

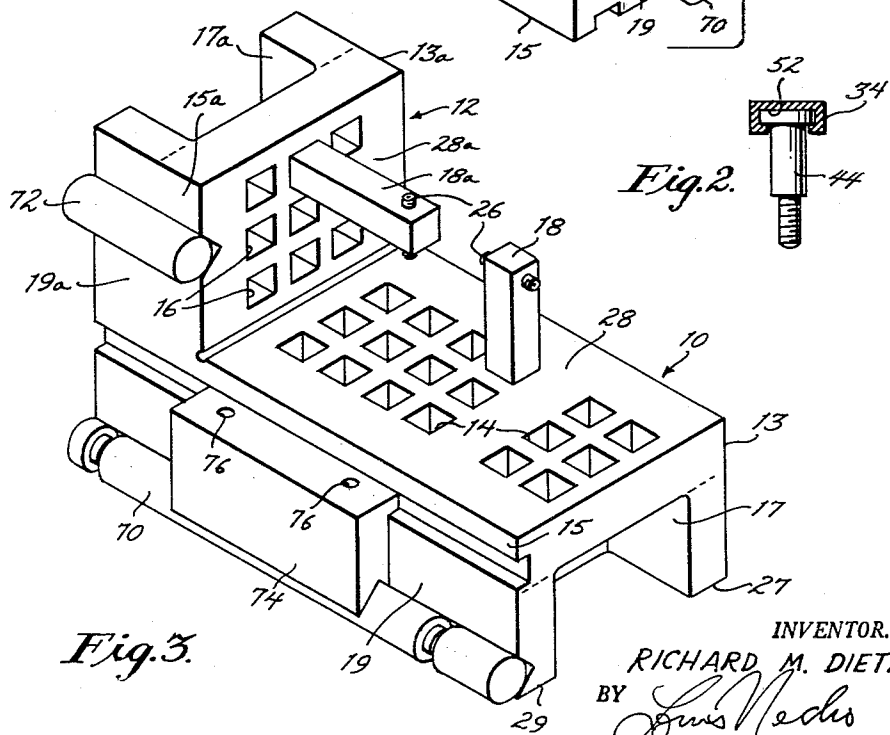
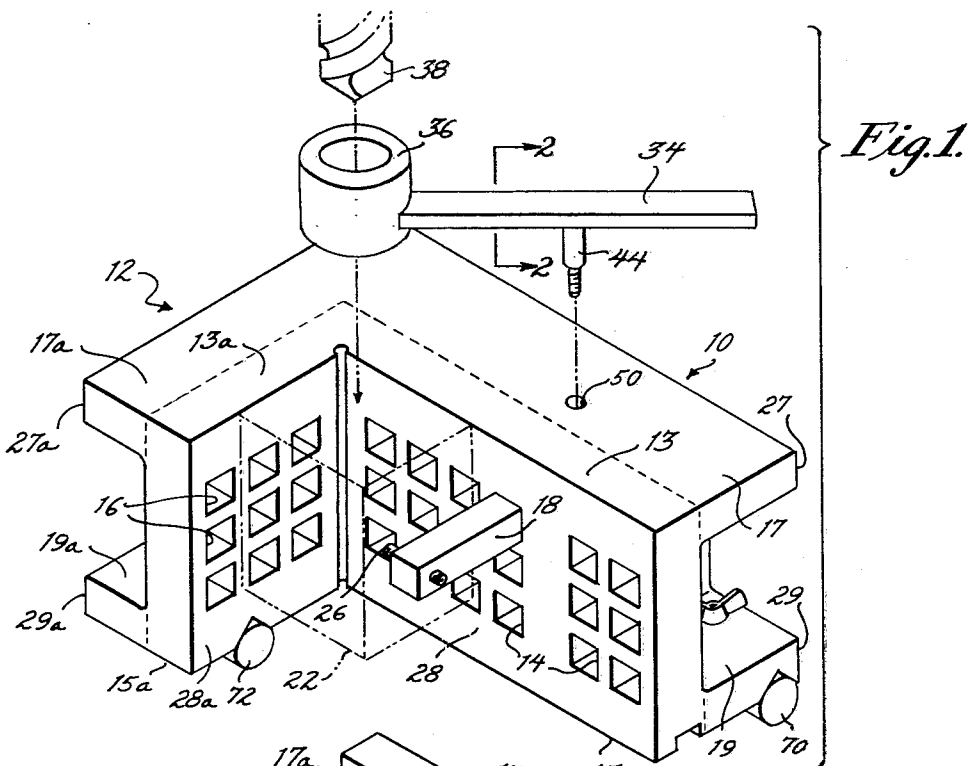
Aug. 15, 1961

R. M. DIETZ
WORK-PIECE HOLDER

2,995,962

Filed March 27, 1959

2 Sheets-Sheet 1



INVENTOR.
RICHARD M. DIETZ
BY *Louis Medus*
ATTORNEY.

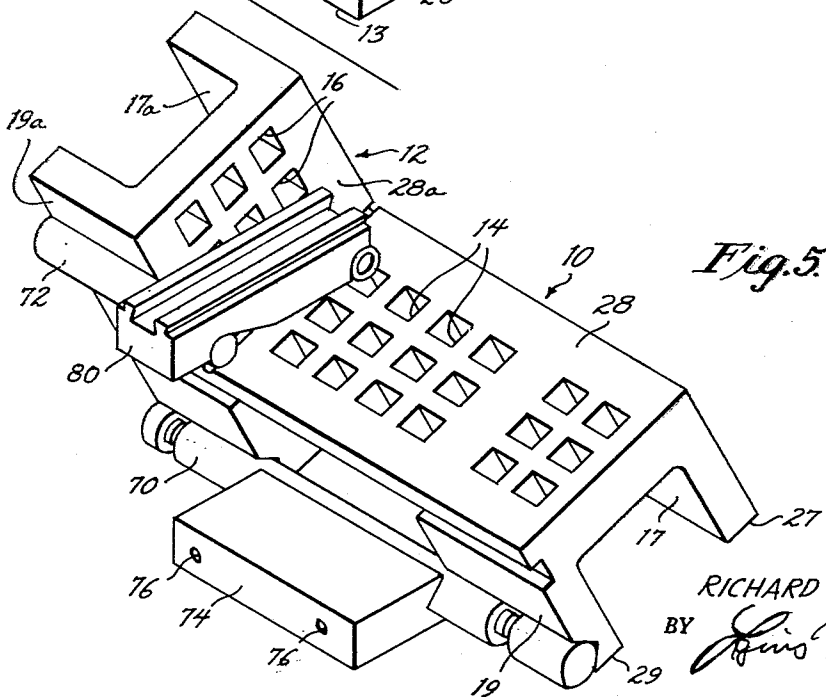
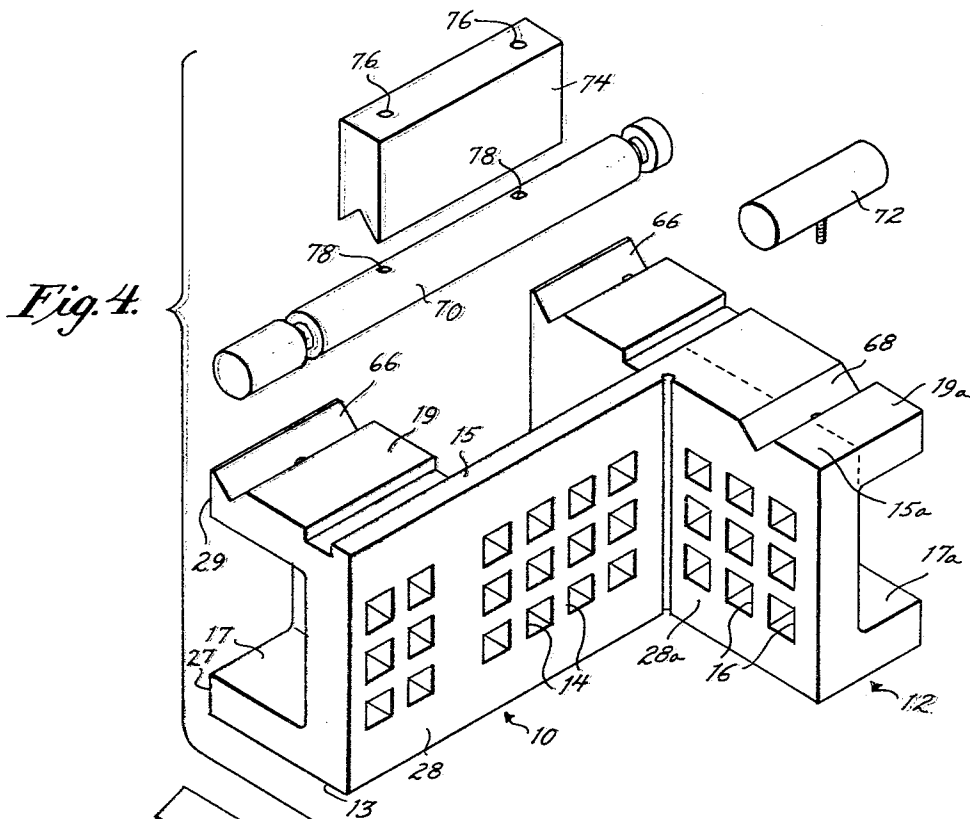
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2 Sheets-Sheet 2



INVENTOR.
RICHARD M. DIETZ
BY *James Neches*
ATTORNEY.

1

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WORK-PIECE HOLDER

Richard M. Dietz, 200 Springfield Ave., Springfield,
Delaware County, Pa.

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1 Claim. (Cl. 77-62)

My invention relates to a work-piece holder of the type used for holding a work piece while it is drilled, ground or otherwise acted on.

The object of the invention is to produce an improved work-piece holder of the type set forth.

A further object of the invention is to produce a simple work-piece holder which is very versatile in the sense that it can support a variety of work pieces in a variety of positions and can present the work piece to a variety of tools, at any desired simple, or compound angle, or, conversely, to produce a tool-holder which can present a variety of movable tools, in a variety of positions to a variety of fixed work pieces at the desired simple or compound angles.

The full nature of the invention will be understood from the following specification and the accompanying drawings in which:

FIG. 1 is a perspective view of the work-piece holder embodying my invention and shown in one position thereof.

FIG. 2 is a sectional view showing details looking in the direction of line 2-2 on FIG. 1.

FIG. 3 is a perspective view of the work-piece holder rotated through an angle of 90°, in clockwise direction as viewed in FIG. 1, to show the holder in another position thereof.

FIG. 4 is an exploded, perspective view showing the holder rotated through an angle of 90° from the position of FIG. 2.

FIG. 5 is a perspective view with the device tilted somewhat from the position of FIG. 1, and showing the use of a sine bar in connection with the holder.

Before describing the structure illustrated, it is pointed out that, because the work-piece holder embodying the invention can be used in several positions, it cannot be accurately described as having a top or bottom or sides. In other words, the surface which constitutes the top side of the device in one position will be its bottom side in another position and vice versa, and the surface which constitutes the front vertical side of the device in one position, may be the top or bottom, or rear side of the device in another position, and so on. However, because it is necessary to orient the description, reference will be made to top and bottom sides, etc., but it is to be noted that such reference in the specification, and in the claim, must be read on the device as it appears in FIG. 1.

Generally speaking, the work-piece holder includes two angularly displaced, body portions 10 and 12 which may be of the same, or of different, surface dimensions and thickness but which are preferably of the same height so as to have coplanar upper surfaces 13 and 13a and bottom surfaces 15 and 15a. Body portions 10 and 12 are provided, respectively, with vertically and horizontally spaced, registering, or non-registering, openings 14 and 16. Openings 14 and 16 are preferably polygonal so as to be non-rotatably engaged by polygonal fingers 18 and 18a, respectively, for supporting and/or clamping a workpiece 22 to be drilled, planed, ground or otherwise acted on. In Fig. 1, one finger 18 is shown which is inserted in one of openings 14 in body portion 10 and which is provided with a set screw 26 for clamping work piece 22 against body portion 12 with the upper surface of the work piece flush with the adjacent upper surfaces 13 and 13a of body portions 10 and 12. If the work piece is shorter

2

than the height of the holder, as viewed in FIG. 1 and it is desired to have the upper surface of the work piece flush with the upper surfaces 13 and 13a of the workpiece holder, a finger 18, or suitable supporting blocks, not shown, may be placed below the work piece. Also, two or more, fingers 18 may be used for clamping a work piece therebetween, or the work piece may be clamped between a finger 18 engaging a hole 14 and a finger 18a engaging hole 16. Body portions 10 and 12 are provided with extensions 17 and 17a, which are coplanar with top sides 13 and 13a of said body portion, and with bottom extensions 19 and 19a which are co-planar with bottom sides 15 and 15a thereof.

It will be noted that the edges 27 and 27a and 29 and 29a of top and bottom extensions 17, 17a and 19, 19a are parallel to the front faces 28 and 28a of the body portions 10 and 12 and that they are normal to the top and bottom sides thereof. Therefore, when the holder is placed on a horizontal work bench, or bed plate, it will present a horizontal top side regardless of the surface on which the holder happens to rest and therefore, a work piece clamped as shown in FIG. 1 will be similarly oriented. It will also be noted that, while one work piece has been shown in one position, different work pieces can be clamped in different positions on, or against, either body portion 10 or 12.

As best shown in FIG. 1, the work-piece holder is provided with a laterally and radially adjustable jig which includes an elongated handle 34 and a cylindrical member 36 for guiding and positioning a tap, or a drill or the like 38. Handle member 34 is adjustably clamped to the upper surface 13 of body portion 10 by means of shouldered bolt 44 which engages opening 50 and the head of which is freely movable in a T-slot 52 in jig handle 34.

In FIG. 3, the work-piece holder is shown resting on sides 27 and 29 which, in FIG. 1, constitute the rear side of body portion 10 of the holder, so as to clamp a work piece in still other positions.

In order to be able to tilt the work-piece holder at any desired angle, I provide the underside of body portion 10 with registering grooves 66, which as shown in FIG. 4, are adapted to receive, and to have suitably and detachably fastened therein, by suitable means, not shown, a roll 70, and I provide the underside of body portion 12 with groove 68 which is adapted to receive and to have suitably and detachably fastened therein, by suitable means, not shown, a roll 72. Roll 70 is adapted to have tilting block 74 attached thereto, by screws, not shown, passing through registering openings 76 and 78. When the work-piece holder is to be used in the horizontal position of FIG. 1, roll 70 is rotated to bring block 74 to the position of FIG. 3. When it is desired to tilt the work-piece holder so as to present the work piece to the tool at a desired simple angle, as shown in FIG. 5, roll 70 is rotated to place block 74 at the desired angle. By this arrangement, the work piece carried by the work-piece holder, will be presented to a tool thereabove at the desired angle and will therefore be drilled, planed or ground, by a horizontally, or vertically, moving tool, at an angle which is complementary to the angle at which block 74 has been tilted.

In machine shop practice a sine bar is commonly used to predetermine the angle at which the work piece is presented to a tool. According to my invention, the sine bar 80 can be attached to body portion 10 and the work piece can be clamped thereto. When used alone, the sine bar will present the work piece to the tool at a simple angle. But, when used in combination with tilting block 74, as shown in FIG. 5, the sine bar will present the work piece at a compound angle. Instead of holding the work piece, the sine bar can serve to hold a

tool, the cutting edge of which is to be dressed at the desired angle.

If desired, rolls 70 and 72 are omitted and are replaced with conventional head and tail stocks of a lathe.

From the foregoing, it will be seen that I have produced an improved work-piece holder by means of which a work piece can be clamped in any desired position without any C-clamps or other fastening devices which project beyond the periphery of the casting; that a drilling or tapping jig can be applied to, or removed from, one side of the casting by merely tightening or loosening screw 44; that, by rotating roll 70, block 74 can be moved to a wholly ineffective position, as in FIG. 3, or to an effective position in which the block is below, and tilts, the casting; that a sine bar can be clamped to either side of the casting and that it can be used, alone, to present the work piece to the tool at a simple angle, or in combination with tilting block 74, to present the tool at a compound angle.

Instead of being square, as shown, holes 14 and 16 can be of any other shape. They can even be made round and the openings and the fingers can be provided with inter-engaging keys.

What I claim is:

A work piece holder including a body portion having openings therein, clamping devices engageable with said

openings for detachably clamping a work piece to said body portion, a pair of parallel extensions carried by opposite sides of said work-piece holder and disposed in planes parallel to the axes of said openings, there being holes in one of said extensions, clamping means detachably engageable with said holes to secure a jig to said one extension, there being a longitudinal groove in the other of said extensions, a roller mounted in said groove, and a block fastened to said roller, said roller being rotatable to a first position in which said block is disposed below, and tilts, said body portion, and to a second position in which said block is disposed alongside said body portion.

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