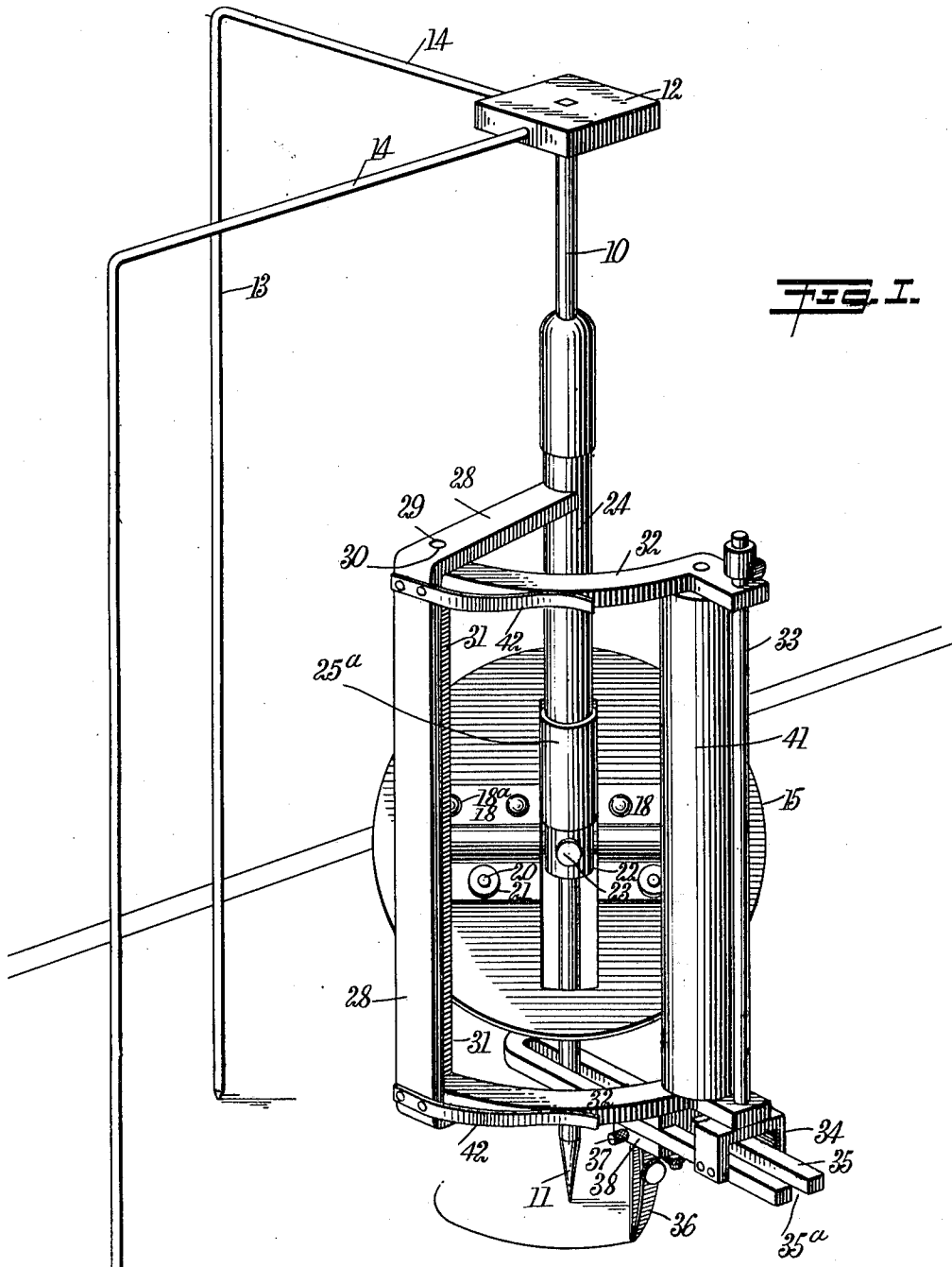


W. S. ELLIOTT.
 ELLIPSOGRAPH.
 APPLICATION FILED APR. 4, 1912.

1,055,303.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 1.



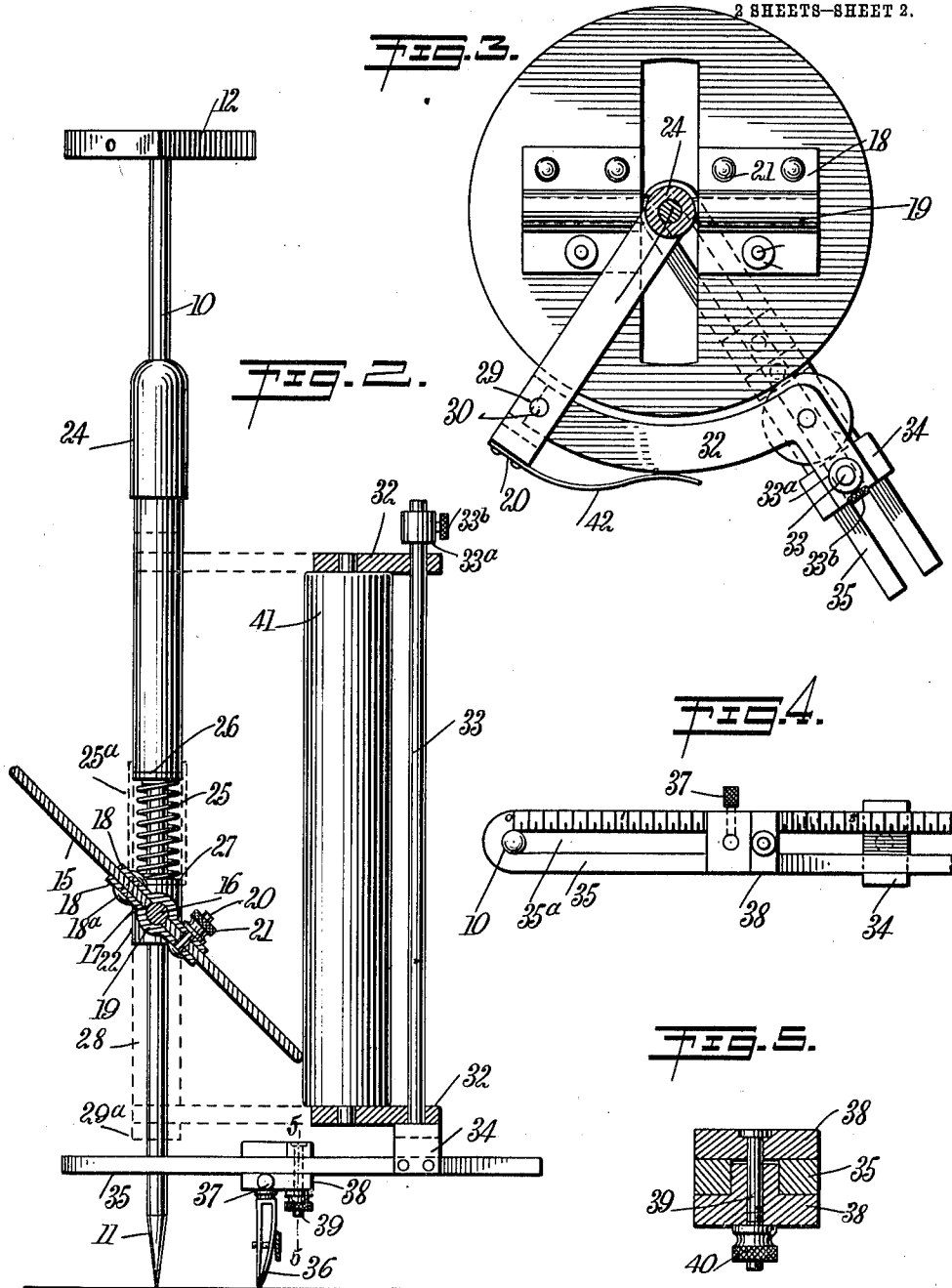
WITNESSES
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2 SHEETS—SHEET 2.



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ELLIPSOGRAPH.

1,055,303.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed April 4, 1912. Serial No. 688,398.

To all whom it may concern:

Be it known that I, WILBUR S. ELLIOTT, a citizen of the United States, and a resident of Prescott, in the county of Yavapai and State of Arizona, have invented a new and Improved Ellipsograph, of which the following is a full, clear, and exact description.

The invention relates to drawing instruments for describing an ellipse of any size within the capacity of the instrument, and it comprises in its construction various novel features permitting of a ready adjustment to vary the size of the ellipse, as desired, and to promote convenience in manipulating the members.

My improved construction will be particularly described in connection with the specific embodiment illustrated as one example of means for carrying out the invention, and the distinctive features will be further defined in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of an ellipsograph embodying my invention; Fig. 2 is a vertical section showing portions of the instrument; Fig. 3 is a sectional plan view; Fig. 4 is an inverted plan view of the graduated pen or pencil carrier; and Fig. 5 is a transverse vertical section through the said carrier and a supported penholder, the section being taken approximately on the line 5-5 of Fig. 2.

Briefly described, the instrument comprises a standard constituting a center, a circular disk mounted on the standard for angular adjustment to correspond with the ellipse to be described, and a frame also supported on the standard for revoluble movement thereon, the said frame having a swinging portion and being provided with a pen carrier embracing the standard, and also with a roller contacting with the perimeter of the mentioned adjustable disk, the arrangement being such that as the frame is revolved around the standard, the roller will travel in a path corresponding with the angular adjustment of the disk and in contact with the latter, and the pen or pencil

will travel with the roller and be shifted inward and outward in an elliptical path.

In constructing the particular embodiment illustrated the standard 10 is provided with a point or center 11, and with any suitable handle such as a head 12 for holding the standard in position. Suitable supports may be employed advantageously, consisting of legs 13 joined to the head 12 by arms 14. A circular disk 15 is clamped to radial arms 16, for angular adjustment relatively to the standard. To effect the desired clamping and adjustment of the disk the latter is formed with a cruciform opening, consisting of slots at right angles to each other, the smaller slot 17 receiving the arms 16 in the plane of the disk. The clamp plates 18 are disposed on the opposite sides of the disk and have semicircular bearing portions 19 receiving the arms 16. Rivets 18^a clamp the plates 18 at one side and the plates are tightened or loosened at the opposite side by studs 20 and knurled nuts 21 threaded onto said studs.

The arms 16 are preferably formed on a collar 22 held in position on the standard 10 by a set screw 23, said collar being accommodated in the larger slot 17^a of the cruciform opening in the disk 15. Above the collar 22 an elongated sleeve 24 is mounted for revoluble movement on the standard, and between the said sleeve and the collar 22, an expansible spiral spring 25 is fitted and inclosed by a housing 25^a fitted to slide on the sleeve 24, the said spring 25 desirably abutting against seats 26, 27, fitted respectively to the said sleeve and collar. The sleeve 24 carries a frame 28 fixed thereto and disposed vertically so that it forms upper and lower bearings 29, 29^a, for receiving the stud journals 30, 30, of a U-shaped swinging frame 31, having upper and lower arms 32 which are offset at their outer ends at an angle, as shown in Fig. 1, to form bearings for a rod 33, to which is fastened by a bracket 34, the carrier 35 for a pen 36 or pencil. The pen is held as by a set screw 37 on a penholder block 38, comprising in the present instance, upper and lower plates held together and to the carrier 35, by any suitable clamping device, as a bolt 39 and knurled nut 40. The rod 33 has a turning movement in the arms 32 when it

is revolved around the standard 10, and said rod 33, and with it the pen carrier 35, has vertical movement in the arms 32, the extent of the vertical movement in an upward direction being limited by the bracket 34 and in the opposite direction by a collar 33^a and set screw 33^b. Thus the pen is pressed gravitationally against the paper.

The carrier 35 is disposed in a plane transecting the axis of the center 11, and is in the form of a bar comprising spaced members which form an intermediate slot 35^a; and it straddles the standard 10 so as to rotate around the standard and shift its position transversely thereof in response to the swinging movement of the frame 31, 32, as the roller 41 follows the perimeter of the disk 15. The vertical roller 41 is also mounted in the frame 31 near the outer ends of the arms 32, and in order that the said roller may be held at all times in yielding contact with the perimeter of the disk 15, suitable springs are provided, which are illustrated as plate springs 42 secured to the frame 28 near the top and bottom and bearing against the respective arms 32.

The pen carrier 35 is in practice, formed with a scale, as shown in Fig. 4, and the pen holder 38 is shifted on carrier 35 to or from the center 11 according to the size of the ellipse, the distance from the center to the pen representing one half of the minor axis. The adjustment of the pen is effected when the swinging frame is turned to bring the pen carrier to a position transverse to the position shown in Fig. 1, so as to be disposed in the direction corresponding with the direction of the arms 16, and hence corresponding with the major axis of the ellipse presented by the tilted disk, in which position the inner end of the slot 35^a of the pen carrier will be adjacent to the standard 10. The scale is used to indicate the adjustment whether the pen is to be set for the major axis, or the disk set to form the minor axis, as will be obvious.

With the described construction, to operate the instrument, the penholder 38 having been positioned on the carrier bar 35 a distance from the center 11 to describe an ellipse of the required size, the sleeve 24 is pressed downwardly against the tension of the spiral spring 25, to carry the frames downward to bring the pen into contact with the paper, whereupon the sleeve is rotated to cause the roller 41 to travel around the perimeter of the disk 15, whereby the pen will describe the ellipse. Upon release of the sleeve 24, the spring 25 will immediately lift the pen from the paper.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent,—

1. An ellipsograph, comprising a standard and constituting a center, a tiltable circular

disk on the standard, a frame mounted on the standard for rotary movement, a second spring actuated frame mounted to swing in the first frame, the said second frame yieldingly engaging the perimeter of the disk, and a pen carrier on said frame and disposed in a plane transecting the axis of the standard.

2. An ellipsograph, comprising a standard constituting a center, a circular disk mounted in a plane transecting the axis of the standard, a frame mounted to turn on the standard, a second frame mounted to swing on the first frame and having a member contacting with the perimeter of the disk, and a pen or pencil carrier mounted on said second frame and provided with a scale and with a means for adjustably supporting the pen or pencil, the said second frame and the carrier for the pen or pencil being movable toward and from the center as the said frame conforms its movements to the perimeter of the disk.

3. The combination with a standard, of a circular disk mounted on the standard and adjustable to vary its angle, a frame mounted to slide on the standard and to rotate thereon, a spring normally tending to raise said frame, a second frame pivoted on the first mentioned frame and provided with a roller to contact with the perimeter of the disk, a horizontal pen carrier secured to the pivoted frame below the disk, and a pen adjustably supported on said carrier.

4. An ellipsograph comprising a standard constituting a center, a disk mounted in a plane transecting the axis of the standard, a frame slidable vertically on the standard and mounted to revolve on said standard, a spring normally tending to raise said frame, a second frame pivotally mounted in the first frame to swing toward and from the standard, a roller carried by said second frame and movable to contact with the perimeter of the disk, springs on the main frame pressing against said second frame to swing it toward the standard, a horizontal pen carrier mounted on said second frame and straddling the standard, and a pen holder on said pen carrier.

5. An ellipsograph comprising a standard constituting a center, a tiltable circular disk on the standard, a sleeve mounted to rotate on the standard and to slide vertically thereon, a frame carried by said sleeve, a spring normally tending to raise said sleeve and frame, a second frame pivotally mounted on the first frame the free end of the second frame being adapted to swing toward and from the disk, said swinging frame having a member in contact with the perimeter of the disk, and a pen carrier mounted on said swinging frame and movable therewith relative to said standard.

6. An ellipsograph comprising a standard

constituting a center, a tiltable circular disk
on the standard, a frame mounted to slide
on the standard and to rotate thereon, a sec-
ond frame pivoted to the first frame and
5 having a member contacting with the per-
imeter of the disk, and a slotted pen carrier
straddling the standard and carried by said
second frame.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

WILBUR S. ELLIOTT.

Witnesses:

ZIBA O. BROWN;
E. S. CLARK.