Jan. 6, 1953 B. M. PACI 2,624,117

DEVICE FOR DRAWING CIRCLES

Filed June 16, 1950

FIG. 1

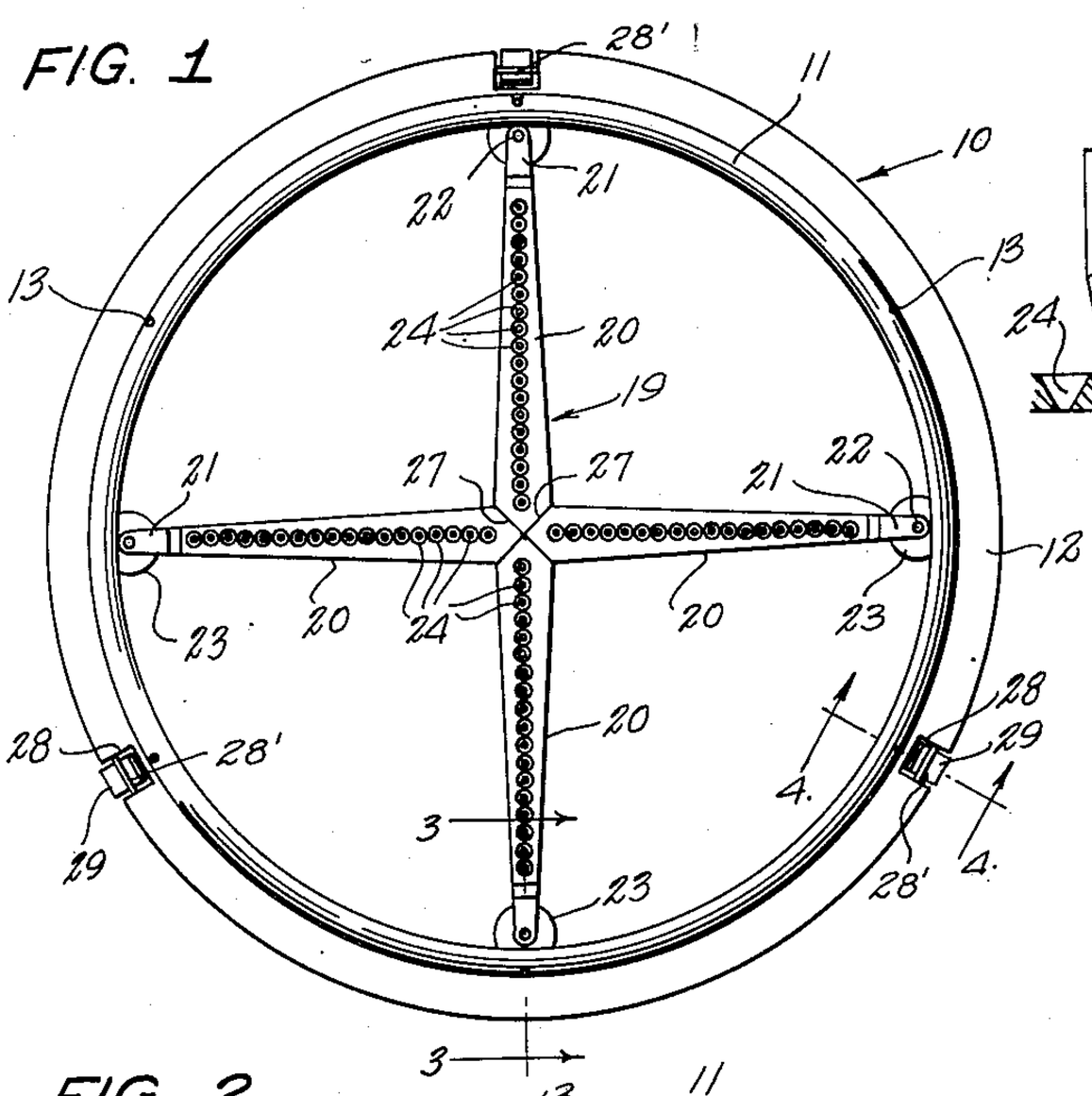


FIG. 2.

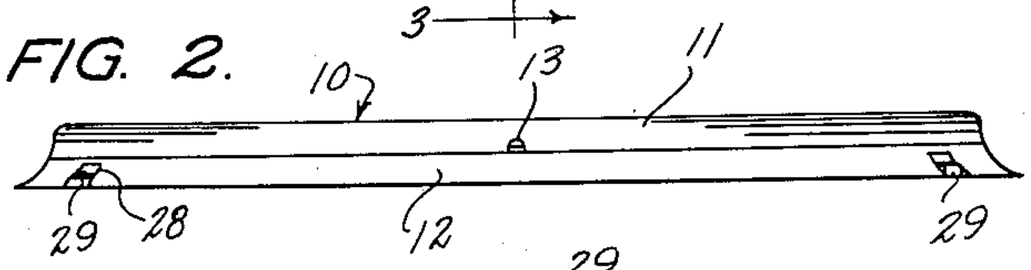


FIG. 3.

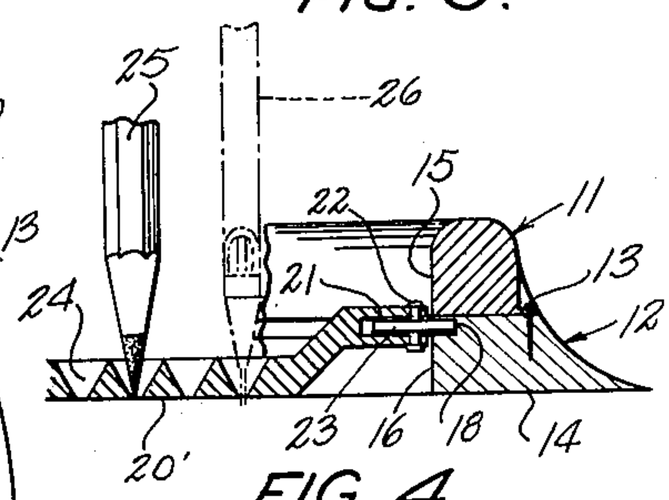


FIG. 4.

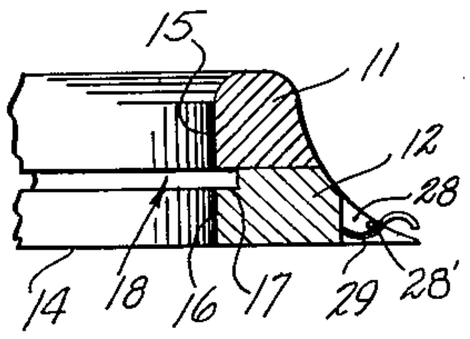


FIG. 5.

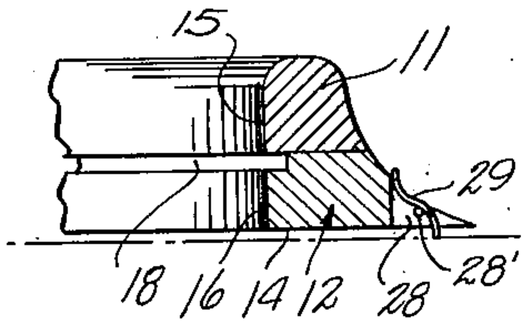


FIG. 6.

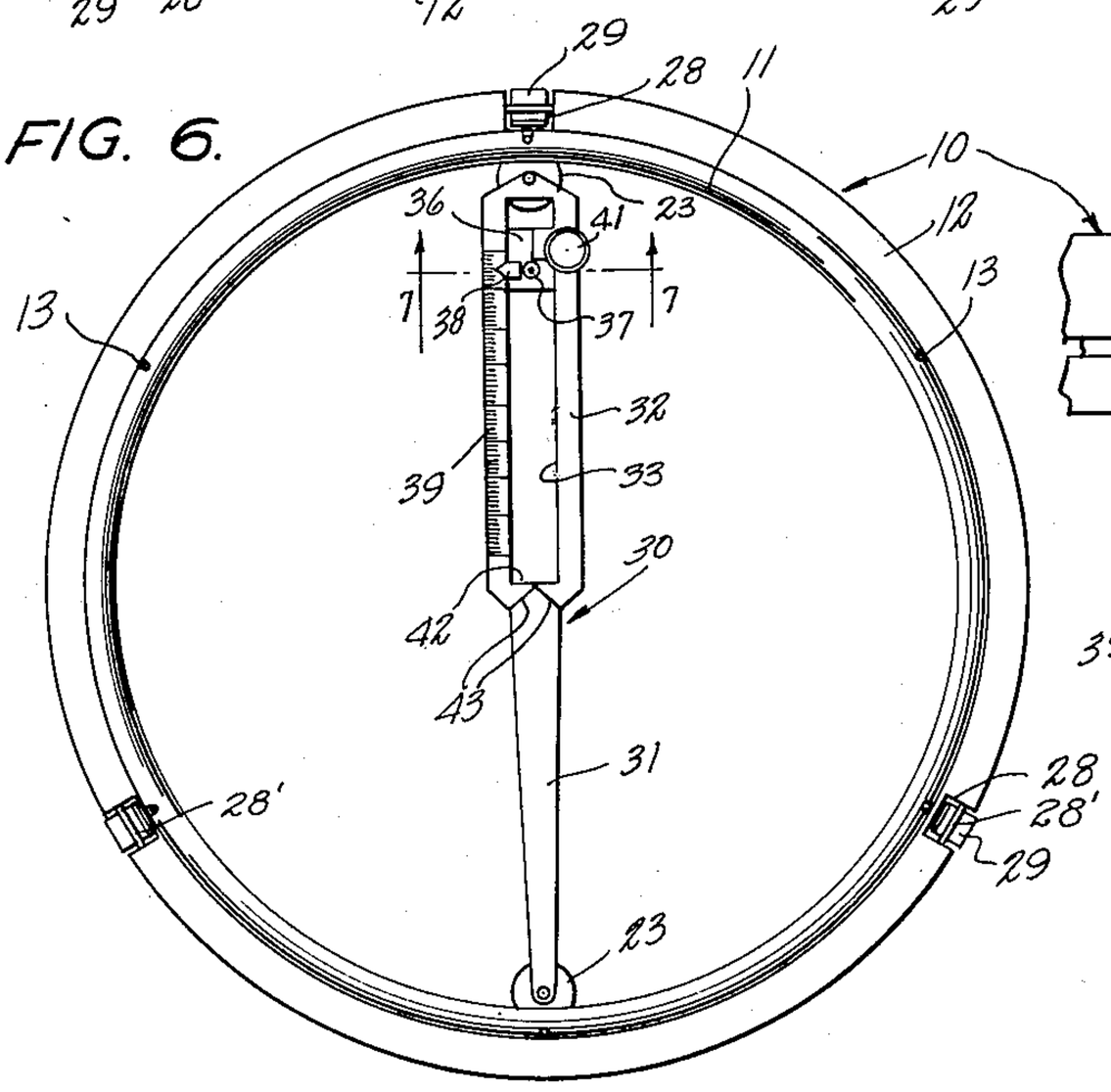
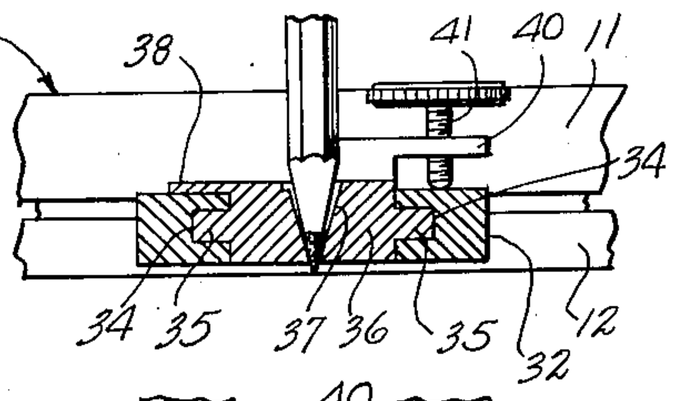


FIG. 7.



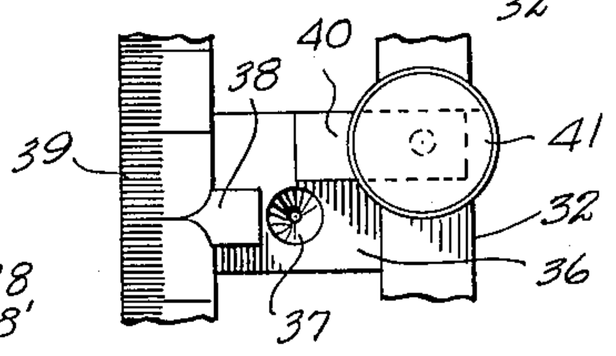


FIG. 8.

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DEVICE FOR DRAWING CIRCLES

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3 Claims. (Cl. 33—27)

1

My invention relates to a device for use in drawing circles.

An important object of the invention is to provide a device to aid draftsmen in drawing circles which normally require the use of a conventional drafting compass, the device having certain advantageous features not possessed by a compass.

A further object is to provide a device of the above-mentioned class which may be conveniently used for drawing circles in either pencil or ink, and which eliminates the punching of holes in the paper, as is often necessary when a compass is used.

A still further object of the invention is to provide a device of the class mentioned, wherein the construction is simplified, strong and compact.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a plan view of a device embodying the invention;

Figure 2 is a side elevation of the same;

Figure 3 is an enlarged fragmentary vertical section taken on line 3—3 of Figure 1;

Figure 4 is a similar section taken on line 4—4 of Figure 1;

Figure 5 is a similar section taken upon the same line as Figure 4, but showing parts in different relative positions;

Figure 6 is a plan view of a modified form of the invention;

Figure 7 is an enlarged fragmentary vertical section taken on line 7—7 of Figure 6;

Figure 8 is a fragmentary plan view of the elements shown in Figure 7.

In the drawings, where for the purpose of illustration are shown preferred embodiments of the invention, attention is directed first to Figures 1 to 5, inclusive, wherein the numeral 10 designates generally a low, annular ring or stationary base, preferably comprising upper and lower annular sections 11 and 12 secured together by brads 13, or the like. The lower annular section 12 has a radially-wide, flat, continuous bottom 14 for engagement upon the drafting paper or the like, and the inner vertical sides 15 and 16 of the sections 11 and 12 are in alignment, as shown. The outer sides of the sections 11 and 12 form a curved upwardly-sloping, continuous surface, as shown. The lower ring section 12 is provided in its inner side

2

16 and top with an annular recess 17 which is overlapped by the bottom of the upper section 11 to form an annular groove or race 18.

Mounted for rotation in a horizontal plane upon the ring or base 10 is a spider 19, preferably comprising four radial arms 20, adjacent pairs of which are arranged 90° apart; the arms 20 being integrally connected at their inner ends, as shown. Near their outer ends, the arms 20 have upwardly-offset integral extensions 21 which are bifurcated and apertured for receiving vertical pins 22 upon which are freely rotatably mounted horizontally-disposed thin wheels or rollers 23 which operate in the race 18. The flat lower faces 20' of the arms 20 are disposed adjacent to the flat bottom 14, Figure 3. The fit of the rollers 23 within the groove 18 is accurate, so that there will be substantially no radial play or shifting of the spider 19. Each arm 20 is provided inwardly of its extension 21 with a radial group of pen or pencil-point-receiving openings 24 which are conically tapered downwardly, Figure 3, for receiving the point of either a pencil 25 or pen 26, as desired. The openings 24 are small at their bottoms, adjacent to the lower faces 20', so that there will be only a small clearance about the pencil or pen point, as shown. The openings 24 of each arm are preferably equidistantly spaced a standard linear distance apart, and a visible scale, not shown, may be marked upon each arm 20 adjacent to the openings 24 thereof, to aid the draftsman in selecting a circle of a given radius. The spacing of the openings 24 of each arm 20 is preferably different, to facilitate drawing the maximum number of circles having different diameters. For example, the openings 24 of one arm 20 may be spaced ⅛ of an inch apart, while the openings of the next adjacent arm may be $\frac{1}{16}$ of an inch or ¼ of an inch apart. If desired, the openings 24 of one arm 20 may be spaced apart some fraction of a centimeter, or some other distance on the metric scale. The spider 19 is preferably formed of some transparent plastic material, and at its center the spider is provided with a pair of crossed hair lines 27 printed or otherwise marked upon the spider. The crossing point of these hair lines 27 indicates the exact center of the instrument, and the center of the circle or circles to be drawn. The distance from the crossing point of the hair lines 27 to the innermost opening 24 of each arm may be known or visibly marked upon the spider.

The lower ring section 12 is provided in its periphery with a plurality of circumferentially-

equidistantly-spaced notches 28 within which are pivotally secured as at 28' S-shaped legs or feet 29. When the feet 29 are disposed horizontally, Figure 4, the bottom surfaces 14 and 20' lie flat upon the drawing paper or table, but when the feet are swung to their generally vertical positions, Figure 5, the entire instrument is elevated slightly from the paper, so that inked circles may be readily drawn without the ink smearing. When the feet are arranged as in Figure 4, the device is, of course, usable to draw circles in pencil.

To use the device as shown in Figures 1 to 5, it is simply placed upon the paper with the feet 29 adjusted for pencil or pen, as desired. The point of the pencil or pen is introduced into the desired opening 24 for drawing a circle of a given radius. The base or ring 10 may be held stationary with the hand while the other hand turns the spider 19 with the pencil or pen, thus drawing the desired circle. It is obviously very convenient to use this device for drawing a plurality of concentric circles, and it is to be noted that it is never necessary to make any hole in the drawing paper, such as is usual with a compass.

Attention is directed next to Figures 6 to 8, wherein there is shown a modification of the invention. In this form of the invention, the same ring 10, including sections 11 and 12, is employed, and these parts are identical in all respects to the corresponding parts shown and described in the first form of the invention. In this form of the invention, instead of the spider 19, I use a single straight diametrical arm or bar 30, one radial section 31 of which is relatively narrow and bifurcated at its outer end to receive one of the wheels 23. The opposite radial section 32 of the bar 30 is wide and provided with a longitudinal slot 33. The outer end of section 32 is bifurcated to receive a wheel 23, and the wheels 23 are mounted identically and operate identically with the wheels of the first form of the invention. The longitudinal edges of the slot 33 have longitudinal grooves 34 to slidably receive tongues 35 of a slide or block 36 which operates within the slot 33. The block 36 has a central conical opening 37 to accommodate the point of a pencil or pen, as shown, and is provided at one side with a laterally-extending integral pointer 38 which overlies and traverses the section 32 at one side of the slot 33. A longitudinal scale 39 is marked upon the top of bar section 32 for cooperation with the pointer, and obviously this scale may be graduated as desired. The block 36 includes an upwardly-offset integral extension 40 disposed above the bar section 32 at its side remote from scale 39. The extension 40 carries an adjustable set or clamp screw 41 for locking the block 36 to the bar 30 in the selected adjusted position along the bar. The inner end 42 of the slot 33 is disposed at the center of the device, as indicated by the converged hair lines 43 printed or otherwise marked upon the bar 30. When the inner end of the block 36 abuts the end 42, the pointer 38 will register with the innermost graduation of the scale 39. The bar 30 is preferably made of some transparent plastic material. The other parts of the device in both forms of the invention may be formed of plastic, metal, or any other suitable material.

The device as shown by Figures 6 to 8 may be used to draw circles of various diameters by adjusting the block 36 along bar 30, locking it

at the selected adjusted positions by screw 41, and then operating the device with a pen or pencil in the same manner as described in the first form of the invention.

It is to be understood that the forms of the invention herewith shown and described are to be taken as preferred examples of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, I claim:

1. A device for drawing circles comprising an upstanding base in the form of a ring and adapted to rest upon a drawing table, there being a groove extending inwardly of and completely around the internal surface of said ring between the top and bottom of the latter, a member positioned within and extending diametrically across said ring and carrying rotatable rollers in rollable contact with said groove for rotatably connecting said member to said ring, said member being provided with an opening conformably shaped to accommodate a pointed end of an inscribing element and extending transversely therethrough intermediate its ends, and spaced horizontally disposed feet arranged exteriorly of said ring adjacent to and above the bottom of the latter and pivotally connected to said ring intermediate their ends for movement from the horizontal position to an upstanding position to thereby slightly elevate the base ring from a drawing table.

2. A device for drawing circles comprising an upstanding base in the form of a ring and adapted to rest upon a drawing table, there being a groove extending inwardy of and completely around the internal surface of said ring between the top and bottom of the latter, a straight bar positioned within and extending diametrically across said ring and having on its ends rotatable rollers in rollable contact with said groove for rotatably connecting said bar to said ring, a block positioned on said bar inwardly of and spaced from one end of the latter and connected to said bar for slidable movement radially of said ring, said block being provided with an opening conformably shaped to accommodate a pointed end of an inscribing element and extending transversely therethrough intermediate its sides thereof, a pointer projecting from one end of said block and overlying the adjacent side of said bar and spaced horizontally disposed feet arranged exteriorly of said ring adjacent to and above the bottom of the latter and pivotally connected to said ring intermediate their ends for movement from the horizontal position to an upstanding position to thereby slightly elevate the base ring from a drawing table.

3. A device for drawing circles comprising an upstanding base in the form of a ring and adapted to rest upon a drawing table, there being a groove extending inwardly of and completely around the internal surface of said ring between the top and bottom of the latter, a member positioned within and extending diametrically across said ring, said member embodying a spider including at least four arms arranged in radial relation positioned within said ring, the free ends of said arms carrying rotatable rollers in rollable contact with said groove for rotatably connecting said spider to said ring, each of said arms being provided with a longitudinal row of openings conformably shaped to accommodate a pointed end of an in-

scribing element and extending transversely therethrough intermediate their ends, and spaced horizontally disposed feet arranged exteriorly of said ring adjacent to and above the bottom of the latter and pivotally connected to said ring intermediate their ends for movement from their horizontal position to an upstanding position to thereby slightly elevate the base ring from a drawing table.

BENIAMINO M. PACI.

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