

D. C. KLAUSMEYER.
TAP LEADING CHUCK.
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1,140,905.

Patented May 25, 1915.

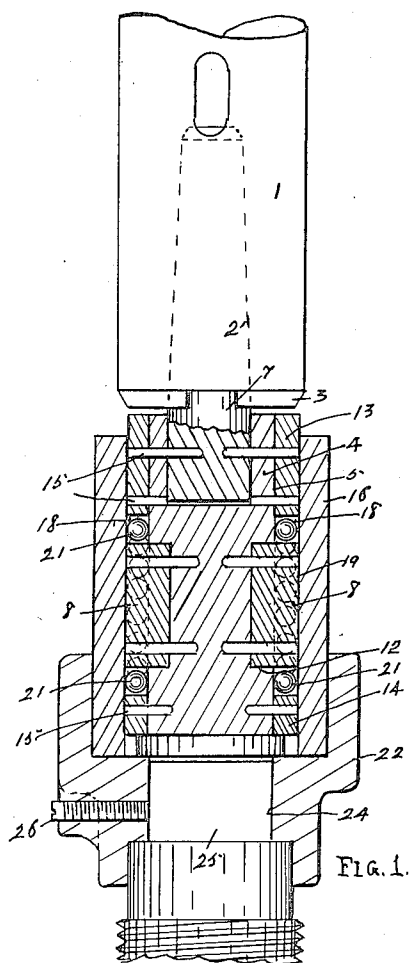


FIG. 1.

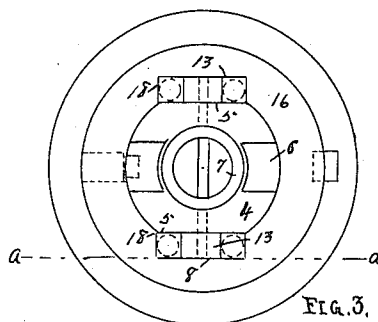


FIG. 3.

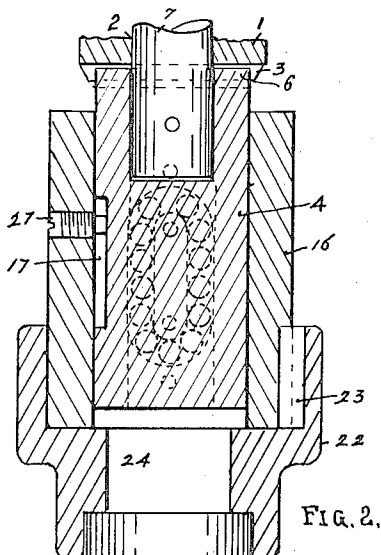


FIG. 2.

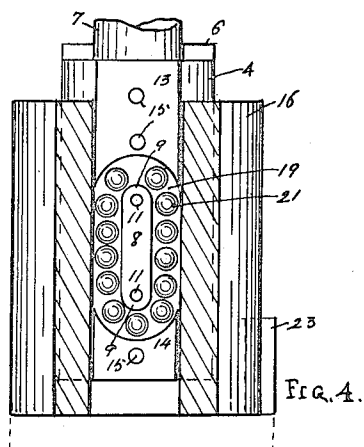


FIG. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

DAVID C. KLAUSMEYER, OF HAMILTON COUNTY, OHIO, ASSIGNOR TO THE CINCINNATI-BICKFORD TOOL COMPANY, OF OAKLEY, OHIO, A CORPORATION OF OHIO.

TAP-LEADING CHUCK.

1,140,905.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID C. KLAUSMEYER, a citizen of the United States, residing at Hamilton county, Ohio, have invented a new and useful Improvement in Tap-Leading Chucks, of which the following is a specification.

My invention relates to tap leading chucks of the class adapted to the use of tapping or drilling machines or for other suitable purposes, and the objects of my improvements are to provide anti-friction means for facilitating the automatic longitudinal movement of the tap; to provide an anti-friction spline between two concentric members for facilitating their relative longitudinal movement; to provide concentric members with a ball bearing spline for facilitating their relative longitudinal movement when being rotated against heavy resistance, and to provide durable and compact construction and assemblage of the various members for securing facility of operation and efficiency of action. These objects may be attained in the following described manner as illustrated in the accompanying drawings, in which:

Figures 1 and 2 are longitudinal diametrical sections on respective perpendicular axial planes of a tap leading chuck embodying my improvements; Fig. 3 a plan, and Fig. 4 a section on the line *a-a* of Fig. 3.

In the drawings, 1 represents the longitudinally movable spindle which may be rotated in either of opposite directions in the usual manner and is formed with a tapered axial opening 2 and terminates in a clutch member 3. The cylindrical body 4 of the chuck is formed with oppositely disposed plane surfaces 5, a groove 17 and with a clutch member 6, and provided with a taper shank 7 whereby it may be removably secured in the taper opening 2 with the clutch members 3 and 6 in engagement. Oblong plugs 8 formed with semi-circular ends 9 may be secured by means of pins 11 in recesses 12 formed in the respective plane surfaces on the body 4. Spline sections 13 and 14 secured on the body by means of screws or pins 15 terminate at their adjacent ends in semi-circular concave form concentric with and a short distance from the corresponding ends 9 of the intervening plugs 8 as shown in Fig. 4.

A sleeve 16 slidably mounted on the body 4 is formed with interior longitudinal grooves or channels 18 for inclosing the corresponding plugs 8 and spline sections 13 and 14. The space between the walls of the grooves 18 and of the adjacent walls of the corresponding intervening plugs 8 equals in width that of the distance between the ends of the plugs and the corresponding spline sections and together form oblong channels 19 for the reception of the anti-friction balls 21, as shown in Fig. 4. The tap socket 22 secured on the sleeve by means of the key 23 is formed with a rectangular axial opening 24 wherein a tap 25 may be removably secured by means of the screw 26. The screw 27 inserted through the wall of the sleeve projects within the groove 17 for limiting the relative longitudinal movement of the sleeve and body.

In operation, the spindle may be moved to start the tap in the hole of the member to be threaded, and with the sleeve moved to its most inward limit on the body. After the tap is properly started the further longitudinal movement of the spindle should be discontinued. The automatic feeding movement of the tap will be facilitated by the frictionless movement therewith of the sleeve in an outward direction on the body. After the tapping of the hole is completed the direction of the spindle may be reversed and the frictionless return of the sleeve in an inward direction by the tap facilitates its automatic removal.

Having fully described my improvement, what I claim as my invention and desire to secure by Letters Patent of the United States is:

1. The combination of concentric members, the one being formed with a spline groove, the other being provided with a spline of less width than the groove and movable therein, anti-friction balls movable within the groove and around the spline, and means for preventing the escape of the balls from the ends of the groove.

2. A tap leading chuck comprising concentric members, the one being formed with a spline groove, the other being provided with a coacting spline having an intermediate portion of its length reduced in width and formed with passages across its respective ends, and anti-friction balls movable

within said passages and between said reduced portion and the adjacent walls of the groove.

3. A tap leading chuck comprising concentric cylindrical members relatively movable longitudinally, the one being formed with a longitudinal groove, the other being provided with a longitudinal lug movable within the groove, anti-friction balls movable within the groove and around the lug therein, and spline sections movable within the groove beyond the ends of the lug for retaining the balls therein.

4. The combination of concentric members relatively movable longitudinally, the one being formed with a longitudinal groove, the other being formed with a rib or spline adapted to project within the groove, anti-friction balls interposed between the adjacent walls of the spline and groove, and channels for the passage of the balls from one side of the spline to the other.

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