LEVELING DEVICE FOR HAND TOOL

Filed July 19, 1955

INVENTOR.

FRED P. SAUER JR.

BY

PARKER & CARTER
ATTORNEYS
LEVELING DEVICE FOR HAND TOOL

Fred P. Sauer, Jr., Milwaukee, Wis.

Application July 19, 1955, Serial No. 522,957

1 Claim. (Cl. 33—207)

My invention relates to leveling devices and more particularly to a leveling device applicable for attachment to any type of hand tool.

The object of my invention is to provide a device that is adaptable for any type of hand tool such as electrically operated or manually operated drills, saws, reamers or the like, and to enable the operator to determine the angular relation of the tool to the workpiece during the operation.

Another object of my invention is to provide a device of the character described that may be attached as an accessory to the hand tool, or may be made a permanent part thereof.

Still another object of my invention is to provide a device of the character described that may be adjusted after mounting, to provide accuracy, thereby adding greatly to the efficiency of the device.

It is manifest to anyone familiar with the use of hand tools such as an electric drill or the like that it is often imperative to align the tool in either a level plane horizontally, if the hole is being drilled into a vertical workpiece, or vertically if the hole is being drilled into a horizontally disposed surface of the workpiece. In some instances it is necessary to maintain a predetermined angular position of the tool during its function.

The device described and illustrated herein lends itself readily to be sold as an accessory adaptable for attachment in any convenient manner to the tool, and is designed to provide minute adjustment in its relation to the surface of the tool to which it is applied.

Other and further objects of my invention will become more apparent as the description proceeds when taken in conjunction with the drawings, in which:

Figure 1 is a perspective view showing the device covered by the invention, attached to a conventional electric drill.

Figure 2 is an enlarged perspective view of the assembled device constituting my invention.

Figure 5 is a perspective view of the spherical enclosure for the leveling unit, illustrating its construction to make it adaptable for engagement with the cylindrical adapter into which it is inserted.

Figure 4 is a top view of the assembled unit.

Figure 5 is a cross section of the entire assembled device taken on line 5—5 of Figure 4.

Figure 6 is an enlarged fragmentary detail cross section of the means for providing adjustment, comprising adjustment screw threadedly inserted into the base and extending into a conical recess in the bottom face of the adapter plate; and

Figure 7 is a view similar to Figure 6, but with the top surface of the turning knob of the adjustment screw serrated for contact with the bottom surface of the adapter plate.

Referring now to details of the embodiment of my invention shown in the drawings, 10 indicates a fanciful perspective view of an electric drill, on which the device of my invention shown as 11 is detachably mounted by means of a pliable strap 12, equipped with a buckle or fastening assembly 13.

The device constituting my invention consists of a receiver 14 herein shown as a circular container open at its top and bottom and formed integrally with a generally rectangular base plate 15. Said base plate has a pair of elongated slots 16 and 16' through opposite edges to accommodate a pliable band 12 extending therethrough. A hollow spherical liquid bubble enclosure 17 constructed of suitable transparent material has a cylindrical bottom extension 18, through which a central filling passage 19 extends. The outer peripheral surface of the extension 18 is shown with threads to aid in retaining the extension 18 in a fixed position in the receiver 14 when coated with a suitable adhesive agent, as shown in Figure 5.

The spherical bubble enclosure 17 is filled with a liquid through the passage 19, after which said passage is closed by a plug 20 driven therein, which may be sealed in position by any suitable adhesive agent. When the enclosure 17 is filled, sufficient space is left between the level of the liquid and the bottom of the plug 20 to provide an air bubble shown as 21, which acts as an indicating means in its relation to the indicating lines 22 on the outer surface of the bubble enclosure 17, when the device is in operation.

These indicating lines may be arranged in any desired relation to each other, to show various angles of inclination of the device, such as 90, 60, 45 or 30 degrees, depending on the position of the bubble 21 when it is in alignment therewith, due to the angular position of the tool.

The edge of the base plate 15 is provided with opposed pairs of centrally disposed indicating marks 23 and 24 at right angles to each other, to enable the operator to place the assembled device in proper centered relation with the hand tool 10 when attached thereto.

A contact plate 25 of generally rectangular shape to correspond with the base plate 15 has its lower face recessed at 26 to form a pair of opposed contact legs 27 and 27' along opposite sides of the contact plate for engagement either with a curved surface or planar surface of the tool on which the device is used. The contact plate 25 has a plurality of spaced threaded apertures 28 for receiving adjusting screws consisting of a knurled member 29, a top member 30 and a threaded bottom member 31. In the form shown herein, four such adjusting screws are used, adjacent the four corners of said contact plate, but manifestly three equi-spaced adjusting screws can be used, if desired.

Each bottom threaded member 31 engages a threaded aperture 28 and the top member 30 engages in a conical recess 32 in the bottom face of the base plate 15. As the knurled member 29 is turned it will cause its screw to revolve and thereby raise or lower one corner of the base plate 15 to level the plate, and bring it into the most minute adjustment relative to the contact plate and the tool on which the device is mounted.

In the form of adjusting screw shown in Figure 7, the upper rim of the knurled nut 29 is serrated at 33 so as to be brought into holding engagement with the lower face of the base plate 15, particularly when the latter is at an inclined angle to the contact plate 25.

Although I have shown and described certain embodiments of my invention, it will be understood that I do not wish to be limited to the exact construction shown and described but that various changes and modifications
may be made without departing from the spirit and scope of the invention as defined by the appended claim.

I claim:

3 In an attachment for tool handles, a base plate, a hollow spherical member of transparent material mounted on said base plate adapted to hold liquid with an air bubble therein, said spherical member having a plurality of lines thereon for indicating deviations of said spherical member from the vertical by reference to the air bubble in said spherical member, a flexible strap connected to said base plate at opposite sides of said spherical member for detachably securing said base plate on a tool handle, a contact plate mounted in generally parallel relation below said base plate, said contact plate having a pair of spaced legs projecting from its under face adapted for engagement with a rounded surface on a tool handle, and means for varying the relation between said base plate and contact plate comprising at least three screws with knurled adjusting nuts, each screw having one end threaded in said base plate, and the contact plate having registering recesses in which the other ends of said screws are engaged, and the base and contact plates being normally held in registering position with each other by the flexible strap when the assembled device is secured to a tool handle.

References Cited in the file of this patent

UNITED STATES PATENTS

970,360 Whigham Sept. 13, 1910
1,640,020 Abrahamson Aug. 23, 1927
1,948,612 Bouchard Feb. 27, 1934
2,689,412 Young Sept. 21, 1954

FOREIGN PATENTS

116,166 Great Britain June 6, 1918
865,697 Germany Feb. 5, 1953