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ELLIPSOGRAPH

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3 Claims. (Cl. 33—31)

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This invention relates to improvements in ellipsographs.

An object of the invention is to provide a device that may be used to accurately draw or cut true ellipses which is highly advantageous in that the construction is relatively simple having comparatively few moving parts and which may be easily and quickly adjusted to draw an accurate ellipse with respect to the center of the ellipse, the major and minor axes of the ellipse being either assumed or known.

Another object of the invention is to provide an ellipsograph which is adjustable so that any size of ellipse from virtually a point to the maximum size of the instrument can be easily and accurately drawn.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a top plan view of the ellipsograph embodying the present invention, parts being broken away and shown in horizontal section, the ellipsograph being shown in that position wherein it is being adjusted for the minor axis of the ellipse;

Fig. 2 is a view similar to Fig. 1, the parts being shown wherein the instrument may be adjusted for the major axis of the ellipse;

Fig. 3 is a vertical section taken substantially upon the line 3—3 upon Fig. 2;

Fig. 4 is a partial view in vertical section taken substantially upon the line 4—4 upon Fig. 2;

Fig. 5 is a vertical section taken substantially upon the line 5—5 upon Fig. 3;

Fig. 6 is a partial vertical section taken substantially upon the line 6—6 upon Fig. 3; and

Fig. 7 is a diagram to illustrate a methematical proof of the accuracy of the improved ellipsograph.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved ellipsograph comprises a rectangular base generally indicated at 10 having opposed sides 11 and 12 connected by ends 13 and 14. The opposed faces of the sides 11 and 12 are grooved as indicated at 15 so as to slidingly receive the side edges of a rectangular slide 16. The ends 13 and 14 are disposed above the tops of the grooves 15 as clearly shown in Fig. 3 so that the ends will not interfere with the sliding movement of the slide 16 but will permit the ends of the slide 16 to pass therebe-

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neath if occasion requires. The grooves 15 which slidingly receive the side edges of the slide 16 constitute one guide means on the base 10. A second guide means on the base is arranged at right angles thereto and is provided by a stationary bridging crosshead 17 that extends across the base over the slide 16 and has a groove 18 formed on its under side.

Within the slide 16 two tangentially arranged circular openings are provided indicated at 19 and 20. These openings are preferably flanged as indicated at 21, the flanges serving to slidably support two rotors 22 and 23. The two rotors 22 and 23 are preferably in the form of equal-sized gears having gear teeth 24 which mesh with each other at the point of tangency so that when one rotor, such as the rotor 22, is forcibly rotated relatively to the slide 16 the other or driven rotor 23 will be driven and caused to rotate at the same rate and in the opposite direction. The two rotors 22 and 23 are confined or retained on their flanges 21 in their respective openings by means of retainers 25. On the rotor 23 there are supports 26 and 27 for rotatably supporting an adjusting screw 28. This adjusting screw is provided with an adjustable nut 29 carrying an upstanding pin 30 that rotatably extends into a slide 31 that is slidable in the groove 18 of the stationary crosshead 17. The rotor 22 has a radially extending slot 32 formed that extends from one side of the center of this rotor to a point adjacent its periphery. Hinge knuckles 33 are provided on the rotor 22 so that a stylus supporting arm 34 may be hingedly mounted thereon, such as by a hinge pin 35. The arm 34 serves to rotatably support an adjusting screw 36 which is threaded through a nut 37 that is slidable between spaced guides 38 and 39 provided by the arm. The nut 37 carries a stylus 40 that extends downwardly through the slot 32 when the arm 34 is in the position shown in Fig. 3. The stylus may be merely a pencil lead, a pen, a steel scribe, or it may even be a cutter, such as for example an oxy-acetylene cutting torch. The hinge connection afforded by the hinge pin 35 enables the arm 34 to be swung into a position wherein the stylus, whatever its form may be, can be adjusted or replaced. Preferably, the arm 34 carries a suitable knob or handle 41 by which the rotor 22 can be rotated about its center relatively to the slide 16. If desired, the arm 34 may be equipped with graduations 42 arranged to be traversed by a pointer 43 on the nut 37 so that the distance that the stylus is from the center of the rotor 22 can be read or ascertained therefrom. In a similar manner, the rotor 23 may be equipped