A. F. STRAFER.

GROOVING TOOL.

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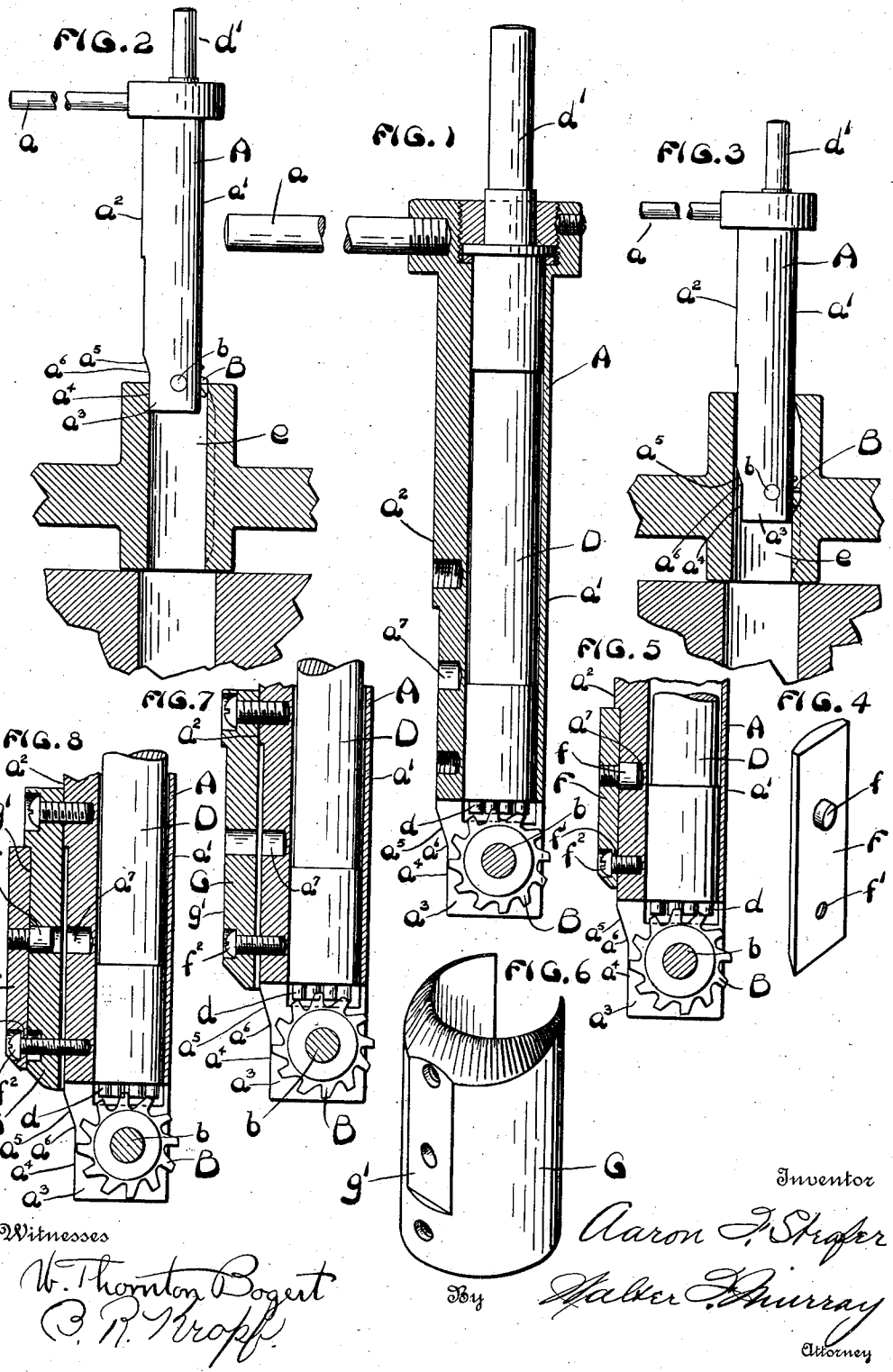
1,026,004.

Patented May 14, 1912.



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GROOVING-TOOL.

1,026,004. Specification of Letters Patent. Patented May 14, 1912.

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To all whom it may concern:

Be it known that I, AARON F. STRAFER, a citizen of the United States of America, and resident of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Grooving-Tools, of which the following is a specification.

The object of my invention is a tool for cutting closed-end grooves in the bores of tools, particularly in journal bearings thereof, for forming oil-grooves. This object is attained by the means described in the specification, and illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal central sectional view of a grooving tool embodying my invention. Fig. 2 is a side elevation thereof in the act of entering the bore of a piece of work. Fig. 3 is a view similar to Fig. 2, but showing the tool in the act of cutting an oil-groove. Fig. 4 is a perspective view of a lug plate for attachment to the grooving tool, to adapt it for bores of large diameter. Fig. 5 is a sectional view showing the lug plate secured to the tool. Fig. 6 is a perspective view of an inverted bushing, which may be secured upon the tool, to adapt it for bores of large diameter. Fig. 7 is a sectional view of the end of the tool with the bushing secured in place. Fig. 8 is a sectional view of the end of the tool with the bushing secured in place and with a lug plate mounted upon the bushing.

The grooving tool comprises a sleeve A, in the lower end of which a toothed cutter B is mounted, and within which is a rotary shaft D, which has teeth d at its lower end for engaging the teeth of the cutter B, to impart rotation thereto, and an upper end d', projecting beyond the sleeve, for engagement with a rotating mechanism, not shown. Sleeve A has a handle a, which is grasped by the workman, to enable him to guide the sleeve during the cutting operation, and to prevent its being rotated by the shaft D. The cutting tool projects beyond one side a' of the sleeve, which side I will hereafter refer to as the "tool side" of the sleeve. The diametrically opposite side a^2 of the sleeve bears against the side of the bore of the work and forces the cutting tool into the work. This side of the sleeve, I will hereafter call the "bearing side" thereof.

The lower end a^3 of the sleeve is of a reduced diameter and is eccentric to the rest of the sleeve. Preferably one side of the eccentric end is placed in alinement with the tool edge of the sleeve, and the bearing side a^4 of the end a^3 is connected by a taper a^5 with the bearing side a^2. The taper a^5 joins the reduced end a^3 at a point a^6, which is located above the transverse plane which passes through the axis of the shaft b of the toothed cutter B. The transverse distance from the side a^4 of the sleeve to the tooth which is in the cutting position, is equal to the diameter of the bore e which is to receive an oil groove. For bores of greater diameter, I provide a lug plate F, which has a pin f to enter a recess a^7 in the sleeve, and a hole f' for receiving a screw f^2. The lower end f^4 of the lug plate is tapered.

For larger bores, I provide an eccentric bushing G, which has a lower taper end, which registers with the taper a^5 of the sleeve, when the bushing is secured thereon. The bushing is provided with a flattened side g' and with screw holes for the reception of a lug plate F, in cases where it is desired to increase the eccentricity of the sleeve to a still greater extent. In each instance, the taper upon the attachment, whether it be lug plate, bushing, or combined bushing and lug plate, occurs above the transverse plane passing through the axis of the shaft of the cutting tool.

In use: When the eccentric end a^3 of the sleeve is inserted into the bore e, the bearing edge a^4 being held in contact with the wall of the bore, the teeth of the cutting tool pass the periphery of the bore, without cutting into the wall. The tool is brought into cutting action by the taper a^6, when it comes into contact with the wall of the bore. Since the taper a^6 is above the axis of the shaft b, the tooth of the cutter which is in the cutting position, will be below the end of the bore. Hence, the groove will be started at a point within the bore, thus leaving the upper end of the groove closed. The workman stops the cutting action of the tool at the desired point within the bore.

What I claim is:—

1. A tool of the character described comprising a groove cutter, a shaft for actuating the cutter, and a sleeve inclosing the shaft and having an eccentric projection at its forward end, a shaft extending across and secured to the projection and upon which said

cutter is mounted, said projection being tapered so as to force the cutter into engagement with the surface to be cut as the sleeve moves along the surface.

2. A tool of the character described comprising a groove cutter, a shaft for actuating the cutter, and a sleeve for the shaft located eccentric thereto and having an eccentric projection at its forward end on which said cutter is mounted, and an inclined face located immediately to the rear of the axis of the cutter for forcing the cutter into engagement with the surface to be grooved as the sleeve is moved along the surface.

3. A tool of the character described comprising a groove cutter, a shaft for actuating the cutter, a casing inclosing the shaft and having a bifurcated eccentric projection located at one end between the prongs of which said cutter is mounted, one side of said projection being flush with the surface of the sleeve beyond which the cutter projects and the other side being tapered immediately to the rear of the axis of the cutter.

4. A tool for cutting grooves in the surfaces of bores or apertures, comprising a cutter, a shaft for actuating said cutter, a sleeve adapted to be moved into the bore or aperture to be grooved and inclosing the shaft and having a bifurcated projection at its forward end between the prongs of which said cutter is mounted, said projection being of reduced diameter and having a tapered bearing face located immediately to the rear of the cutter for engaging the surface of the bore or aperture and for forcing the cutter into operative engagement with the surface to be grooved as the sleeve is moved through the bore or aperture.

5. A tool of the character described comprising a groove cutter, a shaft for actuating the cutter, a sleeve inclosing the shaft and having an eccentric projection at its forward end upon which the cutter is mounted, an inclined face located immediately to the rear of the axis of the cutter between the body of the sleeve and the extension, and an eccentric bushing having an inclined face adapted to form a continuation of the inclined face of the sleeve.

6. A tool of the character described comprising a groove cutter, a shaft for actuating the cutter, a sleeve inclosing the shaft and having an eccentric projection at its forward end with an inclined face immediately to the rear of the axis of the cutter, an eccentric bushing removably mounted on said sleeve, and a plate removably mounted on said bushing, said bushing and said plate having inclined faces flush with the inclined face of the sleeve.

AARON F. STRAFER.

Witnesses:
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