March 6, 1945. E. ZUELLIG 2,371,014

TAILSTOCK TURRET

Filed May 1, 1943 5 Sheets-Sheet 1

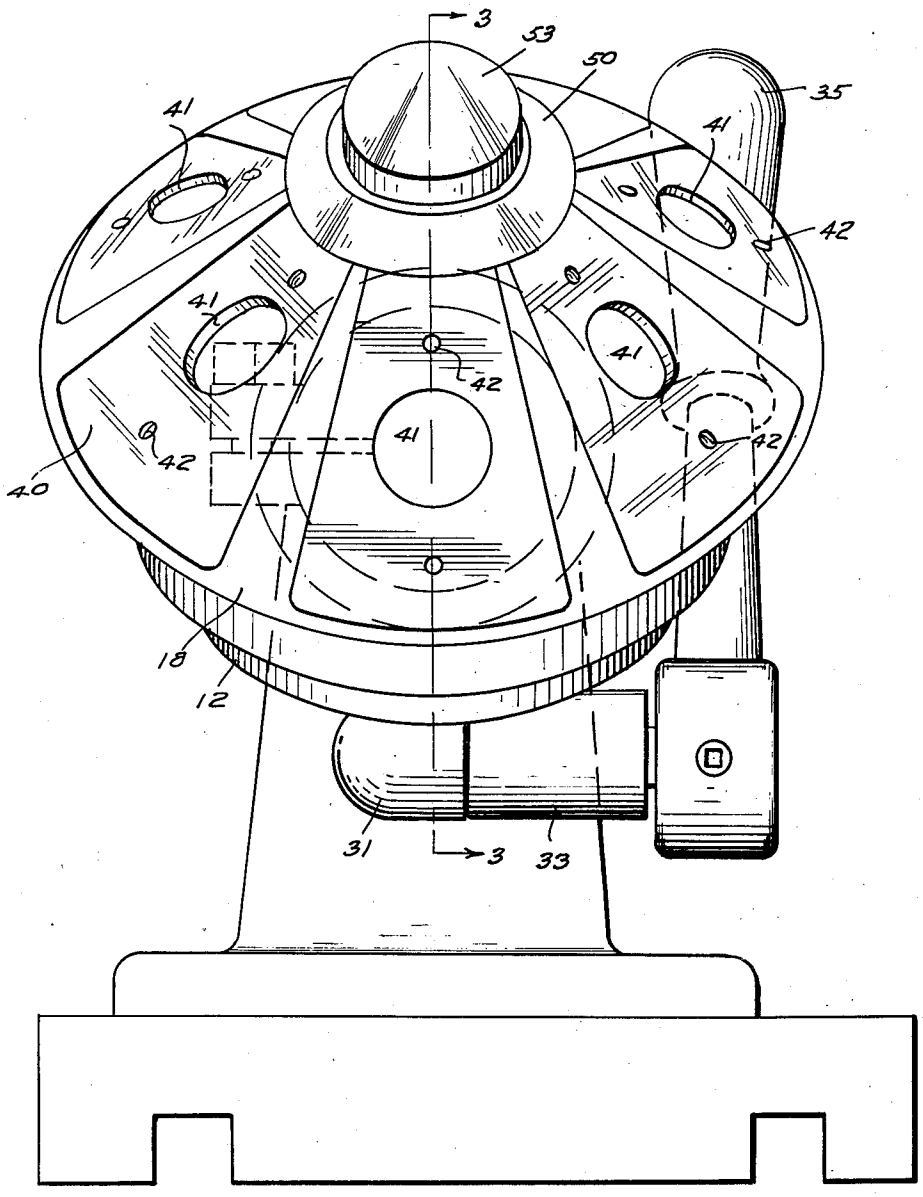


Fig. 1.

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TAILSTOCK TURRET

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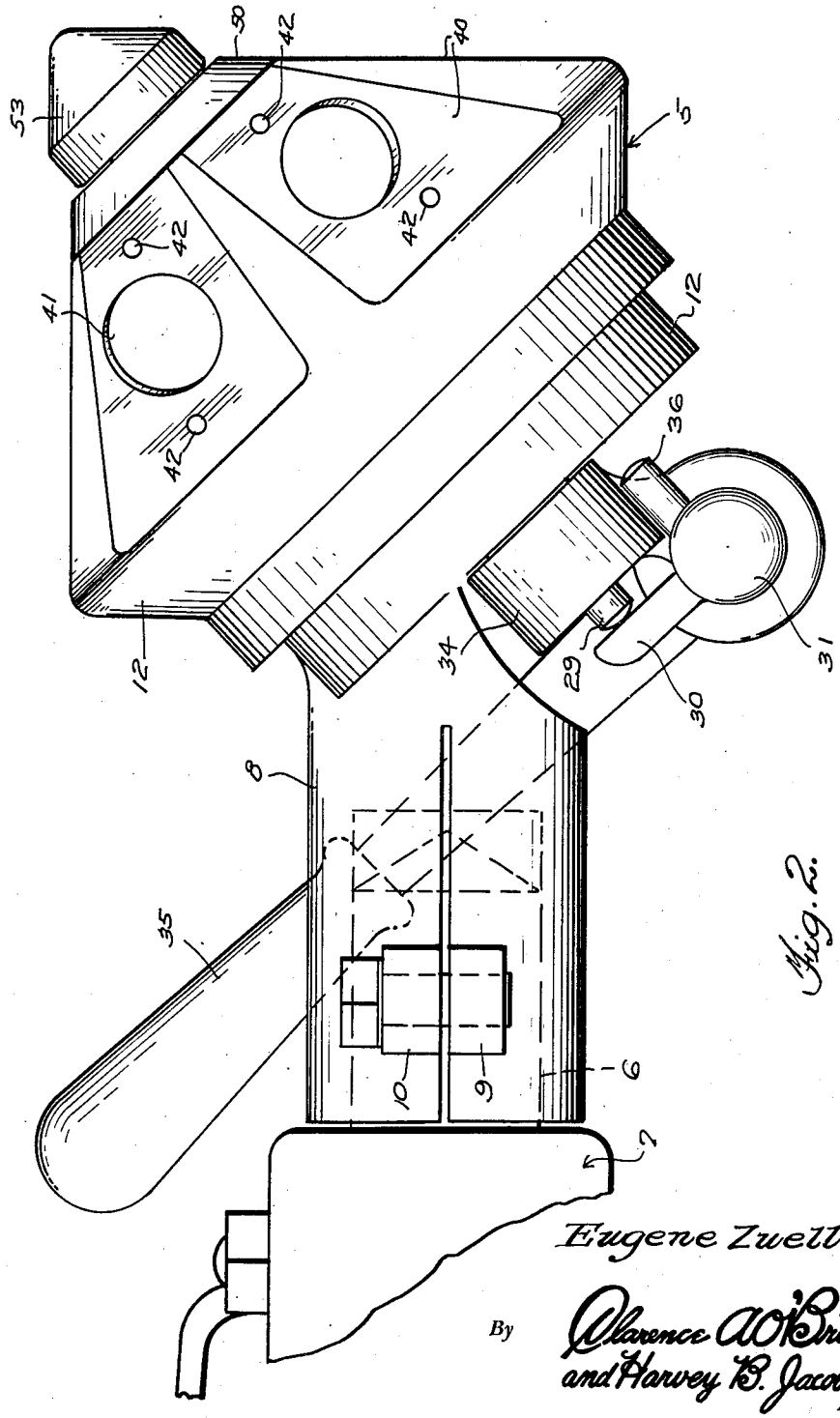


Fig. 2.

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TAILSTOCK TURRET

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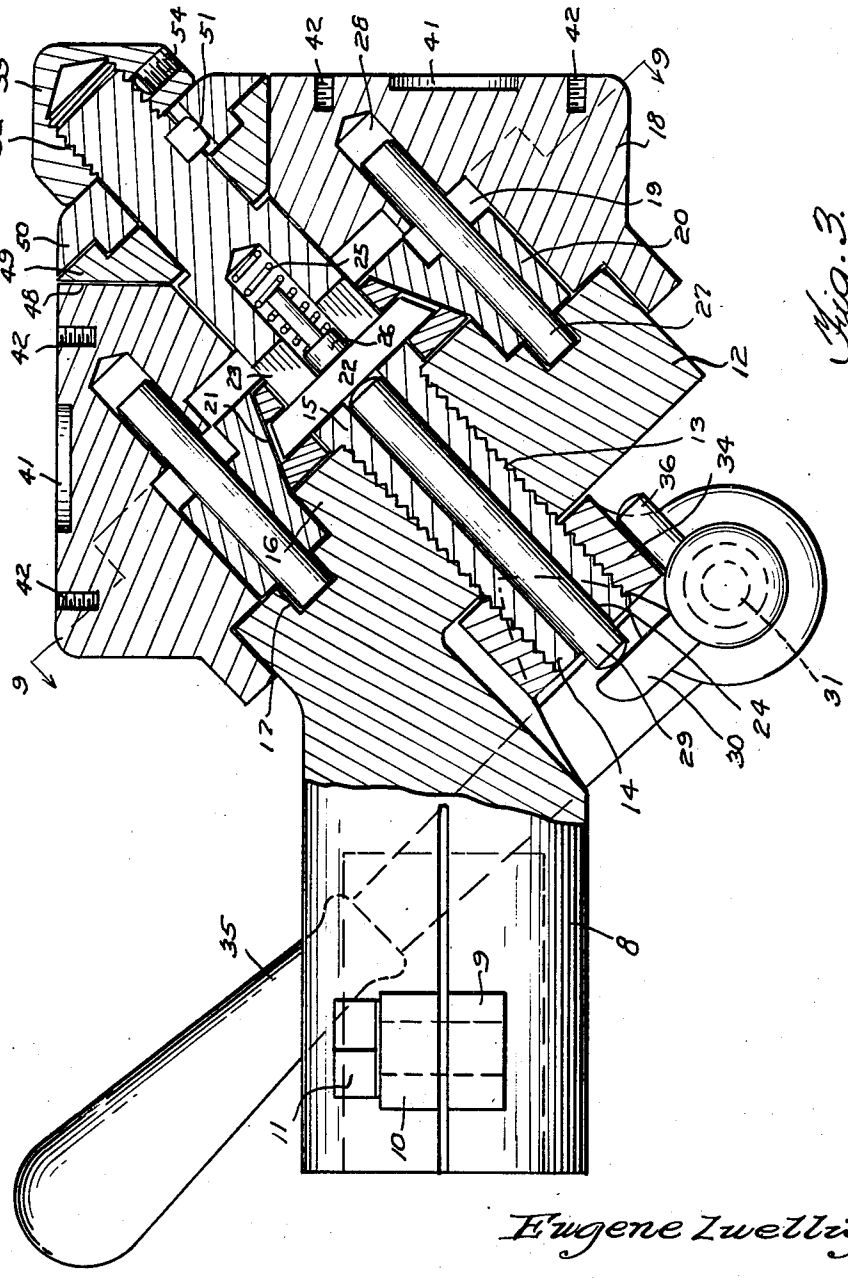


Fig. 3.

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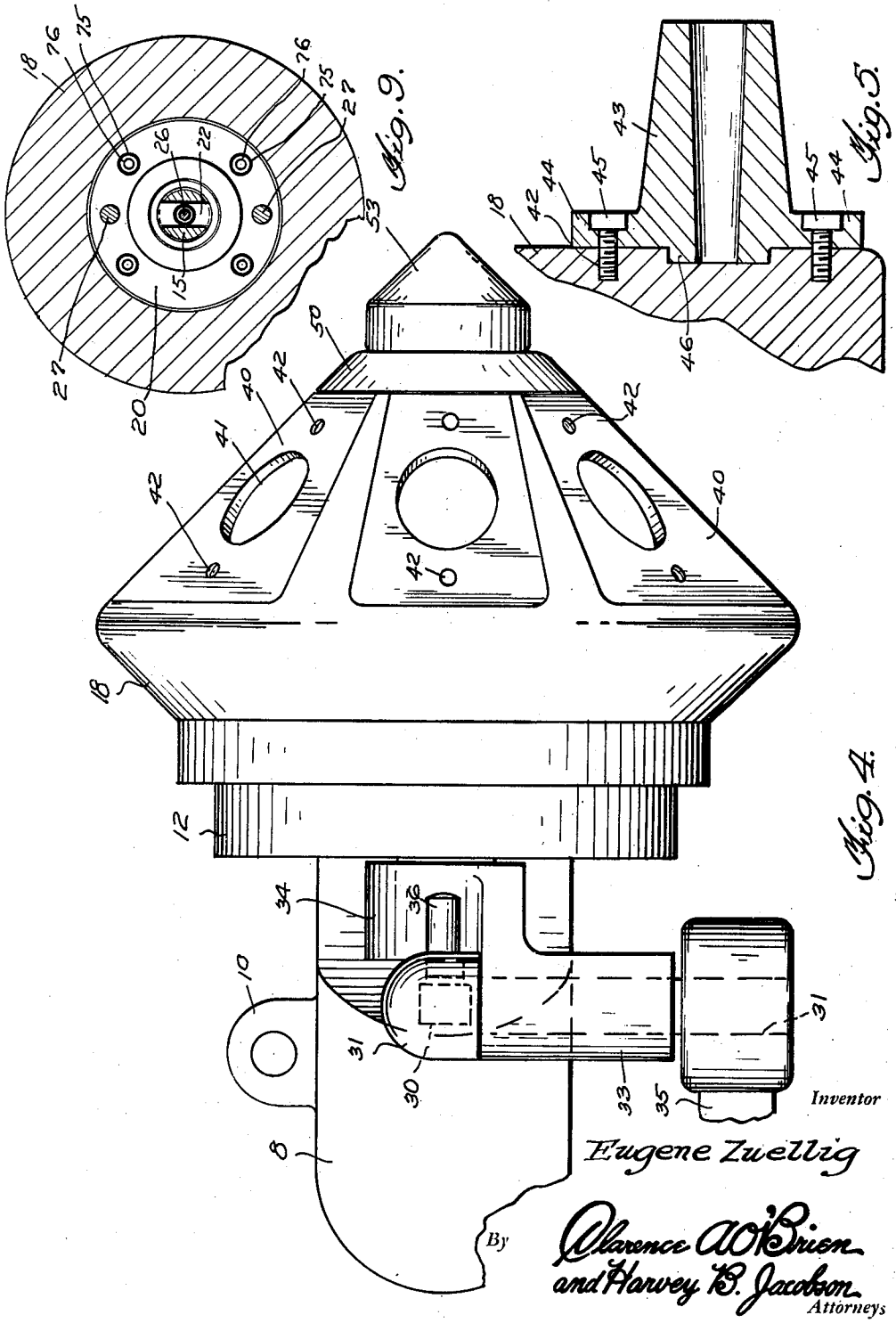
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TAILSTOCK TURRET

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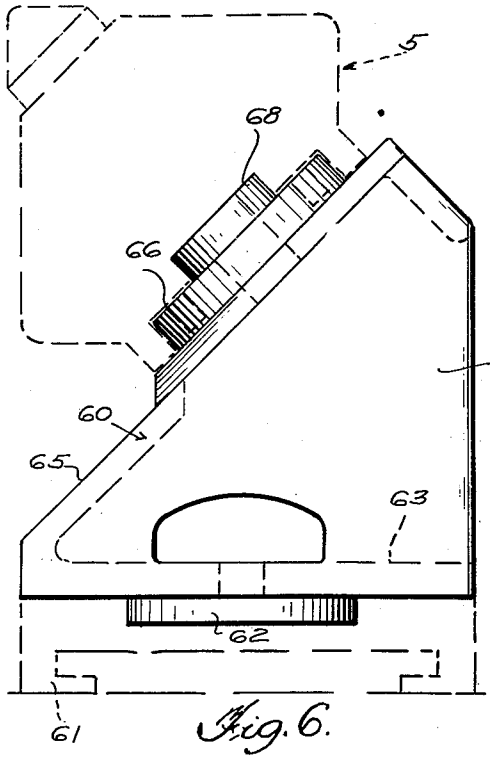


Fig. 6.

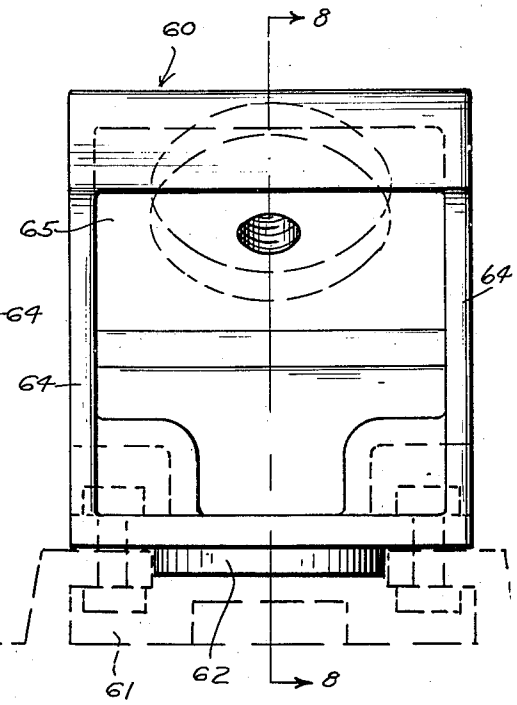


Fig. 7.

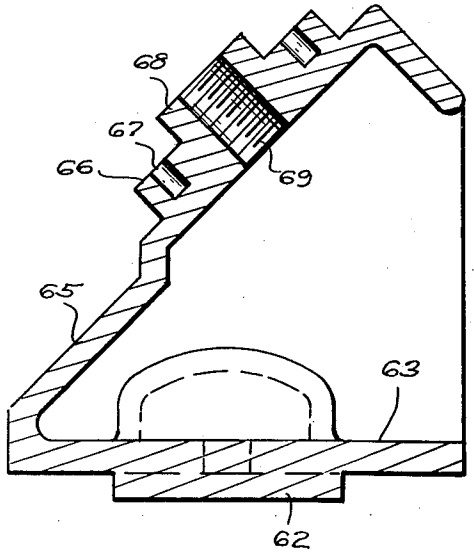


Fig. 8.

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UNITED STATES PATENT OFFICE

2,371,014

TAILSTOCK TURRET

Eugene Zuellig, Hamilton, Ohio

Application May 1, 1943, Serial No. 485,347

2 Claims. (Cl. 29—48)

This invention relates to new and useful improvements in tailstock turrets by means of which any engine lathe, on legs or bench, can be converted to a turret lathe or modified screw machine, quickly and with but a minimum amount of effort.

The principal object of the present invention is to provide a tailstock turret which can be applied to various types of lathes, thus increasing the range of application of the lathe and speeding up production.

Another important object of the invention is to provide a turret which is not only capable of being revolved and indexed by actuating a single handle, but wherein lock means is provided and operated by the same handle.

Other important objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 is a front elevational view of the turret.

Figure 2 is a side elevational view.

Figure 3 is a vertical sectional view through the turret.

Figure 4 is a fragmentary bottom plan view.

Figure 5 is a fragmentary detailed sectional view showing one of the tool holders such as will be applied to the turret shown in Figure 4.

Figure 6 is a side elevational view of a bracket for accommodating the turret on a lathe carriage.

Figure 7 is a rear side elevational view of the bracket shown in Figure 6.

Figure 8 is a vertical sectional view on the line 8—8 of Figure 7.

Figure 9 is a cross sectional view on the line 9—9 of Figure 3, looking in the direction of the arrows.

Referring to the drawings wherein like numerals refer to like parts, it can be seen in the drawings that numeral 5 generally refers to the improved turret which is mounted on the usual adjustable shaft 6 of the lathe's tail structure generally referred to by numeral 7.

More specifically and as can be clearly seen in Figures 2 and 3, the present invention embodies a split socket 8 having ears 9, 10 which can be drawn together by a screw 11 for firmly clamping this socket onto the shaft 6. Preferably formed integral with the socket 8 is an oblique block 12 disposed at 45 degrees angularity with respect to the axis of the socket 8, and this block 12 has an axially disposed threaded bore 13 for receiving the threaded end portion 14 of a core 15.

The outer side of the block 12 has a boss 16 and surrounding this boss, the block is formed with recesses 17.

Numeral 18 denotes a rotatable head which has a pocket 19 therein and in this pocket is located an annulus 20 having an outwardly tapered inside wall 21 against which the beveled ends of a gripping element 22 which is transversely disposed through a slot 23 in the intermediate portion of the core 15, can grip. The core 15 has a bore 24 extending longitudinally therein from a point adjacent the socket 8 and terminating inwardly of the other end, and in this latter end is located a coiled compression spring 25 acting against a plunger 26 which bears against the gripping element 22 to normally tend to urge the beveled ends thereof away from the tapered inner wall of the annulus 20.

The annulus 20 carries a plurality of pin members 27, the inner end portions of which are adapted to engage in the recesses 17 while the outer end portions ride guide bores 28 in the head 18.

An elongated slide pin 29 is disposed in the remaining portion of the bore 24 and is adapted to be urged inwardly by a lug 30 on a shaft 31 disposed through a bearing 33 carried by a nut 34 which is threadedly disposed on to the threaded end portion 14 of the core 15 and locked thereto by an Allen set screw or the like. In this manner the core and nut 15, 34 are always turned together in the block 12. A hand lever 35 projects from the shaft 31 and by this lever the shaft 31 and lug 30 are operated. A stop member 36 is provided on the shaft 31 so that the lug 30 can move no farther away from the nut 34 than is shown in Figure 3, thus permitting the indexing means within the head 18 to assume the position substantially shown in Figure 3 when in released position.

As can be seen in Figures 2 and 3, the outer portion of the head 18 is multi-faced.

It can be seen that the faces which are denoted by numeral 40 are each in 45 degree angularity with respect to the longitudinal axis of the core 14 and each has a recess 41 and threaded openings 42, 42.

Figure 5 shows a tool holder 43 having ears 44, 44, apertured to receive machine screws 45, 45 which are driven into the threaded openings 42, and as shown in Figure 5, the inner end of the holder 43 has a boss 46 for snug disposition into the corresponding recess 41. Obviously, by rotating the head 18, any one of these tool holders 43

can be brought into axial alignment with the shaft of the tail structure 7.

The outer portion of the head 18 is recessed as at 48 and in this recess are collars 49, 50, the collar 50 being splined to a key 51 projecting from the outer end of the core 15, the core being threaded as at 52 to accommodate a cap nut 53 which is positively held in place by a set screw 54. As shown in Figure 9, four plate springs 75 located on pins 76 extend between the head 18 and the annulus 20, for the purpose of maintaining the annulus 20 in the position shown in Figure 3.

In the operation of the turret head, let it be assumed that the head is locked as shown in Figure 3, and the handle 35 is in the position as shown in Figures 1 and 3. Without moving the handle 35 in an upward direction (see Figure 3) the handle is rotated to the right (with the structure as shown in Figure 1) and this without affecting the pin 29. By pressing upwardly on the handle 35 and returning the handle 35 to its original position adjacent the socket 8, the pin 29 at the start of this motion will move the plate 20 resulting in the disengagement of the pins 27 from the recesses 17 and the head will be rotated one index. If more than one index is to be dialed, this operation is repeated the correct number of times. Each time the pin 29 is released and the lever 35 moved outwardly and then drawn upwardly and returned. Obviously, the nut 34 is pinned or otherwise secured to the core 15.

It is also desirable to use this turret in connection with lathe carriages and in this connection a special type of bracket generally referred to by numeral 60 and clearly shown in Figures 6, 7 and 8 is employed. In the drawings, numeral 61 denotes in dotted lines the usual carriage slide and this is recessed to receive a boss 62 which depends from the bracket 60 which in construction consists of a bottom wall 63, side walls 64, 64 and a 45 degree sloping top wall 65, this wall 65 having an outstanding circular formation 66 in which there is an annular arrangement of recesses 67 and prominence 68 through which and the rest of the wall 65 and bore 66 a threaded bore 69 is formed. It can be seen by comparing Figure 8 with Figure 3, that the numerals 66, 68 and 69 correspond to the numerals 12, 16 and 13 of Figure 3.

The turret 5 is mounted on the structure 66 and 68 in the manner suggested in dotted lines in Figure 6.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. A tailstock turret comprising an attaching structure, a block disposed at a 45 degree angle on the attaching structure and having recesses in the face thereof, rotatable head structure having a plurality of tool holder attachable faces thereon, said head being mounted on the block, pins in the head, an annulus carrying said pins, and manual means for releasing the pins and rotating the head, said means for releasing and rotating the head comprising a hand lever, a core on which the head is mounted, a nut member permanently secured on said core, a slide member in the core for operating the pins and a handle carried by the core nut member and provided with a lug for engaging the slide member, said core being adapted to be operated for axial turning by the hand member.

2. A tailstock turret comprising an attaching structure, a block disposed at a 45 degree angle on the attaching structure and having recesses in the face thereof, rotatable head structure having a plurality of tool holder attachable faces thereon, said head being mounted on the block, pins in the head, an annulus carrying said pins, and manual means for releasing the pins and rotating the head, said means for releasing and rotating the head comprising a hand lever, a core on which the head is mounted, a nut member permanently secured on said core, a slide member in the core for operating the pins and a handle carried by the core nut member and provided with a lug for engaging the slide member, said core being adapted to be operated for axial turning by the hand lever, and clutch means between the slide member and the pins, said clutch means comprising a cone shaped gripping element fitting loosely on said core and adapted for engaging a correspondingly tapered recess in said annulus.

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