

Jan. 25, 1938.

A. P. BARTUSCH

2,106,398

DRAWING INSTRUMENT

Filed May 10, 1935

2 Sheets-Sheet 1

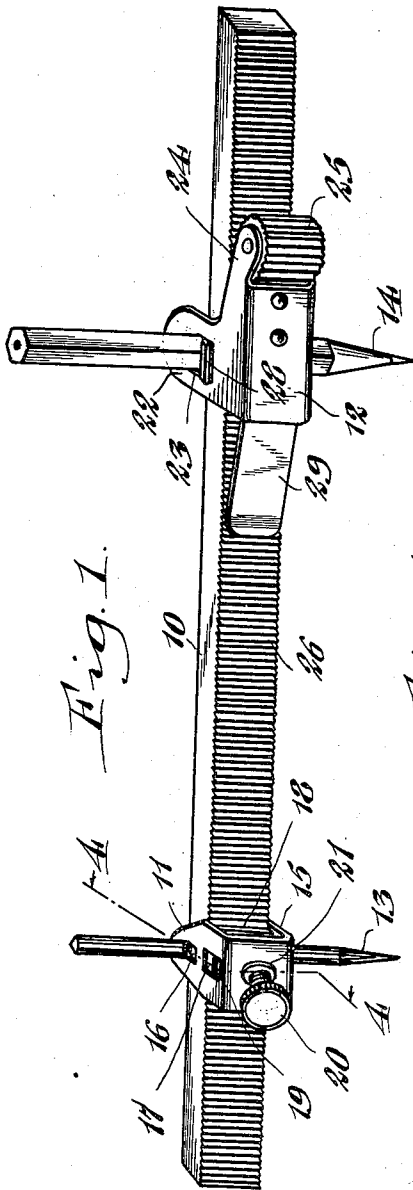


Fig. 1.

Fig. 4.

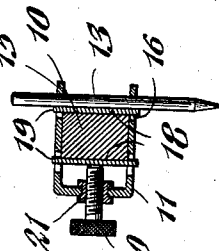


Fig. 3.

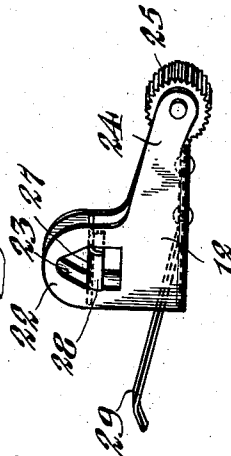
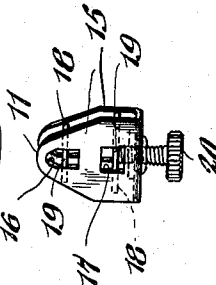


Fig. 2.



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2 Sheets-Sheet 2

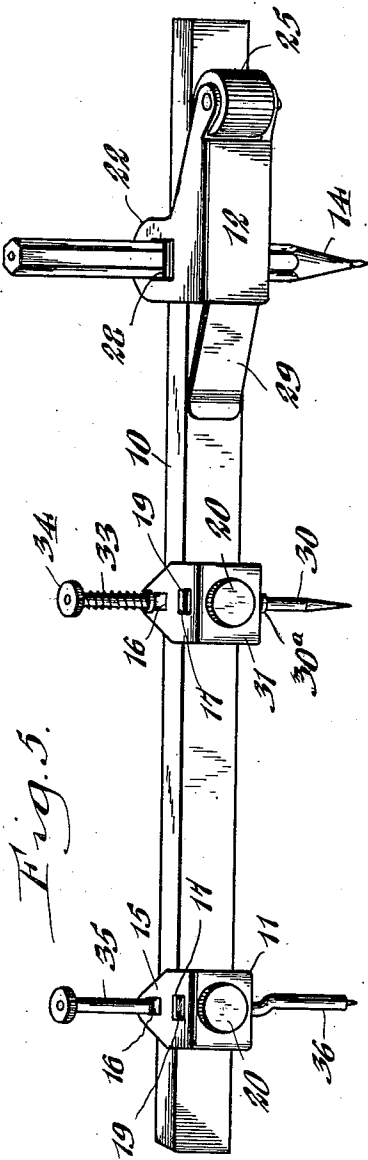


Fig. 5.

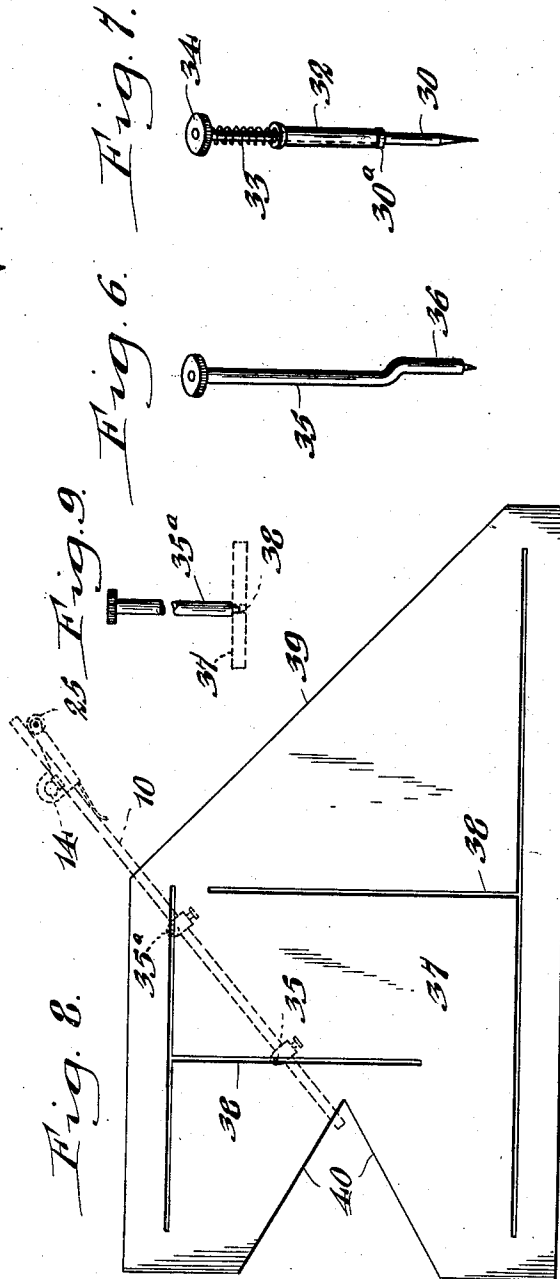
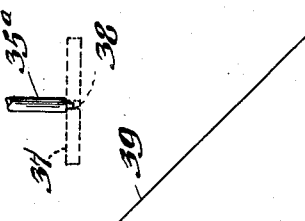
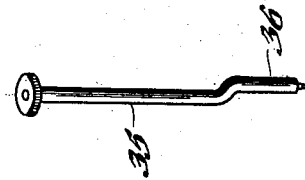
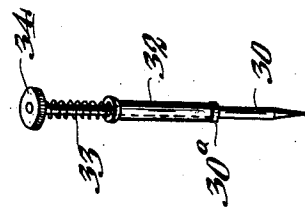


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.



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UNITED STATES PATENT OFFICE

2,106,398

DRAWING INSTRUMENT

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Application May 10, 1935, Serial No. 20,783

5 Claims. (Cl. 33-27)

This invention relates generally to certain new and useful improvements in drafting or drawing instruments but more particularly to an instrument for describing arcs, circles, ellipses and the like.

It has for its primary object to provide a drafting instrument of this character which is so designed and constructed as to afford easy and ready adjustment of its parts with a minimum expenditure of time and effort.

Another object of the invention is the provision of a beam type of compass which is composed of a minimum number of parts and adaptable for use with pen or pencil, or metal scribing tool, which is positive and accurate in operation, and which is inexpensive in construction.

In the accompanying drawings:—

Figure 1 is a perspective view of a drafting instrument embodying my invention. Figure 2 is a detached perspective view of the point or stylus attaching or clamping member. Figure 3 is a similar view of the universal scriber attaching or clamping member. Figure 4 is a cross section taken on line 4—4, Figure 1. Figure 5 is a perspective view of a modified embodiment of my invention. Figures 6 and 7 are detached perspective views of two forms of stylus points. Figure 8 is a plan view of a form of templet which may be used for describing an ellipse with my improved instrument. Figure 9 is a fragmentary elevation of a shouldered stylus associated with the ellipse-describing templet.

Similar characters of reference indicate corresponding parts throughout the several views.

Referring to the embodiment of the invention shown in Figures 1, 2 and 3, 10 indicates the beam of the compass and 11 and 12 adjustable holders upon which the pivot stylus or point 13 and the scribing point 14, either pen, pencil or metal scriber, are mounted, respectively. The pivot stylus holder 11 is preferably in the form of a substantially U-shaped bracket with the side portions or ears 15 embracing the top and bottom sides of the beam 10. The outer ends of the ears project somewhat beyond the adjoining face of the beam and are provided with alining openings 16 for detachably receiving the stylus 13. At their inner ends, adjacent the closed end of the bracket, the ears 15 have similar openings 17. Supported between the bracket-ears for engagement with the opposite sides of the beam 10 are presser-plates 18 having tongues 19 at their upper and lower edges which engage the corresponding alining openings 16 and 17,

respectively, in such ears. The closed end of the bracket 11 is provided with an adjusting screw 20 which engages a threaded opening or nut 21 fitted in the bracket and is adapted to abut against the adjoining presser plate for not only clamping the bracket in a set position of adjustment on the beam 10 but also simultaneously clamping the pivot stylus 13 between the companion presser plate and the opposing ends of the alining openings 16. By loosening the screw, the bracket 11 may be readily adjusted lengthwise of the beam to any given position thereon.

The scribing stylus holder 12 is likewise in the form of a substantially U-shaped bracket embracing the top and bottom sides of the beam 10 and including laterally-projecting ears 22 extending beyond one side of the beam and containing alining openings 23 for the reception of a pen, pencil or like scribing stylus 14. Projecting from the closed end of the bracket lengthwise of the beam, and constituting extensions of the ears 22, are bearing arms 24 which constitute a support for a roller 25 disposed for rolling contact with the beam 10. As shown in Figure 1, this roller may be toothed and the beam 10 may be provided with similar teeth 26, the roller serving as a means for propelling the holder to a desired position of adjustment along the beam and effectually preventing slippage of the holder out of its adjusted position. The openings 23, as clearly shown in Figure 3, are preferably substantially square at their inner ends while their outer ends are substantially in the shape of an acute angle. Supported between the bracket ears 22 for engagement with the adjoining side of the beam is a reversible presser plate 27 having laterally bent lips 28 at its top and bottom edges which extend through the alining openings 23 and overhang the adjoining portions of such ears. The scribing stylus 14 is adapted to be clamped between this presser plate and the opposing ends of the openings 23. A flat spring 29 is secured at one end to the closed end of the bracket 12 and bears at its free end on that side of the beam 10 opposite to that bearing the presser plate 27, such spring functioning to urge the bracket in a lateral swinging direction about the bearing roller 25 to effectually clamp the bracket to the beam and the scribing point to the bracket. In Figures 1 and 3 the presser plate is disposed to clamp a pencil or like large-sized scriber; for clamping a smaller diameter scriber, the plate 27 is reversed with its lips 28 facing outwardly to correspondingly

reduce the size of the clamping opening and yet retain the same clamping tension on the parts.

When using my improved drafting instrument for making ellipses or approximate ellipses, I use a second or supplementary stylus or pivot point 30 which is disposed between the stylus pivot 13 and the scribing point, 14, and which is mounted on a holder or bracket 31 adjustable lengthwise of the beam 10 between the holders 11 and 12, respectively, as shown in Figure 5. The holder 31 is identical in construction to that of the pivot-stylus holder 11 but its pivot point 30 is yieldably mounted in its holder for selective axial projection into and out of a plane intersecting that of the pivot and scribing styluses 13 and 14, and for this purpose said pivot stylus 30 is axially slidable in a sleeve 32 adapted to be clamped to the bracket 31 in the same manner as the pivot stylus 13 is clamped in its bracket 11. The stylus has a shoulder 30a thereon which abuts the lower end of the sleeve in the elevated position of the stylus. A spring 33 coiled about the pivot stylus between the top of the sleeve and a collar 34 on the stylus serves to normally hold the stylus in its elevated position above a plane intersecting the styluses 13 and 14. When drawing an ellipse, the yieldable pivot stylus 30 functions, during the making of a given arc of the ellipse, as a finder or locator for the center of the next adjoining arcs of the ellipse. For example, when, during the describing of an ellipse-arc from the minor axis, the pivot stylus 30 intersects the major axis such stylus is depressed to locate the center for describing the intersecting end arcs, after which the instrument is tipped downwardly at its scriber end to bring the scriber into contact with the sheet on which the ellipse is being drawn and at the same time elevate the opposite pivot-stylus end clear of such sheet.

In Figure 6 and at the left hand end of Figure 5, I have shown a modified form of pivot stylus 35 whose lower shouldered or pointed end is offset to provide a crank arm 36 which brings the point at one side of the axis of the stylus shank. By this construction, upon turning the shank in its holder, the pointed crank end 36 may be lined up as desired with either the scribing stylus 14 or with the companion pivot stylus 30. If desired, however, the pivot stylus may be in the form of a straight shank 35a with a shouldered point, as seen in Figure 9.

In using the instrument depicted in Figure 5 for making an ellipse, the major and minor axes thereof are drawn and then suitably marked to indicate the length and width of the ellipse, after which the respective pivot styluses 35 and 30 are adjusted on the beam 10 relative to the scribing stylus 14, at such distances from the latter equal to the major and minor radii of the respective side and end arcs of the ellipse in question. The fixed stylus 35 or 35a is first placed on the minor axis with the scribing stylus coinciding with one of the indicating marks thereon, to describe one of the side arcs of the ellipse intersecting such axis and when the yieldingly suspended pivot stylus 30 intersects the major axis, such point is depressed to locate the centers for describing the end arcs of the ellipse, which are thereupon drawn about said pivot stylus 30. This process is continued until the ellipse is completed.

In Figure 8 I have shown a templet for use in drawing an ellipse with my drafting instrument using two fixed pivot styluses 35 or 35a. To this end a templet card 37, preferably of transparent material, is provided having a T-shaped slot 38

therein, the branches of the slot representing the major and minor axes of the ellipse. In using this templet, the shouldered stylus points travel in a definite relation in the vertical and horizontal portions of the slot to complete one side of the ellipse, as depicted by dotted lines in Figure 8, after which the templet is reversed and the same process carried on to complete the opposite side of the ellipse. In its preferred form, this templet is provided with two such T-shaped slots 38 having branches of different lengths for use in describing ellipses of different sizes and it will be noted that the horizontal slot-branches adjoin the top and bottom edges of the templet and terminate at their ends short of the side edges of the templet so that the scribing point 14 clears the latter during substantially small drawing of the ellipse. The upper and lower edges of the templet are straight and parallel to abut a T-square, and as indicated at 39 and 40, this templet may be provided at its side edges with angles for use in drawing hexagon nuts, threads and the like.

I claim as my invention:—

1. A drafting instrument for describing ellipses, comprising a beam having holders thereon for a pivot stylus and a scribing stylus, and a supplementary holder adjustable lengthwise of the beam relative to and between said first-named holders and having a selective pivot stylus thereon adjustable axially to and from a pivot contacting position.

2. A scribing instrument for making ellipses, comprising a beam having holders thereon for a pivot stylus and scribing stylus, a supplementary holder adjustable lengthwise of the beam relative to said first-named holders and having a selective pivot stylus thereon adjustable axially to and from a pivot contacting position, and a spring for normally holding the supplementary pivot stylus at an elevation above that of the first-named pivot stylus.

3. A scribing instrument, comprising a beam having a pivot stylus thereon, one side of the beam having teeth thereon, and a holder for a scribing stylus adjustable lengthwise of said beam, said holder having means thereon for detachably receiving a scribing point, a toothed roller on the holder engaging the beam teeth, and means yieldingly urging said holder to swing laterally about said roller as a pivot to clamp it and its scribing point in a set position of adjustment.

4. A drafting instrument for describing ellipses, comprising a beam having a holder for a scribing stylus, and two pivot stylus holders mounted on said beam at one side of the scribing stylus holder and adjustable lengthwise thereof relative to each other and to said scribing stylus holder, the pivot of one holder being used when describing the sides of the ellipse and the pivot of the companion holder being used when describing the ends of the ellipse, the pivot stylus of such companion holder being axially adjustable therein to bring it into a contacting plane of use and to an elevated position clear of the contacting planes of the other pivot stylus and the scribing stylus.

5. A drafting instrument for describing ellipses, comprising a beam, a holder for a scribing stylus adjustable lengthwise of said beam, a toothed roller on the holder in bearing contact with said beam, means yieldingly urging said holder to swing laterally about said roller as a pivot to clamp it in a set position of adjustment, and two pivot stylus holders mounted on said

beam at one side of the scribing stylus holder and adjustable lengthwise thereof relative to each other and to said scribing stylus holder, the pivot of one holder being used when describing the sides of the ellipse and the pivot of the companion holder being used when describing the ends of the ellipse, the pivot stylus of such com-

panion holder being axially adjustable therein and having a spring in engagement therewith normally urging it to an elevated position clear of the contacting planes of the other pivot stylus and the scribing stylus.

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