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1,593,955

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BROACHING TOOL

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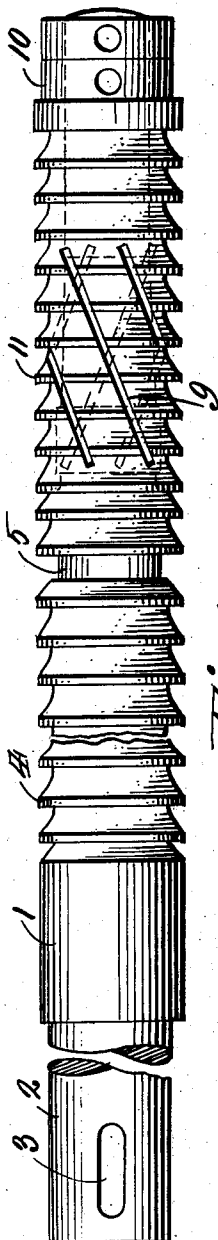


Fig. 1.

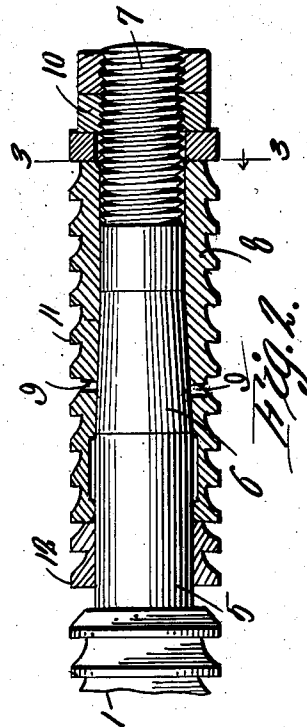


Fig. 2.

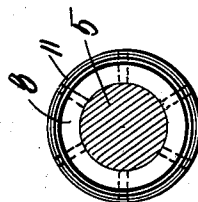


Fig. 3.

WITNESSES

Guym Spring
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UNITED STATES PATENT OFFICE.

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BROACHING TOOL.

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The present invention relates to finished round broaching tools and has for its object the provision of means whereby the broaching tool can be adjusted to desired sizes after having been worn smaller through use.

The invention consists in providing a round broaching tool with a removable member at the outer end thereof which can be adjusted to fit the work.

Another object of the invention is to provide a tool of this nature which will be simple and efficient in construction, reliable in operation, and well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description progresses, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing—

Figure 1 is an elevation of the broaching tool embodying my invention,

Figure 2 is a longitudinal section taken through the outer end thereof, and

Figure 3 is a transverse section taken substantially on the line 3—3 of Figure 2 looking in the direction of the arrow.

Referring to the drawing in detail it will be seen that the shank 1 is provided with a reduced portion 2 having a diametrically extending slot 3 therein so that this reduced portion may be engaged with an operating machine. The annular teeth 4 are provided on the shank 1 and are of conventional construction similar to the ordinary round broaching tool now commonly in use. An extension 5 is formed on the outer end of the shank and includes an intermediate tapered portion 6 and a threaded end portion 7. A sleeve 8 is disposed on the extension 5 being provided with a bore having an intermediate tapered portion for engagement with the tapered portion 6 of the extension 5. This portion of the sleeve 8 normally surrounding the tapered portion 6 of the extension and adjacent portions is provided with a plurality of slots 9 whereby the sleeve 8 may be pushed toward the body of the shank 1 by means of nuts 10 and therefore expanded. It will thus be seen that the sleeve 8 may be expanded to a desired size should the annular teeth 11 become worn. An auxiliary sleeve having annular teeth is disposed on

the extension 5 between the teeth 4 and the sleeve 8 as is shown at 12.

It is thought that the construction and operation as well as the advantages of the invention will now be clearly understood without a more detailed description. I have, in the present instance, shown and described the preferred embodiment of the invention which will give in practice satisfactory and reliable results, and it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention what I claim as new is:—

1. In a broaching tool, a sleeve provided with a series of external annular cutting teeth and formed with a plurality of longitudinally extending slots which intersect the teeth and have their ends in overlapping relation, and means to expand the slotted portion of said sleeve for increasing the diameter of said teeth.

2. In a broaching tool, a sleeve provided with a series of external annular cutting teeth and formed with a plurality of longitudinally extending slots which intersect the teeth, and means to expand the slotted portion of said sleeve for increasing the diameter of said teeth, said slots further extending obliquely to the longitudinal axis of the sleeve with their ends in overlapping relation.

3. In a broaching tool, a sleeve provided with a series of external annular cutting teeth from end to end thereof and having its intermediate portion formed with a plurality of longitudinally extending slots which intersect certain of said teeth, and means to expand the slotted intermediate portion of said sleeve for increasing the diameter of said intermediate teeth.

4. A broaching tool including a shank formed at one end with a series of integral annular cutting teeth and provided at said end with a coaxial rigid extension, a sleeve removably mounted on said extension provided with a series of external annular cutting teeth and formed with a plurality of longitudinally extending slots intersecting said last named teeth, and means to expand the slotted portion of the sleeve for increasing the diameter of the teeth thereof.

5. In a broaching tool, the combination

with a shank formed at one end with a series of integral annular cutting teeth and provided with a coaxial rigid extension projecting beyond the teeth, said extension being
5 provided with an intermediate tapering portion, of an elongated sleeve carried by the extension and being provided with a bore having an intermediate tapering portion for
10 engaging the tapering portion of said extension, said sleeve having formed integrally

therewith a series of external annular cutting teeth and being further formed with a plurality of longitudinally extending slots which intercept certain of said teeth, said slots extending obliquely to the longitudinal
15 axis of the sleeve with their ends in overlapping relation.

In testimony whereof I affix my signature.

CHARLES G. SCHMITTNER.