H. MÜLLER.

TAP GUIDE.

APPLICATION FILED JULY 18, 1919.

1,346,235. Patented July 13, 1920.

Fig. 1.

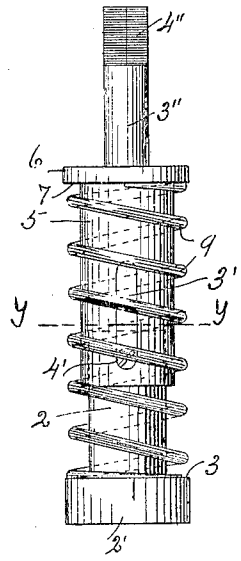


Fig. 2.

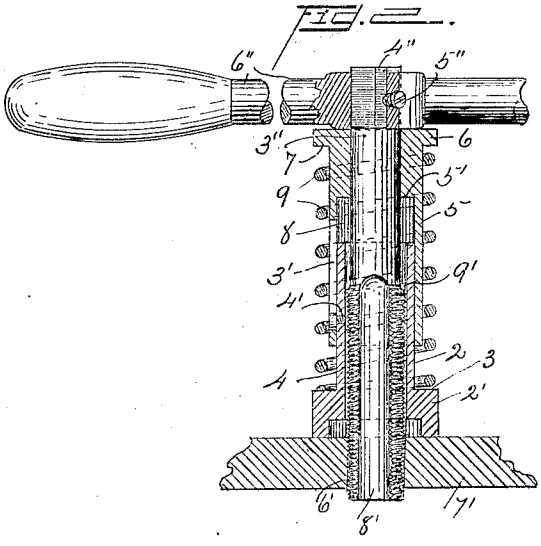


Fig. 3.

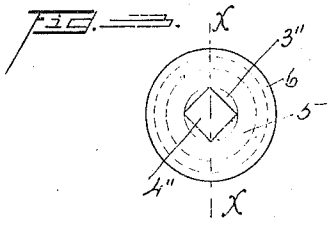
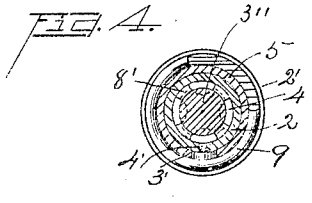


Fig. 4.



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TAP-GUIDE.

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To all whom it may concern:

Be it known that I, HENRY MÜLLER, a citizen of the United States, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Tap-Guides, which improvements are fully set forth in the following specification.

This invention relates to improvements in devices of that class available for maintaining a thread-cutting tap in proper operating position relative to the opening wherein the tap is to be operated for thread-cutting purposes, such devices being well designated tap guides.

The object of this invention is to provide a tap guide which shall be simple and inexpensive as regards its construction; durable, efficient and reliable in practical service; convenient in its application to practical purposes; and which shall possess certain well-defined advantages over prior analogous constructions.

The invention consists in certain combination, details and parts whereby, together with the novel disposition and relative arrangement of said parts, the attainment of the foregoing object is rendered practicable, all of which will be hereinafter more specifically referred to and set forth in the claims hereto appended.

The invention is clearly illustrated in the accompanying drawing, wherein:

Figure 1 is a view in elevation of a tap guide embodying my said improvements.

Fig. 2 is a central, longitudinal section of same, as along the dotted line *x*—*x* of Fig. 3, the telescopically operable body-members of the device being relatively compressed axially and under operating stress.

Fig. 3 is a top plan view of the device.

Fig. 4 is a transverse section thereof, as along the line *y*—*y* of Fig. 1.

Having reference to the accompanying drawing, wherein similar reference-numerals denote like parts throughout the several views, I, in carrying out my present invention, make use of a body which comprises a thrust section 2, fitted at its lower extremity with a thrust-block 2′, the same being annular in general form, by preference, and of a diameter relatively greater than the diameter of the section 2, proper, whereby the latter is provided with an annular shoulder 3, for a purpose which will be hereinafter explained.

Section 2 also has a bore 4, co-extensive with the length thereof, including the thrust-block 2′.

5 denotes the operating section of the body aforenamed, fitted at its upper extremity with an annular flange 6 whereby is formed an annular shoulder 7, and further having a bore 8, coextensive with the length thereof and for the reception, at its lower end-portion and telescopically, of the normal end-portion of the thrust-section 2.

Between the respective shoulders 3 and 7 there is interposed an elastic element 9, here shown as taking the character of a helicoidal or spiral spring, which encircles both of the body sections aforenamed, and whose tendency at all times is to distend or separate axially, by an elastic pressure, the said body sections, the latter coöperating telescopically, as hereinbefore explained.

Any appropriate means may be availed of for limiting the distension or separation axially of the body sections 3 and 5, though in this connection I purpose providing, say, the section 5 with an elongated or slot-like opening 3′, into which freely projects and operates a stop 4′, said stop being carried, say, by the section 2, at a point thereof in registry with the opening 3′, and taking in this instance the form of a small machine, or similar, screw, threaded into the wall of said section 2, as clearly illustrated in Fig. 2 of the drawing.

Thus, the body sections being somewhat compressed, or urged somewhat axially together against the tendency of the element 9, stop 4′ being then screwed into section 2, by way of the opening 3′, and at that extreme terminus of said opening which shall thus be brought into registry with the point along the section 2, whereat the stop 4′ is to be positioned, undue distension or separation of the body sections is prevented, through engagement of the outer portion of the stop 4′ with the terminal wall of the opening 3′ immediately adjacent thereto, and under the normal elastic stress of the element 9 exerted on the section 5 through the medium of its shoulder 7, all as will be readily understood; while compression, or a relative adjustment of the body sections aforenamed, each in the direction of the

other, and still further against the tendency of the element 9, is permissible, by reason of the presence of the opening 3′, and its disposition relative to the stop 4′, the longer axis of said opening lying in parallelism with the longitudinal axis of the sectional body of the device.

The bore 8 of the section 5 is reduced diametrically at the portion thereof extending axially along the flanged end of said section, to form for the latter an interior shoulder 5′, the function of which will be apparent on reference being made to Fig. 2 of the drawing.

In practice, assuming that it is desired to form screw-threads in or on the surrounding wall of an opening, as 6′, formed in stock, as 7′, there is primarily inserted, shank foremost, into the sectional body of the device, by way of the bore 4 of section 2, a suitable thread-cutting tap, as 8′, having the customary shoulder 9′, and shank 3″ customarily merged, at the free end thereof, into a many-sided handle-receiving terminal 4″, for the reception, fixedly while in use and as through the medium of a suitable fastener 5″, of an appropriate operating handle, as 6″, the reverse face of whose head or enlarged medial segment, contacts with the adjacent obverse end-face of the section 5, in use; then the device as a whole, containing the tap aforenamed, is adjusted for service, with its thrust-block 2″ bearing on or against the stock, as 7′, and the bore 4 in due registry with the opening, as 6′; the tip of the tap 8′ being then permitted to enter or caused to enter said opening, primarily for the formation of threads in the surrounding wall thereof; longitudinal play on the part of said tap, relatively to and independently of, the sectional body of the device, being provided to this end, by reason of the relatively extended distance permitted to intervene between the shoulder 9′ of said tap and the obverse face of the medial segment of the handle applied thereto; whereupon, the user applies pressure to the handle 6″ in the direction proper to cause the tip of the tap aforenamed to snugly enter, as stated, the opening, as 6′, for thread-cutting purposes, and thereupon duly works said tap on its own longitudinal axis, as in common practice, and until the cutting-threads of the tip portion of the tap shall secure a firm bite in the wall surrounding the opening, as 6′. Now, as this thread-cutting operation continues, the handle 6″, with, of course, its medial segment aforenamed, will, proportionately as the threads are formed in the wall surrounding the opening, as 6′, be drawn, through the formation of said threads, in the direction of the stock being acted upon, and will be accompanied, in its said movement in the direction of the stock being acted upon, by the entire section 5 of the body aforenamed, this adjustment of the parts, automatically assumed thereby in operation, resulting in the impartation to the element 9, through compression thereof, of a substantially elastic stress, which increases in intensity proportionately as the thread-cutting operation continues, said stress being, in turn, transmitted to the thrust section 2, through the medium of the section 5, and in a manner to hold, elastically though with a firmness of marked serviceability, the thrust-block 2′ to contact with the stock being acted upon, and the entire device, accordingly, in proper operative position, with the tap carried by the device always in due axial alinement with respect to the opening in the surrounding wall of which threads are to be formed. Hence, where my improved tap guide is made use of, the formation of threads in a plane, always desirable, perpendicular to the stock, invariably results, the stock having a plane surface perpendicular to the opening wherein threads are to be formed, and against which the thrust-block 2′ may be caused to bear, and the oblique piercing of the stock by the tap 8′, as not rarely occurs in the formation of threads as at present effected, and whereby threads are formed in a plane oblique to the plane of the stock, such threads being always objectionable, is avoided.

It may be here pointed out that my improved tap guide possesses the novel characteristic of being capable of affording and supplying, in operation, its own elastic holding force, whereby the device as a whole is held in proper operative position relatively to the stock being acted upon, and that this holding force increases in intensity proportionately as the thread-cutting operation progresses.

It will be seen that my improved tap guide is well adapted for the purposes for which it is intended, and further that the same may be modified to a considerable extent, particularly as regards the cross-sectional contour of either of the body sections made use of, the specific character of the elastic element made use of, and various minor details of the construction, without materially departing from the spirit and principle of my invention, as coming within the scope of the claims hereto appended.

I claim:

1. A tap guide comprising telescopically conjoined sections constituting a body for the reception of a tap; means for limiting the extent of distending relative adjustability of said sections; and means for holding said sections normally under an elastic stress against compressive relative adjustment thereof.

2. A tap guide comprising a thrust-section and an operating section, said sections telescopically conjoined, and each fitted

with a suitable shoulder; means for limiting the extent of distending relative adjustability of said sections; and a helicoidal compressible spring, the latter encircling the sections aforenamed, coöperating with the shoulder of each thereof, and tending normally to elastically hold the same against relative compression thereof.

3. A tap guide comprising a thrust-section and an operating section, one of said sections having an elongated opening formed longitudinally through the wall thereof, and the other being fixedly pierced by a stop, the outer portion of which stop operates within the opening aforenamed and serves to thereby limit the distending relative adjustability of the sections aforenamed, the latter being telescopically conjoined, each with the other, elastically controlled, and constituting a body for the reception of a tap.

4. A tap guide comprising an interiorly-shouldered thrust-section and an operating section, said sections being telescopically conjoined, each with the other, elastically controlled, and constituting a body for the reception of a shouldered tap; and means for limiting the distending, relative adjustability of said sections.

5. A tap guide comprising a thrust-section and an operating section, said sections being telescopically conjoined, each with the other, said operating section having an elongated opening formed longitudinally through the wall thereof, having an interior shoulder, and having an annular flange, and said thrust-section being fitted with a thrust-block and with a removable stop, the outer portion of which stop operates within the opening aforenamed and thereby serves to limit the distending, relative adjustability of the telescopically conjoined sections aforenamed; and a helicoidal, compressible spring, the latter encirling the sections aforenamed, intermediate of, and bearing at its opposite ends against, the flange and thrust-block aforenamed, thereby elastically holding distended, said telescopically conjoined sections.

HENRY MÜLLER.