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Doret et al.

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[54] **PORTABLE DRAFTING INSTRUMENT**

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[52] **U.S. Cl.** ..... **33/27 C,** 33/42, 33/26

[51] **Int. Cl.** **B41l 9;04**

[58] **Field of Search** ..... 33/27 R, 27 C, 26, 33/102, 98, 42

[56] **References Cited**

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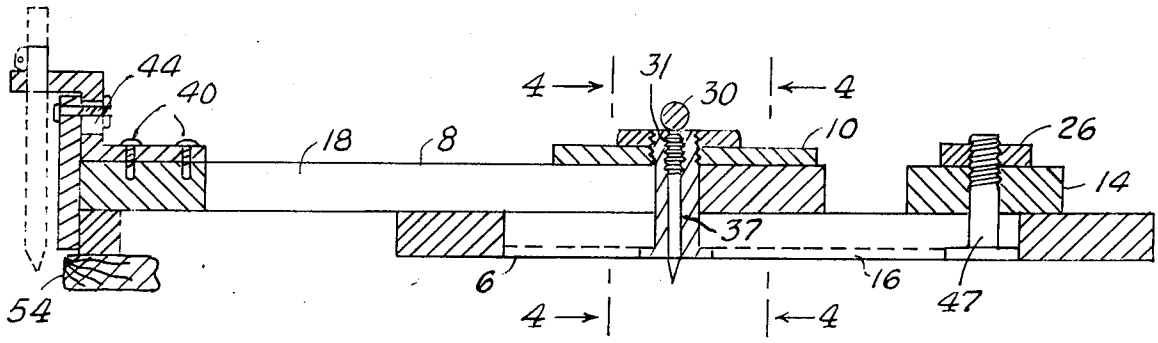
[57] **ABSTRACT**

A portable drafting instrument for drawing horizontal and vertical lines, specific angles and circles with pencil, ink, chalk on various surfaces, including paper and blackboards. The instrument comprises a pair of slotted rulers and a protractor secured by a thin bolt extending through the slots. One of the rulers is swingable about the bolt and secured to the other by a nut on the bolt at a desired angle relative to the other, for marking an angle. The same ruler is provided wih a marking implement for drawing circles, and a centering pin extending through the bolt. Both rulers can be aligned to form a straight edge.

3 Claims, 4 Drawing Figures



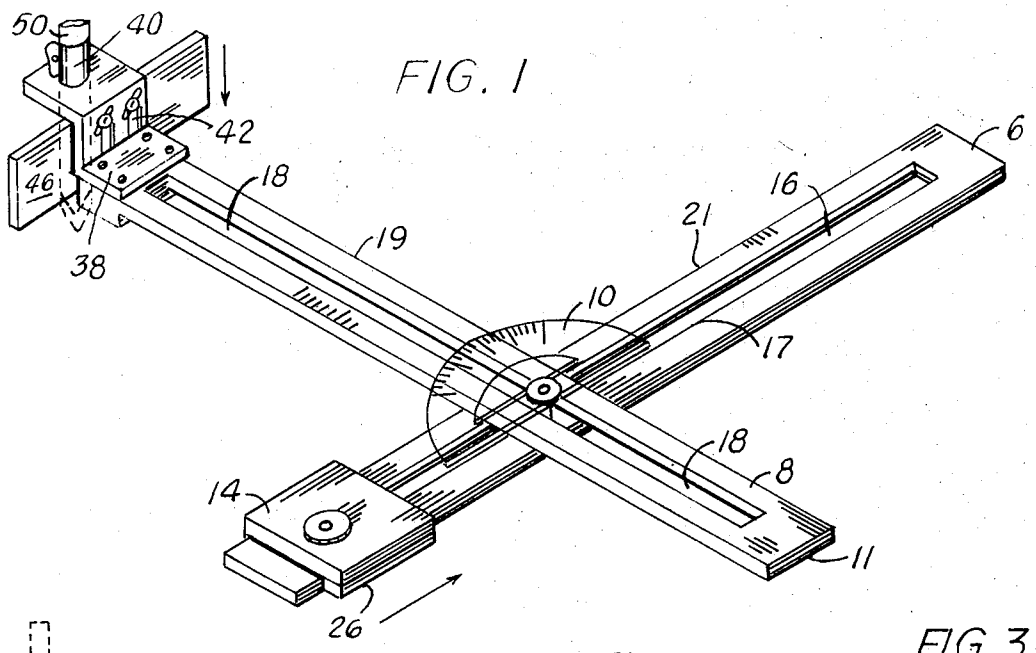


FIG. 1

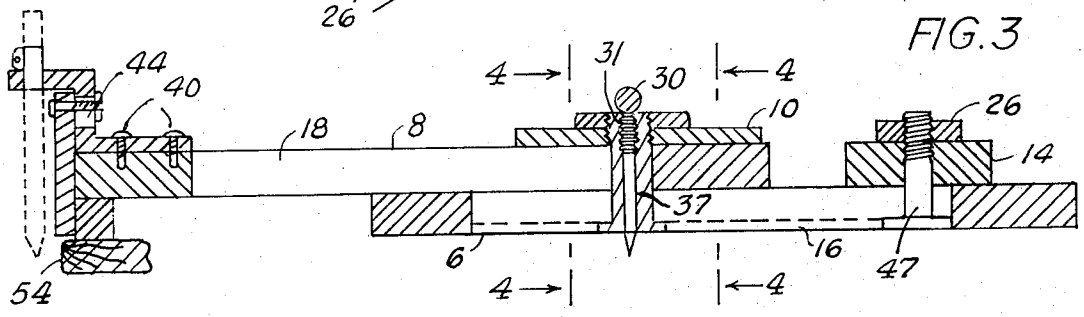


FIG. 3

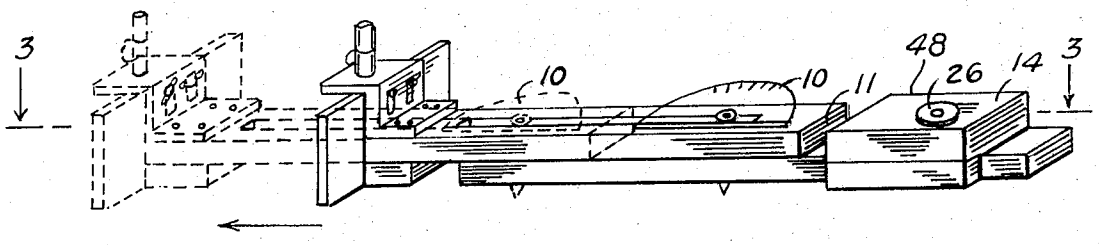


FIG. 2

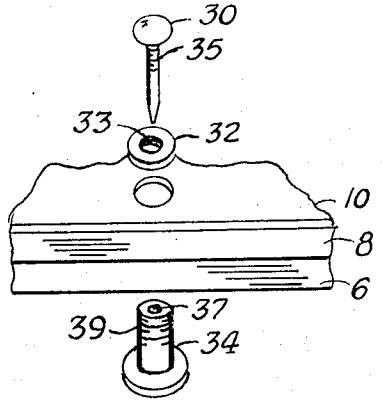


FIG. 4

PORTABLE DRAFTING INSTRUMENT

BACKGROUND OF THE INVENTION

The present invention relates to drafting instruments in general and to a portable drafting instrument for drawing of horizontal and vertical lines, specific angles and circles with pencil, ink, chalk, etc., on various surfaces including paper and blackboards.

Set spuares are not very flexible in their use, for only a few specific angles can be drawn without the assistance of a protractor. For ease of transportation, set squares, compasses, etc., have to be kept small. Draftsmen and students alike find it difficult to carry them daily to and from an office or school because of their size and/or number. It is therefore highly desirable to put at the disposal of not only the student but also the technician and the draftsman an easily portable instrument of the above character.

An object of the invention is to provide an easily portable drafting instrument for laying down straight lines, circles, angles, etc.

A further object of the invention is to provide a device of the above charcter which will simplify the tracing of straight lines, guidelines, angles, circles, book cunder-lining and drafting in general.

Yet another object of the invention is to provide a single instrument of the above character which is capable of performing the above and many other functions.

Still another object of the invention is to procide such a device which is simple to manufacture and comparatively inexpensive in cost.

These and other objects of the invention will become apparent from the following description and the accompanying drawing, in which:

FIG. 1 is a perspective view of the instrument according to the invention, unfolded for angular drawing;

FIG. 2 is a perspective view of the instrument folded in linear position;

FIG. 3 is a cross-sectional view taken on line 3—3 of FIG. 2 and

FIG. 4 is an exploded detail view of the parts disposed between line 4—4 of FIG. 3.

Referring now to the drawing in detail, the instrument shown in FIG. 1, comprises graduated top and bottom rulers 6 and 8 formed with longitudinal slots 16 and 18, respectively. A protractor 10 is adjustably secured to the rulers, above the top ruler 8 by means of a knurled nut 32 and a bolt 34. Nut 32 is provided with an inner thread 33 engageable with the threaded outer end 39 of bolt 34. The bolt 34 is formed with a through bore 37 for the passage of pin 30. The bore of bolt 34 has a thread 31 at its upper end, which engages with the thread 35 of pin 30. A bracket 38 secured to one end of ruler 8 and is provided with a known clamping collar means 40 for a pencil, ruling pen or chalk. The bracket 38 is further provided with slots 42 through which extend bolts 44 secured to a plate 46 perpendicular to ruler 8 which can be tightened by wing nuts, 42.

Slidably mounted on ruler 6, by means of bolt 47 and nut 48 is a square block 14 provided with guides 26.

The instrument is used as follows:

To draw an angle of a desired degree, the plate 46 and the marking tool 50 are raised above the lower end 54 of ruler 8 so that the instrument may be laid flat against the surface on which an angle is to be drawn or traced. The pin 30 is positioned at the converging point of the sides of the desired angle. The bottom edge of the protractor 10 is aligned with the edge 17 of slot 16. Upper ruler 8 is next swung to the desired angle indicated by a respective marking on the scale of protractor 10, and the slot 18 is aligned with said marking. It should be noted that the bolt 34, and slot 18, shown on a greatly enlarged scale for the sake of clarity are actually extremely thin, as for example the winding stem in a miniature wrist watch. The knurled nut 32 is then tightened to secure both rulers in the desired position. The angle is then drawn or traced with an appropriate implement along the edges 19 and 21, respectively of the rulers.

The instrument can likewise be used for drawing right angles by lowering plate 46 so that it aligns with an edge of a drafting table 54.

Furthermore, the ruler can be used as a straight edge of longer length, as shown in FIG. 2 by aligning the respective edges of the rulers and by sliding block 14 to intimately contact the edge 11 of the ruler 8.

The instrument can also be used to draw or trace circles. For this purpose the plate 46 is raised to its highest position, the marker 50 is lowered below the lower end 54, as shown in dotted lines in FIG. 3. The block 14 is slid out of the path of the end 11 of ruler 8. The pin 30 is then set at a desired point on the surface to be marked and screwed through the bolt 34, until it engages such surface. The ruler 8 is then rotated about bolt 34.

We claim:

1. A portable drafting instrument, comprising a bottom ruler and a top ruler provided with longitudinal slots, a protractor superimposed on said top ruler, means adjustably securing said bottom ruler, said top ruler and said protractor to one another, said protractor having a base portion provided with a hole, said means adjustably securing said bottom ruler, said top ruler and said protractor including means for centering said instrument at a desired point on a surface to be drawn, said securing means comprising a bolt having an axial partially threaded bore therethrough and extending through said longitudinal slots and the hole of said base portion of the protractor, a knurled nut engageable with said bolt, said means for centering said instrument consisting of a threaded pin engageable with said bolt's threaded bore, said pin having a sharp point for engaging with a surface to be marked, clamping means for a vertically adjustable scriber, said clamping means being secured to said top ruler, whereby the instrument may be used for scribing circles and arcs by slightly loosening said bolt and a bracket for securing said clamping means to said top ruler.

2. The instrument, as claimed in claim 1, further provided with a plate, displaceable vertically on said bracket, perpendicular to said top ruler.

3. The instrument as claimed in claim 1, wherein said lower ruler is provided with a square block adjustably secured to said bottom ruler, for squaring the other end of said top ruler, to align both said rulers for drawing a straight line.

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