

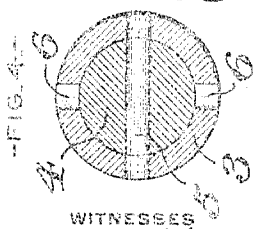
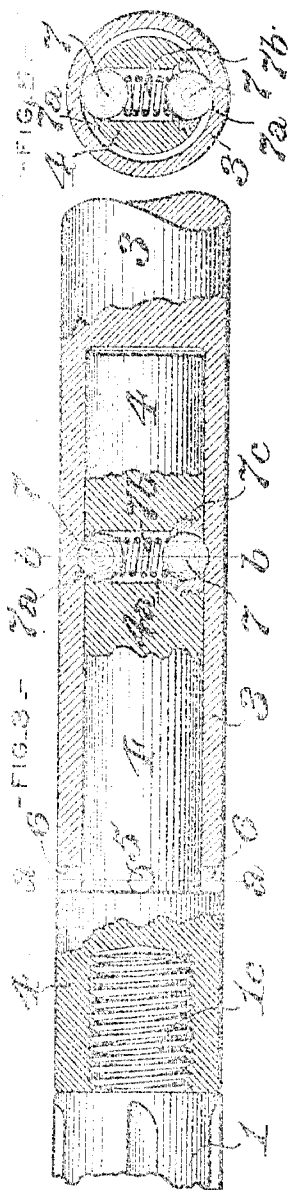
F. E. BOCORSELSKI.

TAP AND REAMER.

APPLICATION FILED AUG. 5, 1912.

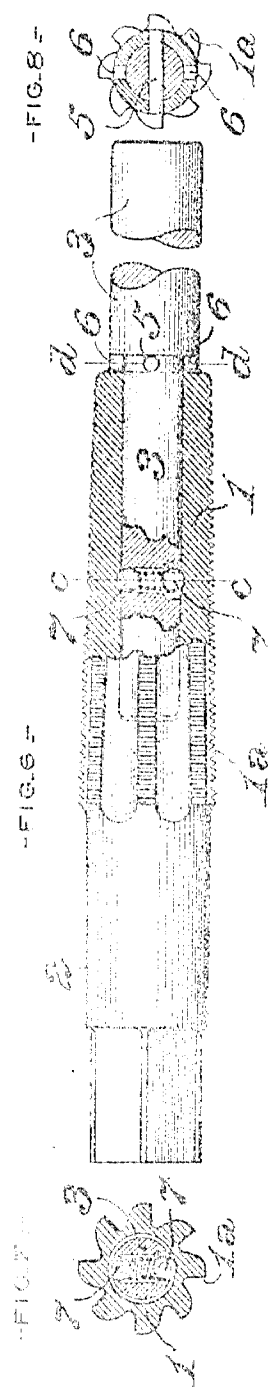
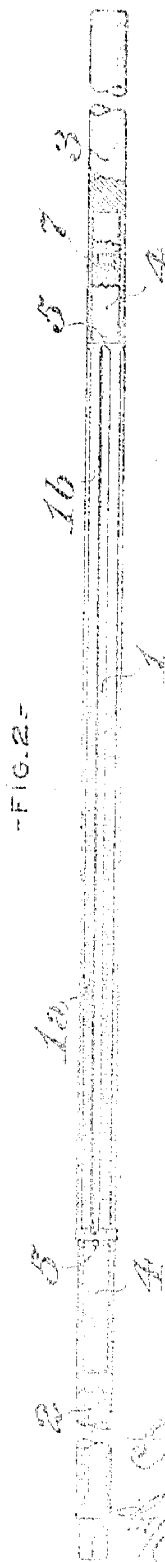
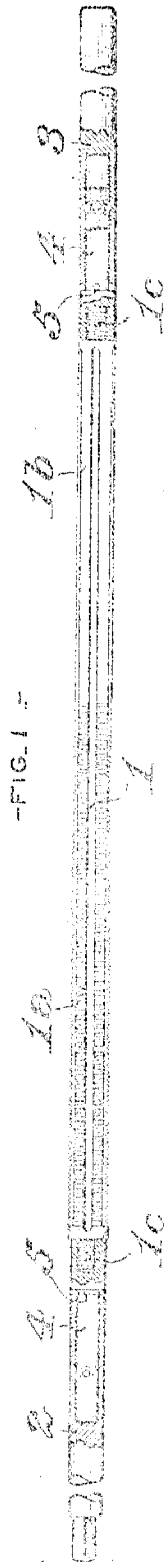
1,040,610.

Patented Oct. 8, 1912.



WITNESSES

Edward Wright
S. R. Bell.



INVENTOR
F. E. Bocorselski
By J. H. ...

UNITED STATES PATENT OFFICE.

FRANK E. BOCORSELSKI, OF RICHMOND, VIRGINIA.

TAP AND REAMER.

Patented Oct. 8, 1912.

1,040,610.

Specification of Letters Patent.

Application filed August 5, 1912. Serial No. 713,207.

To all whom it may concern:

Be it known that I, FRANK E. BOCORSELSKI, of Richmond, in the county of Henrico and State of Virginia, have invented a certain new and useful Improvement in Taps and Reamers, of which improvement the following is a specification.

My invention relates to taps and reamers for truing and cutting screw threads in holes in pieces of metal, and its object is to provide means whereby the guides and driving stems of taps and reamers may be readily and quickly detached from and attached to the bodies of said cutting tools, and be held securely connected thereto during their operation, thereby enabling it to be carried on in locations where limitation of space would interfere with that of a tap or reamer of the ordinary construction.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a view, partly in elevation and partly in longitudinal central section, of a stay bolt tap and reamer, illustrating an embodiment of my invention; Fig. 2, a similar view showing a structural modification; Fig. 3, a longitudinal central section, on an enlarged scale, through a portion of the appliance shown in Fig. 1; Figs. 4 and 5, transverse sections on the lines *a a* and *b b*, respectively, of Fig. 3; Fig. 6, a view, partly in elevation and partly in longitudinal central section, of a tap showing a further structural modification; and, Figs. 7 and 8, transverse sections, on the lines *c c* and *d d* respectively, of Fig. 6.

It is necessary for the operation of taps, reamers, and metal cutting tools of similar character, in certain classes of work, that their bodies should be provided with a guide stem at one end of their cutting members, and a driving stem at the other, and these stems, which are often of considerable length, have ordinarily been integral with the bodies of the tools. When operating in situations where space is limited, as in the combustion chambers of steam boilers, inconvenience and delay is often occasioned by reason of the projecting stems coming in contact with parts of a structure other than those on which the work is being done, so that time is lost in the backing out of the tool which often becomes necessary. My invention avoids this objection by providing stems which are quickly detachable and at-

tachable as conditions may require, while being so connected to the bodies of the tools as to be exempt from liability to accidental and undesired detachment during their operation.

Referring first to Figs. 1 and 3 to 5 inclusive, my invention is herein exemplified as applied in connection with a stay bolt tap and reamer, the body, 1, of which is provided with the usual screw cutting threads, 1^a, and reaming cutters, 1^b. In the practice of my invention, a driving stem, 2, is detachably connected to one end of the body of the tool, and a guide stem, 3, is similarly connected to the opposite end thereof, the connection being effected, in the application to taps and reamers of the ordinary construction, by the following means. An externally threaded extension, 1^c, is formed on each end of the body, 1, and a cylindrical stem, 4, is screwed on each of said extensions. The coupling stems are reduced in diameter beyond the portions which engage the extensions, 1^c, and their so reduced portions are fitted truly in corresponding bores in the adjacent ends of the driving stem, 2, and guide stem, 3, the ends of which abut against shoulders at the ends of the larger diameter portions of the coupling stems, 4, as clearly shown in Fig. 3. Rotation of the driving and guide stems, 2 and 3, relatively to the coupling stems, 4, and the connected body of the tool, is prevented by transverse pins, 5, fixed in the coupling stems and engaging longitudinal slots, 6, in the driving and guide stems, which slots are open at the ends of said stems. Accidental longitudinal displacement of said stems from their normal positions on the coupling stems, 4, is prevented by yielding spring catch mechanisms, each of which comprises a pair of ball latches, 7, fitting in a transverse opening, 4^a, in one of the coupling stems, and forced into engagement with an internal groove or socket, 7^a, in the connected guide stem or driving stem, by an interposed spring, 7^b. The ball latches are held in position by a nut, 7^c, which partially incloses one of them and is screwed into the end of the opening, 4^a. If preferred, a single ball latch, operating similarly to each of the two similar members described, may be used in each mechanism.

It will be obvious to those familiar with the manipulation of taps, reamers, and an-

alogous metal cutting tools, that a construction substantially as above described, is readily applicable, at inconsiderable cost, to such tools, and that, in their operation, the driving and guide stems will be securely held to the tool, and the detachment and attachment of either or both of them may be instantly effected when necessary or desirable.

Fig. 2 illustrates a structural modification which is desirably applicable in the manufacture of new tools, and differs from the construction first described only in the particular that the coupling stems, 4, are, in this case, made integral with the body, 1, of the tool, instead of being screwed to threaded extensions thereof. The means for preventing independent rotation, and accidental longitudinal displacement of the driving and guide stems are similar to those before described.

Figs. 6 to 8 inclusive show a stay bolt tap, having an integral driving stem, 2, formed on one end of its body, 1, and having its body bored out at, and for a substantial distance from, its opposite end, to receive a guide stem, 3, which is reduced in diameter at its end adjoining the body for a distance corresponding substantially with the length of the bore of the body and is fitted truly therein. Rotary movement of the guide stem, relatively to the body of the tool, is prevented by a pin, 5, fixed in the guide stem and engaging open ended slots, 6, in the adjoining end of the tap body, and a yielding spring catch mechanism similar to that before described is provided for preventing accidental longitudinal displacement of the guide stem, 3; the ball latches, 7, in this case fitting in the guide stem, and engaging recesses in the body of the tap.

It will be seen that this construction embodies the same structural and operative principles as those before described, the structural difference being the immaterial one that in this case, the engagement of the stem with the body is effected by fitting the stem within the body, while in the former cases, the extensions of the body are fitted within the stems.

I claim as my invention and desire to secure by Letters Patent:

1. The combination, with a metal cutting

tool having peripheral cutting members on its body, of a stem longitudinally engaging one end of the body of the tool, and connected detachably thereto by a slip joint.

2. The combination of a metal cutting tool having peripheral cutting members on its body, a stem longitudinally engaging one end of the body, means for preventing independent rotary movement of the stem, relatively to the body, and means for preventing accidental longitudinal movement of the stem, relatively to the body.

3. The combination of a metal cutting tool having peripheral cutting members on its body, a stem longitudinally engaging one end of the body, a transverse pin fixed in one of said engaged members and fitting open ended longitudinal slots in the other, and means for preventing accidental relative longitudinal movement of said engaged members.

4. The combination of a metal cutting tool having peripheral cutting members on its body, a stem longitudinally engaging one end of the body, means for preventing independent rotary movement of said engaged members, and a yielding spring catch mechanism interposed between the body and stem for preventing accidental relative longitudinal movement of said engaged members.

5. The combination of a metal cutting tool having peripheral cutting members on its body, a stem longitudinally engaging one end of the body, a transverse pin fixed in one of said engaged members and fitting open ended longitudinal slots in the other, and a yielding spring catch mechanism interposed between said engaged members for preventing accidental relative longitudinal movement thereof.

6. The combination of a metal cutting tool having peripheral cutting members on its body, a stem longitudinally engaging one end of the body, means for preventing independent rotary movement of said engaged members, a ball latch fitted in one of said engaged members and engaging a socket in the other, and a spring normally holding said ball latch in engagement.

FRANK E. BOCORSELSKI.

Witnesses:

A. S. FOWLER,
R. C. SMITH.