July 14, 1931. F. M. WILLIAMSON 1,814,274

TOOL SUPPORTING ARRANGEMENT

Filed Nov. 1, 1928

Fig. 1

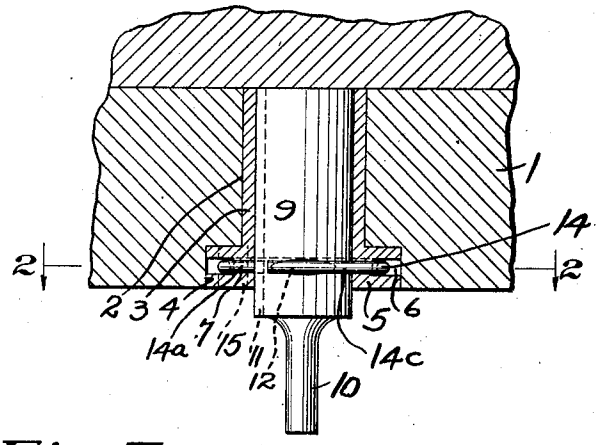


Fig. 2

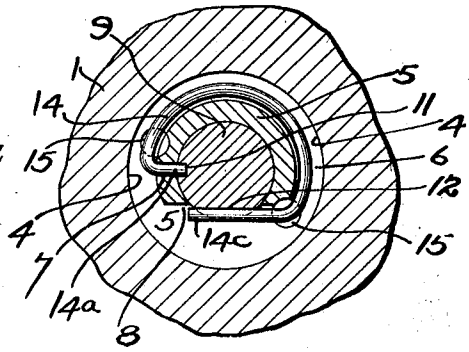


Fig. 3

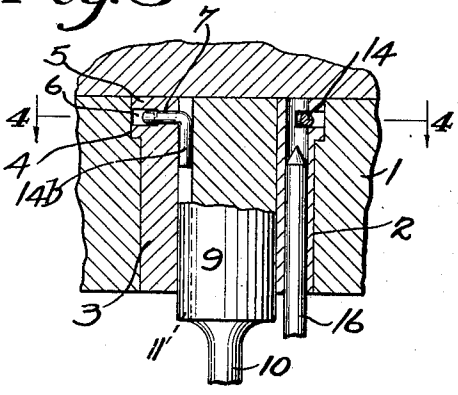


Fig. 5

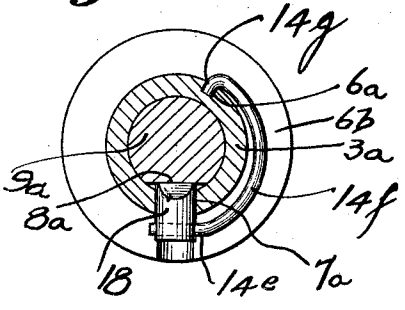
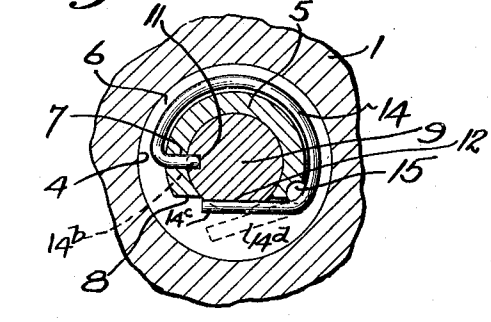


Fig. 4



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TOOL SUPPORTING ARRANGEMENT

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This invention relates to improvements in tool supporting arrangements, and aims primarily to provide a simple and effective means whereby punches may be held against rotation in their holders.

It is an object of the invention to provide a tool supporting arrangement in which a simple and cheaply made form of punch holder and separate holding device are employed in combination with a punch the shank of which needs but little extra machining, so that comparatively little extra work is involved in equipping a punch and punch holder with my supporting arrangement.

Another object of the invention is to provide a tool supporting arrangement wherein the holding device automatically engages the punch as soon as the latter is inserted in the punch holder, and from which the punch may be quickly and easily released.

With these and other objects and advantages in view which will become apparent as the specification proceeds, the invention is hereinafter more fully described with the aid of the accompanying drawings, in which:

Figure 1 illustrates a sectional view of the arrangement, and

Figure 2 is a cross section on the line 2—2 of Figure 1.

Figure 3 shows a longitudinal section of a slightly modified form of construction, and

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a cross section of another modified form of construction.

Referring to Figures 1 to 4 of the drawings, 1 designates a conventional platen having a usual hole 2 therein to receive a punch holder 3. The hole 2 is counterbored at one end 4. The punch holder 3 is provided at one of its ends with a portion 5 of enlarged diameter which fits into the counterbore 4. Around the portion 5 of the punch holder an annular groove 6 is cut, and 7 indicates a substantially radial passage through the holder from the bottom of the said groove. On one side of the punch holder at the bottom of the groove 6 a transverse cut 8 is made which is deep enough to pierce the bottom of the bore of the said punch holder. The shank 9 of a punch 10 extends into the bore of the punch holder and has a longitudinal key slot 11 and a transverse recess 12 cut therein. The recess is so located that when the punch shank is in position in its holder 3 the said recess registers with the transverse cut 8.

14 designates a holding device usually made of a piece of spring wire. In the construction shown in Figures 1 and 2 one end 14*a* of this wire is straight and passes through the radial passage 7 in the punch holder and projects substantially radially into the key slot 11 of the punch. In the slightly modified construction shown in Figures 3 and 4 the end 14*b* of the holding device 14 after passing through the radial passage 7 is flexed substantially at right angles so that its extremity lies parallel with a portion of the key slot 11 in which it rests.

Intermediately of its length the holding device 14 is curved about a radius slightly larger than that of the bottom of the groove 6 in which it rests, and terminates at its end 14*c* in a straight portion which extends across the cut portion 8 of the punch holder and also bears against the recess 12 of the punch shank 9. In this manner both ends of the holding device engage the punch shank and hold it against rotary movement. 15 designates holes extending from one end of the punch holder 3 into the groove 6, so that an instrument as shown at 16 in Figure 3 may be inserted to pry one end of the holding device out of engagement from the punch side as shown at 14*d* in Figure 4.

In Figure 5 the modification consists in the provision of a locking pin 18 through which one end 14*e* of a holding member 14*f*, usually made of spring wire, passes; the opposite end 14*g* of the member is inturned and takes into an aperture 6*a* in the bottom of a groove 6*b* cut in a punch holder 3*a*. The latter supports a punch shank 9*a*. The locking pin 18 passes substantially radially through, and is slidable in, an opening 7*a* in the punch holder, and bears against a transverse flat 8*a* cut on one side of the punch shank 9*a*.

It will be noted that in Figures 2 and 4 th

holding member is shown extending through more than one hundred and eighty degrees whereas in Figure 5 it extends through less than one hundred and eighty degrees. The amount of this angle may however be varied in each case as desired.

While in the foregoing the preferred embodiments of the invention have been described and shown, it is understood that these constructions are subject to such modifications as fall within the scope of the appended claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a tool arrangement of the character described, the combination of a tool having a shank thereon, a tool holder having a bore to receive said shank and an annular groove around its periphery, a resilient supporting member in said groove extending partly around the latter, said tool holder having a radial passage therethrough from the bottom of said groove opening into said bore, and one end of said supporting member extending through said passage and bearing against said tool shank and means for positively holding said shank against rotation in the bore of the tool holder.

2. In a tool arrangement of the character described, the combination of a tool having a shank at one end and a longitudinal key slot formed in said shank, a tool holder having a longitudinal bore to receive said shank and an annular groove cut in its outer side, said tool holder also having a radial passage therethrough from the bottom of said groove to said bore, a resilient curved holding member in said groove extending partly around said groove, and an inturned end on said holding member projecting through said radial passage and taking into said key slot.

3. In an arrangement of the character described, the combination of a tool supporting member having an aperture therein, a tubular tool holder in said aperture having an annular recess formed in its periphery and a transverse cut across said recess penetrating the bore of the tool holder, the latter also having a radial passage therethrough extending from the base of the recess to its bore, a tool having a shank fitting into said tubular tool holder, said shank having a longitudinal slot formed therein and a transverse slot which may register with the transverse cut in the holder, and a resilient member extending around said recess, one end of said member projecting through said radial passage into the longitudinal shank slot and the opposite end of said member lying across the transverse tool holder slot and being adapted to seat in the transverse slot in the shank.

4. In an arrangement as described in claim 3, the combination wherein the tool holder has an aperture formed therein from one end extending into the annular recess so that an instrument may be inserted therethrough and placed under the resilient member so that the latter may be flexed out of engagement from the transverse shank slot to permit axial movement of the tool.

FLOYD M. WILLIAMSON.