No. 835,164. PATENTED NOV. 6, 1906.

C. SCHREIBER.

OVAL COMPASSES.

APPLICATION FILED MAR. 3, 1906.

Fig. 1.

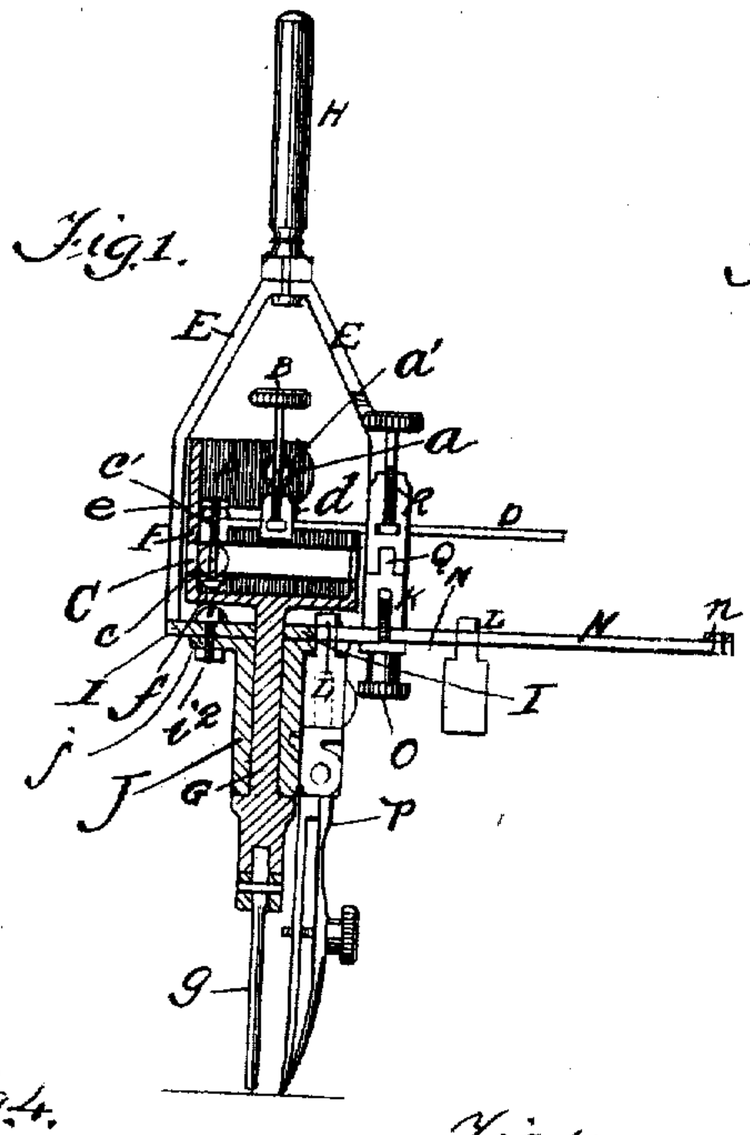


Fig. 2.

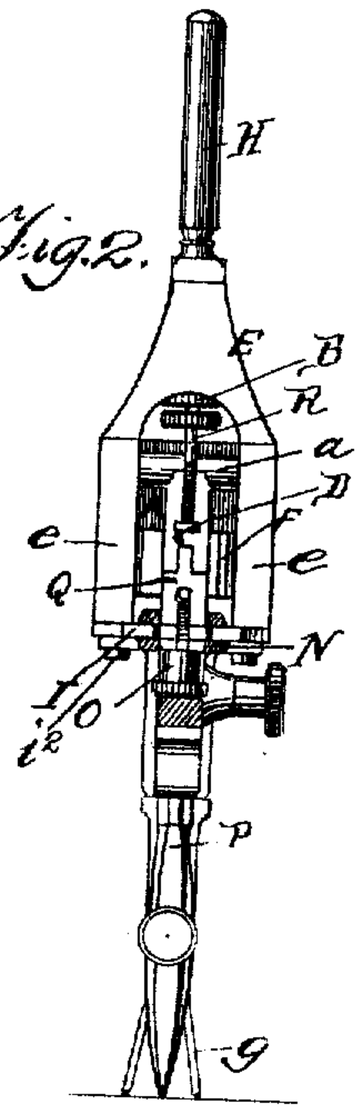


Fig. 4.

Fig. 5.

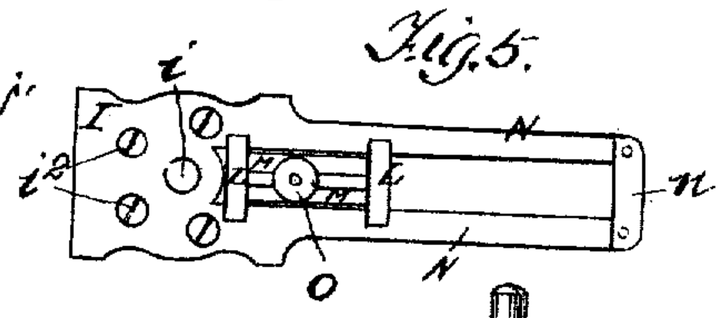
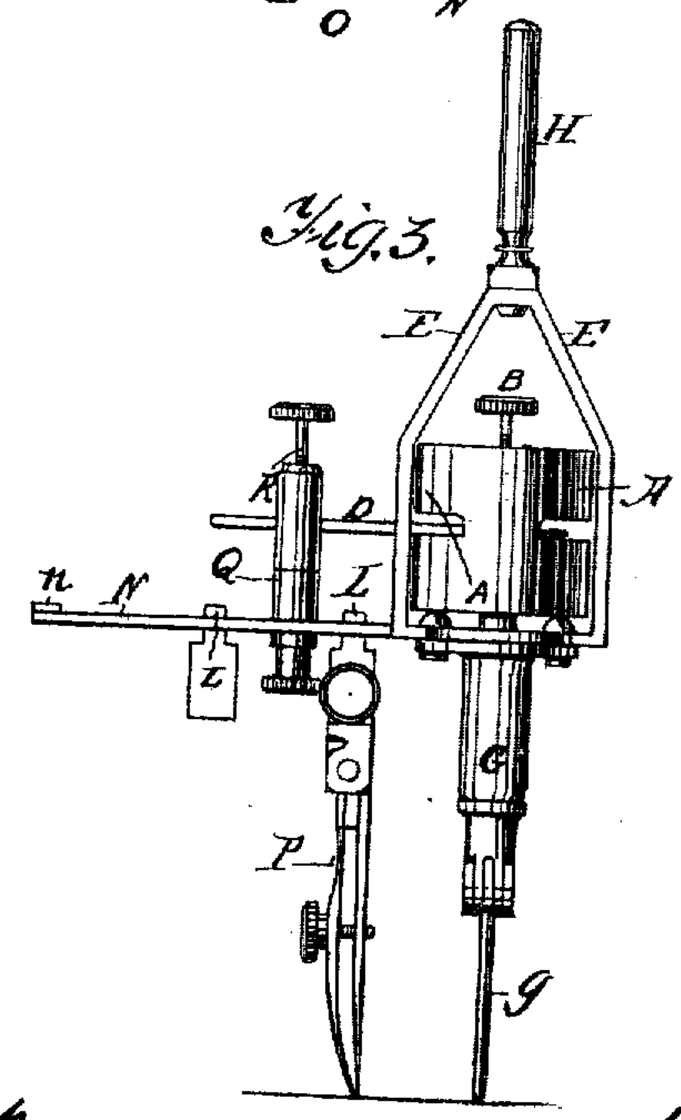


Fig. 3.



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UNITED STATES PATENT OFFICE.

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OVAL-COMPASSES.

No. 835,164. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed March 3, 1906. Serial No. 304,138.

To all whom it may concern:

Be it known that I, CARL SCHREIBER, a subject of the German Emperor, (but having declared my intention of becoming 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 Oval-Compasses, of which the following is a specification.

Draftsmen engaged in the making of mechanical drawings have frequent occasion to draw ovals or irregular curves, and difficulty is experienced in producing a true oval by means of ordinary compasses the centers of which must be shifted to correspond with the major and minor axes of the oval or elliptical figure.

The object of the present invention is to provide a small, light, and easily manipulated compass differing not greatly in general shape from the compass ordinarily employed, which can be adjusted to inscribe elliptical figures of differing dimensions.

It is obvious that the continuous line inscribed by a compass of this character will be more satisfactory than the broken lines of which oval or elliptical figures are composed and inscribed by ordinary circular compasses. At the same time the lines will be much more accurate, and much time and labor will be saved by reason of the fact that there is no necessity for shifting the instrument to accommodate it to the major and minor axes of the figure to be inscribed.

Another characteristic of the implement of the present invention lies in the fact that it can be manipulated by persons unskilled in the use of mechanical drawing instruments, since there is no necessity for the careful alinement of fragmentary lines of the character ordinarily inscribed in making an oval or elliptical figure.

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 of the present invention; Fig. 2, an elevation taken at right angles to Fig. 1; Fig. 3, a side elevation taken at right angles to Fig. 2, and Figs. 4 and 5 detail views of parts of the mechanism.

The compass consists, essentially, of a fixed center standard G, terminating at its lower end in diverging pin-pointed legs *g*. The center standard is provided at its upper end with a cylindrical housing F, which rises from a circular disk *f*, formed integral with the standard G. The housing F is partially cut away at its forward side, leaving ears A, which are connected by a transversely-extending pipe *a*, slotted at top and bottom, which slotted pipe provides a runway for a ball *a'*, which ball is pierced for the passage of an adjusting-screw B. The slotted pipe *a* extends diametrically across the axial line of the standard G, and in addition to the pipe *a* is a companion slotted pipe C, having located therein a pierced ball *c*, through which passes a screw-pin *c'*. The pin *c'* is entered through the end of a graduated guide-bar D, upon which is mounted a clamp *d*, into which is entered the end of the screw B, which can be screwed down to clamp the graduated guide-bar in adjusted position. When the screw is loosened up, the guide-bar can be adjusted back and forth, and with it the ball *c* slides freely in the slotted pipe C. The two balls serve as focal points, and their operative position with respect to each other can be changed or adjusted to adapt the instrument for use in inscribing oval or elliptical figures for different radii of major and minor axes.

The instrument is provided with a handle H, to the lower end of which is secured a bracket having forked arms E. Each of the forked arms is itself forked to provide side fingers *e*, which are secured at their lower ends to a plate I, provided at its center with an opening *i* for the passage of the stem of the standard G. The plate is secured, by means of screws i^2, to the flanged top *j* of a pivotal collar J, which revolves around the stem G of the fixed upright. The flanged end of the pivotal collar is cut away at its forward side *j'* to provide for the adjustment of cross-brackets L, which are mounted on a connecting-bar M, which is adjustable between guide-bars N, which are formed integral with and extend outwardly from the plate I. The guide-bars are connected by means of an end cross-bar *n*, and the brackets are held in adjusted position by means of a thumb-screw *o*. Either of the brackets L serves as a socket for the insertion of a drawing instrument—as, for instance, a spring-pen P—although a pencil or other inscribing instrument could be substituted in place of the

pen, as in ordinary compasses. The thumb-screw *o* is entered into an upright sectional screw-cap Q, into the upper end of which is entered an upper screw R, which bears against the upper guide-bar D, which arrangement allows the adjustment of the brackets carrying the inscribing instruments which can be adjusted to any desired radius.

In use when it is desired to describe an oval the difference between the major and minor axes of the oval or elliptical is first ascertained. The movable guide-rod D is then adjusted, so that the difference between the focal screws B and *c'* will be equal to the difference between the major and minor axes of the intended figure. The slidable guide-rod D is then locked in adjusted position by means of the thumb-screw B, after which the forked pin-points of the instrument are pressed into the drawing-paper or board which holds the central pivotal standard rigid and prevents its rotation. The pen is then adjusted to such position that its tip will be distinct from the line of the stationary pin-points a distance equal to the minor axis of the intended oval or elliptical figure, after which the finger-handle H will be revolved in the usual manner, which revolves all of the mechanism with the exception of the center pivotal standard, the cylindrical housing, and the slotted guide tubes or pipes. The tubes or pipes serve as guideways for the focal balls and the tendency of the two pipes is to move the movable guide-rod C, the screw-cap Q, and the brackets L, which support the pen, in such a manner that the resulting line will be in the form of the intended oval. As the upper guide-rod is thus moved, the supporting-brackets L and thumb-screw *o* will slide freely between the lower guide-bars N, which, being fixed to the pivotal collar J, will revolve in a true circle to permit the necessary reciprocation of the upper guide-rod incident to the adjustment of the focal balls, which reciprocating motion, in combination with the circular motion imparted by the handle H, results in a true oval having a minor axis equal in length to the distance between the line of the stationary pin-points and the pen-point when in close proximity thereto and having a major axis equal to the length of the minor axis plus the distance between the ends of the focal screws carrying the focal balls. The pen-point can be adjusted back and forth by loosening the thumb-screw R and sliding the pen-bracket and screw-caps along the movable upper guide-bar to any desired point, in which position the pen-point and supporting mechanism can be again locked by means of the thumb-screw.

It will be seen from the foregoing description that the compass of the present invention is simple in construction and is adapted to meet the requirements of the draftsman's use, in that it can be easily and quickly adjusted, is light, simple, and easy of operation, and is of small and compact size and adapted to be readily manipulated in the usual manner.

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

1. An oval-compass consisting of a stationary standard, a revoluble bracket portion, focal guideways supported on the stationary standard, focal elements movable in the guideways, and an inscribing instrument connected with both of the focal elements and revoluble with the bracket, substantially as described.

2. In an oval-compass, the combination of a fixed standard, focal guideways secured to the standard, focal elements movable in the guideways, a revoluble bracket terminating in a handle, a movable guide-rod secured to both focal elements, an inscribing instrument secured to the movable guide-rod, and a second guide-rod revoluble with the bracket adapted to allow reciprocation of the movable guide-rod and parts connected therewith, substantially as described.

3. In an oval-compass, the combination of a fixed standard, focal guideways secured to the standard at right angles to each other, focal elements movable in the guideways, a movable bracket terminating in a handle, a movable upper guide-rod secured to both focal elements, an inscribing instrument secured to the movable guide-rod, and a lower guide-rod revoluble with the bracket and adapted to position the inscribing instrument and allow reciprocation of said instrument and the movable guide-rod, substantially as described.

4. In an oval-compass, the combination of a fixed standard having a plurality of positioning-pins, two slotted tubes forming focal guideways secured to the fixed standard at right angles to each other, focal balls movable in the guideways, a revoluble bracket terminating in a handle and journaled to revolve around the fixed standard, a movable guide-rod secured to both focal balls, an inscribing instrument connected and movable with the movable guide-rod and revoluble with the bracket and a second guide-rod adapted to position the inscribing instrument to allow reciprocation thereof together with the upper guide-rod, substantially as described.

5. In an oval-compass, the combination of a fixed standard terminating at its lower end in toothed feet and provided at its upper end with a housing, focal guideways secured to the housing and extending at right angles with respect to each other, focal elements movable in the guideways, a revoluble bracket mounted to revolve around the fixed standard and terminating in a handle, a movable guide-rod secured to both focal elements, an inscribing instrument movable with the

guide-rod, a second guide-rod movable with the bracket and adapted to allow reciprocation of the movable guide-rod and inscribing instrument connected therewith, substantially as described.

6. In an oval-compass, the combination of a fixed supporting-upright terminating at its upper end in a housing, focal guideways carried by the housing at right angles to each other, focal elements movable in the guideways and adapted to be adjusted with respect to each other, a movable guide-rod adjustably secured to one of the focal elements and permanently secured to the other, a bracket revolubly mounted on the fixed standard and having outwardly-extending therefrom a second guideway, an inscribing instrument slidably mounted within the last-mentioned guideway and an adjustable connection between the inscribing instrument and the movable guide-rod, substantially as described.

7. In an oval-compass, the combination of a fixed standard, a bracket revolubly mounted on the fixed standard, a guide-rod adapted to be revolved with the bracket a connection between the guide-rod and the fixed standard for reciprocating the rod simultaneously with its revolutions, and an inscribing instrument connected and movable with the guide-rod for inscribing an oval line, substantially as described.

8. In an oval-compass, the combination of a fixed standard, a bracket revolubly mounted on the fixed standard, a guide-rod adapted to be revolved with the bracket a connection between the guide-rod and the fixed standard for reciprocating the rod simultaneously with its revolutions, an inscribing instrument connected and movable with the guide-rod for inscribing an oval line, and a guideway revoluble with the bracket for positioning the inscribing instrument and allowing reciprocation thereof, substantially as described.

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