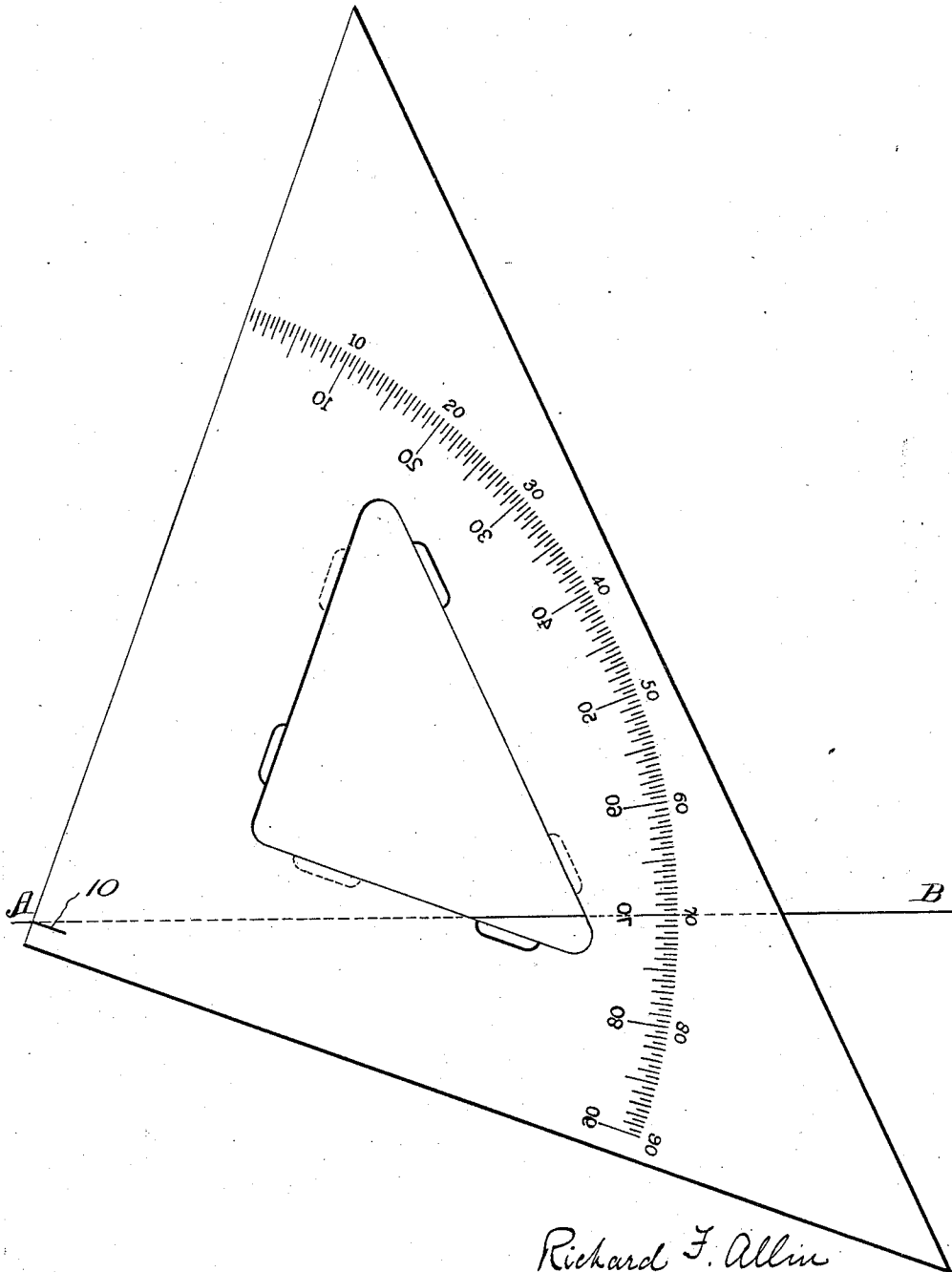


R. F. ALLIN.
PROTRACTOR TRIANGLE.
APPLICATION FILED MAY 11, 1912.

1,046,365.

Patented Dec. 3, 1912.



Richard F. Allin

Inventor

Witnesses:

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UNITED STATES PATENT OFFICE.

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PROTRACTOR-TRIANGLE.

1,046,365.

Specification of Letters Patent.

Patented Dec. 3, 1912.

Application filed May 11, 1912. Serial No. 696,644.

To all whom it may concern:

Be it known that I, RICHARD F. ALLIN, a citizen of the United States, residing in the borough of Manhattan, in the city of New York and State of New York, have invented certain new and useful Improvements in Protractor-Triangles; 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 present invention has relation to an improved instrument of great simplicity and capable of being made at small cost, whereby an angle may be accurately laid off from a base line and the second side of the angle may be accurately drawn without change of position of the instrument.

The following are some of the advantages of my invention. It supplies a convenient combination of triangle and protractor of such a nature that any desired angle may be laid off from a given point on a base line in any quadrant of a circle, with the triangle in one position. It provides a form of instrument wherein lines of maximum length may be drawn at suitable angles to one another in proportion to the size of the triangle. It provides an instrument which remains accurate in spite of the wear which may be expected from ordinary accidents, incident to use.

While the invention broadly considered is capable of use with a protractor of less than a quadrant, in its preferred form and in order to carry out its advantages to the utmost, a right angled triangle is used with a graduated quadrant, having its center near the apex of the right angle.

The instrument is shown in the drawing which is a face view of one side thereof. The right angled triangle shown in the drawing, is made of transparent or translucent material, and transparent in my claims covers either of these qualities.

A graduated quadrant is formed on one or both sides of the triangle and its center is found at the intersection of one of the sides adjacent to the right angle with a fine line 10 drawn preferably parallel to the other adjacent side. The ninety degree point is in a continuation of the fine line 10 as shown in the drawing and the zero point of the scale is found where the quadrant in-

tersects the same edge of the triangle as is intersected by the line 10.

As shown in the drawings one set of the numerals indicating every ten degrees from zero to ninety is on that side of the triangle which is toward the observer, while the other numerals, shown reversed, are upon the other side of the triangle. This is for convenience in use of the triangle when turned over for laying off angles of various quadrants of the circle.

In order to lay off an angle from the base line A—B in the first quadrant of the circle as shown in the drawing, the center of the quadrant is properly placed upon the base line as shown and the triangle is rotated about the center until the base line is seen through the triangle intersecting the quadrant on the proper reading, and it may be easily adjusted within a quarter of a degree. It is obvious that in this position it is only necessary to draw a line along that edge of the triangle which is intersected by the fine line 10 in order to lay off the desired angle, and this can be done without finding any preliminary point and without any movement of the triangle after securing the proper reading.

It is obvious that any angle may be laid off in the first quadrant of a circle and in the third quadrant with that face of the triangle upward which is toward the observer in the drawing.

In order to lay off a desired angle in the second and fourth quadrants, the same procedure is adopted but the triangle is reversed so that the readings are taken with the numerals which are shown reversed in the drawing.

It will be observed that the placing of the center of the graduated arc off-set from the vertex of the triangle, makes it convenient to draw the entire line desired from the center outward and also avoids the inaccuracy as to the location of the center, which would otherwise arise from wearing and blunting of the vertex, if the vertex itself were adopted as the center.

What I claim is—

1. An instrument for laying off angles consisting of a triangle marked with a graduated circular arc having its center near the vertex of one of the angles formed by the outside edges thereof and also provided with a mark slightly off-set from said ver-

tex indicating the true center of said arc, substantially as described.

2. An instrument for laying off angles consisting of a triangle made of transparent material marked with a graduated circular arc suitably numbered on both sides from the same zero end, said arc having its center near the vertex of one of the angles of said triangle, and also provided with a fine line intersecting one edge of the triangle at such center, substantially as described.

3. An instrument for laying off angles consisting of a right angled triangle made of transparent material marked with a gradu-

ated quadrant suitably numbered on both sides from the same zero end at its intersection with one edge of the triangle, the center of said quadrant being marked at a point offset from the vertex of the right angle along the aforesaid edge of the triangle, substantially as described.

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

RICHARD F. ALLIN.

Witnesses:

WM. S. SNIFFEN,

H. J. COMPO.