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M. VAN PRAAG

3,242,773

ELECTRIC HAND DRILL ATTACHMENT

Filed Aug. 14, 1963

FIG. 1

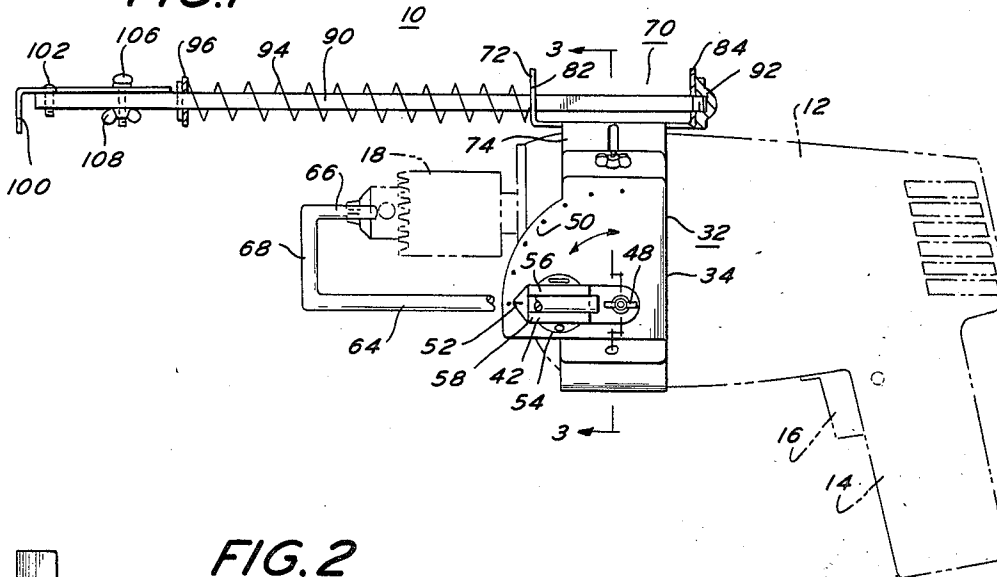


FIG. 2

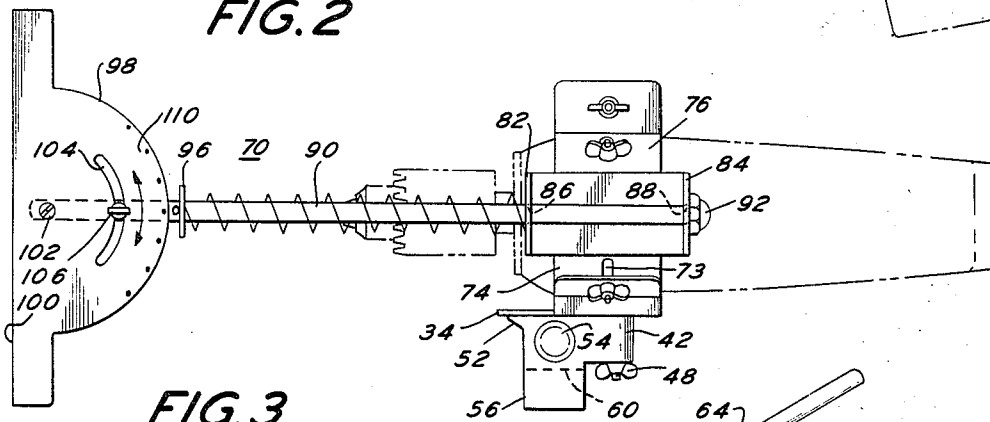


FIG. 3

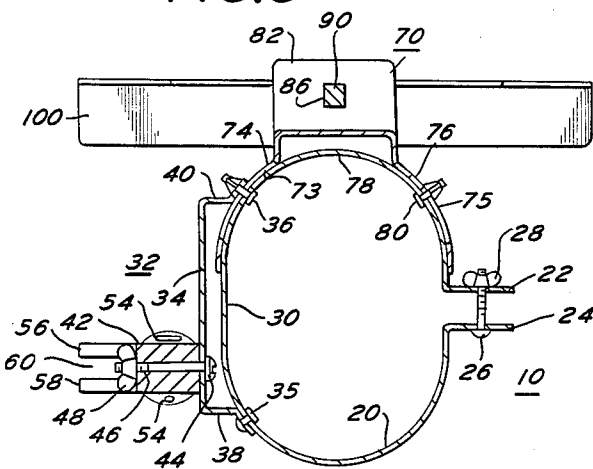
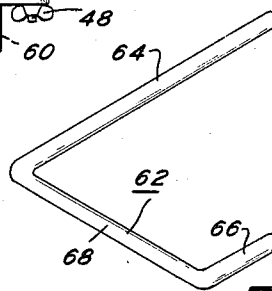


FIG. 4



INVENTOR.  
MARIE VAN PRAAG

BY *Arthur H. Seidel*

ATTORNEY

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**ELECTRIC HAND DRILL ATTACHMENT**  
Marie Van Praag, 50 Gary Road, Syosset,  
Long Island, N.Y.  
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In general, this invention relates to a new and improved attachment for an electric hand drill and more particularly to an attachment for an electric hand drill which will enable the user to drill a hole at any angle.

The standard electric hand drill has many advantages over the well known drill press. These advantages are mobility, ease of access, speed of operation, and compactness in size.

However, the drill press is capable with proper alignment of drilling holes accurately at any given angle. The standard hand drill will only be as accurate as the judgement of the user. It is extremely difficult with present equipment to drill a hole with a hand drill at an angle to the plane of the workpiece. Still further, it is difficult to accurately drill a hole when the plane of the drill is at an angle other than 90° to the plane of the workpiece.

Therefore, it is the general object of this invention to avoid and overcome the foregoing and other difficulties of prior art practices by the provision of a new and better hand electric drill attachment.

Another object of this invention is the provision of a new and better hand drill attachment which will enable the user to accurately drill a hole at any angle to the plane of the workpiece.

Still another object of this invention is to provide a new and improved hand drill attachment for drilling a hole at any angle to the plane of the workpiece which can be simply and accurately added to any standard hand drill.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a side elevational view of the hand drill attachment of the present invention mounted on a hand drill (shown in phantom).

FIGURE 2 is a top plan view of the apparatus shown in FIGURE 1.

FIGURE 3 is a cross-sectional view of the apparatus shown in FIGURE 1 taken along lines 3-3.

FIGURE 4 is a perspective view of the aligning rod of the present invention.

In FIGURE 1, there is shown the hand electric drill attachment of the present invention generally designated by the numeral 10. The attachment 10 is intended to be secured to an electric hand drill 12 shown in phantom. The hand drill 12 includes a grip 14 and trigger 16 for turning on the hand drill. The drill 12 also includes a geared chuck 18 within which is normally inserted a drill bit (not shown).

As best shown in FIGURE 3, the attachment 10 includes a curved resilient band 20 normally formed of metal or the like having mating outwardly extending flanges 22 and 24 which are joined together by a suitable bolt 26 and nut 28 to rigidly secure the band 20 to the drill 12. The curved resilient band 20, mating outwardly extending flanges 22 and 24, bolt 26 and nut 28 form an adjustable mounting means for mounting the drill attachment.

The curved resilient band 20 has a left side portion 30 on which is mounted a horizontal deflection indicator

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32. The horizontal deflection indicator 32 includes a flat plate 34 secured to left side portion 30 by bolts 35 and 36 passing through flanged end portions 38 and 40 of plate 34 and secured to left side portion 30.

5 The horizontal deflection indicator 32 additionally includes an angle selector 42 which is pivotally mounted to plate 34 by a bolt 44 passing through a hole 46 in the angle selector 42 and which is secured by a wing nut 48 so that the angular position of selector 42 can be adjusted by loosening and tightening the wing nut 48.

10 The plate 34 has a curved graduated scale 50. Scale 50 is a 90° portion of a circle whose center is the bolt 44. In FIGURE 1, the angle selector 42 is shown in a position directed toward the 0° position of the scale 50.

15 The angle selector 42 includes a pointer 52 at its outmost end from the bolt 44 for indicating the exact point on the scale 50 to which the selector 42 is oriented. The selector 42 additionally includes a level indicator 54 which in the practical embodiment of the present invention was a glass casing partly filled with alcohol so as to leave an air bubble that moves to the exact center of the glass casing when the angle selector is in a horizontal plane. The casing further includes a ball bearing for purposes to be indicated below.

25 Extending outwardly from the main body of the angle selector 42 are a pair of channel guides 56 and 58 defining a channel 60 in line with the level indicator 54.

30 In order to line up the attachment 10 on the drill 12 so that accurate angle measurements may be made, an alignment element 62 is provided shown in FIGURE 4. The alignment element 62 is a J-shaped rod of circular cross-section having a long leg 64, and a parallel shorter leg 66 joined to the long leg 64 by a joining member 68. The shorter leg 66 is intended to be placed in the drill chuck 18 and the longer leg 64 is intended to be placed within the channel 60. In this way, as indicated in FIGURE 1, when the pointer 52 is directed to the 0° marker on the scale 50 and the alignment element 62 is in place, the attachment can be tightened by means of bolt 26 and wing nut 28 to hold it in place on the drill 12.

40 After this, the alignment member 62 can be removed as it is no longer needed. If one were to drill with the attachment as described above, a drill bit is placed in the chuck 18 and the angle selector 42 is rotated so that the pointer 52 will point to the desired angle from the horizontal which the user intends to drill. For example, if one wished to drill a hole in a vertical planar wall at an angle 30° above the horizontal, the pointer 52 is moved to the 30° mark on the scale 50 and the wing nut 48 is tightened to hold the angle selector 42 in place. Then by merely drilling while maintaining the angle selector 42 level through the use of the bubble in the level indicator 54, one can simply and easily drill this desired hole.

55 In the alternative, if the hole desired to be drilled was 30° below the horizontal, the entire drill 12 would be rotated 180° and the same operation would proceed. Since the level indicator 54 can be seen from both above and below the angle selector 42, the same procedure would be operative for drilling holes either above or below the horizontal. From below the selector, the ball bearing gives the indication and from above the selector, the air bubble is so operative. The ball bearing is a rigid marker having a greater density than the fluid in the casing.

60 There is also a need for drilling holes at an angle to the plane perpendicular to the plane of the workpiece. For this purpose, a suitable workpiece plane adjuster attachment 70 has been provided. This attachment 70 includes a U-shaped bracket 72 having outwardly ex-

tending wall portions 74 and 76 adjustably securing the U-shaped bracket 72 to a top wall portion 78 of the current resilient band 20. In this regard, the bolt 36 which holds flanged end portion 40 to side wall portion 30 also passes through a longitudinal slot 73 in outwardly extending wall portion 74 to hold wall portion 74 to band 20. Outwardly extending wall portion 76 is held to the band 20 by means of a second bolt and nut arrangement 80 passing through an adjustment slot 75 in wall 76.

The U-shaped bracket 72 includes two spaced upstanding walls 82 and 84. Upstanding wall 84 is to the rear of the attachment 10 while upstanding wall 82 is to the front of the attachment. Each of these walls 82 and 84 has a hole 86 and 88 respectively passing therethrough. In a preferred embodiment of this invention, the holes 86 and 88 are rectangular in shape so as to slidably receive a rod 90 which is rectangular in cross-section and conforms to the shape of the holes 86 and 88.

Rod 90 has a suitable end cap 92 which acts as a limit stop for the rod 90. End cap 92 is biased against the end wall 84 outside of the U-shaped bracket 72.

Rod 90 has a spring biasing member 94 extending between end wall 82 and a limit stop 96. Spring 94 is a compression spring which forces rod 90 outwardly away from U-shaped bracket 72 so that end cap 92 abuts wall 84.

At the end of rod 90 and spaced from limit stop 96 is a suitable wall engaging angle selector 98. The wall engaging angle selector 98 has a flat planar flange 100 at the front edge thereof for engaging the surface of the workpiece. The rod 90 is pivotally secured to the angle selector 98 by reason of a curvilinear slot 102 is the pivot point of the angle selector 98. The selector 98 is rotatable by reason of a curvilinear slot 104 through which passes a suitable bolt 106 and wing nut 108. The bolt 106 passes through a hole in the rod 90. Thus, the slot 104 having a path conforming to the arc of a circle whose center is at the bolt 102 can be utilized to vary the angle of flat planar surface 100 by rotation about bolt 102. The angle selector 92 is provided with a curved scale 110 which indicates the angle of the flat planar surface 100 with respect to the 0° indication shown in the drawings. In FIGURE 2, the angle selector 98 has been placed with the 0° point of the scale 110 in line with rod 90. This corresponds to the plane of the drill being perpendicular to the plane of the workpiece. By varying the position of the angle selector 98, various angles on the drill can be selected of the plane of the drill with respect to the plane of the workpiece in accordance with the desires of the user. However, in actual practice, it has been found that it is not practical to vary this angle to any greater extent than 45°. For this reason, the slot 104 has a total length of only 90°.

When utilizing the workpiece plane adjuster attachment 70 of the present invention, the desired angle is first set by loosening the bolt 106 and wing nut 108 and turning the angle selector 98 until the correct angle is read on the scale 110. When this occurs, the bolt 106 and wing nut 108 are tightened into place. Then one merely places the drill bit in the chuck 18 and proceeds by placing the flat planar surface 100 against the workpiece. When this occurs, the angle of the drill bit with respect to the plane of the workpiece will follow the preset design. As the drill bites into the workpiece, the rod 90 will be forced backward against the bias of the compression spring 94. Thus, the flat planar flange 100 will always remain in abutting relation with the workpiece and the correct angle of the drill will be maintained throughout the drilling operation. The rod 90 being supported along the surfaces of the holes 86 and 88 will not cant or otherwise vary its angular position.

Further, the workpiece plane adjuster attachment 70 thus described can be utilized in combination with the horizontal deflection indicator 32 to achieve a compound angle hole. That is, a hole may be drilled whose angle varies with respect to a plane perpendicular to the plane of the workpiece and the horizontal. Furthermore, the drill attachment 10 of the present invention can be utilized on drills of all sizes as it can be easily adjusted into place by utilizing the alignment element 62 discussed previously. Thus, the guessing element has been removed in drilling holes at an angle utilizing a standard hand drill.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. An electric hand drill attachment comprising an adjustable mounting support, said support being axially aligned with respect to the axis of the drill chuck, a horizontal deflection indicator mounted on said support, said horizontal deflection indicator including a level rotatably mounted on said support, said horizontal deflection indicator additionally including an angle indicator to indicate the amount of rotation of said level with respect to a reference line on said support parallel to said axis of said drill chuck, said level being mounted on a pointer, said pointer having one end thereof pivotably secured to said support, said angle indicator including a 90° arc having its center at said pointer one end, an alignment member, said alignment member including two parallel spaced rod members, said pointer having a channel therein for receiving one of said rod members, and each of said rod members being adapted to simultaneously fit in said drill chuck and said pointer channel to align said horizontal deflection indicator with respect to the axis of said drill chuck.

2. An electric hand drill attachment comprising an adjustable mounting support, said support being axially aligned with respect to the axis of the drill chuck, a horizontal deflection indicator mounted on said support, said horizontal deflection indicator including a level rotatably mounted on said support, said level mounted on a pointer, said pointer having one end thereof pivotably secured to said support, said angle indicator including a ninety degree arc having its center at said pointer one end, said level including a transparent casing, said transparent casing extending between opposite parallel side faces of said pointer, said angle indicator ninety degree arc extending from said reference line, said casing being partially filled with a liquid leaving an air bubble therein and a rigid marker freely placed in said casing having a greater density than said liquid, and said horizontal deflection indicator additionally including an angle indicator to indicate the amount of rotation of said level with respect to a reference line on said support parallel to said axis of said drill chuck.

#### References Cited by the Examiner

##### UNITED STATES PATENTS

|           |        |               |        |
|-----------|--------|---------------|--------|
| 2,541,366 | 2/1951 | Kennedy       | 77—7   |
| 2,670,638 | 3/1954 | Roy           | 77—55  |
| 2,757,458 | 8/1956 | Zipser        | 33—207 |
| 3,119,286 | 1/1964 | Forman et al. | 77—55  |

##### FOREIGN PATENTS

|        |         |              |
|--------|---------|--------------|
| 91,186 | 10/1921 | Switzerland. |
|--------|---------|--------------|

WILLIAM W. DYER, JR., *Primary Examiner*,  
FRANCIS S. HUSAR, *Examiner*.