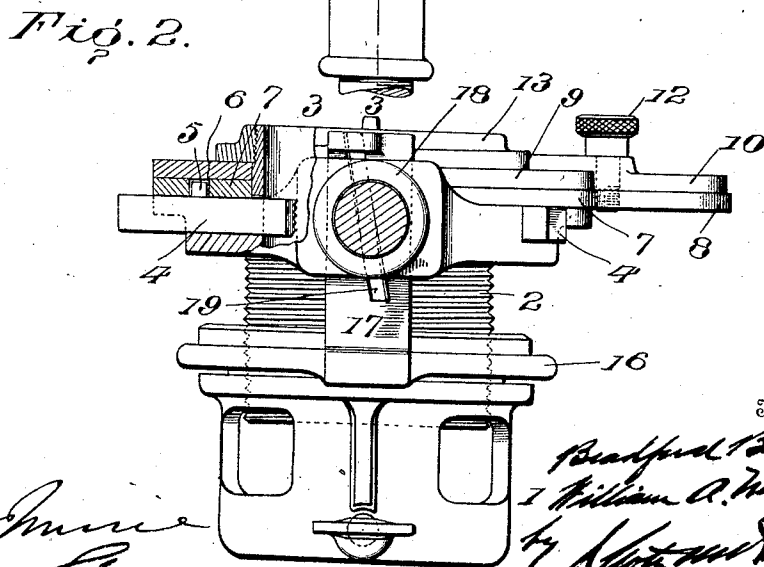
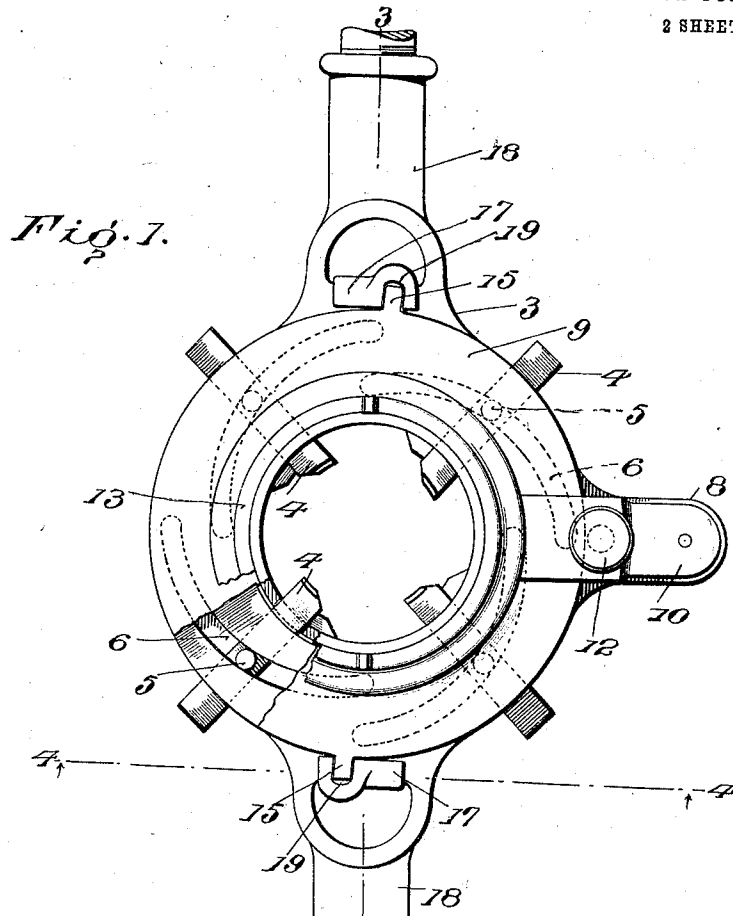


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TAPER THREAD CUTTING TOOL.  
APPLICATION FILED OCT. 5, 1906.

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Patented Oct. 10, 1911.  
2 SHEETS—SHEET 1.



Witnesses

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Fig. 3.

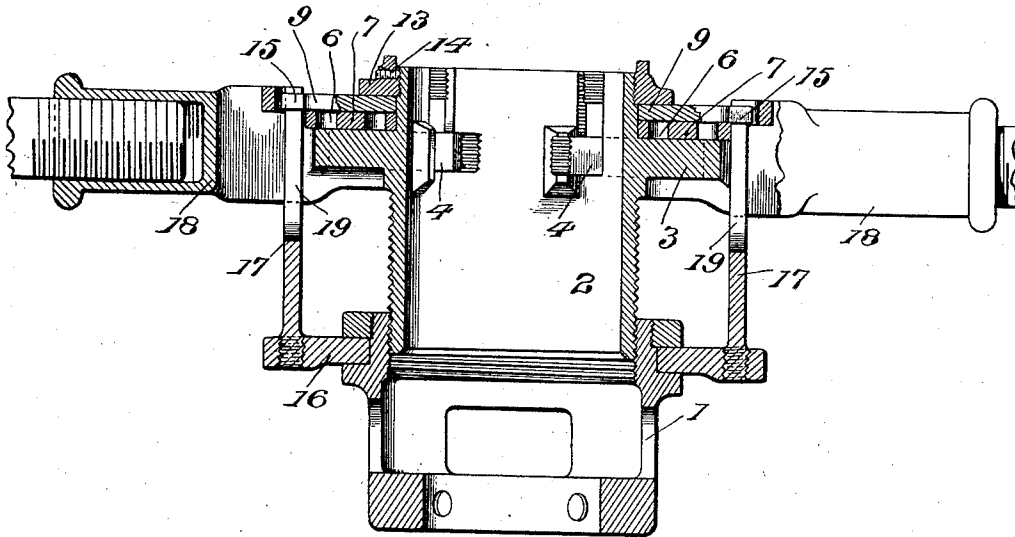
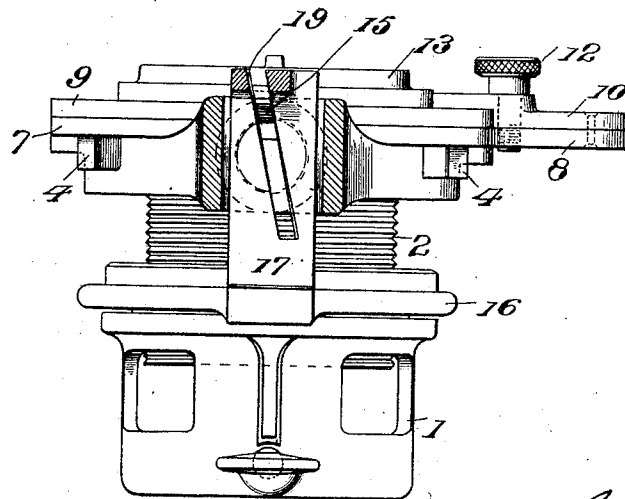


Fig. 4.



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# UNITED STATES PATENT OFFICE.

BRADFORD BORDEN AND WILLIAM A. NERACHER, OF WARREN, OHIO, ASSIGNORS TO  
THE BORDEN COMPANY, OF WARREN, OHIO, A CORPORATION OF OHIO.

## TAPER-THREAD-CUTTING TOOL.

1,005,147.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed October 5, 1906. Serial No. 337,603.

*To all whom it may concern:*

Be it known that we, BRADFORD BORDEN and WILLIAM A. NERACHER, of Warren, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Taper-Thread-Cutting Tools; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of this invention are, first, to increase the range of efficiency of a die-stock or tool for cutting tapered threads, and secondly to provide simple and highly efficient means for positively controlling the rotation of the chaser-engaging plate, independently of its rotation with the chaser-carrier, and thereby the uniform recession of the chasers.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation, with parts shown in dotted lines. Fig. 2 is an elevation, partly in section. Fig. 3 is a vertical longitudinal sectional view on lines 3—3, Fig. 1. Fig. 4 is a side view, parts being sectioned on lines 4—4, Fig. 1.

Referring to the drawings, 1 designates a work-holder which is shown in the form of a tubular frame interiorly threaded to receive the exteriorly threaded tubular body or sleeve 2 of the housing or carrier 3, which in the normal operation of the tool has a rotary and longitudinal movement. In radially-arranged guideways formed by open-end grooves in the outer face of the housing or carrier are located dies or chasers 4 carrying lugs 5 which extend into eccentrically-arranged slots 6 of a ring-like chaser-engaging or cam-plate 7, which fits against, and conforms to, the front face of the housing or carrier. The axial turning of this chaser-engaging plate relative to the housing effects the inward or outward movement of all the chasers. A handle 8 is shown as projecting laterally from the edge of plate 7, being an extension of the periphery thereof. 9 designates a second plate which is designed to be carried by and detachably locked to the chaser-engaging plate. It is

shown as corresponding in general outline to the latter plate. The two plates are designed to be locked together as by a clamping plate 10 held by screw 12 to handle and overhanging the plate 9. These two plates constitute, in effect, a single element and move as such in the normal operation of the tool. By loosening screw 12, the chaser-engaging plate may be turned independently of the outer plate to adjust the chasers to pipes of different sizes, and also to allow them to be set for under or over cutting. When the two plates are locked together power applied to the outer plate, tending to turn it axially, independently of the housing, will cause both plates to move together, and thereby the chasers will be caused to recede. In fact, under certain circumstances, the pressure of the pipe on the chasers acting on the cam plate will turn both plates axially if the inclination of the cam slots is not sufficient to resist such pressure. The two plates, 7 and 9, are shown as being held in place on the central tubular extension of the housing or carrier by a nut 13 which is locked by a set screw 14. By loosening this nut, plate 7 may be released sufficiently to disengage the chasers, which may then be moved outwardly from the housing and other chasers substituted. The plate 9 is shown as carrying two radially-disposed projections in the form of short lugs 15.

The means shown for controlling the chaser-engaging plate, and thereby the gradual recession of the chasers during the threading operation, comprises an element rotatable with the chaser-carrier but not partaking of its longitudinal travel. This element is shown in the form of a bar or post 17 carried by a collar 16 of known construction rotatably mounted on the frame of the work-holder. We have shown and preferably employ two bars or posts 17 and two radial lugs 15 so as to balance the parts, but if desired a single bar or post may be used to cooperate with a single lug 15. These bars or posts are extended through openings in the housing or chaser-carrier, such openings being shown at the inner ends of sockets 18 which accommodate the handles by which the tool is manipulated. In the inner face of each bar or post is a guideway inclined

with respect to a line parallel with the axis of the device. Each guideway is shown in the form of a diagonally-arranged slot or groove 19 into which extends one of the laterally projecting lugs 15, such slots being open at their outer ends to permit the free passage of such lugs. These lugs have a positive interlocking engagement with the bars or posts, and hence as the chaser-carrier is rotated and while it travels longitudinally relative to the bars or posts, the chaser-engaging plate is rotated or allowed to rotate relatively to the housing by the positive engagement between its plate 9 and the bars or posts. If the inclination of the cam slots of the chaser-engaging plate is sufficiently steep to allow the rotation of the chaser-engaging plate to be caused by the pressure of the pipe acting on the chasers, such rotation of the plate, and hence the recession of the chasers, will be controlled by the engagement of lug or lugs 15 with one wall of their respective diagonally-arranged slots 19, but if, on the other hand, the pressure of the pipe on the chasers is insufficient to turn the chaser-engaging plate, as when the cam-slots are at a less pitch, or within the angle of repose, such rotation of the cam plate relatively to the chaser-carrier, and hence the recession of the chasers, is caused by the positive action of the opposite wall of each diagonally-arranged slot on the lugs 15.

In practice, as is well known in the art, after the pipe to be threaded has been secured in a vise, or otherwise held, the work-holder is secured thereon, and the housing or carrier is turned clockwise, carrying with it the bars or posts 17. As the housing or carrier travels toward the work-holder the lugs 15 of plate 9 travel inwardly in the diagonal guideways of the posts, causing or permitting the chasers to gradually and positively recede. When it is desired to adjust the chasers to pipes of different sizes, and to either undercut or overcut, the chasers may be readily adjusted by turning the chaser-engaging plate 7 independently of its lug-carrying plate 9, the clamping plate 10 being released. The range of efficiency of the tool is limited only by the length of the cam slots in the chaser-engaging plate, that is, by the extent of the interlocking engagement between such plate and the chasers, and one set of chasers is capable of threading all sizes of pipes within the capacity of the tool. In this way we avoid the necessity of having to substitute different chasers for pipes of different sizes.

It will be noted that the several chasers are in positive engagement with the plate 7, and hence will be moved positively, inwardly or outwardly, by turning such plate. There is no danger of chips getting between the chasers and their adjusting agency.

Furthermore, the chasers are solidly and securely held in all positions when being moved inwardly or outwardly and regardless of whether they are cutting above or below standard.

We claim as our invention:

1. In a screw-cutting device, the combination of a frame, a member longitudinally and rotatably movable therein, dies or chasers movable in said member, another member longitudinally movable with respect to said first member and held against longitudinal movement relatively to said frame, and a cam plate rotatably secured to said first member and adapted to position said dies or chasers, said second member being adapted to engage said cam-plate to positively rotate the same relatively to said first member upon longitudinal movement of the latter in said frame.
2. In a screw-cutting device, the combination of a frame, a member longitudinally and rotatably movable therein, dies or chasers movable in said member, a bar longitudinally movable with respect to said member and held against longitudinal movement relatively to said frame, said bar being formed with a guideway on one face, a cam plate rotatably secured to said member and adapted to position said dies or chasers, and a radially disposed element borne by said cam plate and adapted to engage said guideway.
3. In a screw-cutting device, the combination of a frame, a member longitudinally and rotatably movable therein, dies or chasers movable in said member, a bar longitudinally movable in said member and held against longitudinal movement relatively to said frame, said bar being provided on its inner face with a groove inclined with respect to a line parallel with the axis of the device, a cam plate rotatably secured to said member and adapted to position said dies or chasers, and a radially disposed element borne by said cam-plate and adapted to engage the groove in said bar.
4. In a screw-cutting device, the combination of a frame, a member longitudinally and rotatably movable therein, dies or chasers movable in said member, a bar longitudinally movable with respect to said member and held against such movement relatively to said frame, and a cam plate rotatably secured to said member and adapted to position said dies or chasers, said bar being provided with a groove and said cam plate with an adjustably positioned projecting element adapted to engage such groove.
5. In a screw-cutting device, the combination of a frame, a member longitudinally and rotatably movable therein, dies or chasers movable in said member, a bar longitudinally movable with respect to said member and held against longitudinal

movement relatively to said frame, said bar being formed with a guideway on one face, a cam plate rotatably secured to said member, and a radially disposed element  
5 adjustably secured to said cam plate and adapted to engage said guideway.

6. In a screw-cutting device, the combination of a longitudinally and rotatably movable housing or carrier, dies or chasers  
10 movable therein, a member rotatable with but not partaking of the longitudinal travel of said housing or carrier, and a cam plate rotatably secured to said housing or carrier and adapted to position said dies or chasers,  
15 said member being adapted to engage said cam plate to positively rotate the same relatively to said housing or carrier during the longitudinal movement of the latter.

7. In a screw-cutting device, the combination of a longitudinally and rotatably movable housing or carrier, dies or chasers  
20 movable therein, a member rotatable with but not partaking of the longitudinal travel of said housing or carrier, and a cam plate rotatably secured to said housing or carrier and adapted to position said dies or chasers,  
25 said member being adapted to engage said cam plate to force the dies or chasers or permit them to move outward during the longitudinal movement of the housing or carrier.  
30

8. The combination with a housing, a work-holder, and a series of radially-arranged chasers, of a chaser-engaging plate rotatable with, and also relatively to, the  
35 housing and constructed to interlock with the chasers, a second plate, means detachably connecting the two plates, and means cooperating with such second plate for actuating both plates to force the chasers or  
40 permit them to move uniformly outward during the cutting operation.

9. The combination with a longitudinally and rotatably movable housing or carrier, dies or chasers movable therein, a bar or  
45 post rotatable with but not partaking of the longitudinal travel of said housing or carrier, a cam plate rotatably secured to said housing or carrier and adapted to position said dies or chasers, a second plate,  
50 and means detachably uniting said plates, said bar or post being adapted to engage said second plate to positively rotate it and the cam plate relatively to said housing or carrier during the longitudinal movement  
55 of the latter.

10. The combination with a longitudinally and rotatably movable housing or carrier, dies or chasers movable therein, a bar or  
60 post rotatable with but not partaking of the longitudinal travel of said housing or carrier, a cam plate rotatably secured to said housing or carrier and adapted to position said dies or chasers, a second plate,  
65 and means detachably uniting said plates, said bar or post being adapted to engage

said second plate to force the dies or chasers or permit them to move outward during the longitudinal movement of the housing or carrier.

11. The combination with a housing, a  
70 work-holder, and a series of radially-arranged chasers, of a plate rotatable with, and also relatively to, the housing and constructed to interlock with the chasers to force them or permit them to move uni-  
75 formly outward during the cutting operation, means mounted on said work-holder and rotatable with said housing comprising a bar or post having a diagonal guideway, a second plate having a lug projecting into  
80 said guideway, and means detachably uniting said plates, said housing being designed to travel, during the cutting operation, on a line parallel with said bar or post.

12. A pipe threading tool comprising a  
85 housing, a series of radially-arranged chasers, a plate rotatable with, and also relatively to, said housing, and having an interlocking engagement with said chasers for moving them or permitting them to move  
90 uniformly during the cutting operation, a second plate, means for detachably binding said plates together, and means rotatable with said housing engaging said second plate for automatically rotating it and said  
95 chaser-engaging plate relatively to the housing during the cutting operation.

13. The combination with a housing, a work-holder, and a series of radially-arranged chasers, of a plate axially rotatable  
100 relatively to the housing, and constructed to interlock with the chasers and force them or permit them to move uniformly outward during the cutting operation, a post or bar mounted on said work-holder, and rotatable  
105 with said housing, and a second plate having an interlocking engagement with said post or bar for effecting or permitting the axial rotation of the chaser-engaging plate during the cutting operation, said latter  
110 plate having a rotatable adjustment relative to the second mentioned plate, said housing being designed to travel, during the cutting operation, on a line parallel with said post or bar.  
115

14. The combination with a housing, a work-holder, and chasers, of a bar or post mounted on the work-holder and rotatable with the housing, such bar or post having  
120 a diagonal guideway therein, a plate interlocking with said chasers for moving or permitting them to move uniformly, said plate having a peripheral extension, a second plate having a peripheral lug extended into said guideway of said bar or post, and a  
125 binding plate mounted on said extension for locking said plates together, said housing being designed to travel, during the cutting operation, on a plane parallel with said bar or post.  
130

15. In a threading device, a series of radially-arranged pipe-engaging members, an axially rotatable plate having an interlocking engagement with said members for moving them or permitting them to move uniformly, a second plate, means for detachably connecting the two plates together, the first mentioned plate being movable independently of the second mentioned plate when disconnected therefrom, and means engaging said second mentioned plate to positively rotate both plates simultaneously when they are connected.

16. In a threading device, a series of radially-arranged pipe-engaging members, an axially rotatable plate having an interlocking engagement with said members for moving them or permitting them to move uni-

formly, a second plate, means for detachably connecting the two plates together, the first mentioned plate being movable independently of the second mentioned plate when disconnected therefrom, and means engaging said second mentioned plate for effecting or permitting the axial rotation of both plates simultaneously when they are connected.

In testimony whereof, we have signed this specification in the presence of two subscribing witnesses.

BRADFORD BORDEN.  
WILLIAM A. NERACHER.

Witnesses:

FRANK S. CHRYST,  
JOHN A. LACHMUS.

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