

C. E. DEXTER.
ELLIPSOGRAPH.
APPLICATION FILED JUNE 8, 1908.

932,768.

Patented Aug. 31, 1909.

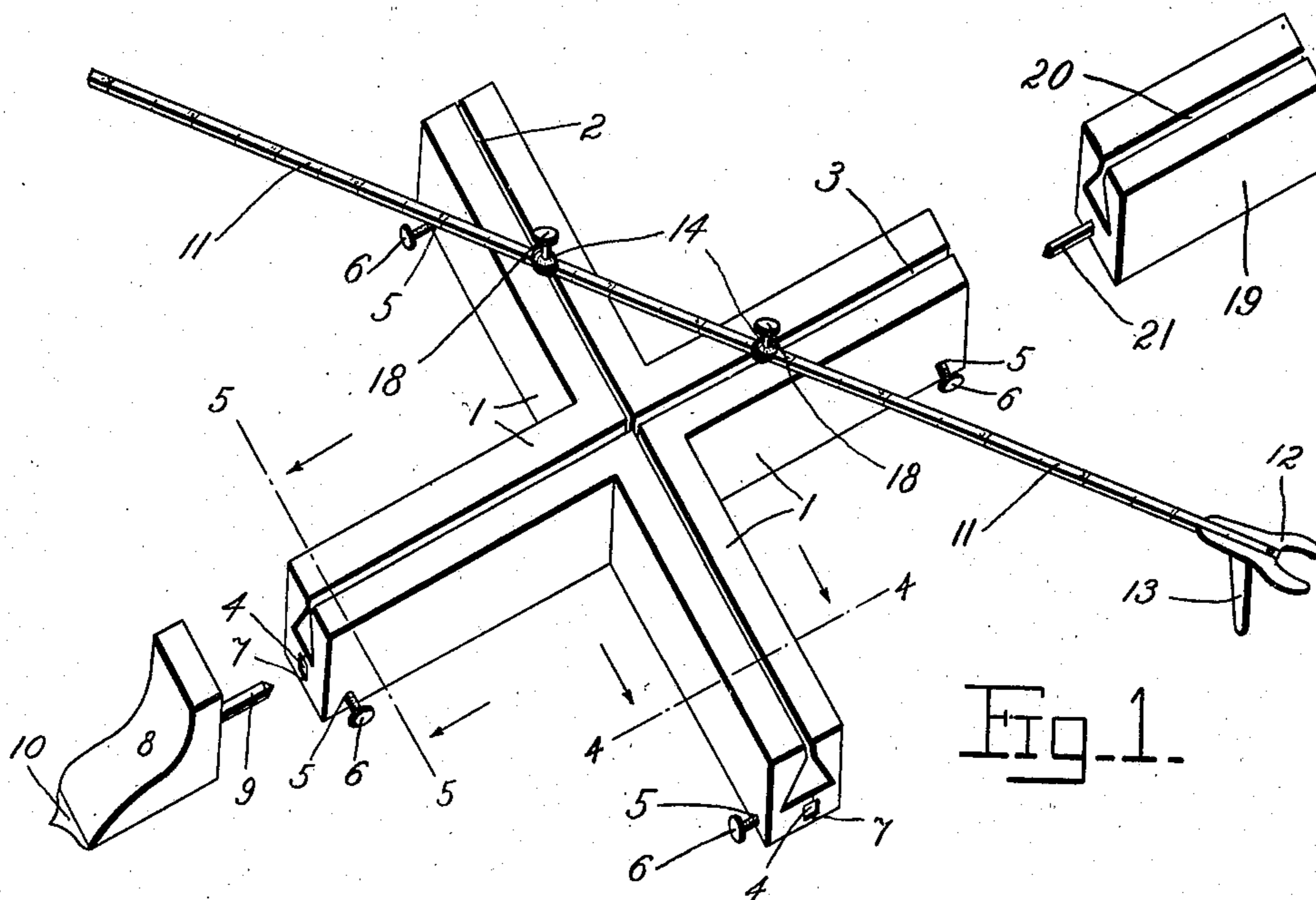


Fig. 1.

Fig. 4.

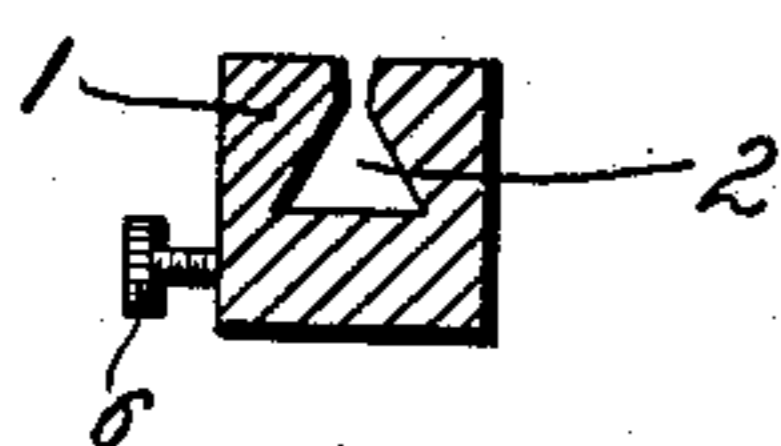


Fig. 2.

Fig. 3.

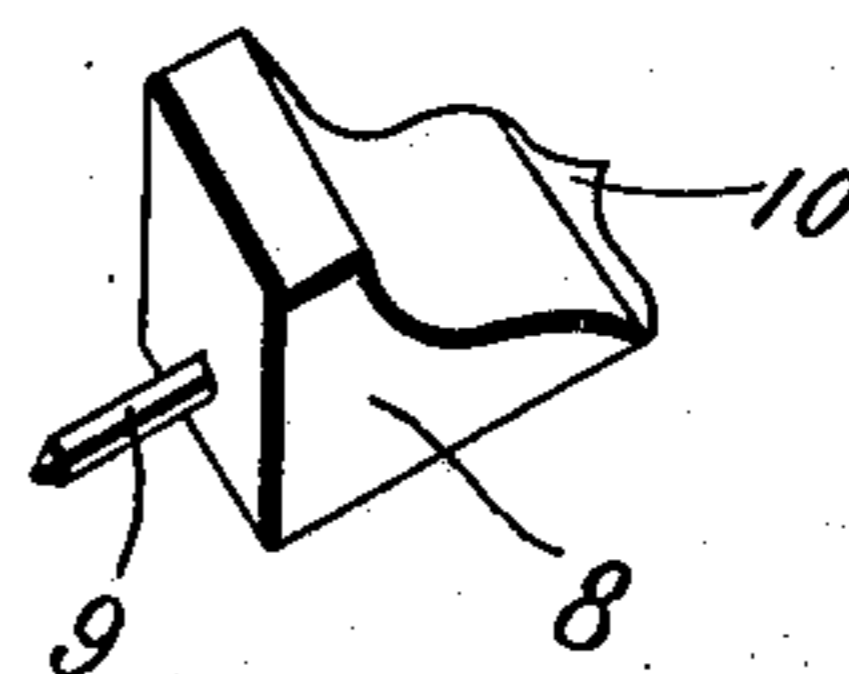
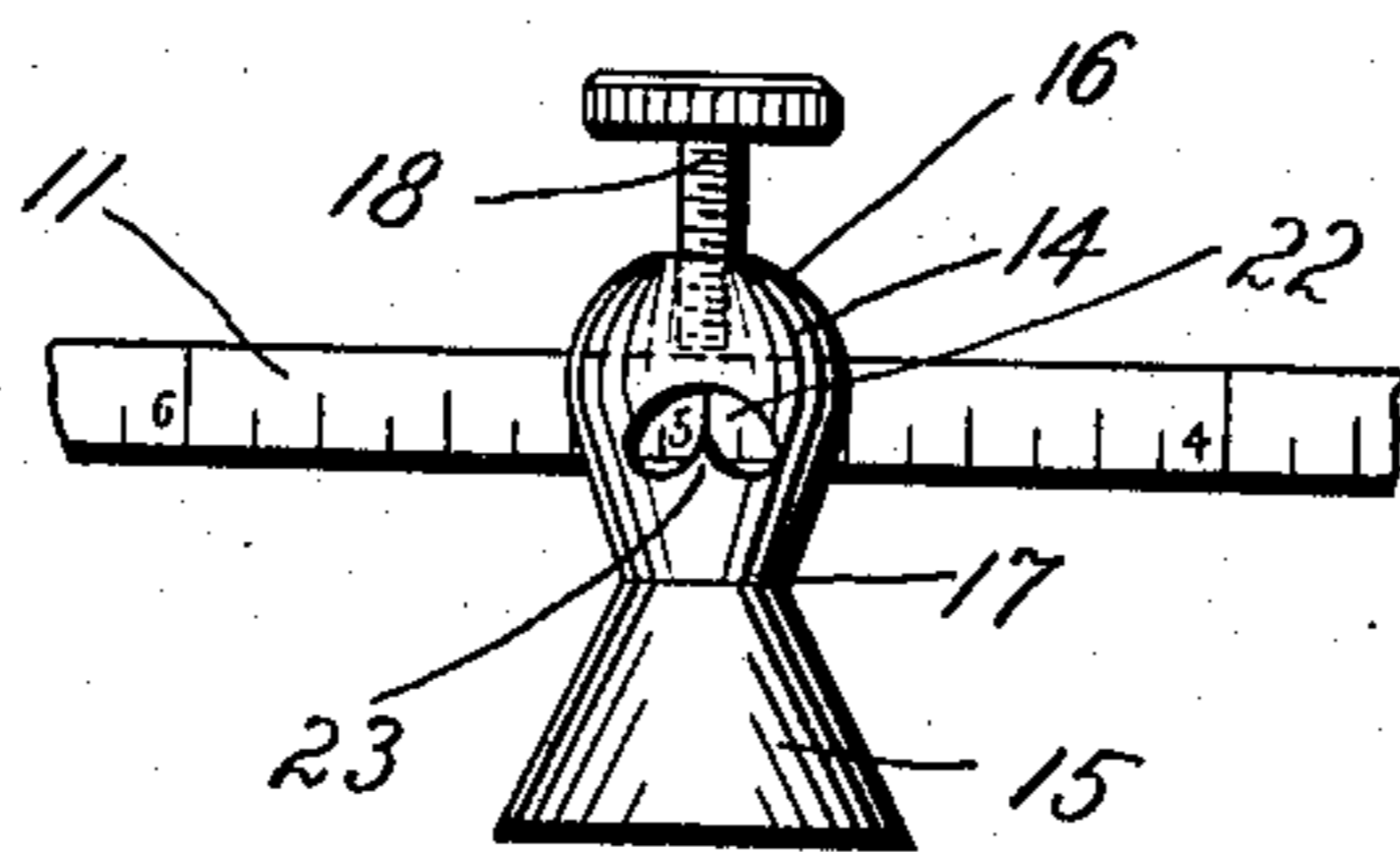
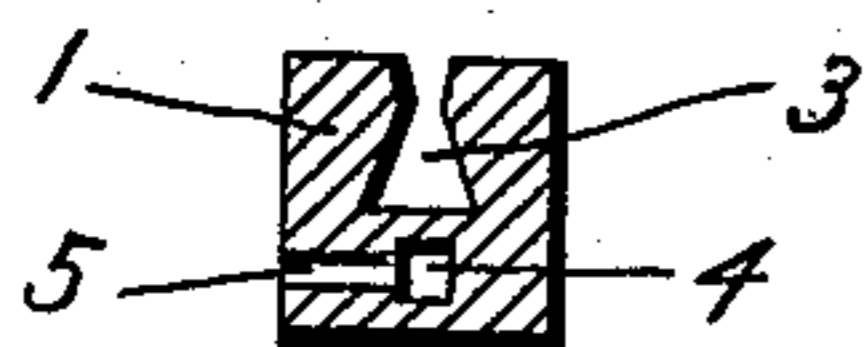


Fig. 5.



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ELLIPSOGRAPH.

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To all whom it may concern:

Be it known that I, CHARLES E. DEXTER, a citizen of the United States, residing at Hampton, in the county of Elizabeth City, State of Virginia, have invented certain new and useful Improvements in Ellipsographs; 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 relates to improvements in ellipsographs, and it has for its principal object the provision of an exceedingly simple and inexpensive drawing instrument by means of which ellipses of various degrees of curvature may be quickly and accurately described.

To this end, the invention, briefly described, comprises a cruciform body portion or trammel, the arms of which are longitudinally grooved, and a beam or marker-carrying arm provided with a pair of slidable clamps whose position upon the beam may be adjusted at will, said clamps including angular bases which fit in the grooves above-mentioned.

The invention resides especially, however, in the provision of an instrument designed for accurately describing ellipses, the position of whose axes is definitely known, and with this object in view, the end face of each arm has formed therein an inwardly-extending longitudinal opening the principal vertical longitudinal plane of which coincides with the like named plane of the arm, directly below which opening is etched a short line which bifurcates the lower edge of said face, one of said openings (preferably that one which is formed in the lower vertical arm) being arranged to receive a finger formed upon the inner face of a holder whose outer face is provided with a pointer, it being thus possible to dispose the instrument with absolute accuracy with respect to the known lines which are to serve as the axes of the ellipse.

The invention still further resides in the particular construction of the clamps carried by the beam, and in the specific device employed in connection with the beam for retaining the marker, *i. e.*, the pen or pencil in place during the movement of the beam.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which corresponding parts are des-

ignated by the same reference numerals throughout the several views.

Of the said drawings, Figure 1 is a perspective view of the complete invention. 60 Fig. 2 is an enlarged detail view of one of the clamps carried by the beam. Fig. 3 is a perspective view of the holder. Figs. 4 and 5 are transverse sections taken respectively on the lines 4—4 and 5—5 of Fig. 1. 65

Referring more particularly to the drawings, 1 designates generally the body portion of the instrument, which, as shown, has a cruciform shape, the upper face of the body portion having formed therein a pair 70 of grooves 2 and 3 which intersect each other at right angles and are arranged longitudinally of the four arms of which said body portion consists. The inner or base portions of the grooves above referred to 75 are triangular in cross section, the grooves opening through the end faces of the arms as shown in Fig. 1. Directly below the bottom wall of each groove, and disposed in the central vertical longitudinal plane of 80 the corresponding arm is an inwardly-extending opening 4 which is angular in cross section and communicates at its inner end with a threaded passage 5 which opens outwardly through one or the other of the side 85 faces of the arm and is adapted to receive the stem of a screw 6. The end face of each arm is further provided with a vertical division line 7 which is etched or otherwise marked thereon and is located directly below 90 the corresponding opening 4, the lower end of each line bifurcating the lower edge of the end face upon which it is indicated. The division lines above referred to are formed at right angles to the lower edges of said 95 end faces and for this reason coincide with the axes of the corresponding arms. The body portion of the instrument includes in addition a detachable holder 8 which is designed to be connected to that arm of the 100 body portion whose axis coincides with the lower half of the minor axis of the ellipse, the holder having formed upon its inner face, or secured thereto as preferred, a horizontal finger 9 adapted to fit in the opening 105 4 in the arm above referred to, the holder being retained against displacement by means of the adjacent screw 6 whose inner end is brought into binding contact with said finger when the screw is turned in the 110 proper direction. The outer face of the holder is provided with a pointer 10 which pro-

jects forwardly from the lower edge of said face, the terminal of the pointer lying in the plane of the finger, and in consequence, coinciding with the axis of the arm to which the holder is attached. Owing to this disposition of the pointer and to the similar disposition of the division lines 7 upon the end faces of the arms which, together, form the major axis of the instrument, it will be apparent that the latter may be positioned with absolute accuracy with respect to a pair of intersecting lines indicated upon the plotting board and designed to form the axes of the ellipse to be described.

In connection with the body portion above described, there is employed a scale arm or beam 11 whose upper face is graduated as shown, said arm terminating at one end in a claw 12 provided with a depending finger 13. The beam carries a pair of sliding clamps 14 each of which, as shown in Fig. 2, includes a triangular base portion 15 arranged to fit loosely in the lower portions of the cross grooves 2 and 3, an annular upper portion 16 which embraces the beam, and a neck portion 17 which connects said upper and lower portions, the annular upper portion of each slide being provided with a threaded opening in which is fitted the stem of a binding screw 18, the screws being tightened to hold the clamps against displacement when their position upon the beam has been adjusted.

The claw 12 above referred to serves to retain a pencil, pen, or other marking device in vertical position during the movement of the beam, the body portion of the instrument being steadied by the holder which is held firmly by the draftsman who operates the beam with one hand in the usual manner, while he presses upon the holder with the other hand.

The length of the arms of the instrument may be increased by means of joints 19 each of which is provided with a groove 20 having the same cross-sectional dimensions as the corresponding groove 2 or 3, to permit the requisite registration of the grooves when the joints are attached to the body portion by means of the fingers 21 with which their inner faces are provided, said fingers fitting in the openings 4 in the end faces of the arms of the body portion. The joints are held against accidental displacement by means of the screws 6. The fingers 9 and 21 are of such cross section as to permit them to fit tightly in the openings 4.

The groove 2 formed in the arms which constitute the major axis of the instrument has its inner or base portion slightly enlarged, and its neck portion constricted with respect to the corresponding portions of the groove 3, such construction preventing the angular base of the clamp which slides in the first mentioned groove from entering the

groove in which the second clamp travels, and vice versa.

The body portion of the instrument which may be made in various sizes is preferably constructed of brass, while the beam is formed of nicked steel with the graduations etched thereon. It is to be understood, however, that the instrument as a whole may be constructed of any other desired material.

The upper portion 16 of each clamp 14 has preferably formed therein a sight opening 22 through which the graduations marked on the beam are visible, the lower wall of each opening extending upwardly intermediate its ends, as indicated by the numeral 23, each of such extensions serving as an indicator or pointer.

What is claimed is:

1. An ellipsograph, comprising a cruciform body portion each arm of which has an inwardly-extending opening formed in the end face thereof, and a member detachably connected to one of said arms and having its inner face provided with a lateral finger arranged to fit in one of the openings in said arm and its outer face provided with a pointer whose axis coincides with that of said arm.

2. An ellipsograph comprising a cruciform body portion each arm of which has an inwardly-extending opening formed in the end face thereof, the principal vertical longitudinal plane of the opening coinciding with the like-named plane of the arm; and a member detachably connected to one of said arms and having its inner face provided with a lateral finger arranged to fit in one of the openings in said arm, and its outer face provided with a pointer whose axis coincides with that of said arm.

3. An ellipsograph comprising a cruciform body portion each arm of which is provided with an inwardly-extending opening formed in the end face thereof, and with a vertically disposed division line located directly below the opening and bifurcating the lower edge of said face, the principal vertical longitudinal plane of the opening coinciding with the like-named plane of the arm; and a member detachably connected to one of said arms and having its inner face provided with a lateral finger arranged to fit in one of the openings in said arm, and its outer face provided with a pointer whose axis coincides with that of said arm, whereby the instrument may be accurately positioned with reference to a pair of known intersecting lines which serve as the axes of the ellipse to be described.

4. An ellipsograph comprising a cruciform body portion having its upper face provided with a pair of intersecting grooves disposed longitudinally of the arms of said body portion, each arm having an inwardly extending opening formed in the end face

thereof, and a vertically disposed division line located directly below the opening and bifurcating the lower edge of said face, the principal vertical longitudinal plane of the opening coinciding with the like-named plane of the arm.

5 5. An ellipsograph comprising a cruciform body portion having its upper face provided with a pair of intersecting grooves disposed longitudinally of the arms of said body portion, a beam, and a pair of sliding clamps carried by the beam and fitting in the grooves, one of said grooves having a greater cross-sectional area than the other groove, to prevent the clamp fitting in the first mentioned groove from entering the last-mentioned groove.

15 6. An ellipsograph comprising a cruciform body portion having its upper face

provided with a pair of intersecting grooves 20 disposed longitudinally of the arms of said body portion, each groove including a base portion angular in cross-section, and a constricted neck, a beam, and a pair of sliding clamps carried by the beam and fitting in 25 the grooves, one of said grooves having its base portion of greater cross-sectional area and its neck of less cross-section area than the other groove, to prevent the clamp fitting in either groove from entering the other 30 groove.

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

CHARLES E. DEXTER.

Witnesses:

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