

July 22 , 1924.

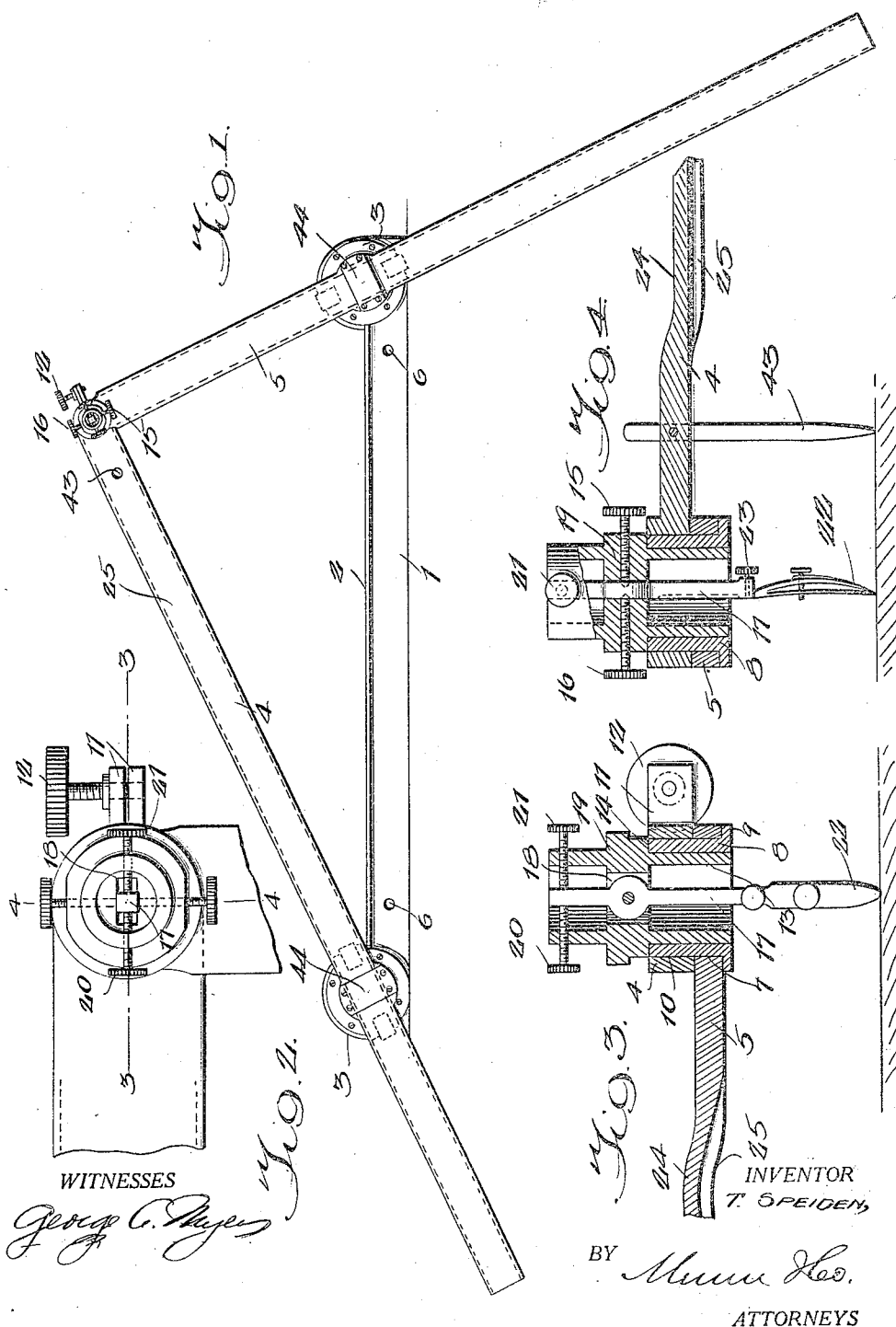
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T. SPEIDEN

UNIVERSAL CIRCULAR ARC TEMPLATE

Filed June 29, 1923

2 Sheets-Sheet 1



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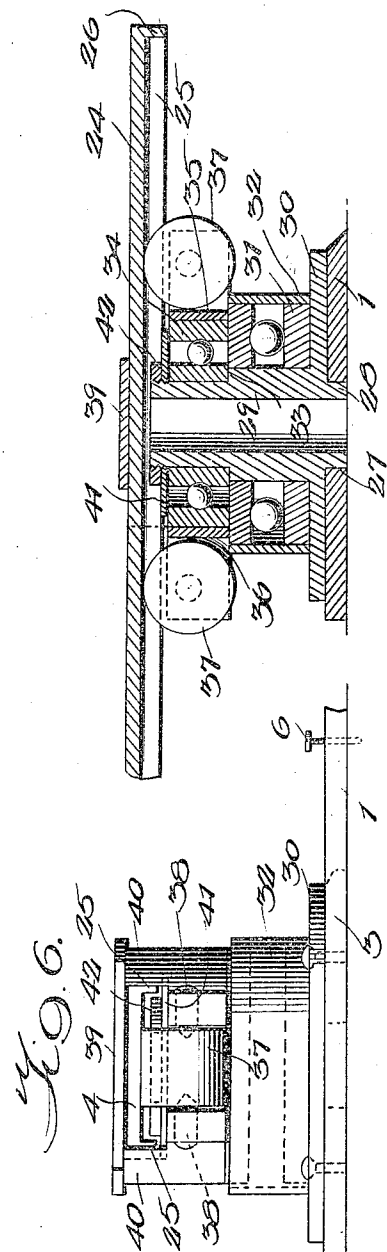
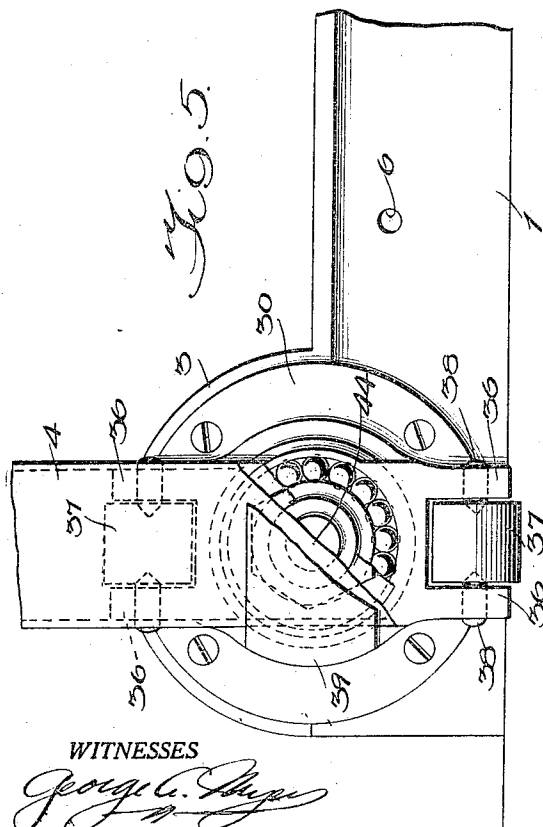
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2 Sheets-Sheet 2



BY *Mum & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

THEODORE SPEIDEN, OF CHICAGO, ILLINOIS.

UNIVERSAL CIRCULAR ARC TEMPLATE.

Application filed June 29, 1923. Serial No. 648,585.

To all whom it may concern:

Be it known that I, THEODORE SPEIDEN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Universal Circular Arc Templates, of which the following is a specification.

This invention relates to a universal circular arc template and has for its object the provision of a device for drawing with a pencil or pen arcs of true circles having radii which may be varied from ten to several hundred inches.

A further object of the invention is the provision of an arc template having an adjustable means for accurately centering a pen or pencil which describes an arc and a pair of legs adapted to be guided in bearings at the end of a base plate; the centers of the bearings at the ends of the base plate and the pen or pencil point being accurately positioned in points along the arc of the circle which is adapted to be drawn by the template.

A further object of the invention is the provision of a template for drawing arcs of circles which will produce accurate work and which is designed to endure a great amount of use without affecting its accuracy because of wear upon the operating parts of the device.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications, which shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a plan view of the template constructed according to my invention.

Figure 2 is a fragmentary view in plan, detailing the angular connection of the legs of the template.

Figure 3 is a vertical section of the angular portion of the template taken along the line 3—3 of Figure 2.

Figure 4 is a vertical section of the angular portion of the template taken along the line 4—4 of Figure 2.

Figure 5 is an enlarged fragmentary

view of the mounting of a leg on the end of the base plate.

Figure 6 is a view in elevation of the same.

Figure 7 is a vertical section of the mounting shown in Figure 6.

Referring to the drawings, 1 designates a base plate having a straight edge 2 and enlarged portions 3 at its ends forming a mounting for the bearings through which the legs 4 and 5 are adapted to slide. Screws 6 of a small diameter having a threaded engagement with passages in the base plate 1 are adapted to be screwed into a drawing board for securing the base plate 1 in position.

The outer end of the leg 5 is provided with a circular opening 7 which is adapted to receive a sleeve 8 and said sleeve is fitted within the opening sufficiently tight to prevent rotation of the sleeve within the opening. The lower end of the sleeve is provided with a flange 9 which prevents disengagement of the sleeve from the opening 7 in leg 5. The adjacent end of the leg 4 is provided with an annular perforation 10 which is adapted to receive the sleeve 8 with said end of the leg located upon the adjacent end of the leg 5.

The end of the leg 4 is split upon the longitudinal central line of the leg and provided with flanges 11 which are clamped together by means of a screw 12 for adjustably locking the end of the leg 4 on the sleeve 5 and thereby maintaining a predetermined angle between the legs when the template is being operated. The flanges 11 and the screw 12 permit angular adjustment of the legs 4 and 5.

Mounted for rotation within the sleeve 8 is a barrel or cylinder 13 which is adapted to form a means for holding a pen or pencil centrally of the sleeve 8 and at the vertex of the angle formed by the center lines of the legs 4 and 5. The barrel is enlarged as at 14 to provide a shoulder which rests upon the upper end of the sleeve 8.

An annular disc 19 adjacent the enlargement 14 closes the barrel intermediate its ends except for a rectangular passage 18 in which is adapted to be received the shank 17 of a pen or pencil. As shown in Figure 4 the shank is pivotally supported in the passage 18 by said screws 15 and 16. These screws are adjusted in diametrically disposed passages extending through the en-

largement 14 and the disc 19. A pair of micrometer screws 20 and 21 are mounted in perforations diametrically disposed at the top of the barrel and are for the purpose of accurately centering a pen or pencil within the barrel. The pen is adjustably disposed within the hollow shank 17 and adapted to be held in a fixed position by means of a screw 23.

Each of the legs 4 and 5 are formed with a horizontal top portion 24 and depending flanges 25 bordering opposite edges of the top portion 24 and an end depending flange 26. These flanges are provided for stiffening the legs and to prevent bending of the same. The mounting for the legs in which said legs are adapted to slide is shown more particularly in Figures 5, 6 and 7.

The ends of the base plate 1 are enlarged as shown at 3 and provided with a circular passage 27. The centers of these circular passages in the ends of the base plate 1 are in direct line with the straight edge 2 of said base. Rigidly secured in any approved manner at the ends of the base plate 1 and having a cylindrical portion 28 located in the circular passages 27 are posts 29. These posts have annular flanges 30 which are adapted to be secured in any approved manner as by screws to the ends of the base plate. Upon each post and resting on the flange 30 are ball bearings 31 encased in a sleeve 32. At a point in the post 29 and where the upper surface of the ball bearing 30 terminates, said post is reduced in diameter externally to form a shoulder 33 and a reduced cylindrical portion which receives a ball bearing 34. One portion of the ball bearing rests on the shoulders 33 while the remaining portion is mounted on the ball bearing 31.

The ball bearing 34 is encased by a sleeve 35 which is provided at diametrically opposite points with pairs of spaced lugs 36. Between the lugs are mounted rollers 37 having conical sockets in alinement with the axis of said rollers for receiving the pointed ends of pivot pins 38 which are screwed into threaded passages in the lugs 36. The bottom faces of the legs ride on the rollers and are held in position on said rollers by means of a plate 39 mounted upon the top of lugs 40 integrally formed with the sleeve 35. A plate 41 is locked upon the end of the post 29 by means of a nut 42. Said plate maintains the ball bearing 34 in position on the barrel.

The ball bearings 34 and 31 on the post 24 provide for ready movement of the legs 4 and 5 when the template is moved to produce a curve and when said legs are moved in a sliding motion in their guide on the end of the post, said legs will ride on the rollers 34. During the sliding movement of the legs the flanges 25 will engage the inner sur-

faces of the upstanding members 40 connected with the sleeve 35 and prevent lateral displacement of the legs when in motion.

A supporting member 43 is mounted for vertical adjustment in the leg 4 adjacent its connection with the leg 5 and is adapted to support the legs in a horizontal position and maintain the legs at their outer ends at the same vertical distance from the board as the inner or sliding portion of said legs.

In the operation of the device the base plate 1 is secured in position upon a table or board by means of the screws 6. The set screw 12 is released for forming the proper angle between the legs 4 and 5 in order to produce the arc desired. The radius of the arc is determined by the length of the line located along the straight edge 2 of the base members 1 and between the centers 44 of the pivotal and sliding mounting of the legs 4 and 5 at the ends of the base member 1. By my improved mounting for the legs 4 and 5 and the micrometer adjustment for the pen or pencil at the apex of the triangle I have provided a device which is not only accurate but which will not readily wear out.

In order to determine whether the pen or pencil point is properly located within the barrel 13, said barrel is rotated and if the point of the pen or pencil describes a circle the micrometer screws must be adjusted until the pencil or pen fails to disclose anything more than a single point where the barrel 13 is revolved.

What I claim is:

1. An arc template comprising a base member adapted to be secured to a fixed support, legs pivotally and slidably mounted intermediate their ends at the ends of the base member, means for removably locking the ends of the legs to form a predetermined angle, means for pivotally supporting an arc describing element at the vertex of the angle formed by the connected legs, and cooperating means for adjusting the arc describing element through an arc of a circle.

2. An arc template comprising a base member adapted to be secured to a fixed support, legs pivotally and slidably mounted intermediate their ends at the ends of the base member, means for removably locking the ends of the legs to form a predetermined angle between the legs, means for supporting an arc describing element at the vertex of the angle formed by the connected legs, said last mentioned means comprising a sleeve supported by the connected legs, a post rotatably mounted within said sleeve and having a narrow passage therethrough to receive the arc describing element, and means for locking the arc describing element centrally of the rotatable post.

3. An arc template comprising a base

member adapted to be secured to a fixed support, legs pivotally and slidably mounted intermediate their ends at the ends of the base member, means removably locking the ends of the legs to form a predetermined angle between the legs, means for supporting an arc describing element at the vertex of the angle formed by the connected legs, said last mentioned means comprising a sleeve supported by the connected legs, a post rotatably mounted within said sleeve and having a narrow passage therethrough to receive the arc describing element, a pair of micrometer screws for adjustably centering the arc describing element within the post, and a pair of screws for supporting the arc describing element in the post.

4. An arc template comprising a base member adapted to be secured to a fixed support, legs pivotally and slidably mounted intermediate their ends at the ends of the base member, a free end of one of the legs being provided with a perforation, a sleeve mounted in the perforation and provided with a lateral flange upon which the perforated end of the leg is seated, the free end of the second leg being perforated and severed at one portion to provide a split ring, ears projecting from the ends of the split ring, said ring adapted to receive the sleeve and rest upon the perforated end of the first mentioned leg, means for clamping the ears together for rigidly locking the end of the second leg to the sleeve, and means rotatably mounted in the sleeve for supporting an arc describing element centrally of the sleeve.

5. An arc template comprising a base member adapted to be secured to a fixed support, legs pivotally and slidably mounted intermediate their ends at the ends of the base member, the free end of one of the legs being provided with a perforation, a sleeve mounted in the perforation and provided with a lateral flange upon which the perforated end of the leg is seated, the free end of the second leg being perforated and severed at one portion to provide a split ring, ears projecting from the ends of the split ring, said ring adapted to receive the sleeve and rest upon the perforated end of the first mentioned leg, means for clamping the ears together for rigidly locking the end of the second leg to the sleeve, a post rotatably mounted in the sleeve and having an annular shoulder bearing upon the upper end of the sleeve, and means mounted in the post for locking an arc describing element at the vertex of the angle formed by the connected legs.

6. An arc template comprising a base member adapted to be secured to a fixed support, legs pivotally and slidably mounted intermediate their ends at the ends of the base member, a free end of one of the

legs being provided with a perforation; a sleeve mounted in the perforation and provided with a lateral flange upon which the perforated end of the leg is seated, the free end of the second leg being perforated and severed at one portion to provide a split ring, ears projecting from the ends of the split ring, said ring adapted to receive the sleeve and rest upon the perforated end of the first mentioned leg, means for clamping the ears together for rigidly locking the end of the second leg to the sleeve, a post rotatably mounted in the sleeve and having an annular shoulder bearing upon the upper end of the sleeve, and adjustable means for centering and supporting an arc describing element at the apex of the angle formed by lines drawn longitudinally and centrally of the legs.

7. An arc template comprising a base member adapted to be secured to a fixed support, legs having an end of one adjustably secured to the end of the other leg, means for pivotally and slidably mounting the legs at the ends of the base member, said last mentioned means comprising a hollow post secured to the ends of the base member, a sleeve mounted for rotation on the fixed post, and a guide mounted on the upper end of the post and adapted to receive a leg.

8. An arc template comprising a base member adapted to be secured to a fixed support, legs having an end of one adjustably secured to the end of the other leg, means for pivotally and slidably mounting the legs at the ends of the base member, said last mentioned means comprising a hollow post secured to the ends of the base member, roller bearings mounted for rotation on the fixed post, and a guide rotatably mounted on the upper end of the post for permitting pivotal and sliding movement of the leg.

9. An arc template comprising a base member adapted to be secured to a fixed support, legs having an end of one adjustably secured to the end of the other leg, means for pivotally and slidably mounting the legs at the ends of the base member, said last mentioned means comprising a post rigidly mounted on the ends of the base plate, a pair of ball bearings mounted for rotation on the post, lugs projecting upwardly from one of the ball bearings, a plate connecting the upper ends of the lugs and cooperating with the lugs to form a guide for receiving and permitting sliding movement of a leg, and likewise pivotal movement of said leg, and means for locking the ball bearings in position on the post.

10. An arc template comprising a base member adapted to be secured to a fixed support, legs having an end of one adjustably secured to the end of the other leg, means

for pivotally and slidably mounting the legs at the ends of the base member, said last mentioned means comprising a hollow post mounted on the ends of the base plate, a
5 pair of roller bearings mounted on the post for rotation, a pair of lugs projecting at diametrically opposite points from one of the roller bearings, a roller pivotally mounted between each pair of lugs, a guide
10 mounted on said roller bearing to receive the legs, said legs being slidable on the rollers mounted in the pairs of lugs.

11. An arc template comprising a base member adapted to be secured to a fixed support, legs having an end of one adjustably
15 secured to the end of the other leg, means for pivotally and slidably mounting the legs at the ends of the base member, said last mentioned means comprising posts rigidly
20 connected at each end of the base member, roller bearings mounted on the post in superposed relation, the upper roller bearing being provided with a pair of upstanding lugs, a plate connecting the lugs and
25 cooperating with the lugs to form a guide to receive a leg, a disc mounted in the post in

engagement with the uppermost ball bearing, and a nut having a threaded engagement with the post for locking the disc in position.

12. An arc template comprising a base member adapted to be secured to a fixed support, legs having an end of one adjustably secured to the end of the other leg, means for pivotally and slidably mounting the
35 legs at the ends of the base member, said last mentioned means comprising posts rigidly connected at each end of the base member, roller bearings mounted on the post in superposed relation, the upper roller bearing being provided with a pair of upstanding lugs, a plate connecting the lugs and co-
40 operating with the lugs to form a guide to receive a leg, a disc mounted in the post in engagement with the uppermost ball bearing, a nut having a threaded engagement
45 with the post for locking the disc in position, said bearings being provided with oppositely projecting pairs of ears, rollers mounted in the ears and engaging the under
50 face of the legs.

THEODORE SPEIDEN.