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TAP WRENCH GUIDE
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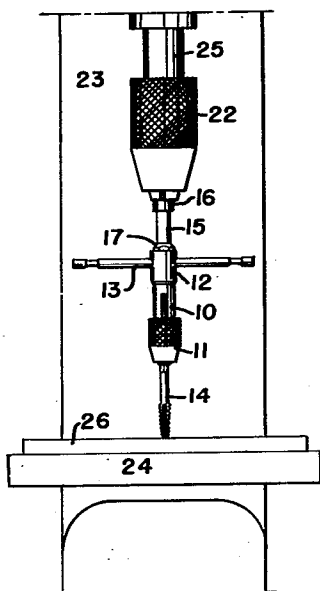


Fig. 1

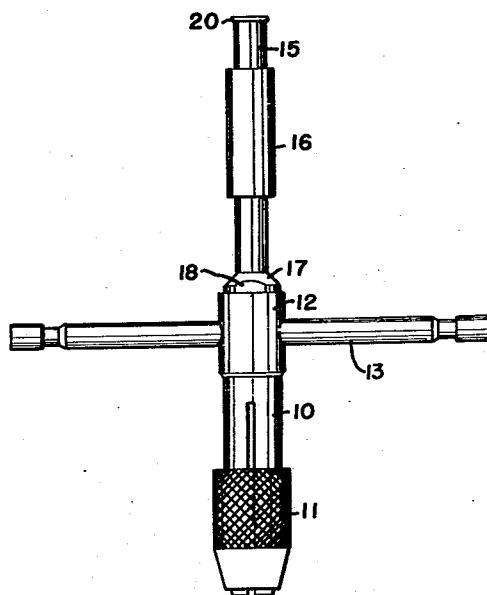


Fig. 2

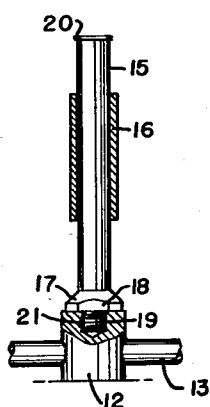


Fig. 3

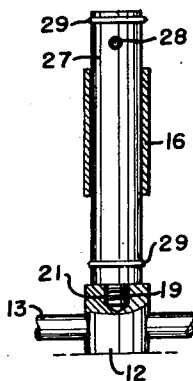


Fig. 4

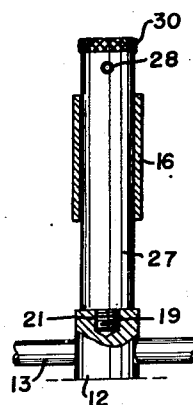


Fig. 5

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TAP WRENCH GUIDE

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1 Claim. (Cl. 10—147)

This invention relates to hand tap wrenches of conventional type and construction, and has as an object to provide an attachment for such wrenches employable to facilitate the use of the associated wrenches for proper manipulation of a tap carried thereby.

A further object of the invention is to provide an attachment for hand tap wrenches operable in engagement with a customary shop facility to correctly position and guide the wrench and an associated tap during manipulation of the latter.

A further object of the invention is to provide an improved hand tap wrench attachment employable to correctly position and hold the tap during its manipulation, which attachment is susceptible of convenient association with conventional tap wrenches of diverse particularity.

A further object of the invention is to provide a hand tap wrench attachment which is susceptible of operative association with a conventional tap wrench without impairment of the normal functional attributes thereof.

A further object of the invention is to provide a hand tap wrench attachment that is simple and inexpensive of production from commonly-available materials, that is adapted for operative association with a tap wrench through minimum alteration of the latter, that is susceptible of embodiment in a diversity of particular constructions, and that is practical and efficient in use.

With the foregoing and other objects in view, my invention consists in the construction, arrangement, and combination of elements as hereinafter set forth, pointed out in my claim, and illustrated by the accompanying drawing, in which:

Figure 1 is a conventionalized elevation of the improvement as associated with a tap wrench and engaged with a shop facility in its intended position of use.

Figure 2 is a side elevation of a typical tap wrench equipped with one practical form of the improved attachment.

Figure 3 is a fragmentary, detail elevation, partially in section, of the attachment shown in Figure 2.

Figure 4 is a view similar to Figure 3 illustrating an alternative structural organization of the attachment.

Fig. 5 is a view similar to Figure 3 illustrating a yet further modified organization of the improvement.

Wrenches for the manipulation of hand taps utilized for the internal threading of bores and holes in various hard materials are well known and extensively in use. Such wrenches are typically constituted as a straight shank carrying a tap-mounting chuck at one end, a head on the other end of the shank, and a rigid manipulating arm slidably and diametrically traversing said head. In an ideal sense, the wrench carrying a selected tap is disposed with its shank coaxial with the bore or hole to be threaded, the free end of the tap is entered in said bore or hole, and the tool is then rotated by means of its manipulating arm about the shank axis to feed the tap inwardly of the hole or bore. In actual practice it is quite impossible to obtain an ideal correlation of the tool and the

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material worked upon, since the axis of the shank and tap will inevitably wander somewhat away from coincidence with the bore or hole axis, side pressures will be developed to act with fracturing effect upon the tap, and irregularities of thread formation will develop. Corrective of the disadvantages above noted, the attachment of the instant invention is designed to permit a convenient operative mounting of the conventional tap wrench in an ordinary drill press in such manner as to maintain the wrench and tap assembly in correct relation with the work piece and in an association adapted for manual actuation of the tap through the agency of the wrench in the customary manner.

In the drawings, a conventional tap wrench is illustrated as comprising the usual cylindrical shank 10 furnished with a chuck 11 at one end, a head 12 at the other end of said shank, and a manipulating arm 13 slidably and diametrically through the head 12. The chuck 11 is of a usual type manipulable to receive and hold a tap 14 extending in coaxial relation with the shank 10 outwardly from the wrench assembly, all as is usual practice.

The improved attachment as represented in Figures 1, 2 and 3 consists of a straight, rigid, cylindrical stem 15 slidably mounting a straight, rigid, tubular sleeve 16 of less length than said stem, said sleeve being fitted to the associated stem for free rotation and reciprocation thereon with a minimum clearance therebetween. At one end, the stem 15 is formed with a radially-expanded boss or collar 17 expediently worked with flat, tool-engagable faces 18, beyond which collar the said stem extends as a short, coaxial, externally-threaded stud 19. At its other end, the stem 15 is headed, or enlarged, as at 20, sufficiently to inhibit separation of the sleeve 16 from the stem without providing any radial projection equalling or exceeding the thickness of the sleeve 16 wall. Thus the sleeve 16 is retained on the stem 15 between the collar or boss 17 and the head 20 for limited travel longitudinally of the stem. The stud 19 is the means for mounting the attachment on and in operative association with the tap wrench, the only operation on the wrench required for mounting of the attachment being the drilling and appropriate internal threading of a hole 21 in and coaxially of the end of the wrench shank head 12 remote from the chuck. With the appropriately threaded hole 21 provided in the exposed end of the shank head 12, the stud 19 is threadably engaged in said hole until the adjacent face of the collar or boss 17 is brought to bear against the end of the head in a secure relation established by means of a tool coacting with the faces 18, such mounting of an attachment serving to dispose the stem 15 as a coaxial extension of the shank 10 on the end of the latter remote from the chuck 11 and associated tap 14.

Mounted as shown and described, the attachment provides means for engaging the wrench and tap assembly with the chuck 22 characterizing an ordinary simple drill press 23 having the usual table 24 perpendicular to the axis of the rotatable and axially reciprocable stem 25. To mount the assembly for its intended use, the chuck 22 is manipulated to receive and clamp the sleeve 16, thus relating the stem 15 carrying the tap wrench and tap for free rotation and limited reciprocation in maintained coaxial relation with the drill press stem 25 and hence in a perpendicular presentation of the tap 14 to the drill press table 24. With the assembly mounted as shown in Figure 1, the drill press may be operated in a usual manner to elevate its stem 25 and to consequently lift the tap 14 into clearing relation with the table 24, whereafter the work piece 26 may be positioned on said table, the drill stem 25 lowered to engage the tap 14 in desired relation with the work piece

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26 and to free the sleeve 16 from any engagement with the head 20 of the attachment stem 15, thus conditioning the assembly for use in the usual manner and for threading of a hole in the work piece 26 as the tap wrench is rotated by means of its arm 13; the wrench shank 10 and tap 14 being constrained against any wandering away from perpendicular relation with the work piece and drill table by virtue of the sleeve 16 engagement in the chuck 22 and the rotatable relation of the attachment stem in and through said sleeve.

The modifications according to Figures 4 and 5 are functionally identical with the organization hereinabove described and differ from the latter, and from each other, only in structural detail. As shown in Figure 4, the sleeve 16 is slidably and rotatably carried by a stem 27 of uniform diameter greater than that of the stud 19 outstanding coaxially from one of the stem ends, thereby to provide an annular shoulder at the junction of the stem 27 and stud 19 adapted to seat against the end of the wrench head 12, and a hole 28 diametrically traverses stem 27 for accommodation of a pin, or pin wrench, whereby said stem may be firmly secured in mounted relation on the associated tap wrench. To retain the sleeve 16 against separation from the stem 27, spring collars or rings 29 are groove-seated adjacent the ends of said stem in slight radial projection beyond the stem surface. As represented in Figure 5, the sleeve 16 may be carried by a stem 29 similar to the stem 27 except for the limiting collars or rings 29 of the latter; the said stem 29 being knurled about its free end, as at 30, to effect a slight enlargement in stem diameter sufficient to retain the sleeve 16 on the stem and the other end of said stem closes against the wrench head 12 to permit the associated sleeve 16 to slide freely on the stem between said head 12 and the stem end enlargement 30.

As should be clearly apparent, the improved attachment is adapted for production in various structural particularity as an accessory unit adapted for convenient association with tap wrenches already available to the user. Since tap wrenches are customarily items of equip-

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ment in shops including drill press units, it is entirely feasible for the tap wrench owner to drill and tap the appropriate holes 21 in the heads of the tap wrenches and to then mount the attachment in operative association with such wrenches, thereby conditioning the equipment for use in guided relation when held in the chuck of a drill press, as above set forth, or for normal use in the ordinary manner.

Since changes, variations, and modifications in the form, construction, and arrangement of the elements shown and described may be had without departing from the spirit of my invention, I wish to be understood as being limited solely by the scope of the appended claim, rather than by any details of the illustrative showing and foregoing description.

I claim as my invention:

The combination with a tap wrench having a shank furnished with a chuck at one end and formed with an integral head at the other end provided with an arm perpendicular to said shank for manual rotation of the wrench about the shank axis, of a straight, smoothly-cylindrical stem, a straight, tubular sleeve of less length than the stem adapted for clamped reception within the chuck of a drill press rotatably and reciprocally engaging said stem through the full extent of the sleeve length, a threaded hole intersecting the end of said head in coaxial relation with the shank, a threaded, shouldered, coaxial stud at one end of said stem engaged in said hole to mount the stem as a coaxial extension of the shank, and a radial enlargement of less diameter than the sleeve exterior at the other end of the stem inhibitive of sleeve travel therebeyond.

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