Nov. 13, 1934. W. E. SIDNEY 1,980,884

DRAFTING DEVICE

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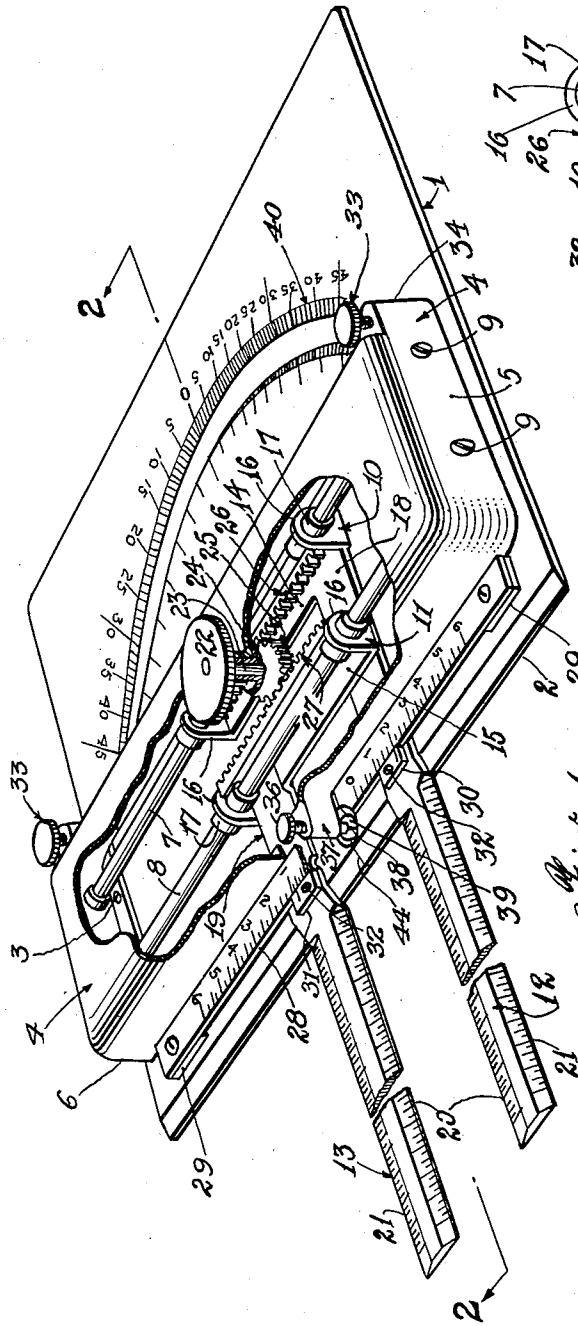


Fig. 1

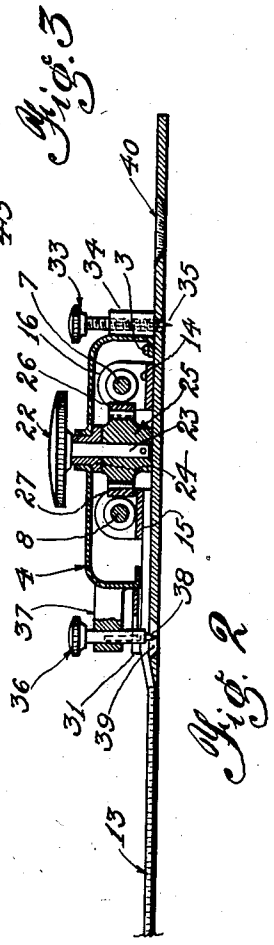


Fig. 2

Fig. 3

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DRAFTING DEVICE

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7 Claims. (Cl. 33—110)

This invention relates to drafting devices.

One of the primary objects of this invention is to provide a drafting device for drawing parallel lines symmetrically disposed at both sides of a center line. Another object is to provide such a device having means for accurately measuring the distances of the lines from said center-line. A further object is to provide a device having means for drawing radially disposed groups of parallel lines. Still another object of this invention is the provision of a drafting device having means for the securement of the device, for the purpose of drawing a series of lines variously spaced from and symmetrically disposed to a common center line. Additional features and advantages of this invention will appear from the following description considered in connection with the accompanying drawing forming a part of this application.

In the drawing:

Fig. 1 is a perspective view, partly in section, of the preferred embodiment of this invention.

Fig. 2 is a cross-sectional view taken substantially on line 2—2 in Fig. 1.

Fig. 3 is a fragmentary view showing one method of removably mounting the drafting blades, or rulers, on the device.

Reference being had to the drawing, the drafting device comprises a base-plate 1 of rectangular shape and having its forward side 2 preferably bevelled to produce a straight edge for drawing lines. Near the forward side, and parallel thereto, is secured by means of screws 3 a rectangular, box-like, housing 4, in the narrow sides 5 and 6 of which are supported the two transverse parallel guide-rods 7 and 8, secured in place, for instance, by means of screws 9.

Upon the guide-rods are slidably mounted the two slide-members 10, 11 to each of which is secured one of the parallel drafting blades 12, 13. Each slide-member consists of a horizontal bridge portion 14, 15 having at its ends upwardly directed lugs 16 in which are preferably securely mounted apertured bushings 17 slidably engaging the guide-rods 7 and 8. The bridge portions 14, 15 of the slide-members 10, 11 have rectangularly disposed extensions 18 and 19 which, in Figs. 1 and 2, are extended outwardly of the housing sufficiently to produce the parallel drafting-blades 12 and 13, the edges 20 and 21 of which are also preferably bevelled and, if desired, provided with graduations or scales for lineal measurements.

It will be noted in the drawing that these extensions 18, 19 glide on the upper surface of the base-plate and that the blade-portions 12, 13 are bent down level with the lower face of the base-plate 1, to lie flat upon the drafting surface. As shown in Fig. 1 in particular, the major part of the bridge-portion 15 is raised above the base-plate to clear the extension 18 of the slide-member 10.

The slide-members 10, 11, respectively and their corresponding drafting-blades 12, 13 are moved simultaneously and equally by turning a knob 22 having a shaft 23 rotatably mounted in a bushing 24 secured in the top side of the housing 4. At the lower end of this shaft is suitably secured a pinion 25 which meshes at opposite sides with the parallelly disposed racks 26, 27, respectively mounted between, and secured to, the lugs 16 of their corresponding slide-members 10, 11.

As shown in the drawing, a clockwise rotation of the knob 22 will cause the drafting-blades 12, 13 to separate, and a reversed rotation of said knob will, of course, move said blades towards each other.

For the purpose of measuring the distance of each blade from a center-line, a scale 28 having, preferably, two sets of oppositely reading lineal graduations, is mounted on the base-plate upon spacer-blocks 29 to clear the blade extensions 18 and 19. Upon the latter are mounted, in sliding contact relation with the scale 28, the gauge-blocks 30, 31, which are secured by screws 32 engaging oblong holes provided therein for longitudinal sliding adjustment, and whereby both blades may be adjusted in their correct position relative to the scale 28. As shown in Fig. 1, each gauge-block is provided with a reading or index line from which readings are made on the scale. When, for instance, radial lines are to be drawn, the blades 12, 13 are moved toward each other and a pencil-point is inserted between the opposite blade-edges. According to the thickness of said pencil, the blocks will be adjusted so as to bring the index-lines in proper registration with the zero (0) mark on the scale. The gauge-block 30 is, in the present embodiment, marked to suit measurements taken from the inner edges 20 of the drafting-blades 12, 13, whereas the block 31 is made use of when drawing lines along the outer edges 21 of said blades.

When many lines are to be drawn parallel to a given center-line, it may be found advantageous to properly secure the drafting device upon the drawing surface. I provide therefor the two thumb-screws 33 engaging suitably tapped lugs 34 placed at the back of the housing 4, and preferably provided with renewable anchoring pins 35 passing through the base-plate and which

may be forced into the drawing surface by turning said screws in the proper direction. When the pins are not needed, the screws are turned up, to bring the former out of engagement with the drawing surface.

The device may also be used for drawing radially or tangentially disposed groups of lines, such as needed, for instance, when designing the spokes of a gear or wheel, etc. For this purpose, I provide near the front of the device a pivot-pin 36, preferably of the push-type, which frictionally fits within a bracket 37 secured to the housing in any desired manner. This pivot-pin is also, preferably, provided with a renewable point 38, as suggested in the drawing.

The pivot-pin and its point pass through an aperture 39 in the base-plate; said aperture being preferably made rather large and bevelled to afford a good view of the center-lines drawn on the working surface, for the purpose of locating the center-point.

At the rear of the housing 4 there is provided in the base-plate a protractor 40 disposed concentrically with the pivot-pin 36. This protractor is preferably marked with oppositely running graduations, the zero (0) point of which is in line with the pivot-pin and with the center-line 44 marked on the front edge 2 of the base-plate.

Instead of permanently securing the drafting-blades 12, 13 to their corresponding slide-members 10, 11 (as shown in Figs. 1 and 2), the former may be detachably secured to the latter in any desired and suitable manner, for the purpose of using longer blades, or such ones having different graduations, such as required for making drawings to different scales.

In Fig. 3, for instance, the extension 18^a of the slide-member 10 is made somewhat longer and is provided with screws 41 whereby the blade 12^a is removably secured. To insure proper alinement of the blade, the latter may be recessed, as at 42, to closely engage the extension 18^a. Also, when the drafting-blades are made of wood, celluloid, or other relatively soft material, it is advisable to drive the screws 41 into metal bushings 43, suitably secured to the blade.

From the foregoing description, the application of the device for drawing parallel lines will be readily understood and may be succinctly described as follows: Assuming that the drafting-blades be properly adjusted in relation to the scale 28, the draftsman first brings the blades towards each each other, leaving just enough space therebetween to insert a sharp pencil to draw the original center-line. Then turning the knob 22 clockwise, he will separate both blades equally from the center-line until the proper distance, as read on the scale 28, is obtained and draw the parallel lines, using either the inner or the outer edges of the drafting-blades, according to the gauge-block from which the measurements are made.

To draw radially disposed groups of parallel lines, the procedure varies only in that the draftsman forces the pivot-pin in the center of rotation and then swings the device around this center to draw the parallel and suitably spaced lines, using the protractor to obtain the desired angular spacing. Thus for instance, if it be desired to draw a wheel with, say, twelve spokes of uniform width, the blades are first brought close together to draw the original center-line and then spread apart to correspond to the width of the spokes. The first set of parallel lines being drawn, the draftsman now swings the device around 30°, as determined with the protractor, and draws the second set of parallel lines, at the same time also marking on the drawing surface a point corresponding to the zero line of the protractor. Reading from this point, he again swings the protractor around 30° to draw the third set of parallel lines, and so forth until the twelve spokes have been outlined.

It will be noted that by this procedure it is not necessary (as is the common drafting-room practice) to first draw the center line of each individual spoke and then space off the arms; but on the contrary, the latter may be drawn directly, thus greatly expediting the work and improving the accuracy thereof.

If however, it is desired to draw the center-lines of all the spokes, the blades are brought together, after each angular shift, to establish said center-lines and then separated to draw the spokes proper.

In addition to the above described practical applications of this device, several others will suggest themselves to a draftsman after becoming more familiar with it.

As will be understood, as suggested herein, there may be many changes made in the construction and arrangement of the details of my invention without departing from the field and scope of the same, and I intend to include all such variations, as fall within the sphere of the appended claims, in this application in which the preferred form only of my invention has been disclosed.

I claim:

1. In a device of the character described, a base-plate including a protractor and a pivot-pin centrally of said protractor; a pair of parallel drafting-blades upon the base and movable toward and away from each other, and means to move said blades simultaneously toward and away from each other whereby lines radially disposed to said pivot-pin and lines parallel and symmetrically disposed to said radial lines may be drawn without shifting said base-plate.

2. In a device of the character described, a base-plate including a protractor and a pivot-pin centrally of said protractor; a pair of parallel guide-means mounted on said base for movement toward and away from each other whereby lines radially disposed to the pivot-pin and lines parallel and symmetrically disposed to said radial lines may be drawn without shifting said base-plate, and means positioned on the base-plate to measure the distance between said guide-means.

3. In a device of the character described, a base-plate; a pivot-pin supported thereby; a pair of parallel guide-means mounted on said base-plate for movement toward and away from each other whereby lines radially disposed to said pivot-pin and lines parallel and symmetrically disposed to said radial lines may be drawn without shifting said base-plate, and means positioned on the base-plate to measure the angle of rotation thereof about the pivot-pin.

4. In a drafting device of the character described, a base plate; a housing mounted thereon; a pair of parallel guide-rods mounted in said housing; a slide-member slidably mounted on each guide rod; an extension secured at right angles to each slide-member, said extensions being disposed in parallel edge to edge relation; means positioned on said extensions for the removable securement thereto of drawing blades and the like; rotatable means mounted in said housing to simultaneously move said slide-members in op-

posite directions; a pivot-pin mounted for vertical movement on the housing and adapted to engage the drawing surface upon which the device is used, and means positioned on said base-plate to measure the angle of rotation thereof about said pivot-pin.

5. In a drafting device of the character described; a base plate; a housing mounted thereon; on; a pair of parallel guide rods mounted in said housing; a slide-member slidably mounted on each guide rod; an extension secured at right angles to each slide-member, said extensions being disposed in parallel edge to edge relation; means positioned on said extensions for the removable securement thereto of drawing blades and the like; rotatable means mounted on said housing to simultaneously move said slide-members in opposite directions; a pivot pin mounted for vertical movement on the housing and adapted to engage the drawing surface upon which the device is used, said base-plate having an arcuate aperture concentric with said pivot pin and provided with graduations to measure the angle of rotation of the base plate about the pivot pin.

6. In a drafting device of the character described; a base plate, a housing mounted thereon; a pair of parallel guide rods mounted in said housing; a slide-member slidably mounted on each guide rod, each slide-member comprising a horizontal bridge portion and upwardly directed apertured lugs adapted to slidably engage said guide rod; a rack-member positioned on each slide-member in parallel relation to its guide rod; a gear rotatably mounted on said housing in meshing engagement with the rack-members; means to rotate said gear; an extension secured at right angles to each slide-member; said extensions being disposed in parallel edge to edge relation, means positioned on said extensions for the removable securement thereto of drawing blades and the like, and means mounted on the base plate to measure the distance between said extensions.

7. In a drafting device of the character described; a base plate; a housing mounted thereon; a front guide rod and a rear guide rod mounted in parallel relation in said housing; a slide-member slidably mounted on each guide rod, each slide-member comprising a horizontal bridge portion and upwardly directed apertured end-lugs adapted to slidably engage the guide rod; an extension secured at right angles to each slide-member, said extensions being disposed in parallel edge to edge relation; the bridge portion of the front slide-member being raised to clear the extension of the rear slide-member; a rack-member positioned on each slide-member in parallel relation to its guide rod; a gear rotatably mounted on said housing in meshing engagement with both rack-members, and means to rotate said gear whereby said slide-members will move simultaneously in opposite directions.

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