A. H. HELDEN.

COMBINED PROTRACTOR AND BEVEL.

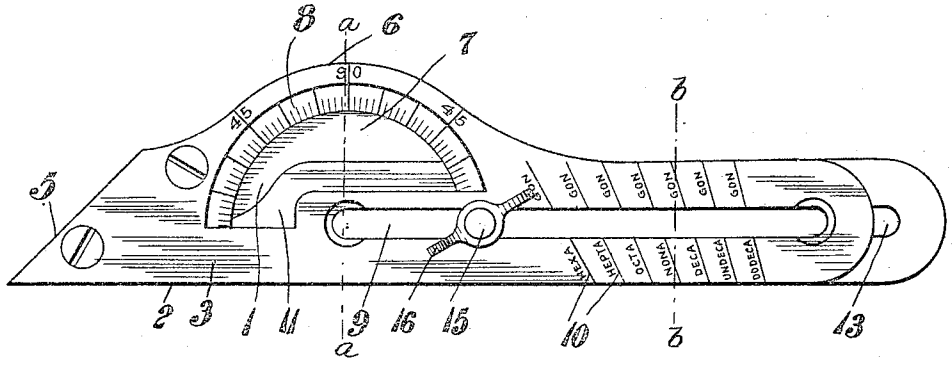
APPLICATION FILED JUNE 28, 1916.

1,223,974.

Patented Apr. 24, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



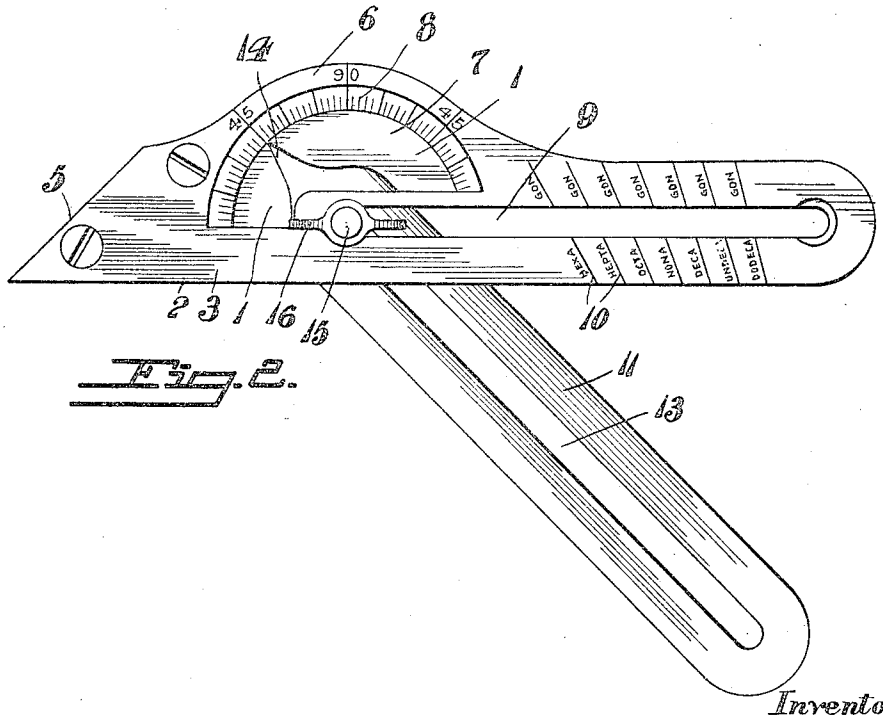


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

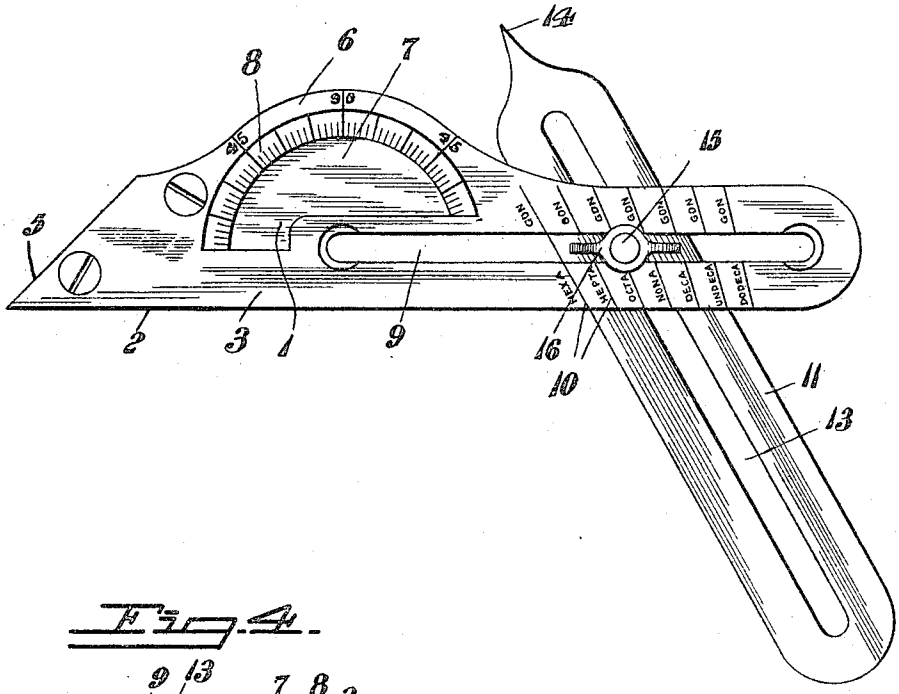


Fig. 4.

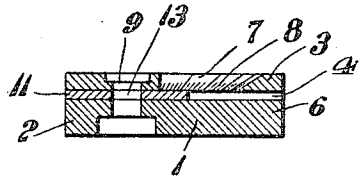
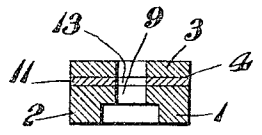


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COMBINED PROTRACTOR AND BEVEL.

1,223,974. Specification of Letters Patent. Patented Apr. 24, 1917.

Application filed June 28, 1916. Serial No. 106,470.

To all whom it may concern:

Be it known that I, ALFRED H. HELDEN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented new and useful Improvements in Combined Protractors and Bevels, of which the following is a specification.

This invention is an improved tool for use as a protractor and also for use as a bevel for marking polygon cuts on work, the object of the invention being to provide an improved tool of this class which is simple in construction, which is extremely compact, and which may be readily arranged for use for either of such purposes.

The invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—

Figure 1 is a side elevation of a combined protractor and bevel constructed in accordance with my invention and arranged for use in marking a miter.

Fig. 2 is a similar view of the same arranged for use as a protractor.

Fig. 3 is a similar view of the same arranged for use as a bevel for marking a polygon cut.

Figs. 4 and 5 are detail sectional views respectively on the planes indicated by the lines *a*—*a* and *b*—*b* of Fig. 1.

In the embodiment of my invention I provide a bar 1 which has a straight edge 2 and is provided on one side with a plate 3 which corresponds in size and shape with the bar. The bar is recessed on the side opposite the plate to provide a slot 4 which extends from side to side of the bar and plate and also extends nearly from end to end thereof. One end of the bar and plate presents a miter edge 5 for use in marking miter cuts on the work.

The bar and plate are provided at a point near the miter end with a widened portion 6 and the plate has a substantially semi-circular opening 7 the edge of which is inscribed with graduations and forms a protractor scale 8. In practice these graduations are appropriately numbered to indicate degrees.

The bar and plate are provided also with longitudinal slots 9 which intersect the slot 7 and the inner ends of which extend a slight distance beyond the center of the protractor. The plate, which in effect forms a part of the bar, is also provided on its outer side with bevel graduations arranged at various angles and for use to indicate polygon cuts. In practice these bevel graduations are appropriately inscribed as hexagon, heptagon, octagon, monagon and the like according to the number and the angular arrangement of the said bevel graduations.

I also provide a blade or arm 11, which in practice is preferably made of metal and is of suitable length and width and adapted to be arranged in the slot 4 between the bar and the plate. This blade or arm presents straight edges 12, is provided with a longitudinal slot 13 which corresponds with the slots 9 and is also provided, at one end, with a pointer 14 to coact with the protractor scale. A pivoting bolt 15 extends through and is slidable in the slots 9, 13 and is provided with a clamping nut 16. Hence the blade or arm may be arranged in the slot 4 with its edges parallel and in line with those of the bar and with said blade or arm almost entirely in the slot 4, or said blade when the pivoting bolt is shifted to the inner end of the slots 9 and concentric with the protractor scale may be used in connection with the protractor scale and with its pointer 13 arranged at any graduation of said scale, as shown in Fig. 2 the pivot bolt adapting the blade or arm to be turned at any desired angle and to be secured in any desired position.

By shifting the pivot bolt outwardly in the slots 9 as required the blade or arm may be arranged with one of its straight edges in line with any desired bevel graduation 10 to adapt the tool to be used for marking polygon cuts on the work.

While I have herein shown and described a preferred embodiment of my invention I would have it understood that changes may be made in the form, proportion and construction of the several parts without departing from the spirit of my invention and within the scope of the appended claims.

Having thus described my invention what I claim is:—

1. A combined protractor and bevel comprising a bar having a straight edge and also having a protractor scale and bevel graduations, and a straight edge arm pivotally and slidably connected to said bar, adapted to be arranged parallel with the bar or in line

with any of the bevel graduations, the said arm having a pointer at one end adapted to coact with the protractor scale.

2. A combined protractor bevel comprising a bar providing a straight edge and also having a protractor scale and bevel graduations, and a longitudinal slot, a straight edge arm also having a longitudinal slot, and a pivoting element for the said arm and shiftable in the said slots of the bar and arm, the said arm having a pointer adapted to coact with the protractor scale when the pivoting element is concentric with the protractor scale.

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Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."