

Aug. 16, 1927.

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1,638,887

INSTRUMENT FOR MEASURING REENTRANT ANGLES

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Fig. 1.

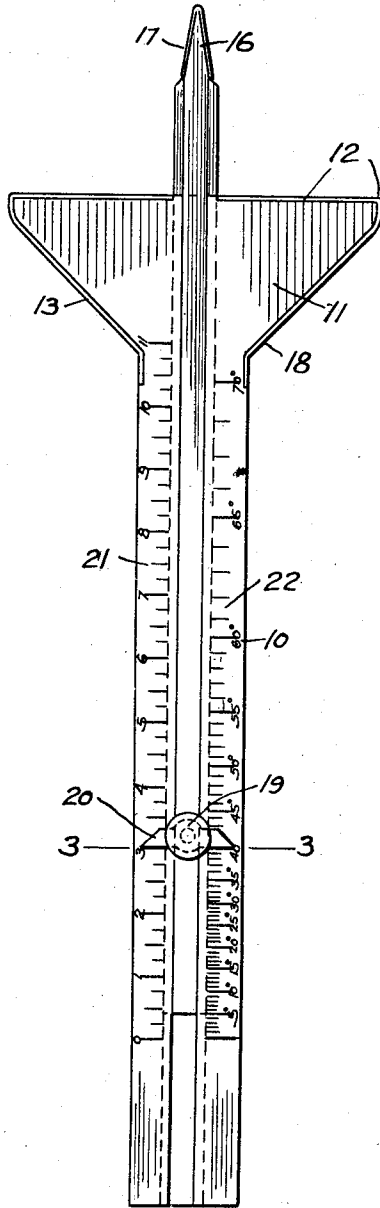


Fig. 2.

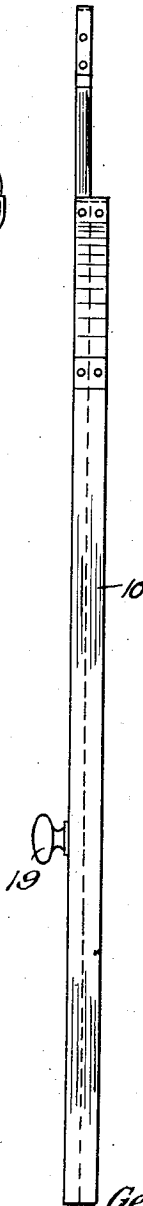


Fig. 4.

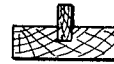


Fig. 5.



Fig. 6.

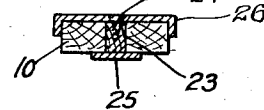
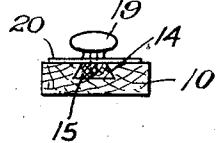


Fig. 3.



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INSTRUMENT FOR MEASURING REENTRANT ANGLES.

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This invention relates to devices for finding angles, and particularly to a device designed to be used by carpenters, metal workers or others in the laying off of joints.

5 The general object of the invention is to provide a device of this character which is designed to be used where two structural elements, such as baseboards, cornices, hip rafters and the like, come together at different
10 angles and it is necessary to find the angle between these two elements.

A further object is to provide a device of this character which may be used as a depth gauge, and further to provide a device of this
15 character which is very simple, can be readily handled, requires no delicate manipulation, and which has been found to be thoroughly effective in actual practice.

20 Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a plan view of this angle-measuring device;

25 Figure 2 is a side elevation of the structure shown in Figure 1;

Figure 3 is a cross section on the line 3—3 of Figure 1;

30 Figure 4 is a cross section on the same lines as Figure 3, but showing a modification of the device;

Figure 5 is a like view to Figure 4 but showing another modification;

35 Figure 6 is a like view to Figures 3, 4 and 5, but showing a still further modification of the manner in which the sliding member is mounted in the body.

Referring to these drawings, and particularly to Figures 1 and 2, 10 designates an
40 elongated body which may be made of wood, metal or any other suitable material and which at one end is laterally extended to form a head 11. One face 12 of this head extends at right angles to the longitudinal
45 axis of the body and the ends of this edge 12 are connected to the side edges of the body 10 by re-entrantly angled side faces 13.

50 In Figures 1, 2 and 3, the body 10 is shown as being formed with a longitudinally extending groove 14 dove-tailed in shape, and operating in this groove is a slide 15 whose cross section is the same as that of the groove. The groove 14 extends from end to end of
55 the body and the slide 15 will have a length corresponding to the length of the body. One end of the slide 15 is tapered, as at 16,

or pointed. Preferably this end of the slide or bisector has a metal facing 17 to protect it and preferably the front face 12 of the head 11 and the side edge faces 13 are protected by metal facing 18.

60 Mounted upon the slide 15 is a handle 19 which projects out through the slot 14, and carried by this handle is a double index pointer 20 which operates over the two scales
65 which are disposed on the upper face of the body 10. One of these scales 21 is marked in inches and the other scale in degrees. Any suitable scales may be used, however. The
70 inch scale will show the extent to which the slide or bisector is projected beyond the face 12. The degree scale will indicate the angle which is formed between the axis of the slide and the line connecting the point
75 of the slide 15 to the extreme corners of the edges 12 of the head. Obviously by pushing the slide outward, the angle is rendered more and more acute, and by drawing the
80 slide inward, the angle is rendered more and more obtuse.

In Figure 4 a slight modification is shown, wherein the slide is simply disposed in a
straight groove as distinguished from a dove-tailed groove. In Figure 5 the slide 15
85 is shown as having tongues on each side which enter grooves formed in the side walls of the groove 14. In Figure 6 the body 10 is longitudinally slotted, as at 23. A slide 24
90 of wood is disposed within this slot and slides therein, and a keeper 26 is attached to this wooden slide and embraces the body 10. A washer 25 is engaged with the wooden slide and operates on the bottom of the body 10. In Figures 4, 5 and 6 the body 10 is constructed in plan as illustrated in Figure 1.
95

100 In the use of this device, if it be desired to find the angle between two walls, the extremity of the bisector or slide is disposed at the junction between the two walls and the body shifted inward on the slide until the opposite corners of the head 11 strike
105 the walls. The pointer 20 will then indicate upon the scale 22 the angle made between the walls. At the same time, the extent of projection of the bisector will be indicated by the coaction of the pointer 20 with the scale 21. In the example illustrated in Figure 1, the pointer 20 coincides with the 40° graduation of the scale 22, thus indicating that the angles formed between the axis of the
110 pointer and lines connecting the extremity of the pointer with the edges 12 of the head

are 40°. As the angle indicated is one-half the angle between the lines connecting the edges 12 of the head with the extremity of the slide, all that is necessary to secure this angle is to multiply the indicated angle by two. Thus, the angle between two walls can be secured or one-half of this angle can be secured to provide a setting for a bevel in laying off material which is to be jointed in the corner. Obviously, as the width of the head 11 is constant and the projection of the slide variable, any desired angle may be found. When the angle has been found by the means described, it is then possible to dispose this instrument upon a drawing board and by the use of a square or a ruler disposed against the apex of the slide and against the corner of the head 11, lines may be drawn which will indicate the exact angular relation of the two walls or other two structural elements to each other. On a perfect mitre joint the two angles will be equal, but oftentimes this is not the case. By transferring the exact measurements onto a table and by the use of the usual carpenter's square, the exact angular relation of the bevel to be cut or of the two elements may be readily laid out. Very few of the corners in rooms are absolutely square and with this device the carpenter or builder is able to bisect the angle and make the exact joint.

The device may be used by metal workers, carpenters, engineers or wherever moldings, baseboards, cornices, hip rafters or like structures come together at different angles. It is particularly desirable for use where it is relatively impossible to secure the angle

between two fixed elements as, for instance, between cornice moldings or between walls already built. The device can also be used as a depth gauge by placing the extremity of the bisector or slide into the recess and then forcing the body toward the point until it contacts with the face of the recessed body. The projection of the slide as indicated by the coaction of the pointer 20 with the scale 21 will then indicate the depth of the recess.

While I have illustrated a particular form of my device, I do not wish to be limited thereto, as it is obvious that many changes might be made therein without departing from the spirit of the invention.

I claim:—

An instrument of the character described comprising an elongated body having at one end a head, the head having an end face extending at right angles to the longitudinal axis of the body and projecting equally on both sides from said longitudinal axis, the body being longitudinally grooved coincidentally with the axis of the body, a slide mounted in said groove and constituting a bisector normally projecting beyond the head and being formed with a pointed extremity, the face of the body on each side of said groove having scales and the slide having pointers coacting with said scales, one of said scales indicating the angle formed by the axis of the slide with relation to lines connecting the extremity of the slide with the outer corners of the head.

In testimony whereof I hereunto affix my signature.

GEORGE S. SIROKMAN.