L. G. COPEMAN.

DRILL.

APPLICATION FILED MAR. 8, 1917.

1,264,370. Patented Apr. 30, 1918.

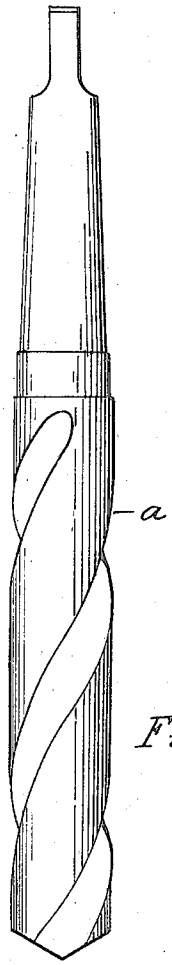


Fig. 1.

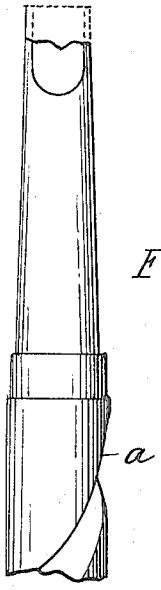


Fig. 2.

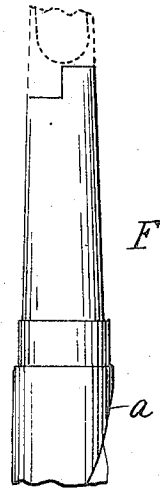


Fig. 3.

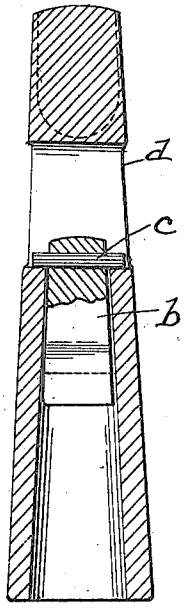


Fig. 5.

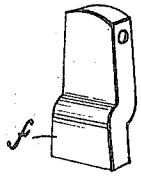


Fig. 4.

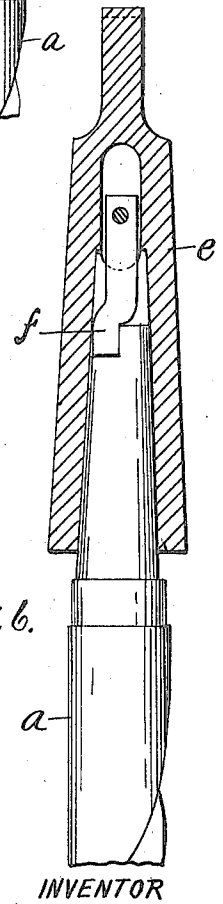


Fig. 6.

INVENTOR

Lloyd G. Copeman

Ralzemond A. Parker ATTORNEY.

UNITED STATES PATENT OFFICE.

LLOYD GROFF COPEMAN, OF FLINT, MICHIGAN, ASSIGNOR TO DEAN F. CARSCADDEN, OF FLINT, MICHIGAN.

DRILL.

1,264,370. Specification of Letters Patent. Patented Apr. 30, 1918.

Application filed March 8, 1917. Serial No. 153,438.

To all whom it may concern:

Be it known that I, LLOYD G. COPEMAN, a citizen of the United States, residing at Flint, county of Genesee, State of Michigan, have invented a certain new and useful Improvement in Drills, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to drills and has for its object a drill that is associated with a supplemental tang constructed to give way under unusual loads to protect the more expensive drill. Inasmuch as some of the drills now used are made of expensive high speed tool steel, it is a great advantage to have means for protecting these drills from destruction in case of an over-load.

This invention also makes possible the use of a conventional drill after the ordinary tang has been broken.

In the drawings,—

Figure 1 is a view of a drill.

Fig. 2 is a fragmentary view showing the same drill with a portion of the tang broken off.

Fig. 3 is a similar view showing the broken tang ground or milled down to seat the supplemental tang.

Fig. 4 is a perspective of the supplemental tang.

Fig. 5 is a longitudinal section of the holder which is arranged to take the drill tang and its supplemental tang.

Fig. 6 is a longitudinal section of the same parts taken at a 90 degree angle from the view of Fig. 5 and showing the drill in place.

a designates the drill, which would ordinarily be made of high speed tool steel. When subjected to unusual stresses the strains very often result in the breaking of this drill and this breakage frequently occurs at the tang end, for instance, as shown in Fig. 2. Where this happens the broken tang end may be ground down in a step-like way as shown in Fig. 3 and the broken drill given further life by reason of the use of my supplemental tang, which is shown in perspective in Fig. 4. This supplemental tang comprises simply a piece of metal (preferably forged wrought iron) having its lower portion offset as indicated in Fig. 4. This offset portion is adapted to seat in the lower step of the step-like ground-off end of the tang. The upper or main portion of the supplemental tang is adapted to take a substantially longitudinal center position with respect to the drill. It will be noted that a cross bore occurs in the main portion of the supplemental tang. This receives a pin *c* which plays loosely in the slot *d* of the chuck or holder *e*.

The supplemental tang *b* can be inserted in the chuck *e* and the cross pin *c* driven through, and this retains the supplemental tang within the chuck. The offset end of the supplemental tang then forms a key *f* arranged to fit into the step of the ground-down tang end as shown in Fig. 6.

This supplemental tang is constructed of a metal which breaks more easily than the metal out of which the drill is constructed. Obviously when any unusual strain is incurred by the drill the supplemental tang will be the first to give way and will protect the very much more expensive drill.

What I claim is:

1. The combination of a rotary tool provided with a step in the end of the shank of the tool at one side, a tool-holder and a supplemental tang in the form of a piece or strip having its lower end offset to fit into the step at one side of the end of the shank of the tool.

2. The combination of a rotary tool, a tool-holder provided with a slot, a supplemental tang having a pin whose ends project through the slot and having an offset portion at its lower end, and a tool whose shank has a stepped end whereby the tool is rotatably connected to the tool-holder by the supplemental tang engaging the stepped end of the tool.

3. The combination of a rotary tool provided with a stepped shank end, the said shank being a tapering shank, a tool-holder having a tapering socket, and a supplemental tang whose upper end has a driving but sliding arrangement longitudinally of the tool-holder and whose lower end is offset to engage in the step of the shank end.

In testimony whereof, I sign this specification.

LLOYD GROFF COPEMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."