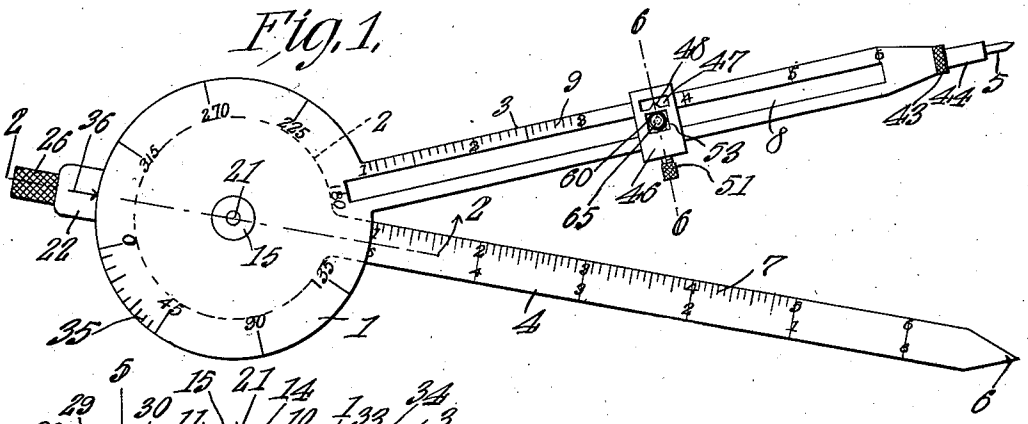
C. F. GOLDEN.

COMPASSES.

APPLICATION FILED JAN. 5, 1916.

1,188,644. Patented June 27, 1916.

Fig. 1.



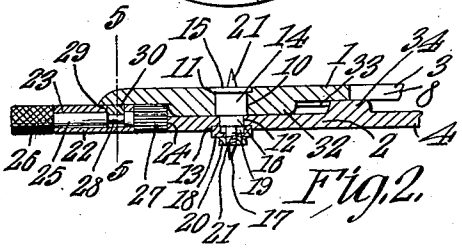


Fig. 2.

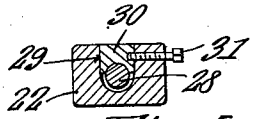


Fig. 5.

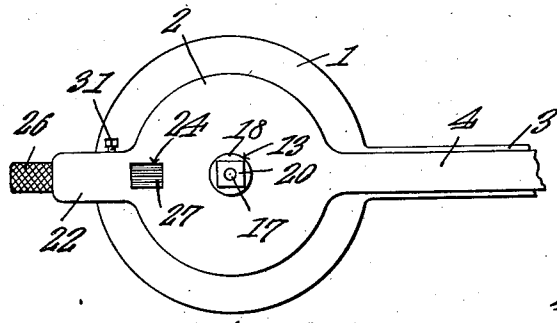


Fig. 3.

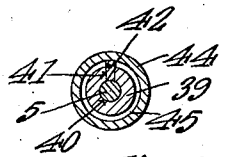


Fig. 8.

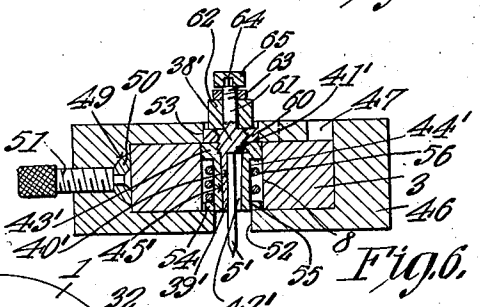


Fig. 6.

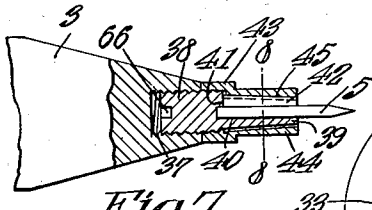


Fig. 7.

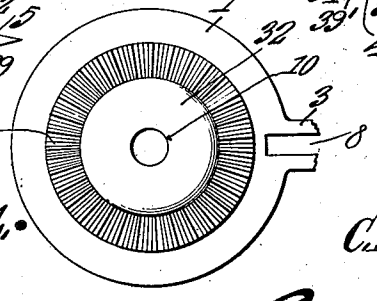


Fig. 4.

Witnesses

J. R. Tomlin

R. L. Parker.

C. F. Golden, Inventor

by C. A. Snow & Co.

Attorneys

UNITED STATES PATENT OFFICE.

CHARLES FREMONT GOLDEN, OF CHILI, INDIANA.

COMPASSES.

1,188,644. Specification of Letters Patent. Patented June 27, 1916.

Application filed January 5, 1916. Serial No. 70,495.

To all whom it may concern:

Be it known that I, CHARLES FREMONT GOLDEN, a citizen of the United States, residing at Chili, in the county of Miami and State of Indiana, have invented new and useful Compasses, of which the following is a specification.

The present invention appertains to drafting instruments, and aims to provide a novel and improved instrument capable of use as a compass, dividers, ruler, and for kindred purposes, whereby the instrument will be found useful by draftsmen, carpenters, machinists, mariners and other artisans in carrying out their respective occupations.

One of the objects of the invention is the provision of novel means for assembling the legs of the compass, and for setting them at various predetermined angles relative to one another.

Another object of the invention is the provision of a slide carried by one leg of the compass and carrying a marking element, such as a point, pencil, punch, or the like, which can be adjusted to various distances from the pivot of the legs for striking arcs of various radii, and whereby in connection with the angular adjustment of the legs, the marking element of said slide can be brought to various desired points of the circle scribed by the marking element.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a plan view of the instrument laid horizontally. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1, with the legs one above the other. Fig. 3 is a bottom plan view of the instrument with the legs one above the other, and partly broken away. Fig. 4 is a view of the inner side of one of the disks and a portion of its leg. Fig. 5 is an enlarged sectional detail taken on the line 5—5 of Fig. 2. Fig. 6 is an enlarged sectional view through the slide, taken on the line 6—6 of Fig. 1. Fig. 7 is an enlarged sectional detail illustrating the marking element holder carried by the end of one leg. Fig. 8 is an enlarged cross section taken on the line 8—8 of Fig. 7.

In carrying out the invention, there is provided a pair of parallel companion disks 1 and 2, the disk 2 being of smaller diameter than the disk 1 and being concentric therewith. The disks 1 and 2 are provided with the respective radially projecting legs 3 and 4 of the compass, a detachable marking element 5 being carried by the end of the leg 3, as will hereinafter more fully appear in detail, and the end of the leg 4 being pointed, as at 6. The leg 4 is graduated, as at 7, in inches, or other units of linear measurement, whereby said leg 4 can be used as a ruler and straight edge. The leg 3 is provided with a longitudinal slot 8, and is graduated, as at 9, in inches, or other unit of linear measurement, extending from or having the zero point at the pivot of the disks.

In order to pivotally connect the disks 1 and 2, the disk 1 is provided with a central aperture 10 and with an enlarged recess 11 at the outer end of said aperture, and the disk 2 is provided with a central aperture 12 and an enlarged recess 13 at the outer end of said aperture. A cylindrical pivot 14 fits within the aperture 10 and has an outstanding annular flange 15 seated in the recess 11, and the pivot 14 is provided with a square boss 16 fitting in the square aperture 12, and said boss is in turn provided with an outstanding threaded stem 17. A washer 18 is disposed on the stem 17 and has a square socket 19 normally disposed toward the disk 2, and a nut 20 is threaded upon the stem 21 and bears against the washer to hold the disks 1 and 2 between the flange 15

and washer 18. Said washer normally seats within the recess 13. The pivot 14 is provided with points 21 at its ends.

By removing the nut 20 and washer 18 from the pivot, the disk 2 can be removed from the pivot, and the washer 18 can then be reapplied to the pivot so that the square boss 16 of the pivot is received in the socket 19, and the nut 20 can then be reapplied to the stem 21 which will hold the washer 18 against the disk 1. The pivot is now held fast to the disk 1. It is thus possible to use the same pivot for pivotally connecting the disks 1 and 2, or for serving as a pivot for the disk 1 alone.

Means is provided for adjusting the legs angularly relative to one another, said mean serving to rotate the disks 1 and 2 relative to one another, and to this end the disk 2 is provided diametrically opposite its leg 4 with an outstanding arm 22 provided with a radial bore 23 extending from the end thereof to a rectangular opening 24 with which the disk 2 is provided remote from the leg 4. A stem 25 is rotatable within the bore 23, and has a knob or thumb piece 26 at its outer end abutting against the radial arm 22, and the inner end of the stem 25 engages within a pinion 27 fitted within the opening 24, whereby said pinion will be rotated with the stem. The stem 25 has a reduced portion 28, and the arm 22 is provided at that side thereof adjacent the disk 1 with an opening 29, adjacent the reduced portion 28, and in which is fitted a piece 30 having a curved surface fitting the reduced portion 28 between the shoulders formed thereby, to prevent the longitudinal movement of the stem 25 unless the piece 30 is removed. The piece 30 is held in place by a set screw 31 threaded into the arm 22 and impinging against the piece 30, as seen in Fig. 5. The inner side of the disk 1 is provided with a central boss 32 surrounding the aperture 10 and resting against the disk 2, and said side of the disk is provided with an annular series of radial gear teeth 33 with which the pinion 27 meshes, in order that when the stem 25 is rotated through the medium of the knob 26, the disks 1 and 2 will be rotated relative to one another to set the legs at the desired angle with respect to one another.

The basal end of the leg 4 is provided with a lug 34 against which the marginal portion of the disk 1 rests, to hold the disks against vibration relative to one another, and the outer side of the disk 1 is provided around its margin with a protractor scale or graduations 35, while the corresponding side of the arm 22 is provided with a pointer 36 coöperable with said scale to indicate the angle between the legs.

In order to detachably and adjustably apply the marking element 5, which may be a pin, lead, punch or other equivalent element, a holder 38 is used, said holder being cylindrical and threaded to screw into a threaded socket 37 with which the end of the leg 3 is provided. The outer end of the holder 38 has a reduced tapered extension 39 provided with a bore or socket 40 for the element 5, and the extension 39 is provided with a longitudinal slot 41. A wedge-shaped key 42 is fitted in the slot 41, and a collar 43 is threaded upon the holder 38 and has a reduced outer extension 44 surrounding the extension 39 and provided with a tapered bore 45. When the collar 43 is screwed onto the holder 38, the extension 44 thereof bears against the key 42, and forces said key inwardly due to the longitudinal movement of the collar 43 and the engagement of the tapered bore 45 with the wedge-shaped key 42. The marking element 5 is thus clamped within the bore 40, and when the collar 43 is loosened, said marking element can be adjusted or removed and replaced.

A slide 46 is slidable upon the slotted leg 3, and is provided with an opening 47 exposing the graduations 9 therethrough, and a pointer 48 projecting into said opening to coöperate with said graduations for indicating the position of the slide relative to the leg 3, or the distance of the slide from the pivot 14. In order to hold the slide at any adjusted position to which it is set, the same is provided with a recess 49 facing one edge of the leg 3, and a clamping element 50 is fitted within the recess 49 and has swiveled thereto a set screw 51 threaded into the slide 46, whereby said screw can be rotated for binding or releasing the slide. The slide 46 is provided at one side with the circular aperture 52 and at its opposite side with a square aperture 53, said apertures being at opposite sides of the slot 8. A plate 54 is slidable within the slot 8 and bears against that portion of the slide 46 having the aperture 52, and said plate 54 has a registering aperture 55. A marking element holder 38′, somewhat similar to the holder 38 above described is movable within the slide 46, and has the parts 39′, 40′, 41′, 42′, 43′, 44′, 45′ and 5′ resembling the corresponding parts of the holder 38 not having their reference numerals primed. The extension 44′ of the collar 43′ is slidable within the apertures 55 and 52, whereby the holder 38′ can slide vertically or perpendicularly relative to the leg 3, a coiled wire expansion spring 56 being disposed within the slot 8 around the extension 44′ and being confined between the plate 54 and collar 43′ to yieldably raise or retract the marking element 5′. A nut 60 fitting non-rotatably within the aperture 53 is threaded

upon the holder 38′, and the collar 43′ is seatable against that portion of the slide 46 having the aperture 53 to limit the upward movement of said holder. When the holder is rotated relative to the nut 60, it is adjusted relative thereto, to regulate the tension of the spring 56. The holder 38′ has a stem 61 projecting therefrom out of the aperture 53, and upon which is freely rotatable a finger piece 62 which can be grasped by the fingers for swinging the leg 3. The finger piece 62 is held in place by a nut or retaining element 63 engaged upon the stem 61, and the free end of said stem has a squared head 64, which is ordinarily protected by a cap 65 fitted thereon when the holder 38′ is tapped by a hammer or equivalent implement.

The inner end of the holder 38 is provided with a square socket 66, whereby when said holder 38 is removed, it can be used as a wrench to rotate the set screw 31, as well as the holder 38′ when the cap 65 is removed. By adjusting the holder 38′, it is screwed within the nut 60, to either increase or decrease the tension of the spring 56, which ever is desired.

The present implement can be used as a compass or dividers, as will be apparent without detailed description, it being noted that by rotating the knob 26, the legs can be readily adjusted to various angles relative to one another. The instrument is particularly useful in trigonometry for obvious reasons, and can be used by mariners, draftsmen and other artisans in following their pursuits. The leg 4 can be used as a ruler, and the device may be used as a compass when laid upon the surface to be scribed, since the pivot 14 will serve as a center while the disk 1 is rotated to cause the marking element 5′ to scribe an arc or circle. The two legs can be detached, whereby the leg 3 can be used as just indicated, while the leg 4 is used as a ruler.

A cardinal feature of the invention, resides in the fact that points can be marked in a circle at predetermined arcs or angles relative to one another. Thus, assuming the instrument as illustrated in Fig. 1 is laid on a surface, with the pivot 14 at the center of a circle, and the leg 4 held stationary at one point of the circle, then, the leg 3 can be adjusted at predetermined angles relative to the leg 4, so that the marking element 5′ can be brought to the desired points. Supposing it is desired to divide a circle into five equal parts, for purpose of drawing a five pointed star, or the like, this will necessitate the points being 72 degrees apart (dividing 360 degrees by 5). Therefore, by holding the leg 4 at one point of the circle, the leg 3 can be adjusted to bring the pointer 36 to the graduation 72 of the scale 35, and the marking element 5′ is therefore brought to a point 72 degrees from the point covered by the leg 4. The element 5′ is then tapped or pressed downwardly to leave a mark, and the leg 3 is then adjusted 72 degrees farther for making the second mark. This can be repeated until the five marks are made, it being noted that the slide 46 can be adjusted to various distances from the pivot, for dividing circles of various diameters. The marking element 5′ can be a sharp pointed pin, a punch, a lead, or the like, whereby the device can be used in various arts. When the holder 38′ is tapped by a hammer or like implement, this will not injure the instrument, since the holder 38′ can yield downwardly for leaving the impression, and as soon as the pressure is relieved, the spring 56 will return the holder 38′ to normal position by raising the collar 43′ and nut 60.

From the foregoing, taken in connection with the drawing, it is believed that the advantages and attributes of the present instrument will be obvious to those skilled in the art.

Having thus described the invention, what is claimed as new is:

1. In an instrument of the character described, a pair of pivotally connected disks having legs, the inner side of one disk having an annular series of teeth, a pinion carried by the other disk and meshing with said teeth, and a stem engaged to said pinion and adapted to be rotated manually.

2. In an instrument of the character described, a pair of pivotally connected disks having radial legs, a longitudinally adjustable slide carried by one leg, a marking element carried by said slide, the disk of said leg having gear teeth at its inner side, a pinion carried by the other disk and meshing with said teeth, means for manually rotating said pinion, and means for indicating the angle between said legs.

3. In an instrument of the character described, a pair of pivotally connected disks having legs, one disk having a radial arm diametrically opposite its leg, said disk having an opening, said arm having a bore extending to said opening, a pinion fitting in said opening, a manually operable stem journaled in said bore and engaged with said pinion, the inner side of the other disk having an annular series of gear teeth meshing with said pinion, the outer side of the second mentioned disk having a protector scale, and said arm having a pointer cooperable with said scale.

4. In an instrument of the character described, a pair of disks having legs and central apertures, a pivot fitted in one aperture, a longitudinally movable marking element carried by the respective leg, the pivot

having a square boss fitting in the other aperture, said boss having an outstanding threaded stem, a washer upon said stem and adapted to bear against the respective disk, said washer having a square socket to receive said boss when said disk is removed, and a nut threaded upon said stem to bear against said washer.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES FREMONT GOLDEN.

Witnesses:
R. S. PLACE,
C. F. FITE.