D. D. ROTH.

PROTRACTOR LEVEL FOR DRILLS AND OTHER TOOLS.

APPLICATION FILED MAR. 9, 1917.

1,255,644. Patented Feb. 5, 1918.

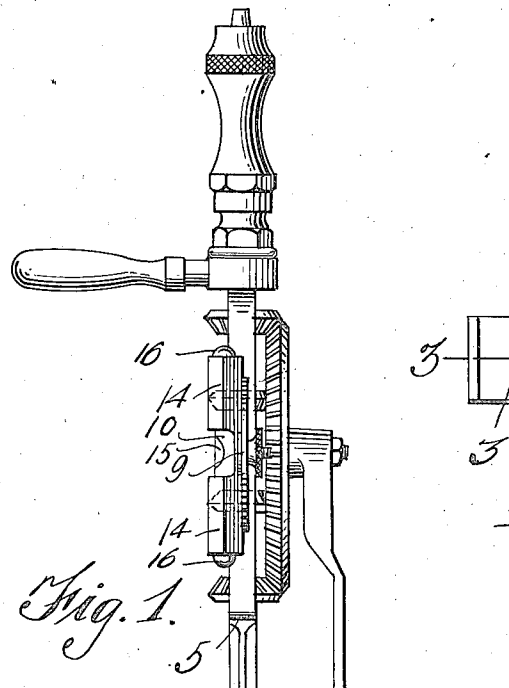


Fig. 1.

Fig. 2.

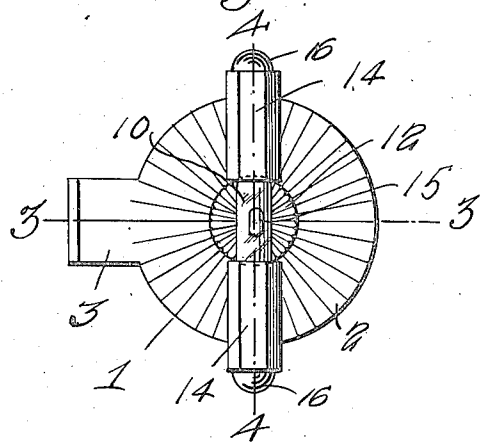
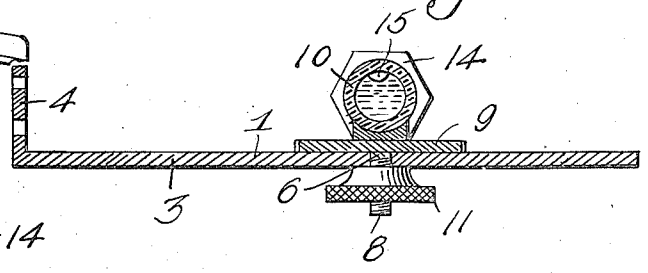


Fig. 3.



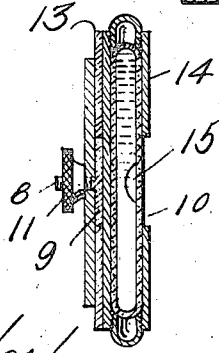


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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PROTRACTOR-LEVEL FOR DRILLS AND OTHER TOOLS.

1,255,644. Specification of Letters Patent. Patented Feb. 5, 1918.

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To all whom it may concern:

Be it known that I, DENNIS D. ROTH, a citizen of the United States, residing at Atlantic City, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Protractor-Levels for Drills and other Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a protractor level for drills and other tools.

The object of the present invention is to improve the construction of spirit levels and to provide a simple, practical and efficient protractor spirit level adapted to be readily applied to hand drills, breast drills and various other tools, and capable of enabling a drill or other tool to be accurately held at a predetermined angle for boring or other operations.

A further object of the invention is to provide a spirit level attachment of this character capable of pivotal adjustment throughout an entire circle and adapted to enable the bubble of the tube from the top, bottom or front so that the tool to which the device is applied may be accurately operated in any position.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

Figure 1 is an elevation of a breast drill provided with a protractor level constructed in accordance with this invention.

Fig. 2 is an enlarged elevation of the protractor level.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a similar view on the line 4—4 of Fig. 2.

Like numerals of reference designate corresponding parts in the several figures of the drawing.

In the accompanying drawing, in which is illustrated the preferred embodiment of the invention, the protractor level comprises in its construction a dial 1 constructed of metal or other suitable material and provided with graduations 2 and having an approximately L-shaped base or attaching portion 3 having a flange or arm 4 and extending outwardly at right angles to the plane of the dial and adapted to be secured by screws or other suitable fastening devices to the frame 5 of a drill, as illustrated in Fig. 1 of the drawing. The dial may be readily mounted on the frame of a breast drill, hand drill or similar tool by filing a portion of the surface flat, but tool frames of this character may be constructed with a flat face or portion for the reception of the device.

The dial is provided with a central opening 6 for the reception of a screw 8 of an index plate 9 which carries a spirit tube or bubble tube 10. The screw 8, which is rigid with the index plate 9, extends rearwardly from the same and passes through the opening 6 and receives a clamping nut 11 which engages the rear face of the dial and firmly clamps the index plate 9 in its adjustment. The index plate 9 is provided with graduations 12 to coöperate with the graduations 2, and the graduations may in practice be carried out to any desired extent.

The index plate is provided with opposite arms 13 to which are secured by soldering, brazing, or the like a pair of alined sleeves 14 extending longitudinally of the arms and receiving the end portions of the spirit tube or bubble tube 10. The spirit or bubble tube 10, which is provided with the spirit to form the bubble 15, extends across the dial and is rotatable in a plane in parallelism with the longitudinal axis of the drill or other tool, and it is adapted to be set in parallelism with the axis of the drill or at an angle to the axis and it is capable of rotation throughout an entire revolution so that the desired angle may be readily obtained, and as the clamping nut 11 is located at the rear face of the dial, the spirit tube is supported at the front face or graduated face of the dial and is entirely exposed at the top, bottom and front so that the spirit level may be viewed by the operator when held in any position.

The level may be adjusted to drill at any predetermined angle and an adjustment may be easily effected by placing the drill in the proper position and bringing the spirit tube

to a level. This insures the drill being held in proper position for accurate drilling and the drill may be removed as often as desired from the work to rest the arms and may be accurately replaced. Also the device will be found useful in locating a cam or gear, as on a half-inch shaft where the hub is short it is difficult to center properly on opposite sides, but with the aid of the level the drill can be accurately guided.

The sleeves are provided at their outer ends with caps or closures 16 which may be of any desired construction, and one or both of the caps may be removable to afford ready access to the spirit or bubble tube and they are preferably adjustable to accurately place the said tube with relation to the index plate.

What is claimed is:

1. A protractor level for drills and analogous tools including a dial provided with graduations, an index plate arranged centrally of and to coact with the dial and provided with a rearwardly extending screw passing through the said dial, a clamping nut mounted on the screw at the rear face of the dial, diametrically alined sleeves carried by the index plate and provided at their outer ends with caps, and a spirit or bubble tube mounted in the sleeves and exposed at the center of the index plate and the dial, said tube being arranged diametrically with relation to the dial.

2. A protractor level for drills and analogous tools including a dial provided with graduations and having an attaching portion or foot, an index plate graduated to coact with the dial and provided with a rearwardly extending screw passing through the dial, a clamping nut mounted on the screw at the rear face of the dial, arms extending from the index plate at opposite sides thereof, alined sleeves carried by the arms and spaced apart to expose fully the index plate, and a spirit or bubble tube mounted in the sleeves and exposed at the front, top and bottom at the index plate.

In testimony whereof I affix my signature in presence of two witnesses.

DENNIS D. ROTH.

Witnesses:
DONALD R. WALLACE,
THOS. F. SCOTT.