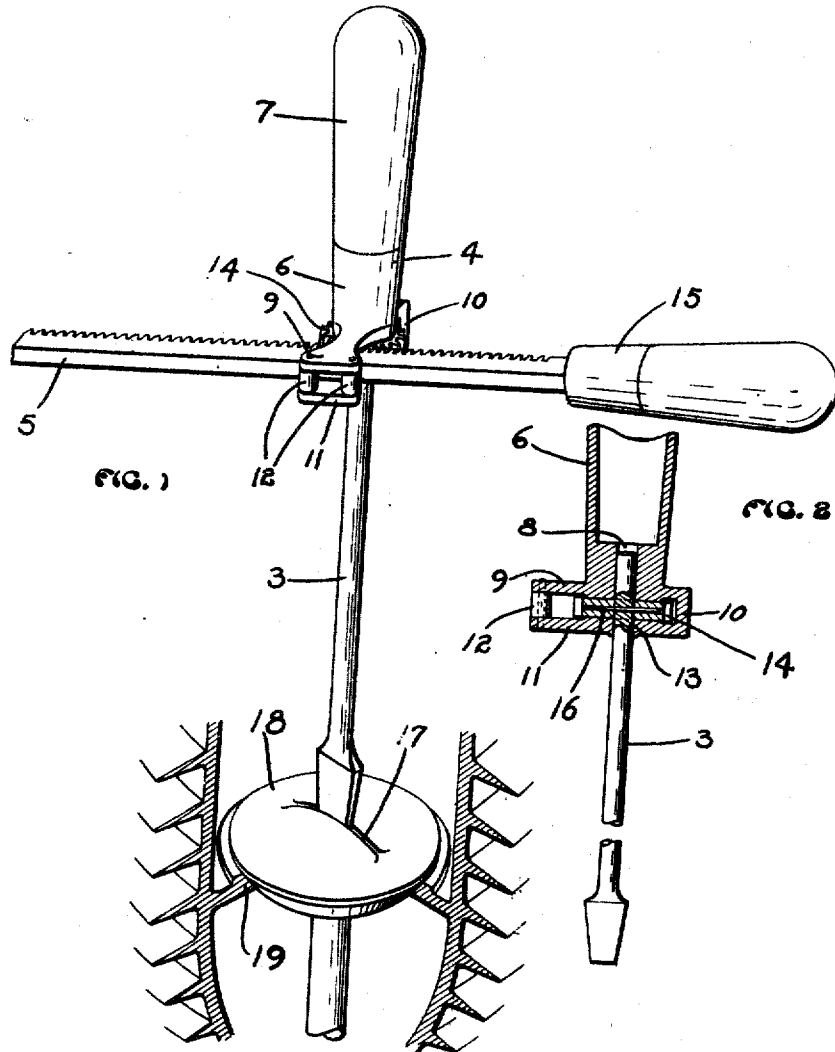


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VALVE GRINDING APPARATUS.
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1,005,864.

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VALVE-GRINDING APPARATUS.

1,005,864.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM LEE MILNER, 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 Valve-Grinding Apparatus, of which the following is a specification.

This invention relates to valve grinding apparatus and has for an object to produce a simple and effective manually operated tool, which is adapted to rotate the valve, while it is in contact with the valve seat, so that it will be ground to accurately fit the seat.

A further object is to produce a valve grinding tool which is simple and cheap to manufacture, and which occupies little space while not in use.

These and other objects I attain by means of a tool embodying the features herein described, and illustrated in the drawings accompanying this application and forming a part thereof.

In the drawings, Figure 1 is a perspective view of a tool embodying my invention and shown in connection with a gas engine valve, which is located on a valve seat, shown partially in section. Fig. 2 is a fragmental sectional view of the tool illustrated in Fig. 1.

The tool illustrated as an embodiment of my invention consists of a bit or shank 3, which is rotatably mounted on a handle 4 and is provided with a manually actuated rack 5. The handle 4 consists of a metallic collar 6, bored to receive the end of a wooden hand grasp or handle 7, and provided with a cylindrical bore 8, which is adapted to receive the upper end of the bit 3. A bracket 40 is integrally formed on the lower end of the handle 6 and consists of a laterally projecting arm 9, and an L-shaped arm 10, the free leg 11 of which extends parallel with the arm 9. Rollers 12 are rotatably mounted on the bracket between the ends of the arms 9 and 10, and the leg 11 is provided with an aperture 13, which is located in line with the bore 8, and through which the bit 3 is adapted to extend. A gear wheel 14 is mounted on the bit 3 and is located between the leg 11 of the arm 10 and the lower end of the collar 6. The rack 5 is provided at one end with a handle 15, and is adapted to be inserted between the arm 9 and the leg 11, and between the rollers 12 and the gear 14, so that its teeth mesh with the teeth of

the gear, and so that the back of the rack contacts with the rollers 12.

In assembling the bit 3 and the handle 4, the gear 14 is first located in place between the leg 11 of the arm 10 and the bottom face of the collar 6, so that the opening in the gear registers with the bore 8 and the aperture 13. The upper end of the bit 3 is then forced upwardly through the aperture 13, the gear 14, and the bore 8, and the gear is locked in place on the bit by any suitable means, such, for example, as a tapered pin 16, which extends diametrically through the gear and the bit, and may be locked in place by being riveted over at the small end, after it is in place. The lower end of the bit is flattened, so as to engage a slot 17, which is provided for its reception, either in the face of the valve 18, or in the upper end of the valve stem.

The grinding operation is accomplished by reciprocating the rack while it is in mesh with the gear 14, and thereby turning the valve disk 18 on its seat 19, first in one direction and then in the other. During the operation of grinding the valve, the downward or grinding pressure is manually applied to the handle 4 of the bit and is transmitted to the bit through the gear 14, which, with the lower end of the collar 6, forms a thrust bearing for the bit. The reciprocating motion of the rack is manually imparted to the handle 15, with which the rack is provided. The arms 9 and 10 and the rollers 12 hold the rack in engagement with the gear 14, during the operation of grinding the valve, and the rollers prevent the rack from binding and also decrease the friction between the rack and the inclosing bracket.

When the tool is not in use, the rack is withdrawn from engagement with the gear 14, and, consequently, the tool may be packed or placed in a much smaller space than if the rack were permanently locked in the operative position.

What I claim is:—

1. A tool of the character described comprising a handle, a bracket formed integrally with the handle, a bit journaled in the handle and extending through the bracket, a gear mounted on the bit and forming a thrust bearing between the bit and the handle, a pin projecting through the gear and the bit for rigidly securing the gear to the bit, and a reciprocal rack for engaging the gear.

2. A tool of the character described comprising a handle, a bracket formed integrally with the handle, a bit journaled in the handle and in the bracket, a gear mounted on the bit and located between the handle and the bracket, a pin extending through the gear and the bit for securing the gear to the bit and the bit to the handle, rollers

mounted upon the bracket, and a reciprocal rack for engaging the gear adapted to be mounted on the bracket between the gear and the rollers.

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