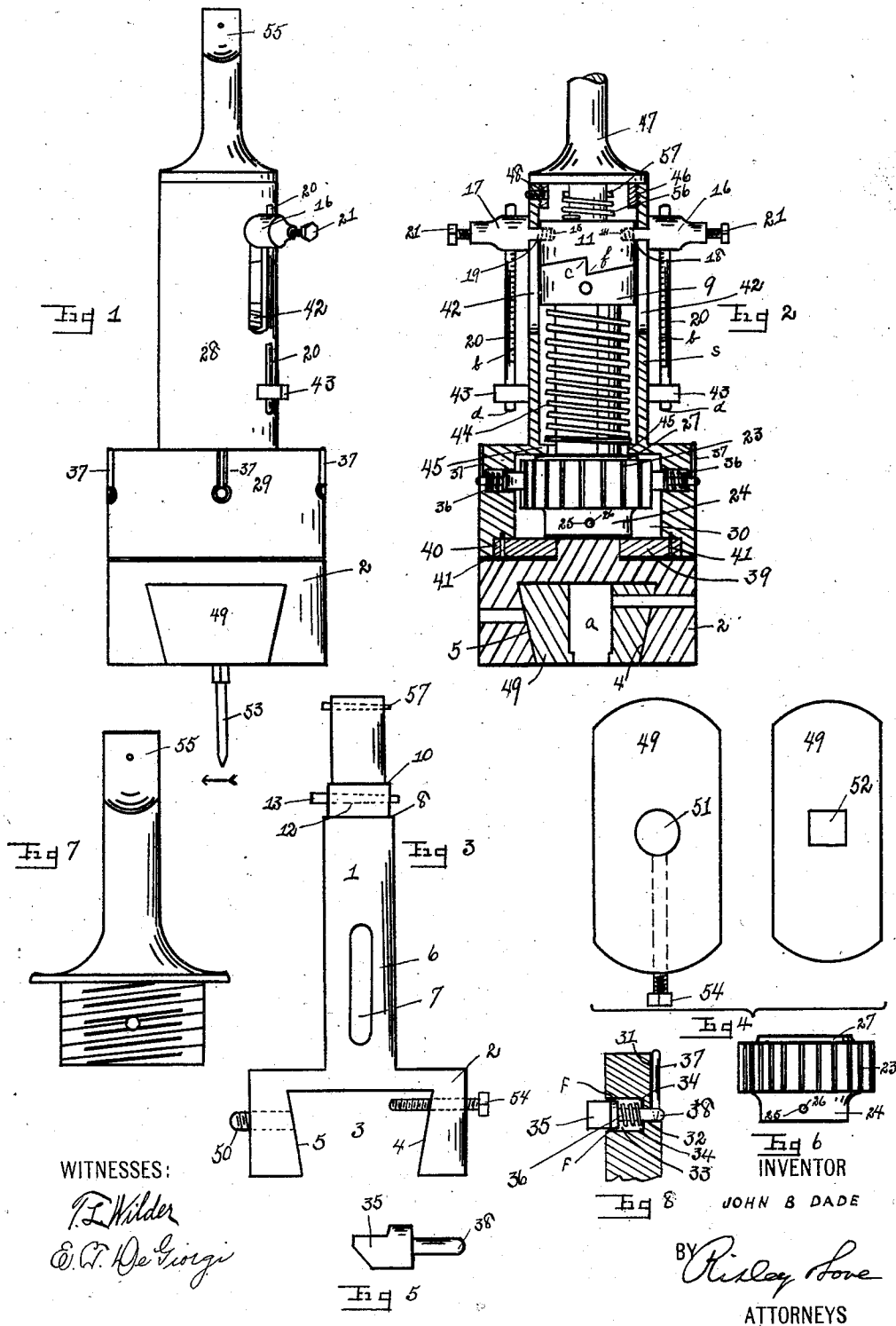


J. B. DADE.
TAPPING ATTACHMENT.
APPLICATION FILED DEC. 20, 1909.

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UNITED STATES PATENT OFFICE.

JOHN B. DADE, OF FRANKFORT, NEW YORK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN B. DADE, citizen of the United States, residing at Frankfort, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Tapping Attachments, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to an improved tapping attachment and I declare that the following is a full, clear, concise and exact description thereof sufficient to enable one skilled in the art to make and use the same reference being had to the accompanying drawings in which like reference characters refer to like parts throughout.

The object of the invention is to provide a tapping attachment that is simple, efficient and can be cheaply manufactured.

The invention as disclosed in the drawings shows a device whereby any style of tap may be used to accomplish the work desired thereby. The device is so constructed that the depth of bore within a certain range may be predetermined upon and the device will automatically stop at such depth and may then be removed from such position by reversing the lever controlling the driving mechanism. These objects are more fully set forth in the accompanying drawings in which—

Figure 1 is a view of my device complete; Fig. 2 is a central elevation of Fig. 1 partly in section; Fig. 3 is an elevation of the stock employed in the device; Fig. 4 is a plan view in detail of the tapping block showing opposite surfaces of same; Fig. 5 is a detail view enlarged of a dog employed in the device; Fig. 6 is a detail view of a ratchet wheel which performs an important function in the device; Fig. 7 is a detail enlarged of the shoulder; and Fig. 8 is a detail enlarged of a dog and the manner of its housing.

Referring to the drawings more particularly the stock piece of the device is represented by 1 and comprises an enlarged cylindrical base portion 2 which is recessed as at 3 whereby the sides of said recess converge as at 4 and 5, approaching each other as they near the outer surface of 2. This enlarged cylindrical portion 2 is provided with a centrally disposed upwardly extending shaft 6 which has a longitudinal central recess 7 for a purpose to be described. At

8, shaft 6 is reduced in cross area in order to form a seat for tight lock nut 9. It is further reduced at 10 similarly to form a seat for loose lock nut 11. Between shoulders 8 and 10 shaft 6 is provided with a tapering bore 12 which is in alignment with suitably disposed bores provided in lock nut 9 through which train of bores a wedge shaped stud 13 is passed and secured by wedging in order to rigidly hold nut 9 to shaft 6. Loose nut 11 is provided with threaded apertures as 14 and 15 suitable for screw mounting therein screws 18 and 19 which screws are integral with sleeves 16 and 17. Sleeves 16 and 17 are suitably recessed or bored transversely to provide apertures for the insertion of graduated arms 20—20. Sleeves 16 and 17 are also apertured longitudinally with internal threads for the disposition therein of set screws 21—21 which are provided to hold arms 20—20 at any desired point of the scale on the arms.

On shaft 6 I have mounted a centrally bored ratchet wheel 23 provided with an integral trunnion shaped portion 24 transversely bored or apertured as at 25 which passes diametrically therethrough and across the central bore of the ratchet wheel for the insertion of a stud 26 passing through 25 and intermediate of said bore 25 through recess 7 of shaft 6 in order to mount ratchet wheel 23 rigidly from turning about shaft 6 but loosely for moving up and down thereon within the limits of recess 7. Ratchet wheel 23 is further provided with a raised portion or rib 27 which forms an upper bearing portion therefor.

Ratchet wheel 23 and shaft 6 of shank 1 and its parts in connection therewith are suitably housed by casing 28 which comprises a cylindrically enlarged portion 29 similar externally to 2 of shank 1. Portion 29 is recessed, however, as at 30. At quadrant points, preferably, in 29 I have provided recesses of a shape more particularly seen by reference to Fig. 8. Said recesses comprise peripheral longitudinal bores 31 and perpendicular thereto radially extending bores 32 enlarged at 33 in order to form shoulders 34—34 to seat correspondingly formed shoulders F of ratchet engaging dogs 35 which are held normally inward by springs 36 and by pins 37 suitably housed in bores 31 and having wedge shaped ends which pass through correspondingly formed

apertures in arms 38 of dogs 35. Aperture 30 of casing 28 is suitably closed by a plate 39 which fits into a proper recess 40 provided therefor in 29 and is rigidly secured to 29 by any suitable means here shown by screws 41. Casing 28 is provided with an upwardly extending cylindrical shell *s* as best seen in Fig. 2. This shell portion has oppositely disposed recesses 42—42 adapted to permit the longitudinal movement therealong of screws 18 and 19. Directly below said recesses 42—42 are similarly located oppositely disposed guide sleeves 43—43 integral with *s* and adapted to cause arms 20—20 to contact with the upper surface of 29 at approximately right angles. There is provided a coiled spring 44 wound about shaft 6 and has one of its ends seated on rib 45 which is integral with casing 28 and disposed as shown in Fig. 2. The other end lies adjacent the under surface of tight lock nut 9. The function of coiled spring 44 is to draw enlarged cylindrical portion 2 of shank 1 and its parts in connection therewith up normally with like portion 29 of casing 28. The shell portion of 28 is screw threaded internally as at 46 upon which is screw mounted shoulder 47 which when seated is rigidly secured from turning by set screw 48 passing through suitable threaded apertures provided therefor in the shell *s* and in the shoulder 47.

In recess 3 of enlarged cylinder portion 2 of shank 1, I slip a correspondingly shaped tapping block 49 which is held from vertical movement by tapering sides 4 and 5 and is held from transverse or lateral movement by a set screw 50 mounted in a suitable threaded aperture in 2 as shown in Fig. 2. Block 49 has centrally disposed a vertical recess *a* having its upper portion circular in cross section as shown at 51 and its lower portion square in cross section as shown at 52 adapted to hold the butt of a tap as 53 from turning therein. Set-screw 54 mounted in a suitable threaded aperture as indicated by dotted lines in Fig. 4 is also provided to rigidly hold the butt of tap 53 in proper position. Any style of tap may be used by placing in recess *a* the proper sleeve adapted to hold the desired tap.

In order to hold loose nut 11 normally in engagement with tight nut 9 I provide a coil spring 56 which is held in place about shaft 6 by stud 57, suitably housed in a recess in shaft 6, and by the upper surface of loose nut 11.

The operation of the device is as follows: The power attachment of any suitable drill press is connected to shoulder 47 suitably shaped as at 55 for the purpose. The operator places the work or material under tap 53 and throws on the lever of the drill press which starts the motive power and causes the tap to revolve to the left, preferably,

as indicated by arrow. The immediate and intermediate connections of the tap to the driving power may be briefly enumerated as follows: shoulder 47, casing 28, sleeves 16 and 17, loose nut 11, tight nut 9, shaft 6, ratchet 23 which rides over the teeth of dogs 35 when the turning is toward the left or when the tap is entering the work, enlarged cylindrical portion 2 and the tap directly in connection therewith. The tap descends into the work or material until it reaches a predetermined depth whereupon the tap is automatically stopped from further turning because of ends *d—d* of arms 20—20, which have been properly adjusted by means of scales *b—b* and set screws 21—21, coming in contact with the upper surface of enlarged cylinder portion 29 and thereby raising loose nut 11, which is directly connected with arms 20—20, until its clutch teeth *f—f* oppositely disposed are able to rise above and clear corresponding clutch teeth *c—c* of tight nut 9. In order to draw tap 53 out from the work the operator reverses the turning of the driving power which causes the teeth of dogs 35 to rigidly hold ratchet 23 from turning and thereby turns tap 53 out from the work, clutch teeth *f—f* riding over *c—c* in this reversing movement.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is—

1. In a tapping attachment, the combination of a casing adapted to be attached to the spindle of a machine tool, a shank adapted to hold a tap of various styles, said casing having means engaging means on said shank whereby to turn said shank and tap in one direction for boring or tapping, graduated arms adjustably held by said means on said shank and by set screws for stopping said turning at a predetermined time and said casing having other means engaging other means on said shank for turning said shank and tap in the reverse direction adapted to draw said tap out of the work, substantially as described.

2. In a tapping attachment, the combination of a casing adapted to be attached to the spindle of a machine tool, a shank having means adapted to hold a tapping block and tap, said casing having a slot engaging means on said shank for turning said shank in one direction for tapping and said casing having other means engaging other means on said shank for turning said shank in the reverse direction, and graduated arms adjustably held by said means on said shank and by set screws, arranged in an external manner to the device, for automatically stopping the turning of said shank in one direction, substantially as described.

3. In a tapping attachment of the character described, the combination of a casing adapted to be attached to the spindle of a

machine tool, a shank having a cylindrical base with a tapering slot, and said casing having means engaging means connected to said shank whereby said shank may be
 5 turned in one direction, graduated arms adjustably held in an external position to the device for automatically stopping said shank from turning at a predetermined time, and said casing having plungers
 10 adapted to engage with a ratchet wheel on said shank whereby said shank may be turned in the reverse direction.

4. In a device of the character described, the combination of a casing adapted to be
 15 attached to the spindle of a machine tool, a shank holding a block adapted to operatively secure taps of different styles, said casing having slots adapted to engage screws mounted in a nut revolubly mounted on said
 20 shank whereby to turn said shank in one direction, sleeves holding arms and rigidly secured to said nut whereby to stop the turning of said shank at a predetermined time, and said casing having dogs adapted to en-
 25 gage with a ratchet wheel on said shank whereby said shank may be turned in the reverse direction.

5. In a device of the character described, the combination of a casing having an en-
 30 larged cylinder base portion, a shank holding a tapping block and a tap, a ratchet wheel slidably mounted upon said shank, and adapted to ride over dogs whereby said tap may be turned into the work and said
 35 wheel held stationary by said dogs whereby said shank may be turned in the reverse direction, graduated arms arranged externally to said device and intermediately connected to said shank and adapted to come to rest
 40 upon the cylindrical base of said casing whereby said tap may be stopped from turning into said work at a predetermined time, substantially as described.

6. In a device of the character described, the combination of a casing, having means whereby it may be attached to the spindle of a machine tool, a shank having means for holding a tap, a tap and a tapping block, a loose nut having teeth adapted to engage
 50 with the teeth of a tight nut, said loose nut and said tight nut mounted upon said shank, and said loose nut connected with said casing by sleeves holding arms whereby said shank may be turned in one direction by
 55 power means and said shank may be stopped from turning at a predetermined time by said arms coming in contact with said casing and a slidably mounted ratchet on said shank engaging with dogs in said casing
 60 whereby said shank may be turned in the reverse direction, substantially as described.

7. In a tapping device of the character described, the combination of a casing adapted to be attached to the spindle of a machine
 65 tool, a shank vertically holding a tapping

block and tap, lock nuts mounted upon said shank, one loosely mounted and the other rigidly mounted, said loosely mounted nut connected to said casing by sleeves holding
 70 adjustable arms adapted to abut against the cylindrical portion of said casing whereby said shank may be stopped from turning in one direction at a predetermined time and a ratchet wheel slidably mounted upon said shank adapted to be engaged with dogs in
 75 said casing whereby said shank may be turned in the reverse direction, substantially as described.

8. In a tapping attachment, the combination of a casing adapted to be attached to
 80 the spindle of a machine tool, a shank, and said casing having slots adapted to engage screws secured to a nut revolubly mounted on said shank whereby said shank may be turned in one direction and external adjust-
 85 able means connected with sleeves integral with said screws whereby said turning may be stopped at a predetermined time and said casing having dogs adapted to engage with a slidably mounted ratchet wheel on said
 90 shank whereby said shank may be turned in the reverse direction.

9. In a device of the character described, the combination of a casing adapted to be
 attached to the spindle of a machine tool, a
 95 shank, and said casing having connections with said shank whereby said shank may be turned in one direction, and said casing having other connections with said shank where-
 100 by said shank may be turned in the reverse direction, and adjustable arms whereby the turning in one direction of said shank may be stopped at a predetermined time, substantially as described.

10. In a tapping device, the combination
 105 of a casing adapted to be attached with the spindle of a machine tool having an enlarged cylindrical portion forming a shoulder, a shank inclosed in said casing having an enlarged cylindrical base portion adapt-
 110 ed to vertically hold a tapping block and a tap, shoulders connecting said casing with a lock nut on said shank, said lock nut adapted to engage with a second lock nut rigidly mounted to said shank whereby the
 115 turning of said casing turns the said shank in one direction, a slidably mounted ratchet wheel mounted on said shank adapted to engage with dogs in said casing whereby said shank may be turned in the reverse direc-
 120 tion and arms in said shoulders adapted to engage with the said cylindrical portion of said casing whereby the turning of said shank may be stopped at a predetermined time, substantially as described. 125

11. In a tapping device, the combination of a casing having an enlarged cylindrical portion, a shank having an enlarged base portion inclosed in said casing, lock nuts on
 130 said shank, one of said lock nuts rigidly se-

cured to shoulders having bearings in said casing, a shoulder connected to a driving power rigidly secured to said casing, a slidingly mounted ratchet wheel on said shank
5 adapted to engage with dogs in said casing, said ratchet wheel adapted to slide over said dogs when said casing is turning in one direction and said ratchet wheel adapted to be rigidly held by said dogs when said casing
10 is turning in the reverse direction and external means intermediately secured to one of said lock nuts and engaging with said casing whereby to stop the turning of said shank in one direction.

15 12. In a device of the character described, the combination of a casing adapted to be attached to the spindle of a machine tool having an enlarged cylindrical portion, a
20 shank having an enlarged cylindrical portion adapted to vertically hold a tapping block and a tap and inclosed within said

casing, lock nuts on said shank, one rigidly mounted thereto and the other loosely mounted thereto, said loosely mounted nut
25 screw mounted to sleeves slidingly mounted in said casing, whereby the turning of said casing will turn said shank in one direction, means intermediately secured to said loosely
30 mounted lock nut and adapted to engage with the cylindrical portion of said casing whereby to automatically stop the turning of said shank, a ratchet wheel slidingly
35 mounted on said shank adapted to engage with dogs whereby said shank may be turned in the reverse direction.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

JOHN B. DADE.

Witnesses:

T. L. WILDER,

ELEANOR T. DE GIORGI.