No. 873,291. PATENTED DEC. 10, 1907.

N. D. S. K. BECK.

ELLIPSOGRAPH.

APPLICATION FILED MAY 22, 1907.

Fig. 1.

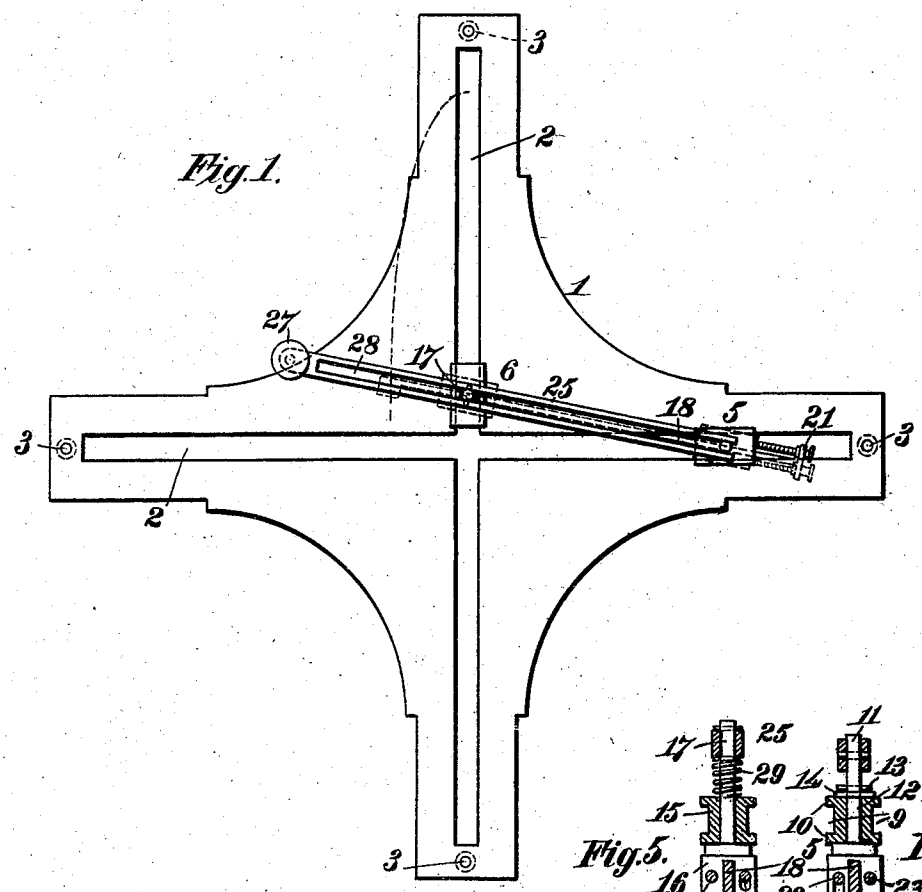
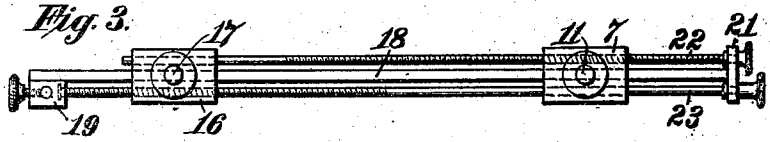


Fig. 5. Fig. 4.

Fig. 3.



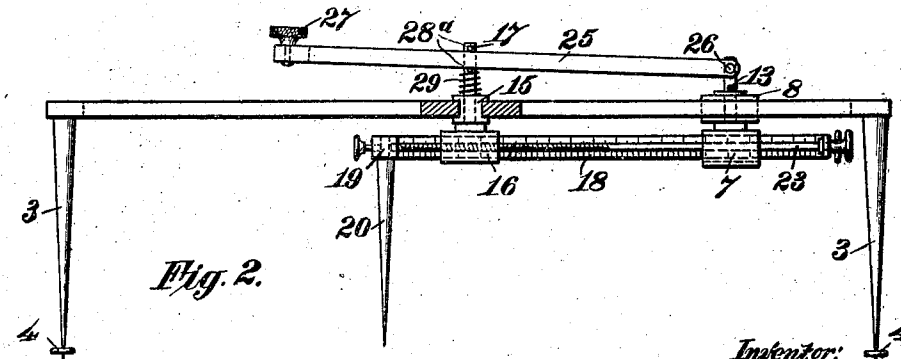


Fig. 2.

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UNITED STATES PATENT OFFICE.

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ELLIPSOGRAPH.

No. 873,291. Specification of Letters Patent. Patented Dec. 10, 1907.

Application filed May 23, 1907. Serial No. 375,039.

To all whom it may concern:

Be it known that I, NIELS DANIEL SOFUS KRISTIANSEN BECK, 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 an Ellipsograph, of which the following is a specification.

This invention relates to drafting instruments and more particularly to ellipsograph of that type in which ellipses of different sizes may be quickly and accurately drawn the pencil or pen being so mounted as to be normally raised off the surface on which the ellipse is to be made.

The objects of my invention are to provide an ellipsograph, of great accuracy, which shall be simple to adjust and easy to operate, and which shall be comparatively inexpensive to manufacture; to provide an instrument as mentioned, which shall be light and readily positioned with relation to the surface upon which the ellipse is to be drawn, and which may be readily and firmly held in position without injury to the paper or other surface upon which it rests; and, to provide a device as mentioned in which the scribing instrument is normally held in retracted position, and equip the same with means for lowering the instrument at will into engagement with the surface to be marked.

Further objects will appear hereinafter.

With these objects in view my invention is embodied in an ellipsograph comprising a cruciform frame having slots substantially coextensive with the arms thereof and arranged at right angles to each other, in combination with a pair of slides mounted in respective slots, blocks pivotally secured to respective slides, a bar slidably mounted in said blocks and having a scale marked thereon, an instrument holder fixed to one end of said bar, means for adjusting said blocks on said bar, in relation to each other and to said instrument holder, and means for lowering said holder and causing the same to revolve.

My invention further consists in various details of construction and combinations of parts, all as will be hereinafter described, and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a plan view of an ellipsograph embodying one form of my invention, Fig. 2 is a side elevation thereof, the parts being adjusted to draw an ellipse of small minor diameter, the front arm of the frame being shown in section, and the rear leg omitted for clearness, Fig. 3 is a plan view, on an enlarged scale, of the graduated, instrument carrying arm and the blocks adjustable thereon, Figs. 4 and 5 are detail views respectively of the two slides and the parts connected thereto.

Referring to the drawing 1 designates the cruciform frame of the apparatus, the arms of which are provided with longitudinal slots 2 that meet at a common point and at the outer ends of the arms are legs 3 pointed at their lower ends and provided with washers or disks 4 to form tack like extremities whereby the legs can be pricked into the surface on which the ellipse is to be drawn and enable the parts 4 to suitably support the frame and when the frame is so adjusted it is fixed against accidental displacement.

Movably mounted on the frame are slides designated generally by 5 and 6 that are free to move in the slots 2. The slide 5 is composed of two blocks 7 and 8, the latter being provided with horizontal grooves 9 on opposite sides as shown clearly in Fig. 4 for presenting flanges 10 that engage over the top and bottom surfaces of the frame for holding the slide in the slots 2. On the block 7 is a vertically extending stud 11 that projects through the opening 12 in the block 8 as clearly shown in Fig. 4 and the blocks are removably secured together by means of the pin 13 extending through the stud on the top side of the block 8 there being a washer 14 disposed under the pin. By this means the blocks 7 and 8 are pivotally connected and are adapted for relative rotary movement on a vertical axis. The slide 6 is composed of a block 15 substantially similar to block 8 and which is pivotally connected with the block 16 by means of a stud 17 on the latter, which projects through the block 15 thereby permitting of a relative rotary movement also on a vertical axis.

18 indicates a bar slidably mounted in the blocks, 7 and 16, and carrying an instrument holder, 19 at the end adjacent to the block, 16. The size and proportions of the ellipse to be drawn by the device is regulated by the distance of the instrument from the blocks, 16, and 7:—that is, the minor axis of the ellipse is measured by twice the distance from the axis of rotation of the block, 16 to the scribing instrument, 20; and the major

axis is measured by twice the distance between the instrument and the axis of the block, 7. It follows, therefore, that suitable means must be provided for adjusting these distances and for securely holding the parts in their relative positions after adjustment. The manner of doing this is clearly illustrated in Fig. 3 of the drawings, wherein the bar, 18, is illustrated as having a cross head, 21, upon the end opposite from the one carrying the instrument, 20. Swiveled in the head, 21, is a screw, 22, threaded through the blocks, 7, and preferably having a bearing in the block, 16. Assuming that the block, 16 is fixed, it is evident that by turning the screw, 22 the distance between the blocks may be nicely adjusted, especially as the bar, 18 is provided with a graduated scale for this purpose. Swiveled in the opposite side of the head, 21, is a screw, 23, which passes freely through the block, 7 and is threaded through the block, 16. If preferred, this screw may have a bearing in the instrument, 19. It is evident that by turning the screw, 23 the distance between the holder 19 and the block, 16 may be nicely adjusted, the scale on the bar, 18, facilitating the adjustment. In operation the block, 16 is first set, fixing the minor diameter or axis of the ellipse, then the block, 7 is adjusted to fix the major axis. In setting the block, 7, the screw, 23, holds the block, 16 against movement.

As before stated the block, 16 has vertical as well as rotary movement in relation to the slide, 15. This is in order that the instrument, 20 may be lowered or raised at will.

To this end the apparatus is provided with a handle 25 whereby the scriber can be conveniently moved to scribe the ellipses and this handle is hingedly connected at 26 on the stud 11 of the slide 5, the stud extending upwardly above the block 8 for this purpose. On the opposite end of the lever or handle 25 is a grip 27 and extending longitudinally of the handle is a slot 28 into which extends the upper end of the stud 17 of the slide 6, there being pins 28[a] on the stud that engage the top and bottom sides of the handle or lever 25. The stud 17 is freely movable in the block 15 and is adapted to be depressed by the handle to bring the point of the scriber 20 into marking relation to the surface on which the ellipse is to be drawn. Normally the scriber is held off of the surface by a helical compression spring 29 mounted on the stud 17 interposed between the underside of the handle 25 and top of the block 15.

In practice the frame is set up in the desired position and the screws 23 and 22 manipulated to adjust the relative position of the slides 5 and 6 and the instrument 20 to enable an ellipse of the desired size and proportions to be made. The grip 27 of the handle 25 is then grasped and pressed downwardly so as to bring the scriber 20 in contact with the surface to be marked and then by a rotary movement of the lever the scriber will draw an ellipse, the slides being free to move in the slots 2 in an obvious manner.

The apparatus can be made of any desired size according to the nature of the work to be done and a pen, pencil, brush or other device may be used for doing the marking. Also when it is desired to cut out an ellipse for any purpose, a knife can be secured in the holder 19. While the device is extremely simple in operation and adjustment, it is also durable, substantial and of inexpensive construction.

From the foregoing description taken in connection with the accompanying drawing the advantages of the construction and the method of operation will be readily apparent to those skilled in the art to which the invention appertains and while I have described the principle of operation of the invention together with the device which I now consider to be the best embodiment thereof I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as are within the scope of the claims.

Having thus described my invention what I claim as new is:

1. An ellipsograph comprising a frame, legs supporting the same, slides mounted on the frame, a bar adjustably fixed to said slide, an instrument holder rigidly fixed on one end of said bar, and means for depressing the holder and moving the same while depressed for drawing an ellipse.

2. An ellipsograph comprising a cruciform frame having slotted arms, legs supporting the frame, slides movable in the slots of the arms, adjustable connection at the underside of the frame for connecting the slides, an instrument holder and instrument arranged thereon a handle mounted on one of the slides and disposed above the frame, and means connecting the handle with the other slide for depressing said holder and instrument, substantially as described.

3. In a device of the class described, a cruciform slotted frame, in combination with a pair of slides mounted in respective slots, blocks pivotally secured to respective slides, a bar slidably mounted in said blocks and having a scale marked thereon, an instrument holder, fixed to one end of said bar, means for adjusting said blocks on said bar in relation to each other and to said instrument holder and means for lowering said holder and causing the same to revolve, substantially as described.

4. In a device of the class described, a cruciform slotted frame, in combination with a pair of slides mounted in respective slots, blocks pivotally arranged beneath said slides,

a bar slidably connecting said blocks, an instrument holder and instrument arranged at the end of said bar, a handle pivotally arranged above one of said slides and adapted to lower the block on the other said slide to bring the instrument into contact with the surface to be marked and also to cause the same to revolve, substantially as described.

5. In a device of the class described, a cruciform slotted frame, in combination with a pair of slides mounted in respective slots, a block arranged beneath each said slide and having a stud extending vertically through said slide and forming pivots for said blocks, a bar slidably mounted in said blocks, an instrument holder and instrument fixed to one end of said bar adjacent to one of said blocks, a handle pivoted to the stud on the other said block and adapted to depress the first said block to cause the same to lower the instrument into contact with the paper and also adapted to cause the same to revolve, substantially as described.

6. In a device of the class described, a cruciform slotted frame, in combination with a pair of slides mounted in respective slots, a block arranged beneath each said slide and having a stud extending vertically through said slide and forming pivots for said block, one of said blocks having vertical as well as rotary movement in relation to its respective slide, a bar slidably mounted in said blocks, an instrument holder and instrument fixed to the end of said bar adjacent to said vertically movable block, a handle pivoted to the stud of the vertically fixed block and connected with the stud of the vertically movable block, and means for normally holding said handle and the parts connected thereto in raised position, substantially as described.

7. In a device of the class described, a cruciform slotted frame, in combination with a pair of slides mounted in respective slots, a block arranged beneath each said slide and having a stud extending vertically through said slide and forming pivots for said blocks, a bar slidably mounted in said blocks, an instrument holder and instrument fixed to the end of said bar adjacent to one of said blocks, means for adjusting the relative positions of said blocks with each other and with said instrument, a handle pivoted above one of said slides and connected to the pivotal member of the block on the other said slide and adapted to depress said block to bring the instrument into contact with the paper, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of the two subscribing witnesses.

NIELS DANIEL SOFUS KRISTIANSEN BECK.

Witnesses:

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HELEN F. LILLIS.