A. W. ALLEN.

INSTRUMENT FOR DESCRIBING ARCS OF CIRCLES.

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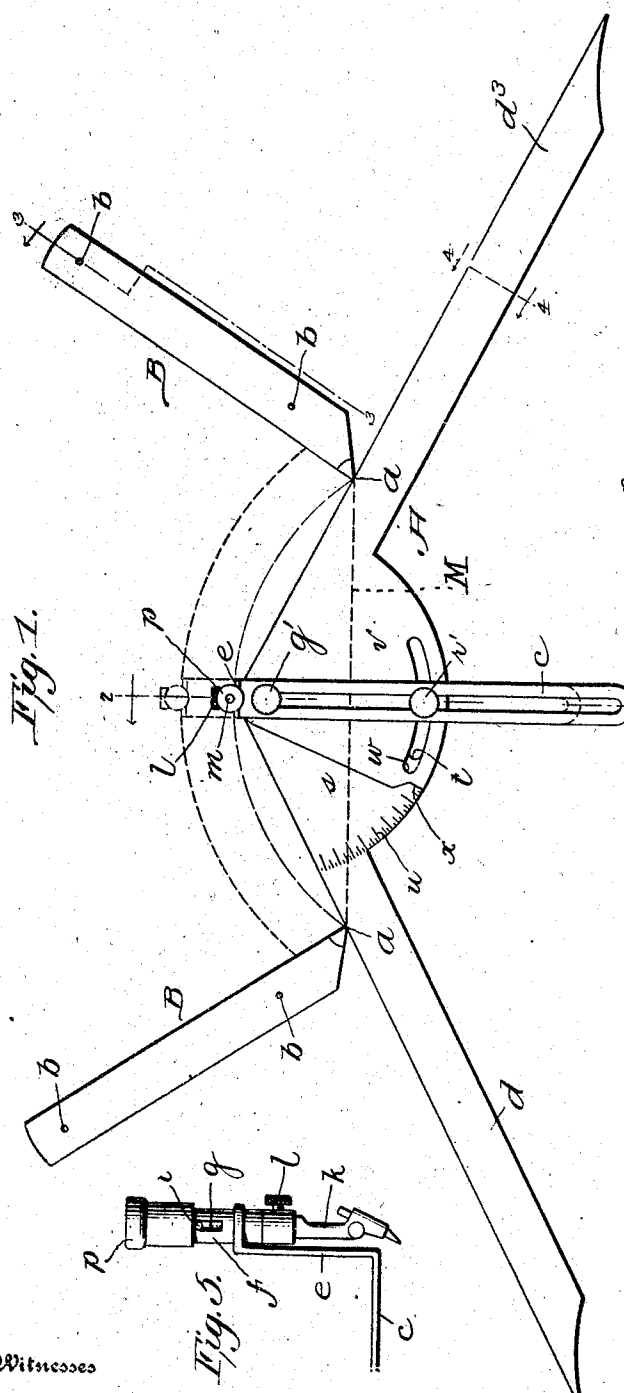

Fig. 1.

Fig. 4.

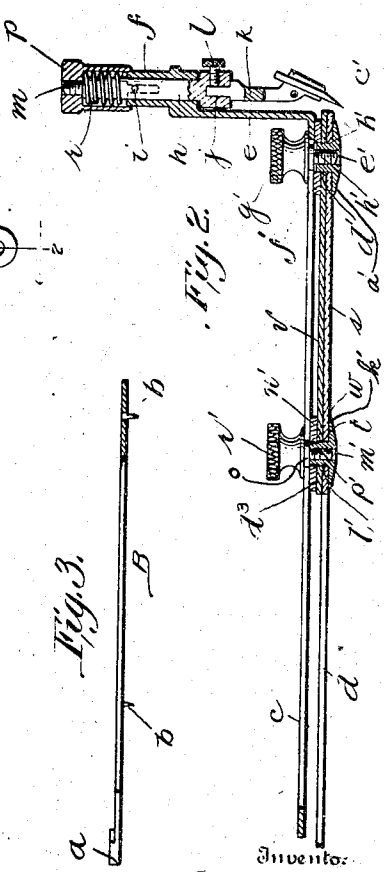

Fig. 2.

Fig. 3.

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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INSTRUMENT FOR DESCRIBING ARCS OF CIRCLES.

No. 915,926. Specification of Letters Patent. Patented March 23, 1909.

Application filed September 24, 1908. Serial No. 454,577.

To all whom it may concern:

Be it known that I, ALONZO W. ALLEN, citizen of the United States, residing at Streator, in the county of Lasalle and State of Illinois, have invented new and useful Improvements in Instruments for Describing Arcs of Circles, of which the following is a specification.

My present invention relates to instruments for describing arcs of circles without the use of a central point; and it consists in the peculiar and advantageous instrument hereinafter described and particularly pointed out in the claims appended.

In the drawings, accompanying and forming part of this specification: Figure 1 is a plan view illustrating the three members of my novel instrument as the same appear when properly arranged in the first instance relative to a cord line from which the arc of a circle is to be drawn, and also showing by dotted lines the adjustment of the marker-carrying bar of the major member that is resorted to when it is desired to draw a line parallel to the arc of the circle. Fig. 2 is an enlarged vertical section taken through the major member of the instrument in the plane indicated by the line 2—2 of Fig. 1. Fig. 3 is a section taken through one of the auxiliary members of the instrument in the plane indicated by the line 3—3 of Fig. 1. Fig. 4 is a detail cross-section on line 4—4 of Fig. 1. Fig. 5 is a detail side elevation of the forward portion of the marker-carrying bar.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which:

A is the major member of my improved instrument, and B B are the auxiliary members; the said auxiliary members being formed of steel or other suitable material and being each provided with a point *a* and with two (more or less) depending barbs *b*. The major member A comprises a longitudinally slotted bar *c*, and two arms *d* d^3. The bar *c* terminates at its forward end in an upwardly extending portion *e* on which is a vertically-disposed sleeve *f*, having opposite notches *g*; and in the said sleeve *f* is a vertically-movable plunger *h* which has opposite studs *i* disposed in the notches *g*, and also has in its lower end a socket *j* to receive the shank of a marker-holder *k* which is removably secured in said socket *j* by a set screw *l*. The upper end of the plunger *h* is reduced and threaded, as indicated by *m*, for the engagement of a tubular cap *p* and inclosed in the said cap and interposed between the top of the same and the upper end of the sleeve *f* is a coiled spring *r* which has for its office to yieldingly support the cap *p* and the plunger *h* in the position shown in Fig. 3. Thus it will be seen that the marker in the holder *k* (which marker may be a pencil, as shown, a pen or the like) is normally maintained above the surface on which the instrument is placed, and yet by simply pressing downwardly on the cap *p* the marker may be carried into contact with said surface. When, however, the cap *p* is relieved of pressure, it will be observed that the spring *r* will operate to raise the cap *p*, the plunger *h* and the marker-holder *k*, and will then yieldingly maintain said parts in their raised position as before described.

The arm *d* of the major member A is provided at its inner end with an enlargement *s* in which is a slot *t* and on which is a protractor *u*, subdivided into degrees. The arm d^3 of said member A is provided at its inner end with an enlargement *v*, having a slot *w* and a pointer *x*; the latter to coöperate with the before mentioned protractor *u*. Said arm d^3 is also provided at its underside with a rib *y*, Fig. 4, the office of which is to bear on the surface on which the instrument is placed with a view of supporting the arm d^3 in a horizontal plane parallel to that of the lower surface of arm *d*. The arms *d* and d^3 are pivotally connected together in the manner shown in Fig. 2—that is to say through the medium of a pin having a head *a'*, disposed under the arm *d*, and also having a circular shank portion *b'* disposed in said arm *d*, and an angular shank portion *c'* disposed in an angular aperture *d'* in the arm d^3 and further having a threaded socket *e'*, a washer *f''* arranged above the arm d^3 and below the marker-carrying bar and having an angular aperture receiving the angular shank portion *c'* of the pin, and a screw having a head *g'* which bears on the marker-carrying bar, and also having a threaded shank *h'* disposed in the threaded socket *e'* of the pin. Thus it will be seen that when the screw is loosened the marker-carrying bar may be adjusted in the direction of its length on the shank *h'*. The arms *d* d^3 are adjustably fixed together through the me-

dium of a pin having a head k' disposed under the arm d and an angular shank portion l disposed in the slots t and w of the arms $d\,d^3$, respectively, and also having a threaded socket m', a washer n' arranged on the arm d^3 and under the marker-carrying bar, and a screw having a portion o arranged in the slot of the marker-carrying bar, and a threaded shank p' extending into the threaded socket m' of the pin and also having a head r', larger in diameter than the portion o, disposed above the marker-carrying bar. The portion o of the screw is of a diameter to bear against the upper side of the washer n' and enable the screw to clamp the arms $d\,d^3$ between the washer n' and the pin head k' disposed under the arm d. Thus it will be seen that when the arms $d\,d^3$ are adjustably fixed together, and it is desired to adjust the marker-carrying bar horizontally, it is not necessary to loosen the screw having shank p' and head r'; the space between the washer n' and the screw head r', when the arms $d\,d^3$ are clamped between washer n' and head k', being, of course, sufficient for the free horizontal movement of the marker-carrying bar. On the other hand it is simply necessary to loosen the screw having the head g' when the marker-carrying bar may be expeditiously and easily moved forward or backward and may then be adjustably fixed with respect to the arms $d\,d^3$ by simply tightening the screw having the head g'.

In the practical use of the instrument, the auxiliary members B are, by the embedding of their barbs b in the paper or other surface on which the arc is to be described, fixed in position with their points located at the ends of the cord line, indicated by M, and after the arms $d\,d^3$ of the major member A are adjusted to the required degree—*i. e.*, to determine the radius of the arc—the said arms $d\,d^3$ are placed against the points of the members B, Fig. 1, and are moved against said points after the manner shown in Fig. 1 to move the marker, which is of course at such time depressed, from one end to the other of the cord line M and thereby describe the arc. After the arc is described, if it is desired to make one or more lines parallel with the arc the same may be readily accomplished by adjusting the marker-carrying bar forwardly and then manipulating the major member A as before.

The construction herein illustrated and described constitutes the best practical embodiment of my invention of which I am cognizant, but it is obvious that in the future practice of the invention such changes or modifications may be made as fairly fall within the scope of my invention as defined in the claims appended.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:

1. An instrument for the purpose described, comprising means for affording bearing points at the ends of a cord line, and a member comprising arms pivotally connected together and adapted to be arranged and moved against the said bearing points, a marker, and a marker-carrying bar connected and movable with the arms and adjustable lengthwise thereon to carry the marker toward and from the said pivotal connection between the arms.

2. An instrument for the purpose described, comprising means for affording bearing points at the ends of a cord line, a member comprising arms adapted to be arranged and moved against the bearing points, means pivotally connecting said arms together, means for adjustably fixing the arms with respect to each other, marking means, and a bar carrying said marking means and engaged with and adjustable with respect to said means pivotally connecting the arms together and said means for adjustably fixing the arms with respect to each other.

3. An instrument for the purpose described, comprising means for affording bearing points at the ends of a cord line, and a member comprising arms pivotally connected together by means including a set screw and adapted to be arranged and moved against said bearing points; one of said members having a protractor and the other having a pointer, means for adjustably fixing the arms with respect to each other, and a slotted bar carrying a marker and engaged by the means for adjustably fixing the arms with respect to each other and adapted to be adjustably fixed by the said set screw.

4. In an instrument for the purpose described, the combination of a vertically disposed sleeve, a plunger movable endwise and held against turning in the sleeve and adapted to carry marking means, a tubular cap secured on the plunger and movable on the sleeve, and a coiled spring inclosed in the cap and interposed between the upper end of the sleeve and the top of the cap.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALONZO W. ALLEN.

Witnesses:
PAUL MENINGER,
THOS. F. HENRY.