

S. W. GOOCH.
FILING MACHINE.

APPLICATION FILED NOV. 11, 1911. RENEWED NOV. 16, 1912.

1,048,684.

Patented Dec. 31, 1912.

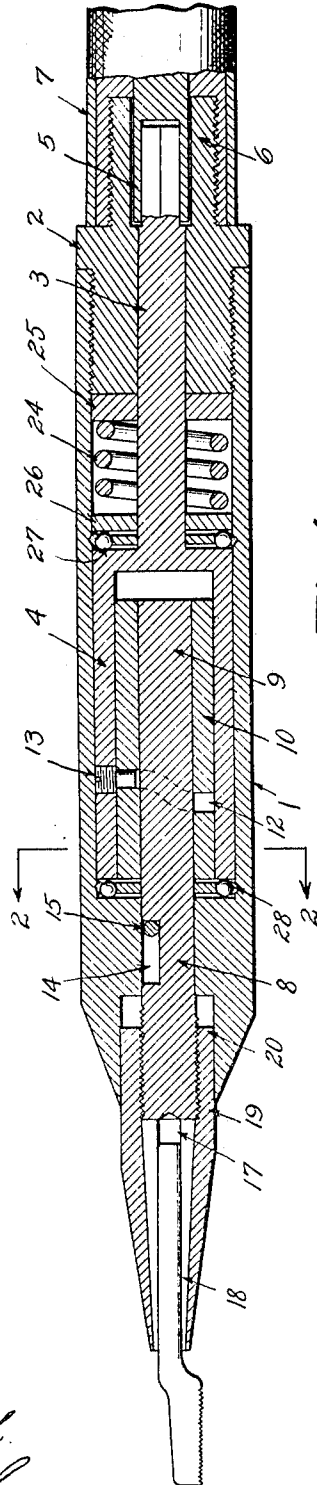


Fig. 1.

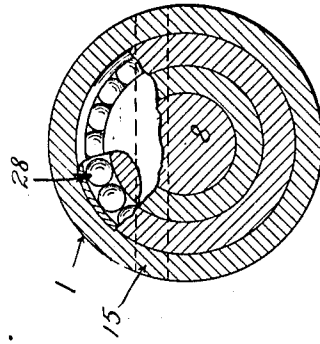


Fig. 2.

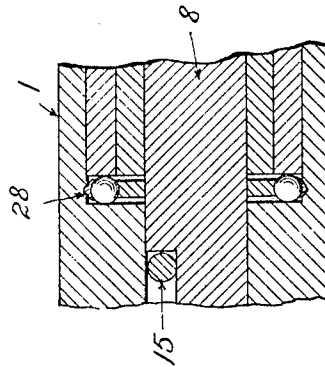


Fig. 3.

WITNESSES

Stephen Mack.
W. C. Lyon

INVENTOR

Shade W. Gooch
By Frank W. Winter

Att'y.

UNITED STATES PATENT OFFICE.

SHADE W. GOOCH, OF NEW BRIGHTON, PENNSYLVANIA, ASSIGNOR TO THE GOOCH-KOEHLER SPECIALTY MANUFACTURING COMPANY, OF ROCHESTER, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FILING-MACHINE.

1,048,684.

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Patented Dec. 31, 1912.

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To all whom it may concern:

Be it known that I, SHADE W. GOOCH, a resident of New Brighton, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Filing-Machines, of which the following is a specification.

This invention relates to an implement for filing, buffing or polishing.

The object of the invention is to provide a power driven implement adapted to hold a file or similar tool, and which is to take the place of hand filing, buffing or polishing or processes of like character, and by means of which better and more work can be done than with the hand.

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawing Figure 1 is a longitudinal section through the implement; Fig. 2 is a transverse section on the line 2—2, Fig. 1, partly broken away to show the ball bearings; and Fig. 3 is a fragmentary longitudinal section showing one of the ball bearings and connected parts on an enlarged scale.

The particular implement illustrated in the drawing is adapted for giving a reciprocating movement to the file. The driving mechanism is inclosed within a casing or shell 1 which is of general cylindrical form, tapering somewhat at its forward end, and having in said end a reduced opening through which the chuck or tool holder projects. The rear end is closed by means of a bushing or plug 2 which is threaded into the shell and is provided with a central opening through which projects the shank 3 of the rotating driving shell or cylinder 4. This shank at its rear end is square or otherwise formed for having readily coupled thereto a driver shown as a flexible shaft 5. The bushing or plug 2 is at its outer end reduced and externally threaded at 6 and adapted to have secured thereon the casing 7 of the flexible shaft.

Within the rotating shell or cylinder 4 is the reciprocating member or plunger 8 which is shown as formed in two parts rigidly secured together, that is, the central tool holder or chuck member 9 has an outer sleeve 10 rigidly secured thereto. Obvi-

ously, these parts can be formed from a single piece of metal. The rotating shell or cylinder 4 and the reciprocating member have inter-engaging spiral or cam connections whereby the rotation of the shell or cylinder imparts a reciprocating movement to the plunger. As shown, this is effected by providing the inner member with a spiral cam groove 12, which is engaged by a pin 13 threaded into the shell or cylinder 4. To prevent rotation of the plunger 8 the latter is provided with a slot 14 through which projects a pin 15 whose ends are secured in the casing or outer shell 1.

The file or other implement is secured to the plunger 8 in any suitable way. As shown, the outer end of the plunger 8 is formed as a chuck, being provided with a central bore 17 and split radially to provide a plurality of spring jaws 18 which are tapered externally and adapted to be moved radially inwardly to clamp the shank of the bit or file by means of an internally tapered sleeve 19 having a threaded connection with the chuck body at 20. This is a well known form of tool chuck and will be readily understood without further description.

The implement has been designed particularly for filing ornamental figures and the bottoms of depressions in glass molds, or dies for stamping metal articles and other similar molds and tools and the like. In filing mold and other cavities and also in other work the end of the file is liable to abut against the wall of the cavity and this will stop the file. In order to compensate for such stoppage of the file by meeting with undue resistance, the driving shell or cylinder 4 is so mounted that it yields endwise. This is accomplished by interposing between the rear end of the rotating cylinder 4 and the plug or bushing 2 a suitable spiral spring or other cushion member 24. It is obvious that when the forward movement of the file meets with undue resistance the spring 24 will yield and permit the driving shell or cylinder 4 to move endwise, but without stopping its rotation. The spring 24 is shown as interposed between a washer 25 seated against the end of the plug or bushing 2 and another washer 26; said latter washer being provided with a ball race co-operating with a similar race in the outer

end of the cylinder or shell 4, said race receiving the ball bearings 27. At the opposite end of the cylinder 4 there is likewise a ball race cooperating with a similar race in an internal shoulder formed at the forward end of the cylinder or shell 1, said race receiving the ball bearings 28.

In use the file or other tool is secured in the chuck 17, and the driving mechanism, such as the flexible shaft 5, is connected to the shank 3 of the rotating driving cylinder 4. The implement is manipulated by grasping the shell or casing 1 in the hand. The rotation of the cylinder 4 obviously imparts a reciprocating motion to the plunger 8, thereby imparting reciprocating movement to the file or other tool. The tool can be moved to any position desired. Should the file abut against a stationary part or meet with undue resistance the spring 24 yields, so that the driving cylinder or shell is not strained, and the rotation thereof is not interfered with.

Any suitable source of power may be utilized for driving the implement, and the connection to the rotating cylinder or shell 4 may be made in any desired or suitable way.

What I claim is:

1. In an implement of the character described, the combination of a casing, a rotary driving member therein having a driving connection through one end of the casing, a reciprocating member projecting through the opposite end of the casing and there provided with a tool holder, inter-engaging spiral operating connections between said rotary and reciprocating members, and yielding means arranged to permit endwise

movement of said rotary member when the tool meets with obstruction.

2. In an implement of the character described, the combination of a casing, a rotary driving member therein having a driving connection through one end of the casing, a reciprocating member projecting through the opposite end of the casing and there provided with a tool holder, inter-engaging spiral operating connections between said rotary and reciprocating members, and a spring arranged between the rear end of the rotary member and a stationary part of the casing to permit endwise movement of the rotating member when the tool meets with obstruction.

3. In an implement of the character described, the combination of a casing, a rotary shell or cylinder therein having a reduced end projecting through one end of the shell and adapted for a driving connection, an internal shoulder on the shell, a ball bearing between the forward end of said cylinder and said shoulder, a washer in said shell, a ball bearing between the rear end of said cylinder and said washer, a spring interposed between said washer and a stationary part of the shell, a reciprocating plunger in said rotary shell projecting through the forward end of the casing and having its outer end provided with a tool chuck, and an inter-engaging spiral connection between said rotary shell and said plunger.

In testimony whereof, I have hereunto set my hand.

SHADE W. GOOCH.

Witnesses:

L. P. BETTS,
AMELIA S. KOEHLER.