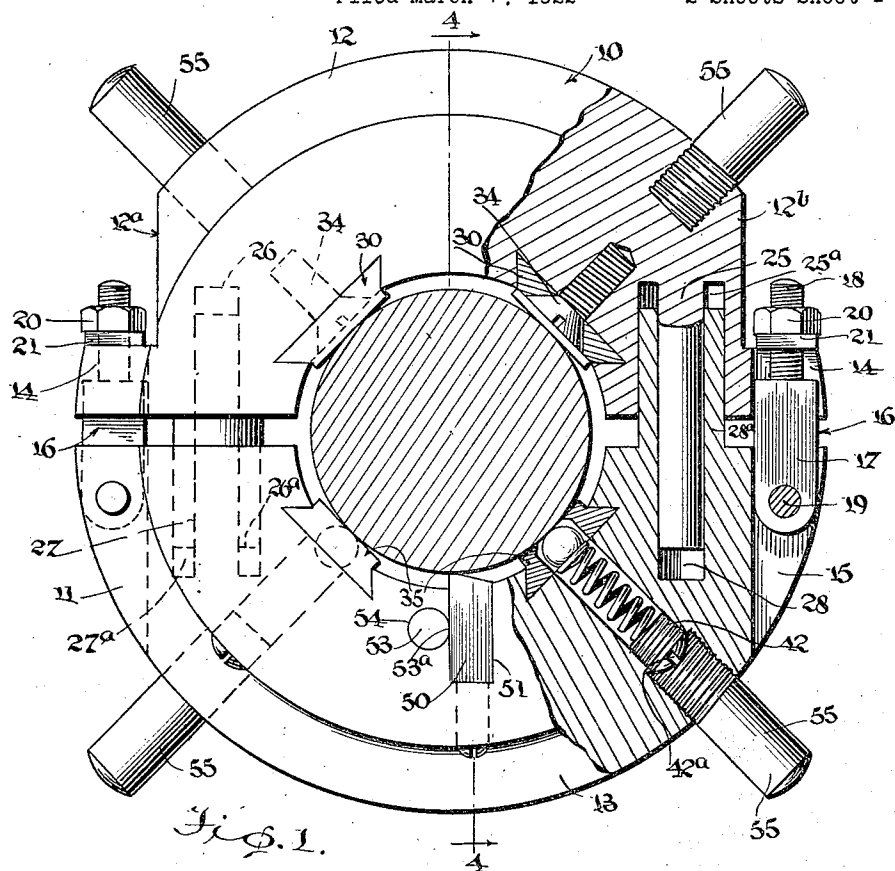
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W. F. RONEY

TURNING TOOL

Filed March 7, 1922

2 Sheets-Sheet 1



WITNESSES

R. E. Rousseau
W. F. Buckley.

INVENTOR

W. F. Roney,

BY *Wm. Ho*

ATTORNEYS

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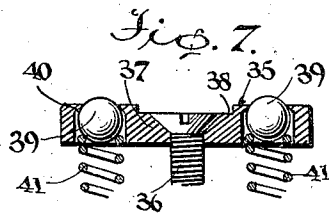
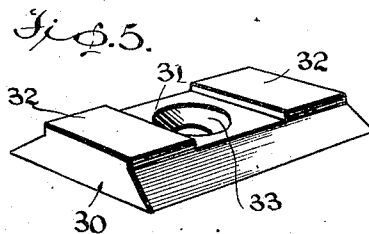
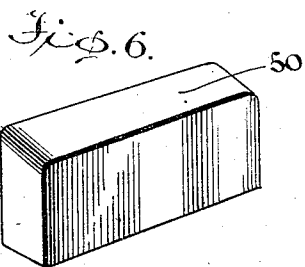
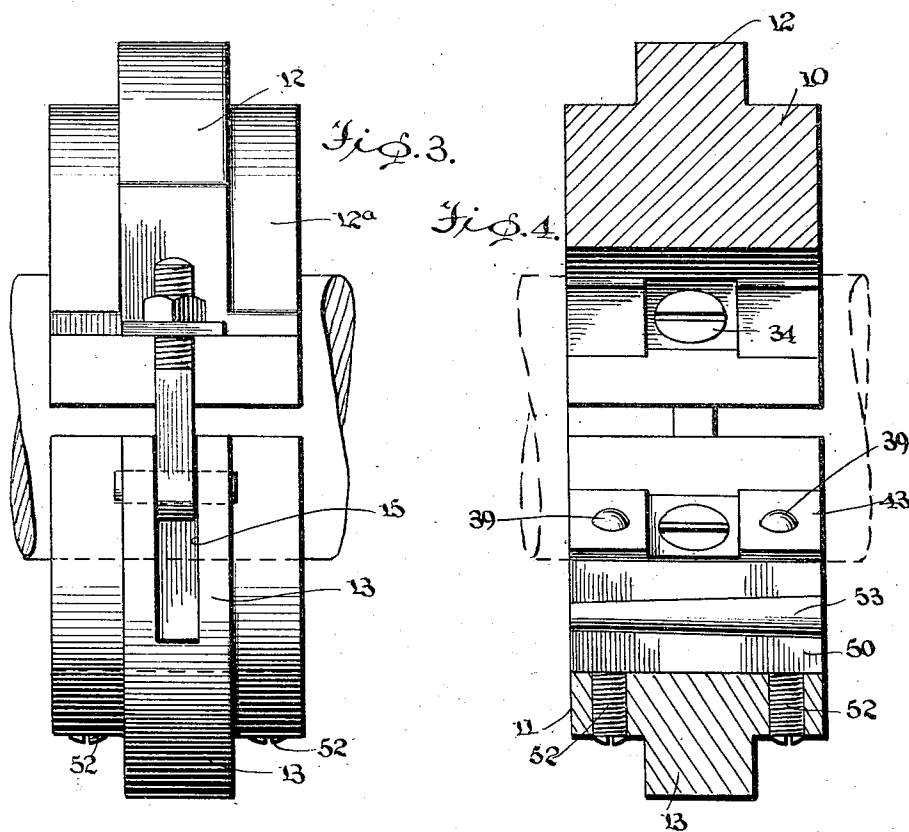
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WITNESSES
W. F. Rousseau
W. F. Buckley

INVENTOR
W. F. Roney
BY *Munn & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM FRANKLIN RONEY, OF DENVER, COLORADO.

TURNING TOOL.

Application filed March 7, 1922. Serial No. 541,741.

To all whom it may concern:

Be it known that I, WILLIAM FRANKLIN RONEY, a citizen of the United States, and a resident of Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Turning Tools, of which the following is a specification.

This invention relates to an improvement in turning tools especially adapted for use with crank shafts and the like.

The object of the invention is to provide a turning tool of this character which is adjustable so as to be readily adapted for use with work on bearings of various sizes and which is so constructed and organized as to accurately turn or "true" the bearing to its circular cross section irrespective of the adjustment of the turning tool.

Another object is to provide a turning tool of this character which may be readily applied to and removed from the work and which may be conveniently used on a lathe, bench or in the crank case.

Other objects and advantages of the invention reside in certain novel features of construction, combination and arrangement of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming part of this specification, and in which:

Figure 1 is view in side elevation, showing the preferred embodiments of the invention, parts being broken away and shown in section and in elevation for the sake of illustration;

Figure 2 is a plan view of the invention;

Figure 3 is a front elevational view thereof;

Figure 4 is a view in transverse section on line 4-4 of Figure 1;

Figure 5 is a detail perspective view of one of the stationary carrier shoes or blocks;

Figure 6 is a detail perspective view of the cutter.

Figure 7 is a detail view in transverse section illustrating the detail construction of one of the centering shoes or blocks.

Referring to the drawings wherein for the sake of illustration is shown the preferred embodiment of the invention, it will be seen that the improved turning tool comprises a pair of companion parts, designated at 10 and 11, these companion parts together constituting the body portion

of the tool. The companion parts 10 and 11 are each provided with arcuate shoulders designated at 12 and 13, respectively. The arcuate shoulder 12 terminates at its ends in vertical walls designated at 12^a, and below these vertical walls laterally extending bifurcated lugs 14 are provided, the lugs being preferably integrally formed with the body portion. The lugs 14 are arranged in confronting relation with respect to channels 15 provided in the opposed portions of the arcuate shoulder 13. Eyebolts 16 are provided, and each includes a shank 17 of rectangular cross section and presenting flat side faces and a threaded stem 18 integral with the shank. The rectangular shanks 17 of the eye-bolt 16 are pivotally connected at one end by means of pivot pins 19 to the portions of the shoulder 13 which define the channels 15. The faces of these portions of the shoulder 13 which define the channels 15 are plane and flat and lie parallel, and these faces coact with the flat faces of the rectangular shank to constrain it to vertical swinging motion. A portion of the rectangular shank 17 is also received in the space between the bifurcated lugs 14. Adjusting nuts 20 are threaded on the stems 18 and engage rectangular washers 21 interposed between the nuts and the adjacent faces of the bifurcated lugs 14. The part 10 carries a cylindrical guide rod 25 at one side and has formed at the opposite side a guide socket 26. Similarly the part 11 has a guide rod 27 formed at one side and a guide socket 28 formed at the opposite side. The guide rod 25 coacts with the guide socket 28 of the part 11 and the guide socket 26 of the part 10 coacts with the guide socket 27 of the part 11. The parts 10 and 11 are provided with cavities 25^a and 27^a about the guide rods 25 and 27, respectively, and the guide sockets 26 and 28 are formed by boring or otherwise machining an opening in the body proper of the parts 10 and 11 and also by providing tubular flanges 26^a and 28^a respectively, the bores of the tubular flanges 26^a and 28^a being alined with the openings or bore formed in the bodies of the companion parts. As clearly shown in Figure 1 the guide rods 25 and 27 slidably fit in the guide sockets 28 and 26 respectively and the tubular flanges 26^a and 28^a slidably fit in the cavities 25^a and 27^a, respectively. These parts are machined or ground and polished

to a snug working or sliding fit and function to accurately constrain the parts 10 and 11 to partake of proper movements toward and away from each other.

5 Carrier shoes or blocks 30 are associated with the part 10 and preferably two such carrier shoes or blocks are provided. The carrier blocks 30 have dove tailed engagement with the part 10, the part 10 being
10 provided with grooves receiving these blocks, and the side walls of the grooves being undercut and engaging undercut side edges of the blocks 30 to bring about the dove-tail engagement. Intermediate its ends
15 each carrier block is provided with a cutaway portion or clearance 31 and at its ends bearing surfaces 32 are formed, these bearing surfaces 32 being plane and flat and being adapted to directly engage and contact
20 with the work. The central portion of the carrier block is provided with a countersunk opening 33 with which a screw 34 coacts to secure the carrier block in position of the part 10. As clearly shown in Figure 1,
25 these blocks 30 are spaced angularly from each other and the planes in which the bearing surface 32 are disposed intersect each other at approximately a 90° angle. It is the primary function of these blocks to support and carry the tool during the rotation
30 of the work, the bearing surfaces 32 engaging the work for this purpose. The clearance 31 is provided in order that the oil grooves and other irregularities encountered in crank shaft bearings and the like may
35 be accommodated without impairing the accuracy or otherwise impairing or altering the action of the tool.

A pair of centering blocks, designated generally at 35 are carried by the part 11 of the tool and preferably these centering blocks are arranged diametrically opposite the carrier blocks. These centering blocks
40 have dove-tail or undercut engagement with the part 11 and are also secured in position by means of the screw operating through a countersunk opening 37 provided in the center of the block, the block being cutaway centrally, as at 38, to provide a clearance
50 as in the instance of the carrier block. The centering blocks 35 are also provided with centering devices which are arranged at the ends of the block. Preferably these centering devices comprise balls 39 operating in
55 sockets 40 provided therefor at the ends of the block. The sockets permit the balls to project therefrom a substantial distance and springs 41 urge the blocks to project from their sockets as shown in Figure 7. The
60 springs 41 are arranged in radial openings provided therefor in the part 11, and these springs are tensioned by means of threaded plugs 42, the plugs having slots 42^a in their outer ends in order that they may be readily
65 manipulated by suitable tools, such as a

screw-driver or the like. As before stated the centering devices are provided at the ends of the block and these ends are also provided with bearing surfaces 43 (see Figure 4) which are adapted to engage the work
70 when it is of true circular cross section and when it is not necessary for the balls 39 of the centering devices to project from their sockets and engage the work in order to properly center the tool thereon.

A cutter 50 is provided and preferably is arranged upon the part 11, the cutter being adjustably mounted in the cutter slot 51 provided therefor in this part. As shown in Figure 1 the cutter is arranged intermediate the centering blocks 35. Adjusting mechanism is provided for the cutter and preferably comprises a pair of adjusting screws
80 52 (see Figure 4) having threaded engagement with the part 11 and having their ends engaging and controlling the cutter. A tapered key 53 is adapted to be driven into an opening 24 of corresponding formation, and this tapered key 53 is provided with a flat face 53^a engageable with the adjacent face
90 of the cutter, it being understood that the opening 54 intersects the cutter slot 51 so that the flat face 53^a of the key 53 directly engages the adjacent face of the cutter 50. In this manner the cutter is locked in position and displacement thereof is prevented.

Operating handles 55 are provided. Preferably there are four such handles, two being carried by the part 10 and two being carried by the part 11, the operating handles extending laterally or radially from the tool. The handles may be connected in any desired manner to the tool but preferably have their inner ends threaded and engaged in the threaded openings provided in the parts 10
105 and 11.

In use, the parts 10 and 11 are separately associated with a crank pinion or bearing, the adjusting nuts 20 having been previously loosened and the eye-bolts having been
110 swung away so as to disengage the adjusting nuts with respect to the legs 14 in order to separate these parts. When the separate parts are associated with the work they are brought into alinement and the guide rods
115 are entered into the guide sockets and the parts are then urged toward each other until the desired adjustment is had. At this time the eye-bolts are swung until their shanks are received in the bifurcations of the lugs
120 14 and the adjusting nuts 20 are then turned to secure the parts in adjusted position. If the work is of true circular cross section, the bearing surface 32 of the carrier shoes 30 and the bearing surface 43 of the centering shoes 35 directly engage the work and the balls 39 of the centering devices engage the work as shown in Figure 1 but these balls do not project from their sockets but are displaced therein against the tension of the coil
130

springs 41. The cutter 50 is then adjusted until it is brought into the desired engagement with the work and it is locked in this position by the key 53 in the manner described. When the operating handles 55 are grasped and the tool is turned the cutter 50 revolves circumferentially around and in engagement with the work and shapes it to the desired cross section. The balls 39 of the centering devices at all times engage the work and tend to properly center the tool thereon, and as these balls are diametrically opposite the bearing surfaces 32 of the carrier blocks 30 they bring these bearing surfaces into action at all times so that the tool rides or is carried smoothly around the work. This is true irrespective of the cross section or irregular manner in which the bearing has been worn as the balls 39 have ample capacity to move to compensate for any such irregularities or cross section. By adjusting the nuts 20 on the eye-bolts 16, the tool may be adapted for bearings of various sizes and in any or all such adjustments the guide rods 25 and guide sockets 28 together with the tubular flanges and guide cavities secure alinement and proper disposition of the parts.

I claim:

1. In a turning tool of the character described, a pair of companion parts, one of said parts having an arcuate shoulder provided with channels at its ends, bifurcated lugs carried by the other of said parts and alined with the channels of said shoulders, eyebolts having squared shanks pivotally connected to the arcuate shoulder, the square shank operating in the channels and being adapted to be received in the bifurcations of said lugs, said eye-bolts also having threaded stems projecting from said shanks, adjusting nuts operatively engaged with the threaded stems of said eyebolts, rectangular washers interposed between said adjusting nuts and said lugs, cooperating guide means between said companion parts for constraining them from proper movement toward and away from each other, a pair of carrier blocks carried upon one of said companion parts, a pair of centering blocks carried by the other of said companion parts and a cutter intermediate said centering blocks.

2. In a turning tool of the character described, a pair of companion parts, one of said parts having an arcuate shoulder provided with channels at its ends, bifurcated lugs carried by the other of said parts and alined with the channels of said shoulders, eye-bolts having squared shanks pivotally connected to the arcuate shoulder, the square shank operating in the channels and being adapted to be received in the bifurcations of said lugs, said eye-bolts also having threaded stems projecting from said shanks,

adjusting nuts operatively engaged with the threaded stems of said eye-bolts, rectangular washers interposed between said adjusting nuts and said lugs, cooperating guide means between said companion parts for constraining them from proper movement toward and away from each other, and cutting mechanism carried by one of said parts.

3. In a turning tool of the character described, a pair of companion parts, cooperating guide means between said parts for constraining the same to proper movement toward and away from each other, said guide means including a guide rod and a guide socket carried by each of said companion parts, the guide rod of one part slidably fitting in the guide socket of the other part, each of said parts being provided with a cavity around its guide rod and having a tubular flange defining a portion of its guide socket, the tubular flange slidably fitting in the cavity of the opposed part, means for securing the parts in adjusted position a pair of carrier shoes arranged upon one of said parts, a pair of centering shoes arranged upon the other of said parts, and a cutter arranged between said centering shoes and adjustably secured to the adjacent part of said tool.

4. In a turning tool of the character described, a pair of companion parts, a pair of carrier shoes secured to one of said parts and each having bearing surfaces and a clearance intermediate said bearing surfaces, a pair of centering shoes secured to the other of said parts and diametrically opposite the carrier shoes, each of said centering shoes having a pair of bearing surfaces and a clearance intermediate said bearing surfaces, a pair of centering devices cooperating with each of said centering shoes, and each including a ball, said shoes having a socket formed therein in which the ball operates and from which it projects, the ball being arranged to project beyond the bearing surface, a spring for projecting said ball, means for tensioning said spring, and a cutter arranged between the centering shoes and adjustably secured to the adjacent parts.

5. In a device of the character described, a pair of companion parts, a pair of carrier shoes mounted on one of said parts, and a pair of centering shoes carried by the other of said parts, said centering shoes having work engaging means spring pressed into engagement with the work.

6. In a device of the character described, a pair of companion parts, a pair of carrier shoes secured upon one of said parts and each having a bearing surface and a clearance intermediate said bearing surfaces and a pair of centering shoes secured to the other of said parts, each of said centering shoes hav-

- ing a pair of bearing surfaces and a clearance in said bearing surfaces, a pair of centering devices for said centering shoes, and each including a ball, said shoes having sockets therein in which said balls operate and from which said balls project, the balls being arranged to project beyond the bearing surfaces and spring means for projecting said balls.
- 10 7. In a turning tool of the character described, a pair of companion parts, cooperating guide means between said parts for constraining the same to proper movement toward and away from each other, said guide means including a guide rod and a 15 guide socket carried by each of said companion parts, the guide rod of one part slidably fitting in the guide socket of the other part, each of said parts being provided with a cavity around its guide rod and having a 20 tubular flange defining a portion of its guide socket, the tubular flange slidably fitting in the cavity of the opposed part, and means for securing the parts in adjusted position.

WILLIAM FRANKLIN RONEY.