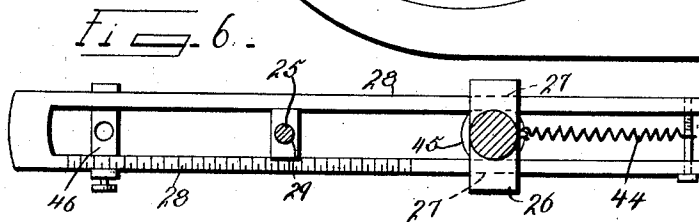
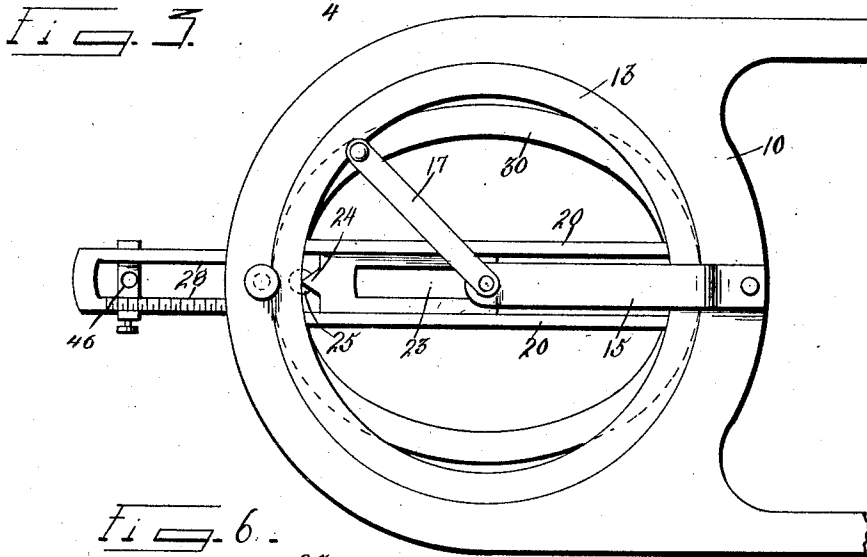
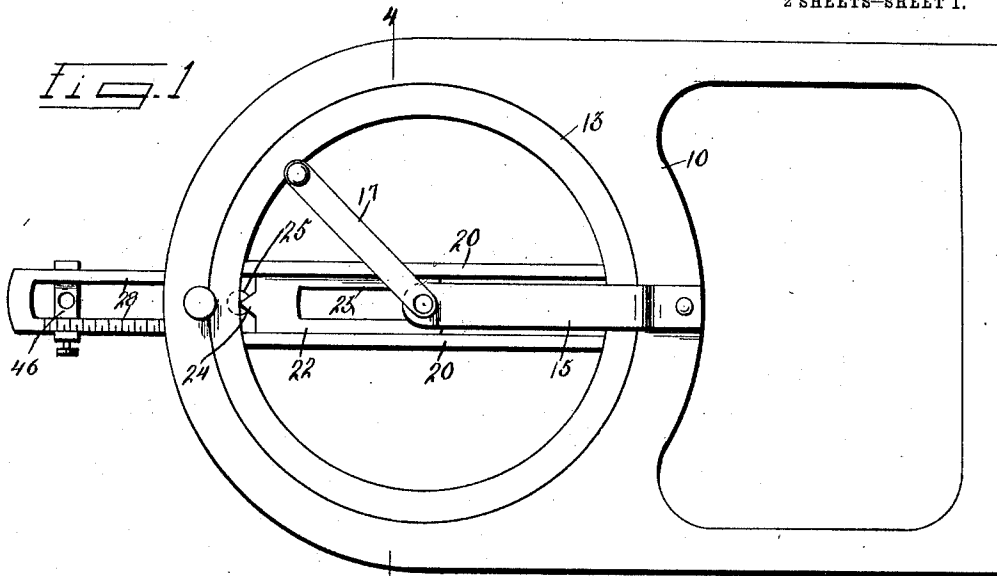


F. J. BAKER.
 ELLIPSOGRAPH MACHINE.
 APPLICATION FILED OCT. 27, 1910.

1,007,910.

Patented Nov. 7, 1911.

2 SHEETS—SHEET 1.



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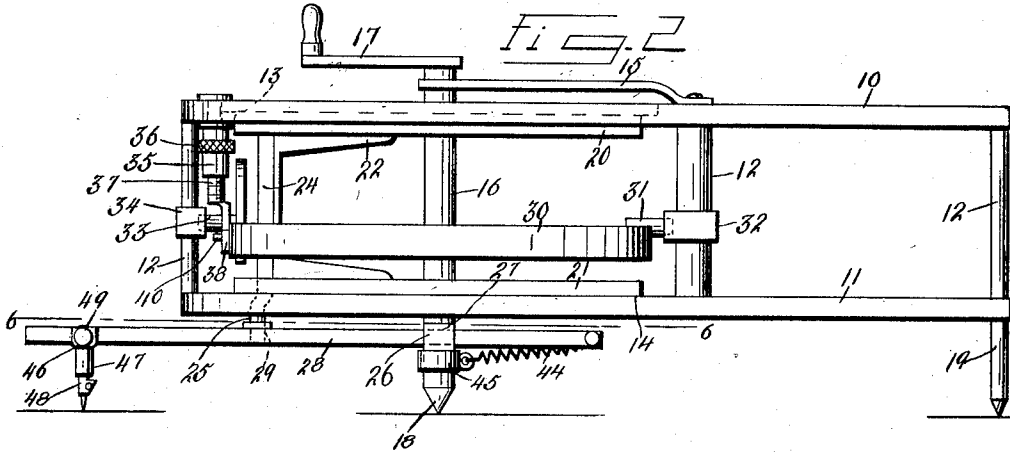


Fig. 4.

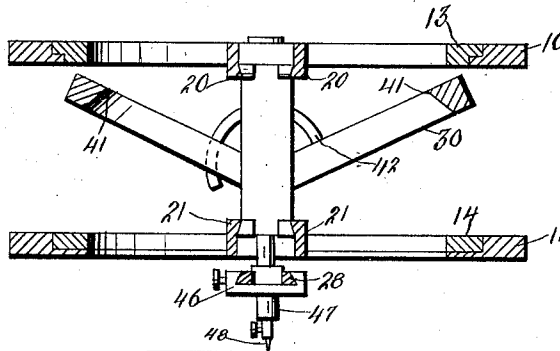
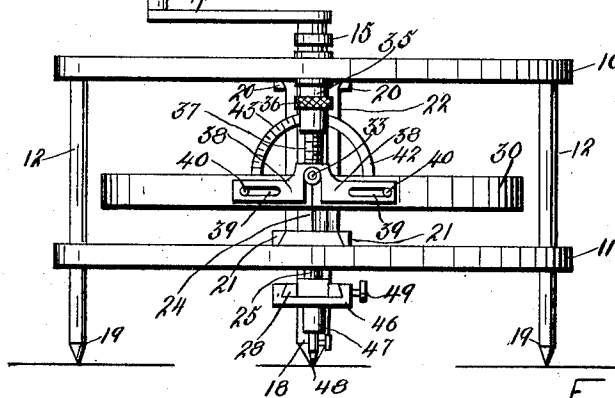


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ELLIPSOGRAPH-MACHINE.

1,007,910.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed October 27, 1910. Serial No. 589,392.

To all whom it may concern:

Be it known that I, FRANK J. BAKER, a citizen of the United States, residing at Harrisburg, in the county of Dauphin, State of Pennsylvania, have invented certain new and useful Improvements in Ellipsograph-Machines; 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 invention relates to an ellipsograph machine and more particularly to the class of instruments by which ellipses and circles of varying diameters may be made.

The primary object of the invention is the provision of an ellipsograph machine having a main frame supporting a split hinged ring the latter adapted to be adjusted at varying angles to convert a true circle into an ellipse or ellipses of varying diameters, a hand actuated crank guided within said split ring and a guide rod actuated by the crank and adapted to support a tool for outlining at will either an ellipse or a circle of varying diameters.

Another object of the invention is the provision of an ellipsograph machine comprising a combination of parts that by one and the same operation of the instrument there can be drawn either an ellipse or a circle and by the adjustment of the machine the same will draw ellipses or circles of varying diameters.

A further object of the invention is the provision of an ellipsograph machine which is simple in construction, easily manipulated and inexpensive in the manufacture.

In the drawings accompanying and forming part of this specification is illustrated one form of embodiment of the invention which to enable those skilled in the art to practice the said invention will be set forth at length in the following description while the novelty of the invention will be included in the claims succeeding said description. It is to be understood however, that changes, variations and modifications may be made such as come properly within the scope of the claims hereunto appended without departing from the spirit of the invention.

In the drawings: Figure 1 is a top plan view of the machine with the split hinged ring in position for guiding the tool-carrying rod to draw a true circle. Fig. 2 is a side view. Fig. 3 is a further plan view

showing the split hinged ring with its sections angularly adjusted for guiding the tool-carrying rod to draw an ellipse. Fig. 4 is a sectional view on the line 4—4 of Fig. 1. Fig. 5 is a front end view of the machine. Fig. 6 is a detail section on the line 6—6 of Fig. 2.

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

In the present embodiment there is provided an upper frame 10 and a lower frame 11 these frames being held in spaced relation by spacing rods 12. The frame is in plan a circle having a rectangle projecting therefrom as can clearly be seen by reference to Fig. 1, there thus being provided a pair of superimposed circles. In each of these circles is provided a ring, the upper ring being indicated at 13 and the lower ring at 14. These rings are closely fitted into the upper and lower frames so that they may be revolved therein. Attached to the upper frame is a bracket 15 having a bearing opening in its end concentric with the rings and through this bearing opening extends a spindle 16 having a crank 17 on its upper end. This spindle also extends through the two rings and terminates in a point 18 adapted for positioning in the intersection of the major and minor axes of the ellipses to be drawn. The spacing members 12 at the corners of the rectangular portion of the frame are extended downward to provide legs 19 which are likewise pointed so that by means of the point 18 and those on the leg 19 the device may be positioned on a drawing board without danger of its shifting. Extending across the upper ring 13 is a pair of spaced guide bars 20 and a similar pair of guide bars 21 extending across the lower ring, the latter being perpendicularly disposed beneath the former and the guide bars of each pair being equidistant from a diameter of said ring.

Movable in the guides 20 and 21 is a slide 22 which accurately fits the guides but which is freely movable therein. This slide is provided with elongated top and bottom members spaced to provide a slot 23 which passes freely over the spindle 16 and the slide is furthermore provided on its outer face with a triangular lug 24. In addition to this the slide has a downwardly extending pin 25 the axis of which is concentric with the outer edge of the triangular lug 24. The

lower end of the spindle 16 is laterally enlarged as at 26 and is provided with a pair of spaced openings 27 through which pass the legs 28 of a tool carrying bar which is provided with an opening 29 wherein fits the pin 25.

At 30 is a split ring which consists of two semi-circular portions pivotally united along a diametrical line and the pivot which unites these portions at one end of the diameter is indicated at 31 and is journaled in a box 32 supported on one of the members 12. At the other end of the diameter there is provided a pivot 33 which is likewise journaled in a box 34 carried on a second member 12. Supported for rotation in the upper frame member is a sleeve 35 threaded internally, and provided with a milled portion 36 whereby it may be rotated; within this sleeve 35 is a threaded stem 37 having at its lower end lateral arms 38 provided with slots 39. These slots 39 engage over pins 40 projecting from the split ring at points adjacent but spaced from one of the pivot points of said ring. By means of this arrangement the rotation of the sleeve 35 will move the stem 37 up or down and in consequence will raise or lower the portions of the split ring remote from the pivot points, each half being similarly raised to maintain uniform angles between the respective halves and the bottom frame. This ring is beveled in cross-section to provide a sharp edge 41 against which the apex of the triangular lug 24 of the slide may constantly bear. To one of the edges of this ring is attached an arc 42 which passes through a suitable slot formed in the other half of the split ring and this arc is provided with graduations 43 indicative of the proportional relation between the normal diameter of the split ring and the lateral edges when the ring is moved so that its edges occupy an angular position with relation to each other. In order to constantly hold the slide 22 in position against the split ring the bar 28 has attached thereto a spring 44 the other end of which is attached to a collar 45 on the spindle 16, the spring being so arranged as to normally force the bar in such direction that the slide is forced away from the spindle 16 and consequently is kept in contact with the split ring. On the bar 28 is slidably mounted a carriage 46 depending from which is a socket 47 adapted to receive an instrument point such as is indicated at 48, it being understood that a pen, pencil or scriber may be equally employed in this position, this being a common expedient in drafting. This carriage is held in adjusted position on the bar 28 by a set screw 49.

In the operation of the device, when it is desired to draw a circle the edges of the split ring are arranged in the same plane

and the carriage 46 set along the bar 28, the latter being provided with a graduated scale 50 for the purpose of this adjustment. The instrument is then set with the point 18 in the center of the circle to be described and the crank 17 rotated. Now since the spring 44 constantly holds the slide 22 against a true circle there will be no movement of the bar backward and forward through the openings 27 but the same will be held in constant position with relation to the center or axis of rotation of the spindle 16.

When it is desired to draw an ellipse of any proportions the thumb screw is manipulated until the scale shows that the diameter of the split ring under normal conditions bears the same relation to the maximum distance between the raised halves as the major axis of the required ellipse bears to the minor axis thereof. The pencil carriage is then adjusted for the major axis, either the scale 50 being employed or the major and minor axis being laid out and the point 18 placed at the center after which the describing instrument is placed upon the end of the major axis, care being taken to have the machine position accurately in alinement with the major axis. The crank 17 is then operated as in drawing a circle. Now as the rings 13 and 14 are revolved by the crank the spring 44 will yield and permit the slide 22 to move inward. By reason of the connection between this slide and the bar 28 the latter will also be moved so as to bring the describing instrument toward the center of the ellipse until one-quarter of the same has described after which the spring will force the bar outward for the next quarter when it will again be moved inward and will pass out for the second time during the remaining quarter.

What is claimed is:—

1. A machine of the class described comprising a main frame, an adjustable guide ring member comprising hinged semi-circular sections, means for locating the sections in their adjusted position, a rotatable slide carried by the frame and guided in its movement by said guide ring member to cause the same to travel in the path of an ellipse, means for holding the slide in contact with said guide ring member, and an instrument supporting bar having connection with the slide.

2. A machine of the class described comprising a main frame having a circular opening, a rotatable slide disposed within the opening and supported by the frame, a guide ring member comprising semi-circular hinged sections supported by the frame below the opening, means for rotating said slide, a describing instrument support connected to the rotating means, and an operative connection between the slide and the support whereby the instrument support fol-

lows the movement of said slide during rotation, said slide coacting with the hinged sections of the guide ring member during rotation of the former.

5 3. A machine of the class described comprising a main frame, a guide ring member formed of hinged semi-circular sections connected to the frame, means for angularly adjusting the said sections, rotatable guide
10 members carried by the frame, a rotary slide carried by one of said guide members, a describing instrument support connected to the rotating means, and an operative connection
15 between the slide and the support coacting with the sections of the guide ring member to cause said instrument to travel in the path of an ellipse upon the rotation of said rotating means.

4. In a machine of the class described
20 comprising a main frame, an adjustable

guide ring member comprising hinged circular sections, a sleeve rotatably mounted on the frame and having a threaded interior, a stem threaded in said sleeve, lateral extensions on said stem each provided with a slot, 25 pins on the sections of the guide ring member and projecting into said slots a rotatable slide guided in its movement by said guide ring member to cause the same to travel in the path of an ellipse, means for holding the
30 slide in contact with the guide ring member, and an instrument supporting bar having connection with the slide.

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

FRANK J. BAKER.

Witnesses:

M. B. O'DONNELL,
GEO. E. GRINDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
