C. SCHREIBER.

ELLIPSOGRAPH.

APPLICATION FILED JAN. 7, 1908.

905,107. **Patented Nov. 24. 1908.**

Fig. 1.

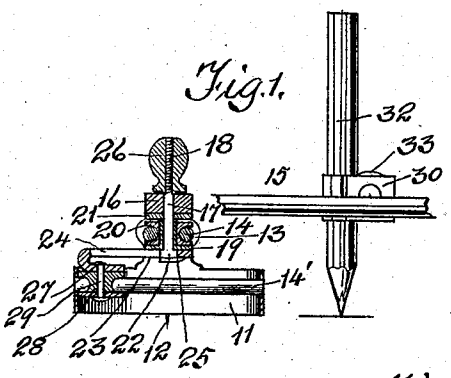


Fig. 2

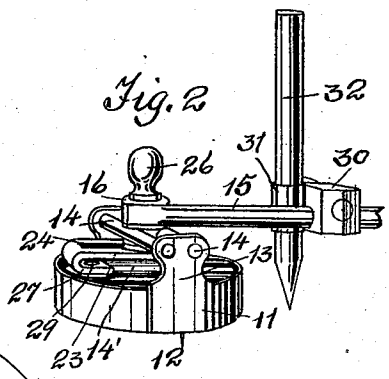


Fig. 3.

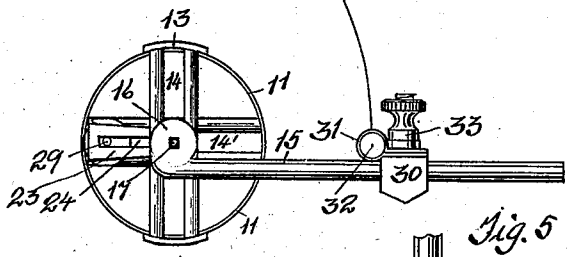


Fig. 6.

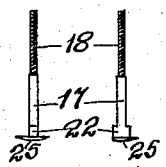


Fig. 7.



Fig. 9.

Fig. 5

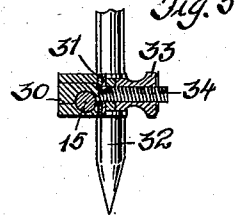


Fig. 8

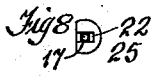


Fig. 10.

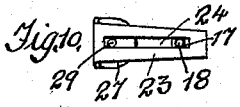
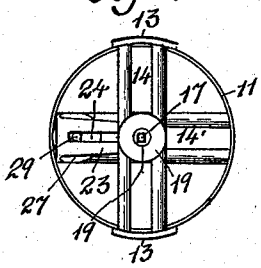


Fig. 4.



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ELLIPSOGRAPH.

No. 905,107. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed January 7, 1908. Serial No. 409,669.

To all whom it may concern:

Be it known that I, CARL SCHREIBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ellipsographs, of which the following is a specification.

The object of this invention is to provide an ellipsograph capable of producing a complete and unbroken ellipse, which will be of such light and simple construction that it can be carried as a constituent part of an ordinary draftsman's outfit but which will have a considerable range of adjustment, which renders it peculiarly efficient for ordinary draftsman's usage.

Ellipsographs of previous constructions have usually been so cumbersome and complicated as to render them too expensive for ordinary usage except under peculiar conditions. In like manner their size and complex character have unfitted them for the frequent manipulation and adjustment ordinarily required in drafting work.

The ellipsograph of the present invention, in size, appearance, and manner of manipulation, closely resembles drafting tools of the style usually employed in making mechanical drawings, so that any draftsman, having reasonable skill in the use of drafting tools generally, can readily manipulate the instrument of the present invention.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a sectional elevation of the instrument, showing the swinging arm and inscribing instrument in elevation; Fig. 2 a perspective view of the instrument; Fig. 3 a top or plan view of the same, showing the adjusting thumb screw removed; Fig. 4 a similar view, showing the swinging arm removed; Fig. 5 a sectional detail, showing the clamp for holding the inscribing instrument; Figs. 6, 7, and 8, details of the main supporting post; Fig. 9 a detail, showing the bearing collar surrounding such post; and Fig. 10, a plan view of the slotted guide arm.

The instrument comprises a frame 11, in the form of a circular ring adapted to rest with its lower edge upon the paper to be inscribed. The ring has, at opposite points in its periphery, a pair of pointed pins 12, adapted to pierce into the paper in order to hold the frame firmly in position. The frame has upwardly extending from opposite sides thereof a pair of ears 13, which ears serve as a mounting for an upper transverse guideway 14, which comprises a pair of round parallel rods or bars having their ends entered into and held within the upwardly extending ears. The upper guideway coöperates with a lower guideway 14′ similarly formed, which extends in transverse relation with respect to the upper guideway, the ends of the rods or bars forming the lower guideway being entered into and rigidly held within the frame ring itself.

The guideways serve to direct the movement of a swinging arm 15, which terminates, at its inner end, in a laterally projecting disk-shaped head 16, through the center of which projects a squared post 17, terminating at its upper end in a threaded stud 18. The post passes through a bushing 19, which provides a bearing for a grooved guide wheel 20, which wheel is adapted to travel back and forth between the rods comprising the upper guideway. Between the head 16 and the top of the wheel is a washer 21, which rests upon the upper end of the bushing, so that there will be no frictional contact of any of the bearing portions with the upper face of the wheel. The lower end of the post 17 is widened to provide a flat head 22, which is adjustable within a slot 24 in an arm 23, which projects outwardly from the post 17 in parallel relation with the swinging arm 15. The lower end 25 of the post 17 is upset to provide a bearing for the lower face of the slotted arm, and the pitch of the instrument can be regulated by unscrewing a thumb nut 26 on the end of the threaded stem 18 and thereafter adjusting the main post to a suitable position within the slotted arm. The slotted arm, at its outer end, is given a **U** formation to provide a mounting 27 for a lower grooved guide wheel 28, which is adapted to travel between the rods or bars comprising the lower guideway. The lower guide wheel is mounted upon a journal pin 29 which extends downwardly from the inwardly turned mounting 27. The formation of the outer end of the slotted arm is such that the upper guide wheel can be moved to a position in which its axis will be immediately above the axis of the lower guide wheel, in which position of coincidence the instrument will inscribe a circle.

The swinging arm has slidably mounted thereon an adjustable block 30, to the forward face of which is secured a split ring clamp 31 adapted to receive the shank of an inscribing instrument 32 in the form of a pen or pencil, which split ring clamp is adapted to be locked by the compression of a thumb nut 33 carried by a threaded stem 34 which outwardly projects from the slidable block 30.

In inscribing ellipses with the instrument of the present invention it is first necessary to adjust the main post within the slotted arm to such a position that the distance between the axes of the upper and lower guide wheels will be equal to the difference in length between the major and minor radii of the intended ellipse. Thereafter the instrument should be positioned with the points 12 in alinement with the minor axis of the ellipse, and the inscribing instrument adjusted to contact the paper surface. Thereafter, by compressing the frame of the instrument with sufficient firmness to prevent wabbling, a continuous and perfect ellipse can be inscribed without taking the point of the inscribing instrument away from the paper and without shifting or changing the position of the frame. The instrument is of such extreme simplicity that it can be manufactured and assembled so cheaply as to make it an instrument of everyday employment by draftsmen. The circular formation of the framework and the arrangement of the guide rods insures great rigidity and steadiness and at the same time provides a compact and easily manipulated instrument.

What I regard as new and desire to secure by Letters Patent is:

1. An ellipsograph comprising a frame, an upper guideway and a lower guideway spaced one above the other and secured to the frame in transverse relation to one another, a main post extending above and below the upper guideway, an inscribing arm mounted upon the main post above the upper guideway, and extending outside the circumference of the frame at all points in its orbit of travel, an inscribing instrument carried by said arm at a point to clear the frame, a secondary arm mounted upon the main post between the upper guideway and the lower guideway, an upper guide member carried by the main post and traveling in the upper guideway, and a lower guide member carried by the secondary arm and traveling in the lower guideway, substantially as described.

2. An ellipsograph comprising a frame, an upper guideway and a lower guideway spaced one above the other and secured to the frame in transverse relation to one another, a main post extending above and below the upper guideway, an inscribing arm mounted upon the main post above the upper guideway, and extended outside of the circumference of the frame at all points in its orbit of travel, an inscribing instrument carried by said arm at a point to clear the frame, a secondary arm mounted upon the main post between the upper guideway and the lower guideway, an upper guide member carried by the main post and traveling in the upper guideway, a lower guide member carried by the secondary arm and traveling in the lower guideway, and means for securing the upper guide member in different positions of adjustment, substantially as described.

3. An ellipsograph comprising a frame, upper and lower guideways secured to the frame, a main post extending vertically through the upper guideway, an inscribing arm mounted on the main post, and extended outside of the circumference of the frame at all points in its orbit of travel, an inscribing instrument carried by said arm at a point to clear the frame, an upper guide wheel rotatably mounted on the main post and adapted to travel within the upper guideway, a secondary arm provided with a slot within which the main post is adapted to be adjusted, and a lower guide wheel carried by the secondary arm and adapted to travel within the lower guideway, substantially as described.

4. An ellipsograph comprising a frame, upper and lower guideways secured to the frame, a main post extending vertically through the upper guideway, an inscribing arm mounted on the main post, and extended outside of the circumference of the frame at all points in its orbit of travel, an inscribing instrument carried by said arm at a point to clear the frame, an upper guide wheel rotatably mounted on the main post and adapted to travel within the upper guideway, a secondary arm provided with a slot within which the main post is adapted to be adjusted and provided at its end with a reversely extending portion providing a space for allowing the end of the main post to be moved thereinto, a journal pin depending from the reversely extending portion of the arm, and a lower guide wheel journaled on said pin and adapted to travel within the lower guideway, substantially as described.

5. An ellipsograph comprising a frame of ring-shaped formation, upper and lower guideways in the form of transversely extending parallel rods having their ends secured to the frame, the guideways being at right angles with respect to one another, a main post having a threaded stem on its upper end extending between the upper guideways, a thumb nut on the stem to hold the post in adjusted position, an inscribing arm rigidly mounted on the upper end of the post, an upper guide wheel journaled

upon the post and adapted to travel between the bars comprising the upper guideway, a secondary arm provided with a slot and adapted to receive the lower end of the main post and having a reversely extending member secured to its outer end, a space being provided for the reception of the lower end of the post when adjusted to a position of axial coincidence, and a lower guide wheel journaled to the under side of the reversely extending portion of the slotted arm and adapted to travel between the arms comprising the lower guideway, substantially as described.

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