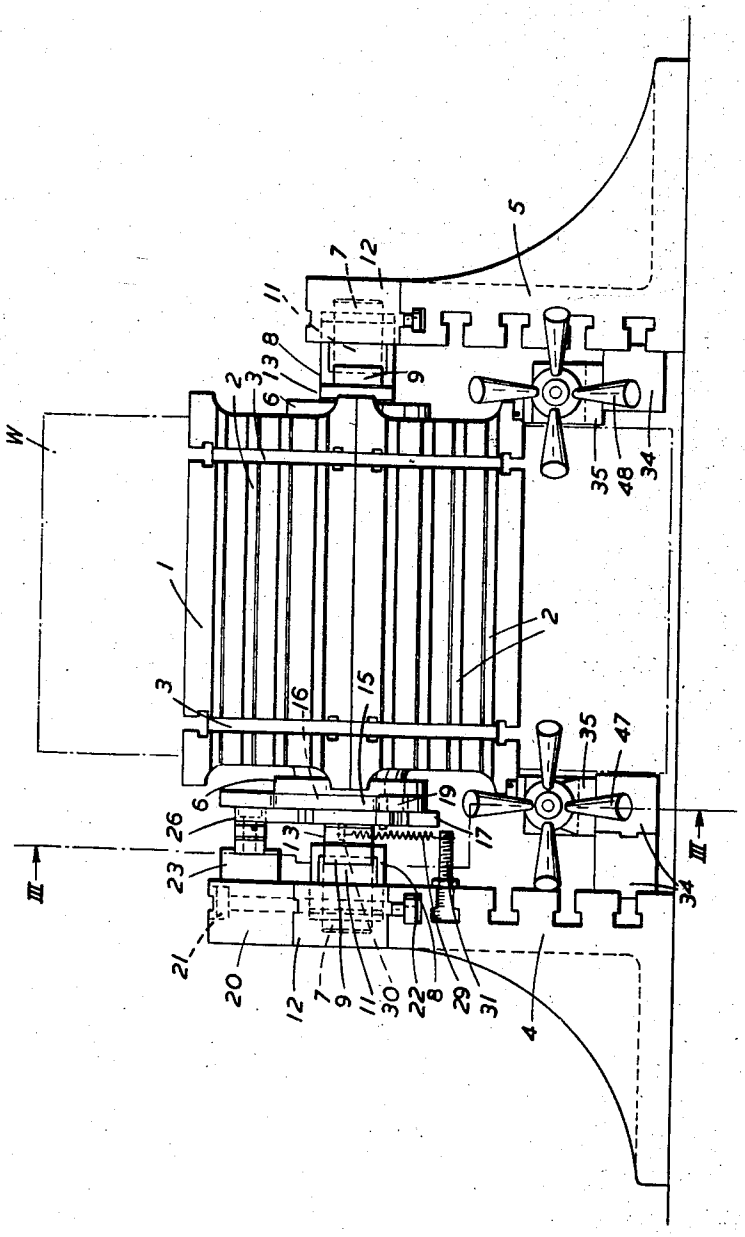
June 26, 1951 W. WHARTON ET AL 2,558,283

WORK HOLDER

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2 Sheets-Sheet 1

FIG. 1.



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FIG.2.

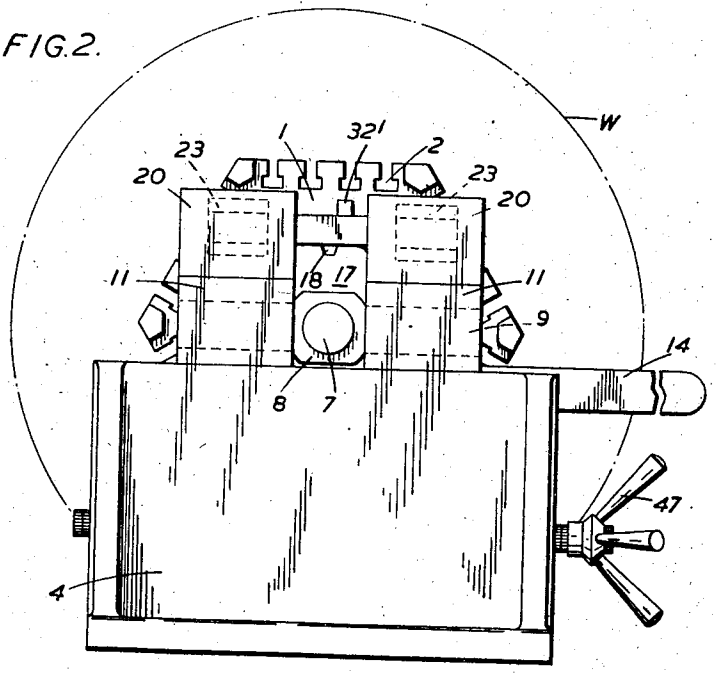
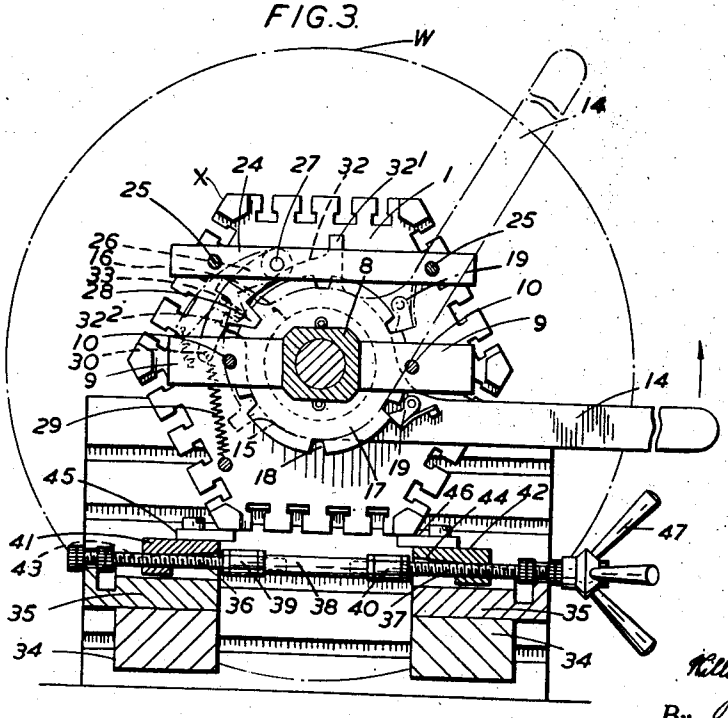


FIG.3.



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WORK HOLDER

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Application August 4, 1947, Serial No. 765,960
In Great Britain August 1, 1946

1 Claim. (Cl. 90—59)

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This invention relates to a base for jigs and fixtures and is more particularly designed for use in building up jigs and fixtures from standard elements by the method described in the specification to application No. 200,316, filed December 12, 1950.

According to this invention a base consists in the provision of a structure furnished with a plurality of faces each face having a plurality of accurately machined T-slots disposed in a longitudinal and/or transverse direction said faces being so arranged as to form a multi-sided drum like structure, rotatable about a central axis disposed in parallel relationship to said faces.

The invention further includes the provision of means for definitely locating the face on which a component is located and secured at right angles to the axis of the spindle of the machine tool operating on said component.

In the accompanying drawings which illustrate an embodiment of this invention:

Figure 1 is a front elevation,

Figure 2 is an end elevation, and,

Figure 3 is a section on line III—III of Figure 1.

In the drawings, the base comprises a multi-sided drum-like structure 1 of hexagonal form each of its sides being equidistant from and parallel to its axis. Each face of the structure is furnished with a plurality of T-slots 2 disposed in a longitudinal direction relatively to the face and a plurality of T-slots 3 disposed at right angles to the slots.

The structure 1 is arranged to be rotatably mounted in supporting angle brackets 4 and 5 and for this purpose the end walls are each provided with a form of trunnion, comprising a disc 6 spigoted into the end wall of the structure 1 and secured thereto by studs or bolts. Each disc 6 is provided with a stub axle 7 arranged to be rotatably supported in bearings 8 furnished with side extending arms 9 secured by studs or bolts 10 to the standard elements 11 mounted in vertical T-slots provided on the inner faces of elements 12 which constitute extensions of the brackets 4 and 5, a thrust washer 13 being interposed between each disc 6 and the inner end of each of the bearing 8 by means of which any end thrust caused by the action of the cutting tool is taken up.

As in practice component parts upon which it may be desired to effect certain work are mounted on and secured to the several faces of the structure 1, it is necessary to provide means for rotating said structure, and to this end, at one end of the structure (shown on the left in Figure 1)

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an operating arm 14, the pivoted end 15 of which is rotatably mounted on a boss 16 formed on the disc 6 is provided said arm being arranged to co-operate with a disc 17 provided with a plurality of peripheral notches 18. The operating arm 14 is provided with a spring controlled pawl 19 arranged to engage in one of the notches 18 so that when it is desired to rotate the structure 1 the arm 14 is first raised into the position indicated by dotted lines (Figure 3) so that the pawl 19 is caused to engage the next notch 18 above. If the arm 14 is now depressed and returned to its former position the face X and thereby the component secured thereon will then be brought uppermost, and so on to bring each face and component uppermost in turn. As it is desirable that some means should be provided for approximately locating the working face relatively to the axis of the spindle of the machine tool, two further standard elements 20 are mounted above the elements 12 each pair of said elements 12, 20 being secured to the bracket 4 by a bolt 21 passing through said elements the head thereof engaging a T-slot 22. Standard elements 23 are mounted in T-slots disposed vertically on the inner faces of the elements 20 and a further element 24 is secured by T-bolts 25 passing through the elements 23 with the heads in the vertical T-slots in the element 20, said element 24 serving to act as a support for an arm 26 pivoted at 27 to the element 24. The arm 26 is provided with a projection 28 designed to engage in one of the notches 18 in the disc 17, said arm 26 and thereby the projection 28 being maintained in position by a spring 29 one end of which is connected to a pin 30 on the free end of the arm 26 the opposite end of said spring being connected to a suitable anchor such as the stud 31 mounted in the angle bracket 4. The part 15 of the arm 14 is furnished with a cam surface 32 extending from a stop 31^1 to a stop 32^2 and arranged to coact with a pin 33 secured to and projecting from the side of the arm 26, the arrangement being such that as the arm 14 is moved upwardly into the dotted position the cam will lift the projection 28 out of engagement with the notch 18 so that on the downward movement, the pawl 19 can effect the necessary rotative movement of the disc 17 and thereby of the structure 1, the projection 28 engaging the next notch 18 to that it previously engaged.

In order to give definite location to any given face of the structure 1, in relation to the cutting tool, that is so that this face is held at right angles to the axis of the spindle of such tool, and, at

the same time to support the structure in a rigid manner and take up or remove the whole of the vertical thrust of the cutting tool from the axis of the structure 1, means are employed for rigidly securing and supporting the structure 1 against any possible movement and such means in the embodiment illustrated comprises two pairs of wedging devices mounted on a plurality of standard elements 34 which may be similar in form to the standard elements 12 and 20 secured to the angle brackets 4 and 5, each pair of said devices comprising a base element 35 secured to a standard element 34 on which are rotatably mounted screw threaded rods 36, 37 provided with a right and left handed thread respectively, the rods 36, 37 are coupled together by means of a sleeve 38 which provides for adjustment through couplings 39, 40. A pair of wedge elements 41, 42 being mounted on the screw threaded rods 36, 37 and are arranged to slide on inclined surfaces 43, 44 provided on the base element 35, suitable means are provided for enabling the screw threaded rods to rise and fall. The elements 41, 42 being provided with replaceable bearing parts 45, 46 arranged to be moved towards or away from the corners of the structure 1 when the screw threaded rods are rotated by any suitable means such as the hand wheels 47, 48.

The complete arrangement, namely the structure and its bearings, turning and locating mechanism, may be mounted on the table of the machine tool or used in conjunction with portable machines mounted on a suitable structure. The bearings and their supports, and the rotational and wedge mechanism may be built up from standardised elements as described in the specification to application No. 200,316.

The complete arrangement may be used as a multiple assembly jig, or, as a multiple receiver gauge for inspection purposes.

It will readily be appreciated that the arrangement lends itself to continuous operation as components may be unloaded from the sides away from the cutting tool and these sides loaded with new components. Either, a single operation may be carried out, and the arrangement used for loading and unloading only, or separate operations may be carried out on one particular component or one operation performed on different components.

The broken lines W on the drawings are shown to give an indication of the limits of loading on the respective faces of the structure to give clearance and enable the components to pass the face of the machine table or base upon which the brackets 4 and 5 are mounted.

What we claim is:

In a base for jigs and fixtures a multi-sided drum like structure rotatable about a central axis disposed in parallel relationship to the several sides thereof, a pair of screw threaded rods disposed in end-to-end relationship extending transversely under each end of said structure from the opposite sides thereof, one of said rods having a left hand thread and the other a right hand thread, means for coupling said rods together for unitary rotary motion, hand actuated means for rotating said rods, a wedge element screwed on to each of said rods for sliding movement inwardly and outwardly with respect to said structure and means for raising said wedge elements against the underside of said structure during their inward movement, said wedge elements being adapted to prevent rotational movement of the structure and to remove the whole of the vertical thrust of a machine tool operating on a component mounted on another of the sides of said structure from the trunnions which support the central axis of the structure.

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