

974,239.

Patented Nov. 1, 1910.

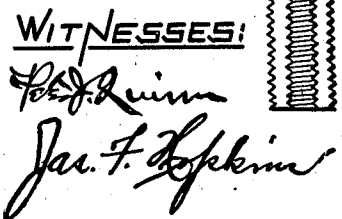


FIG. 9. INVENTOR:
Joseph A. Dalton.
By Charles T. Hannigan,
Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH A. DALTON, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO
PETER J. QUINN, OF PAWTUCKET, RHODE ISLAND.

TAPPING AND DRILLING CHUCK.

974,239.

Specification of Letters Patent.

Patented Nov. 1, 1910.

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To all whom it may concern:

Be it known that I, JOSEPH A. DALTON, a citizen of the United States, residing at the city of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Tapping and Drilling Chucks, of which the following is a specification.

My invention relates to an improved structure in that class of tools adapted for holding taps and drills; and the objects in view are to provide a tool of this character for mounting in a machine-spindle to receive a positive drive for respectively feeding and reversing the tap or drill, and said tool having a graduated stop to set for any depth of hole to be tapped or drilled, of the novel construction, arrangement, and combination of parts, as hereinafter described and claimed.

In the accompanying sheet of drawings, Figure 1 represents a vertical view, partly in section and partly in elevation, of my improved tapping or drilling chuck complete, and showing the normal position of parts prior to the tool undergoing its tapping operation. Fig. 2 is a similar view, showing the relative position of parts after the tool has completed its operation of tapping. Fig. 3 is a plan section of the tool-housing, taken on line 3.—3. of Fig. 1, showing block-keys mounted in said housing and the driving clutch member in engagement with the blocks of said keys. Fig. 4 is a side view of said clutch member. Fig. 5 is a plan of the working clutch member. Fig. 6 is a side view of the same. Fig. 7 is a plan of the holding means for the graduated stop for the tapping or drilling tool. Fig. 8 is a plan section of the tap or drill-head, taken on line 8.—8. of Fig. 1., and, Fig. 9 is a perspective view of one of the block-keys for the tool-housing.

Like reference characters indicate like parts.

a designates an inverted cup-shaped housing having at its upper portion a central stock a^1 to be coupled to a machine-spindle, and said housing having its lower portion exteriorly screw-threaded, as at a^2 , to engage a threaded annular flange a^3 of a closure member a^4 .

The housing a is provided with two longitudinal grooves, as at points a^5 , a^6 in Fig. 3, extending the full depth of the interior of said housing, arranged diametrically opposite each other, and in each groove is made fast a key c .

Within the upper portion of the housing a is made fast a disk-shaped clutch member d whose sides are provided with two diametrically opposite slots d^1 , d^2 , to receive therein blocks c^1 , c^2 integral of the keys c , and said clutch member has a rib extending diametrically across its bottom face, as at d^3 . A second disk-shaped clutch member e loosely fits the bore of the housing a and has a long concentric reduced cylindrical hub e^1 which passes through an opening formed in the closure member a^4 , and said hub is also concentrically reduced in diameter to form a shank e^2 to fit within an aperture of the tap or drill-head f . An expanding coil spring g surrounds the hub e^1 and is interposed between its clutch part e^3 and closure member a^4 .

On that portion of the hub e^1 , which projects from the closure a^4 , is loosely mounted a holder which acts as a support h (Fig. 7) for the stop-bar i . This holder or support h is made in like halves, each half having a semi-circular portion h^1 to embrace said hub, each half having a semi-circular vertical portion h^2 to embrace the rounded surface of the stop-bar i , each half of said support secured together by screws j , j^1 and j^2 , and the latter screw to act in binding the vertical portions of said support to said bar. This stop-bar i is provided with a scale or graduated marking which extends above the binder portion of the support h , as at i^1 in Fig. 1, and the lower part of said bar has a laterally bent portion i^2 adapted to rest upon the surface of the work which is to be tapped or drilled and close to the tap or drill.

The tap-head f is secured to the shank e^2 of the clutch member e by means of a pin k , and said head is provided with a socket to loosely receive the shank l of the tap l^1 , which is held in said socket by an ordinary yieldable holding means, as at m in Fig. 1. The tap-head f is larger in diameter than the diameter of the clutch-hub e^1 in order to prevent displacement of the support h ,

and the action of spring g tends to keep said support always in contact with the closure member a^4 , in the manner shown in Fig. 1.

When the lateral portion i^2 of the stop-bar i contacts with the surface of the work, during the operation of tapping, the lead of the tap h^1 causes the working-clutch e to become free of the driving-clutch d , and the tap-head f carried free from contact with the support h to a point equal to the depth of the clutch-rib d^2 , in the manner shown in Fig. 2.

Assuming the tool is mounted in the machine-spindle and it is desired that a hole of—say one inch in depth is to be tapped, the operator first slides the stop-bar to bring its three quarter inch graduation mark above the top of the binder portions h^2 of the support h , after which he lifts the usual operating lever of the machine to cause the tool to revolve in the direction indicated by the arrow r and at the same time automatically carry downwardly the tap. When the tap has completed three quarters of an inch of its tapping operation the lateral portion i^2 of the stop-bar will then be at rest upon the surface of the tapped-work, and the tap will continue to operate one eighth of an inch farther and equal to the depth of the fixed clutch-rib d^2 , in order to free the clutch members d and e . When the clutch members d and e become disengaged the screwing operation of the tap causes blocks c^2 , c^3 , integral with the keys c , c , to engage in slots e^3 , e^3 formed in the sides of the clutch e , so that when the tap has reached the full depth of its working distance a compression of the spring g is had, in the manner shown in Fig. 2. After the threaded hole has been formed the operator reverses the motion of the tool and when the tap frees from the hole the action of the spring g forces upwardly the working-clutch e to its normal engagement with the driving-clutch d .

By my construction and arrangement of parts I provide a device which permits of regulating the proper distance required for tapping or drilling, and at the same time a device that is simple, durable, and effective in operation.

What I claim and desire to secure by Letters-Patent, is—

1. In a tool of the class described, a housing having a stock for connection with a power driven machine spindle and said housing provided with two diametrically opposite grooves, a closure secured on said housing and provided with an opening, a key secured in each groove and having integral blocks projecting in the bore of said housing, a clutch member made fast at the bottom of the bore of said housing, a movable clutch member provided with a series of slots to receive the blocks of said keys and having a concentric hub projecting through the

opening of the closure and said hub having a reduced shank, a coil spring surrounding the hub and interposed between the closure and the last mentioned clutch, a bar having a lateral portion to come in contact with the work to be tapped or drilled and said bar provided with graduated markings thereon, a support mounted on the hub and having means to frictionally hold said bar in position, and a head secured on the shank of the clutch-hub and provided with a socket to receive the shank of a tap or drill.

2. In a tool of the class described, a closed housing having a stock for connection to a power driven spindle, a fixed driving-clutch mounted in the housing, a working-clutch having an integral hub which is reduced to form a shank, and expanding spring to force the working-clutch into engagement with the driving-clutch after the tapping or drilling operation, a head secured on the shank of the clutch-hub and said shank provided with a socket to receive the shank of the tap or drill, means to engage the working-clutch during its operation of tapping or drilling, a support mounted on the clutch-hub and having a binder means, a stop-bar slidably mounted in the binder of said support and said bar provided with a graduated scale, whereby said bar may be set for the depth of hole desired to be tapped or drilled.

3. In a tool of the class described, a closed housing having a stock for connection to a power driven spindle, a driving-clutch member fixed in the housing, keys secured in the housing and having integral blocks, a working-clutch member adapted to engage the first mentioned clutch and provided with a series of slots to receive the blocks of said keys and said second mentioned clutch having a hub projecting from the housing and having a reduced shank, a head secured on the shank of said hub and provided with a socket for the reception of a tap or drill, a support mounted on the hub and having a clamping portion, a bar slidable in the clamping portion of said support and provided with graduated markings and said bar adapted to come in contact and act as a stop upon the surface of the work prior to the latter being tapped or drilled, and means to cause the working-clutch to release from engagement with the blocks of said keys after the tapping operation.

4. In a tool of the class described, a closed housing having a stock for connection with a machine-spindle which is automatically driven to respectively feed and reverse the motion of the tap or drill, a disk-shaped clutch fixedly secured in said housing, a disk-shaped working-clutch having an integral hub projecting from said housing and said clutch provided with a series of slots formed in its sides, a tap or drill-head se-

5 cured on a reduced portion of the hub and provided with a socket to receive the tap or drill, means to lock the working-clutch by its slots with said housing during the feeding depth of the tap or drill, a slidably mounted stop-bar carried by the tool to come in contact with the work and said bar provided with a graduated scale to give the desired depth of hole to be tapped or drilled,

and means to force the working-clutch into 10 engagement with the fixed clutch after the tapping or drilling operation.

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

JOSEPH A. DALTON.

Witnesses:

C. T. HANNIGAN,
PETER J. QUINN.