J. W. MEAKER.

METHOD OF FORMING POLYGONAL BORES.

APPLICATION FILED JULY 7, 1913.

1,144,425. Patented June 29, 1915.

Fig. 1.

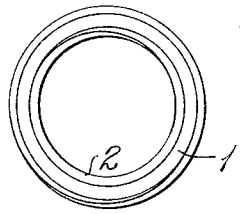


Fig. 3.

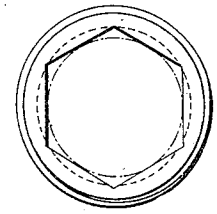


Fig. 2.

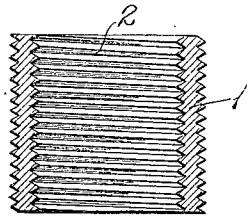


Fig. 4.

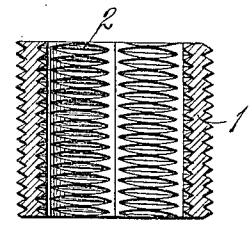


Fig. 5.

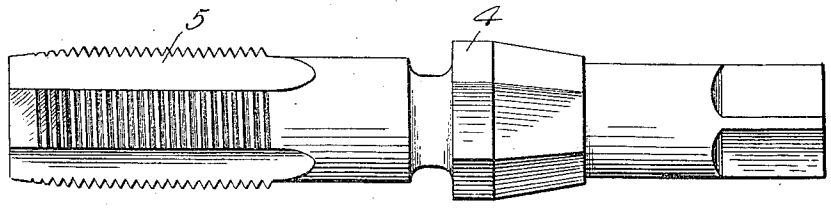


Fig. 7.

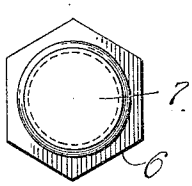
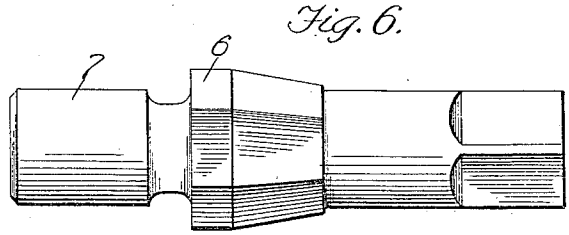


Fig. 6.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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METHOD OF FORMING POLYGONAL BORES.

1,144,425. Specification of Letters Patent. Patented June 29, 1915.

Application filed July 7, 1913. Serial No. 777,742.

To all whom it may concern:

Be it known that I, JOHN W. MEAKER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Methods of Forming Polygonal Bores, of which the following is a specification, reference being had therein to the accompanying drawings.

It is frequently desirable to form a ferrule, bushing, collar, check-nut or like fittings with internal squared or polygonal bores or bores having facets whereby a plug, wrench or tool may be inserted for turning the part in or out of engagement with some engaging member. This is difficult as it requires both time and power to cut away the metal from the interior and if the article have a light thin wall, it is almost impossible to prevent deformation of the exterior.

This invention relates to a method of forming a square or polygonal bore in a bushing or the like and more especially in such an article having a comparatively thin wall which is easily and cheaply carried out in such manner that the exterior is not changed thereby.

The invention also includes the bushing or like article formed by such process.

In the drawings, Figure 1 is a view of a blank bored and tapped for broaching; Fig. 2 is a view thereof in longitudinal section; Fig. 3 is an end view of a finished bushing; Fig. 4 is a view in longitudinal section thereof; Fig. 5 is a view of one form of the broach; and Figs. 6 and 7 are views in detail of another form of broaching tool.

As an initial step in the process a blank 1 is formed of the desired exterior conformation, as for example, with exterior screw-threaded periphery. The blank is drilled out to a diameter slightly less than that of the desired finished polygonal bore. Screw threads 2 are then cut in the blank as a second step in the process by forcing a suitable threading tap therethrough in the usual manner. A broach of the square or polygonal form desired, whose greater diameter is slightly longer than the greatest diameter of the screw threads, is then forced longitudinally through the threaded blank, as the final step of the method. Because of the proportions of the broach and die, the corners of the broach enter and plane out the corners of the bore sharply and clearly from the wall of the blank while the intermediate portions of the cutting edges of the tool sever or plane off the projecting portions of the screw thread to an extent dependent on the distance from the corners. The carrying away or weakening of the surface by the initial use of the tap permits the broach to readily plane off the bulk of the remainder of the metal and to clear the chips from its path without difficulty. As a convenient arrangement for carrying out the method, the blank may be turned up and drilled in a lathe or screw machine, and a broach as indicated at 4 carried in the same machine, with a properly proportioned pilot tap 5 then be turned into the blank or the blank rotated on to the tap until the latter has passed through. Then by manual operation of the carriage on which either the broach or the blank is mounted, or by power, the broach is readily pushed through. Or the blank may be screwthreaded by any suitably dimensioned tap and the broach 6 shown in Figs. 6 and 7 be used, a pilot member 7 centering the broach in the bore. The effort required is slight, and the broach has no expanding or disrupting effect sufficient to distort even a comparatively thin-walled bushing, sleeve, collar, nut or whatever fitting is thus treated. A bore is formed which is of the desired contour and dimensions and which makes a good seat for the application of a plug wrench or tool.

Obviously, changes in the details of construction may be made without departing from the spirit of the invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim is:—

1. A method of forming a bore having facets in a metal article which consists in drilling the article, cutting an interior screw thread in the resultant opening and forcing a broach of the contour of the desired bore through the screw threaded aperture.

2. A method of forming a bore having facets in an article which consists in removing a portion of the metal around the bore

by cutting a screw thread therein, and then forcing a broach longitudinally through the article whose greatest diameter is slightly longer than the greatest diameter of the screw thread, and whose cross-sectional contour is that of the desired faceted bore.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. MEAKER.

Witnesses:
C. R. STICKNEY,
A. M. DORR.

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