Sept. 4, 1945. A. SAROSSY 2,383,991

DIE HOLDER AND TAILSTOCK CENTER

Filed Nov. 9, 1943

Fig. 1.

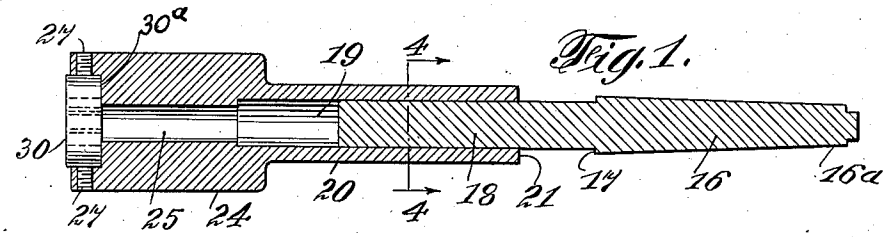


Fig. 2.

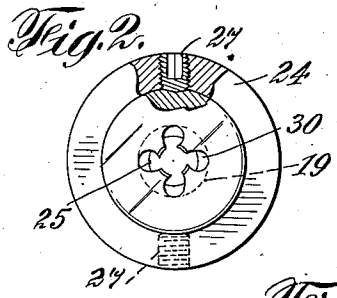


Fig. 3.

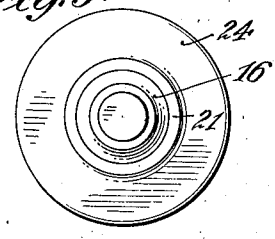


Fig. 4.

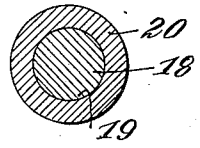


Fig. 5.

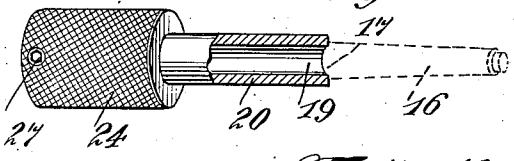


Fig. 6.

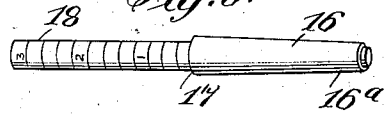


Fig. 7.

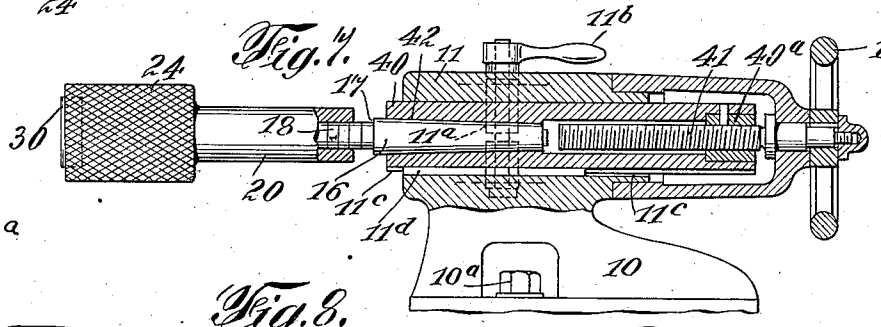
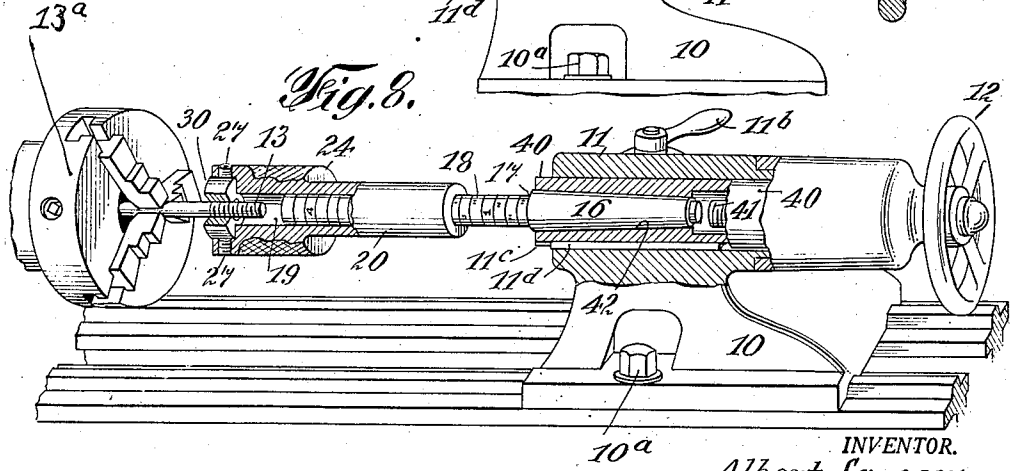


Fig. 8.



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Patented Sept. 4, 1945 2,383,991

UNITED STATES PATENT OFFICE

2,383,991

DIE HOLDER AND TAILSTOCK CENTER

Albert Sarossy, West Orange, N. J.

Application November 9, 1943, Serial No. 509,561

8 Claims. (Cl. 10—89)

This invention relates to die holders and tailstock centers, and more particularly to an improvement therein.

The improved die holder consists of two parts, a die housing and a guide-bar, which may be made in sizes suitable for bench lathes and for engine lathes.

The invention consists in a die holder in which the threads may be cut at right angles, because the die rests flat against the squarely surfaced recess in the die housing. The die cannot be moved during the threading operation because it is securely locked. It is absolutely concentric with the stock to be cut and it remains so because the die housing revolves freely around a cylindrical part of the guide or improved and novel tailstock center. The thread is cut with a locked tailstock. The tailstock need not be pushed against the stock while cutting the threads as heretofore. The die housing with its dies yields longitudinally to any pull of the work, thus there is no danger of stripping the thread caused by the weight of the tailstock. The smallest force will pull the die housing along the guide or tailstock center towards the work piece so that there is no strain on the thread. The lathe may be revolved at top speed because the die is held secure, and there is no possibility of it getting out of alignment from the work piece, and therefore the threads may be cut faster and more effectively than heretofore, reducing the cost of operation.

In the prior art the entire tailstock was subjected to a pulling and/or pushing action when the work piece was being worked on. In the improvement, the weight or pull is so little that the finest thread can be cut, and very delicate work carried out, because of the give instead of the pull. All parts are axially in alignment, and a true cut is obtained.

The invention will be more fully described hereinafter, an embodiment shown in the drawing, and the invention will be finally pointed out in the claims.

In the accompanying drawing,

Fig. 1 is a longitudinal section of the improved die holder and the guide bar for the same;

Fig. 2 is an end view thereof, partly broken away;

Fig. 3 is an end view from the other end;

Fig. 4 is a section on line 4—4 of Fig. 1;

Fig. 5 is a perspective view showing the insertion of the die holder with the guide bar in dotted lines;

Fig. 6 is a perspective view of the guide bar;

Fig. 7 is a central longitudinal section of a tailstock with an improved tailstock center, supporting the improved die holder and guide bar applied thereto shown in sideview and partly in section, and

Fig. 8 is a perspective view of the tailstock, guide bar, and work piece, to show their operative relationship.

Similar characters of reference indicate corresponding parts throughout the various views.

Referring to the drawing, the known tailstock is shown in Fig. 7, and the tailstock 10 may be moved longitudinally on the lathe base and clamped thereto by the aid of the clamping bolt and nut 10*a*. Supported in the tailstock top 11 is a known cylindrical member or tailstock spindle 40 which slides longitudinally therein and which is clamped in place or loosened by a known tailstock binding lever 11*b* and a tailstock binding screw and plug 11*a*. Known keyways 11*c* and a key 11*d* prevent the tailstock spindle 40 from rotating. In the manner well known, the tailstock spindle 40 has a nut 40*a* or a direct thread engaging a tailstock screw 41 which is secured to a hand wheel 12, the rotation of which wheel and screw slides the tailstock spindle 40 longitudinally. The work is indicated by 13, it being supported in a chuck 13*a* in a manner well known, as shown in Fig. 8.

The cylindrical member or tailstock spindle 40 has a tapered bore 42. Into this bore there is inserted a novel tailstock center hereinbefore referred to a guide bar having a tapered stem 16, having a shoulder 17, and a cylindrical holding and guiding portion 18. The tapered tailstock center and tapered seat in the tailstock spindle engage each other frictionally so that the new tailstock center does not rotate with respect to the spindle.

The cylindrical portion 18 of the tailstock center fits into a cylindrical bore 19 of a die supporting member 20, and has the shoulder 17 abutting against the end wall 21 of the die supporting member 20. This member 20 is rotatable and slidable on the portion 18. An oiler may be provided to permit oiling of the cylindrical part or shaft 18. Oiling the cylindrical shaft 18 may be carried out by any suitable means.

The member 20 has an enlargement 24 having a bore 25 subcaliber to the bore 19. These bores may be, if desired, of the same diameter as the bore of the part 20 as in Fig. 8, or it may be larger. The length of the bore 25 must be such as to accommodate the length of the entering end of the work piece. The bore 25 permits the entry of

the work piece 13 during the operation of the dies. The outer surface of the enlargement is knurled. At the end of the enlargement circumferentially arranged set screws 27 preferably of the Allen type hold a threader 30 or dies. The threader 30 is seated in a seat 30a which seat being at 90° to the axis of the threader assures that the axis of the threader is co-axial with the member 20, and work piece. As known, the threaders are replaceable to conform to different sizes.

When it is desired to substitute one threader for another, the screws 27 are withdrawn, one threader removed, and another threader substituted, and then the screws are again fastened against the substituted threader.

Thus, the improved die holder consists of the novel die housing 20 and the novel tailstock center 16. The tapered end 16a of the tailstock center or guide-bar fits into the tailstock spindle proper. The die housing 20 fits over the cylindrical end of the tailstock center or guide-bar 16. It is preferably made of cold rolled steel and both are preferably case hardened to insure long wear. It is preferably made in several sizes, to hold standard size dies. It will hold dies to cut threads from the smallest to one-half inch diameter fine thread size or larger.

When cutting thread the knurled part 24 of the member 20 is held by hand pressure. After a few revolutions the threading action will pull the member 20 forward on the guide-bar or tailstock center. The cylindrical stem 18 has scorings to indicate the length of the thread to be cut, preferably graduated ¼" apart. When the member 20 has moved slidably on the stem 18 the desired amount of thread length to be cut, the hand pressure on the knurled part 24 is released, then the lathe is stopped and reversed, the member 20 again held, and the work piece unscrews itself, pushing the member 20 back on the cylindrical portion 18.

It will have been noted that the member 20 moves axially on the guide-bar or tailstock center the amount of the length of the thread to be made, whereby a fast, delicate and true action results.

A very fine adjustment is made possible by the use of the improved device. First the work piece is supported in position. Then the part 10 is longitudinally moved towards the work piece and fastened in position by nut 10a. Then the cylindrical part 40 is moved by the hand wheel 12, all of which secures a very accurate adjustment of the die to the work piece. The fact that the member 20 axially and easily slides on the guide bar 16, removes any possibility of a pull or push on the tailstock. Contrary to the old practice the work piece does not pull or push on the tailstock in its entirety, thus eliminating any possibility of stripping or marring the threads being cut.

In the improved holder, there is a delicate axial movement on the stem, and this sliding action trues the threads.

The improved die holder for lathes is especially adapted for small threads, but may be adapted to larger threads and to turret lathes, or the like.

The improvement has special advantages for all shops, especially for the shops who use it as an attachment for existing lathes without having to install separate and special screw machines which might idle a large part of the time.

Due to the construction described, the improved device can be adjusted in about fifteen seconds, which is considerably faster than the time running into minutes required by the earlier forms.

An embodiment of the invention has been described, but obviously various changes may be made in the details disclosed without departing from the spirit of the invention as set out in the following claims.

What I claim is:

1. A die holder for tailstock spindles comprising a die supporting member having a bore for the entry of the work piece, and having a sleeve having a cylindrical bore and a guide bar cylindrical at one end in registration with the cylindrical bore, and tapering towards the other end adapted for entrance in the tailstock spindle to be held thereby, said cylindrical end having graduated markings for indicating the desired movement of the die supporting member on its registering cylindrical portion, the cylindrical bore of the said member and cylindrical end of the guide bar being slidable and rotatable in respect to each other.

2. A die holder for tailstock spindles comprising a die supporting member having a bore for the entry of the work piece, and having a sleeve having a cylindrical bore and a guide bar cylindrical at one end in registration with the cylindrical bore and tapering towards the other end adapted for entrance in the tailstock spindle to be held thereby, said cylindrical end having graduated markings for indicating the desired movement of the die supporting member on its registering cylindrical portion, the cylindrical bore and cylindrical end being slidable and rotatable in respect to each other, said cylindrical member having a shouder limiting its movement against the die supporting member, and said die holding member having a recessed portion at its end for holding a replaceable die, and having its exterior portion knurled.

3. In a die holder for tailstock spindles, the combination of a die holding portion having a die for acting on a work piece at one end and an extended supporting portion at the other end having a bore of circular cross section, and a guidebar engaging the supporting portion in rotatable and axially slidable connection therewith, having a part conforming to said bore of the guide holding portion, and having a part adapted to engage non-rotatably and non-slidably, the spindle of a tailstock, and having means limiting the said slidable connection, permitting the die holding portion with its die to move along with the work piece without exerting any pull or push upon said guidebar.

4. In a die holder for tailstock spindles, the combination of a die holding portion having a die for acting on a work piece at one end and an extended supporting portion at the other end having a bore of circular cross section, and a guidebar engaging the supporting portion in rotatable and axially slidable connection therewith, having a part conforming to said bore of the guide holding portion, and having a part adapted to engage non-rotatably and non-slidably, the spindle of a tailstock, and having means limiting the said slidable connection, permitting the die holding portion with its die to move along with the work piece without exerting any pull or push upon said guide bar, said die holding portion having a seat at right angles to the axis of said portion for the die to seat axially with said portion and the work piece.

5. A die holder for tailstock spindles comprising a die supporting member having a bore for the entry of a work piece and having a sleeve having a cylindrical bore, and a guide bar cylindrical at one end in registration with the cylindrical bore of the die supporting member and in axially slidable and rotatable connection therewith, and tapering towards the other end adapted for entrance in the tailstock spindle and to be held thereby.

6. In a die holder for tailstock spindles, the combination of a die holder having a recessed portion at one end for the reception of a die to act on a work piece and having a bore one end of which is in communication with the bore of the die for the passage of the work piece into said bores, and having a bore at the other end of the die holder of circular cross section, and a guidebar for said die holder having one end of substantially the same cross section as that of the circular bore, and having its other end of a configuration to register with the bore of the tailstock to be locked therein, whereby the die holder and support are in rotatable and axial relationship with each other during the action of the die upon the work piece, avoiding any pull or push upon the support or upon the tailstock.

7. In a die holder for tailstock spindles having a bore tapering inwardly, the combination of a guidebar having a part tapering outwardly adapted to frictionally engage said bore against rotation and having a part forming a cylindrical extension, with a shoulder disposed between said parts, and a die supporting member having a cylindrical bore of substantially the same diameter as that of the cylindrical extension for rotatably and slidably engaging said cylindrical extension, and having at its other end a die for acting upon a workpiece, and a bore for the entrance of the workpiece held by a chuck, whereby upon the workpiece being operated upon by the die, the die supporting member longitudinally moves on said cylindrical extension, said shoulder limiting said movement, with the cylindrical extension remaining stationary, so that any pull or push of the work piece is taken up by the die supporting member in axial longitudinal movement without exerting any pull or push upon the cylindrical extension or upon the tailstock.

8. In a die holder for tailstock spindles having a bore tapering inwardly, the combination of a guidebar having a part tapering outwardly to frictionally engage said bore against rotation, and having a part forming a cylindrical extension, with a shoulder disposed between said parts, and a die supporting member having an exterior knurled portion and a cylindrical bore of substantially the same diameter as that of the cylindrical extension for rotatably and slidably engaging said cylindrical extension, and having at its other end a bore for the entrance of a work piece and a recessed portion for a die for acting upon the work piece, whereby upon the work piece being operated upon by the die, the die supporting member longitudinally moves on said cylindrical extension, said shoulder limiting said movement, with the cylindrical extension remaining stationary, so that any pull or push of the work piece is taken up by the die supporting member in axial longitudinal movement without exerting any pull or push upon the cylindrical extension or upon the tailstock, the die supporting member being held by hand on the knurled portion against rotation during the operation of the die upon the work piece, and released for rotation with the workpiece upon the completion of the work.

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