March 15, 1932. E. A. WALKER 1,849,160

ADJUSTABLE TAP

Filed July 27, 1929

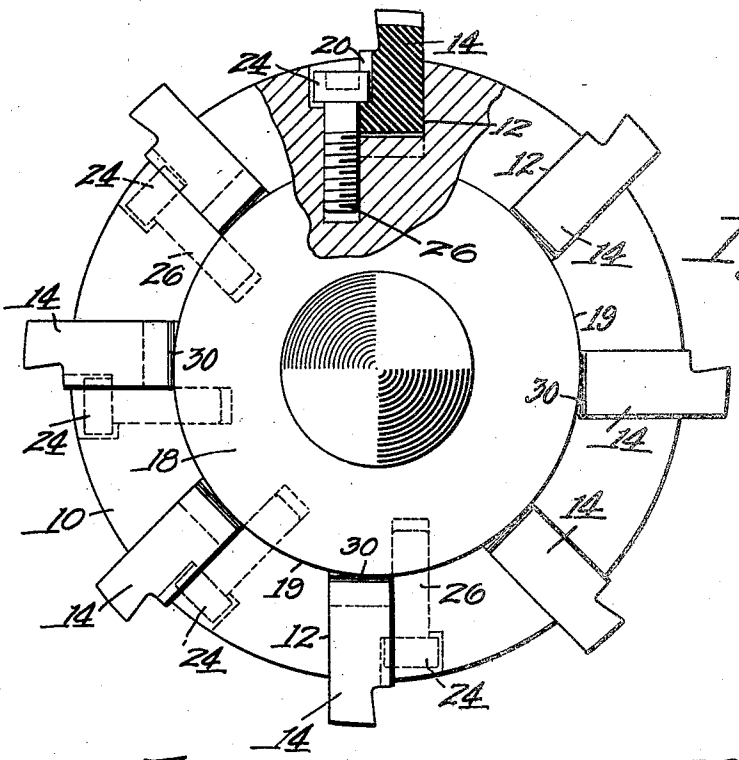


Fig. 2.

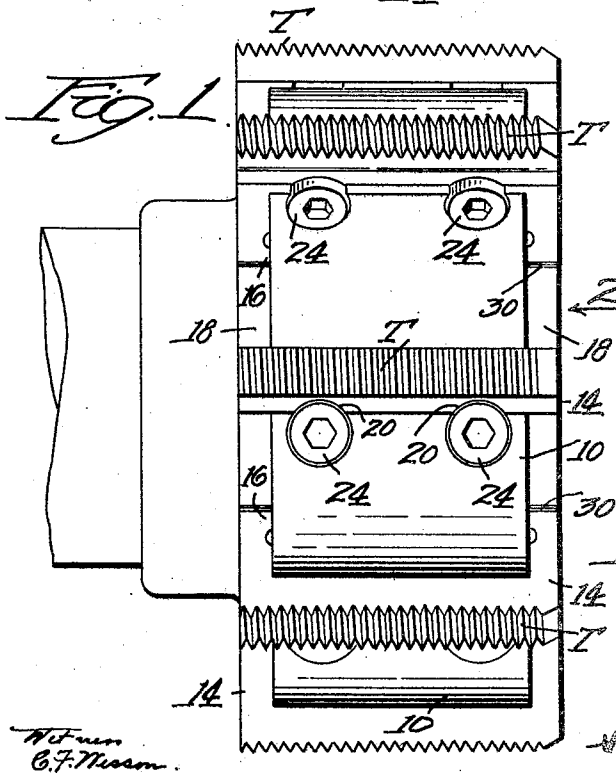


Fig. 1.

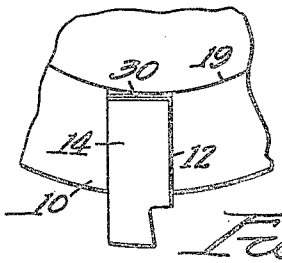


Fig. 4.

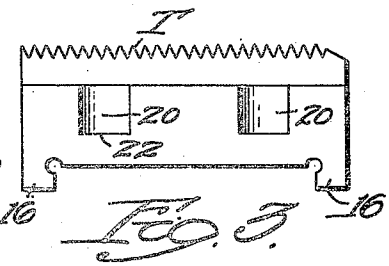


Fig. 3.

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UNITED STATES PATENT OFFICE

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ADJUSTABLE TAP

Application filed July 27, 1929. Serial No. 381,627.

This invention relates to taps particularly designed for cutting screw threads in holes of relatively large diameter, the threads being commonly of relatively fine pitch.

It is the general object of my invention to provide a tap for such purposes in which the cutting teeth are formed on separate cutter bars, and in which provision is made for accurate radial adjustment of said bars to compensate for wear or regrinding of the teeth.

A further object of the invention is to provide improved means for holding the cutter bars firmly seated in the supporting member or head.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings in which:

Fig. 1 is a side elevation of my improved tap;

Fig. 2 is an end view thereof, partly broken away;

Fig. 3 is a side elevation of one of the cutter bars; and

Fig. 4 is a partial end elevation, showing the manner of radially adjusting the cutter bars.

Referring to the drawings, my improved tap comprises a supporting member 10 adapted to be mounted upon a driving shaft or spindle in any convenient or desired manner. The member 10 is provided with a series of slots 12, spaced about the periphery of the head 10 and adapted to receive rectangular cutter bars 14, having teeth T formed on one face or edge thereof.

These bars 14 are preferably formed as indicated in Fig. 3, each bar being somewhat longer than the width of the face of the member 10 and being provided with offset projections 16 at each end thereof, adapted to embrace and closely engage the sides of the member 10. The projections 16 thus serve to effectively prevent axial or endwise movement of the cutter bars 14.

Cylindrical projections or bosses 18 project from the side faces of the member 10 and provide shoulders 19 on which the projections 16 abut and are supported, it being noted that the projections extend rearwardly, or in a direction away from the teeth.

Segmental recesses 20 are formed in one face of each bar 14 and provide shoulders 22 (Figs. 2 and 3) adapted to be engaged by the enlarged heads 24 of binding screws 26, which are threaded into the member 10. The outer face of each bar 14 is provided with teeth T by which the desired thread may be cut.

When the bars 14 are inserted in the slots 12 and the shoulders 22 thereof are engaged by the heads 24 of the binding screws 26, the projections 16 will be firmly seated on the shoulders 19 and at the same time the bars 14 will be held from axial movement by the projections 16.

When the teeth on the bars 14 become worn or are reground, the tap may be restored to size by inserting shims 30 under each of the projections 16. These shims are very thin but are very accurately made, each shim being commonly only a few ten-thousandths of an inch in thickness. In this manner the size of the tap can be very accurately restored.

For instance, if the tap is found to cut six ten-thousandths of an inch under size, the tap can be restored to full or standard size by inserting shims of three thousandths thickness under each of the projections 16. This method of adjusting the cutter bars is found to be more accurate and reliable than the adjusting devices heretofore used, such as adjusting screws or slidable wedges. The projections 16 also very effectively preserve the axial alignment of the cutter bars during adjustment thereof.

One or more shims 30 may be inserted under each projection 16 before the tap is initially ground to size, in which case the tap may be adjusted to cut undersize by removing shims 30 of the desired thickness. It is not necessary to remove the bars 14 from the member 10 to insert or remove the shims 30, but merely loosening the screws 26 is sufficient.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, other-

wise than as set forth in the claims, but what I claim is:—

1. An adjustable tap comprising a supporting member having a plurality of axially extended slots spaced about its periphery, a toothed cutter bar for each slot, each bar having an offset projection at each end thereof extending in a direction opposed to the toothed edge and closely abutting the sides of said supporting member and thereby preventing relative axial movement between said bar and said member, and means to hold said bars seated in said slots.

2. An adjustable tap comprising a supporting member having a plurality of axially extended slots spaced about its periphery, and a toothed cutter bar for each slot, each bar having an offset projection at each end thereof extending in a direction opposed to the toothed edge and closely abutting the sides of said supporting member and thereby preventing relative axial movement between said bar and said member.

3. An adjustable tap comprising a supporting member having a plurality of axially extended slots spaced about its periphery, and a toothed cutter bar for each slot, each bar having an offset projection at each end thereof extending in a direction opposed to the toothed edge and closely abutting the sides of said supporting member and thereby preventing relative axial movement between said bar and said member, said member being provided with shoulders underlying and supporting said offset projections.

4. An adjustable tap as set forth in Claim 1, in which each of the cutter bars has shoulders on one side thereof and in which said holding means comprises screws threaded in said supporting member and each provided with an enlarged head engaging one of said shoulders.

5. An adjustable tap comprising a supporting member having an axially extending slot in its periphery, a cutter bar for said slot, said bar having teeth projecting radially outwardly and also having an offset projection at each end thereof extending radially inward and closely abutting the sides of said supporting member thereby to prevent relative axial movement between said bar and said member and means insertable between one of said projections and said member for adjusting the relative radial position of said bar in its slot.

6. An adjustable tap comprising a supporting member having an axially extending slot in its periphery, a cutter bar for said slot, said bar having teeth projecting radially outwardly and also having an offset projection at each end thereof extending radially inward and closely abutting the sides of said supporting member thereby to prevent relative axial movement between said bar and said member, and means insertable between one of said projections and said member for adjusting the relative radial position of said bar in its slot, said member being provided with a shoulder overlying and supporting said projections.

In testimony whereof I have hereunto affixed my signature.

ERNEST A. WALKER.