G. H. CARDELL.

DRAFTING INSTRUMENT.

APPLICATION FILED MAR. 20, 1911.

1,015,423.

Patented Jan. 23, 1912.

2 SHEETS—SHEET 1.

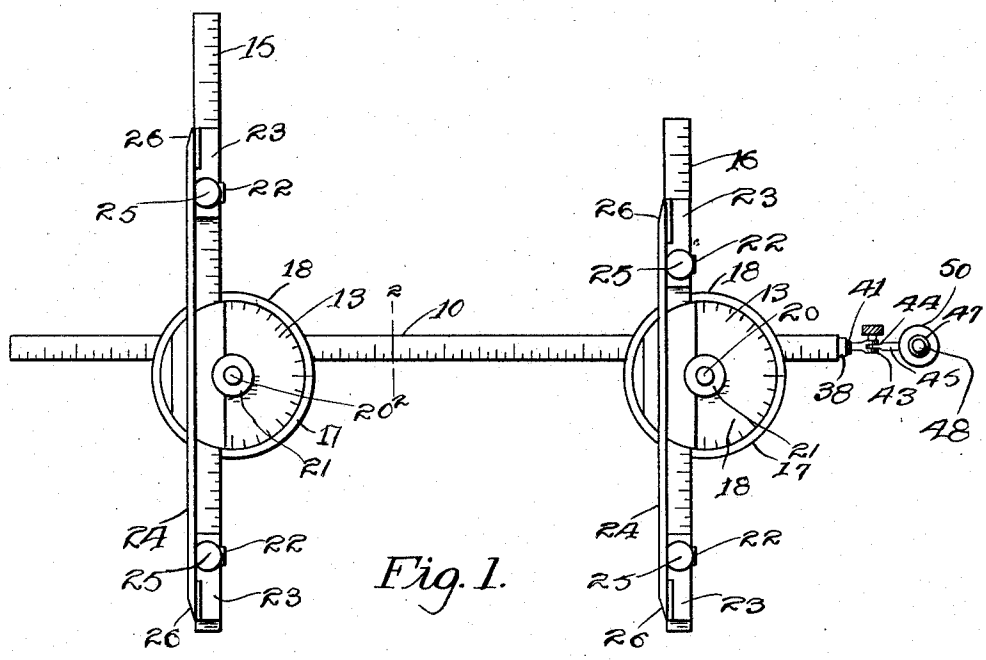

Fig. 1.

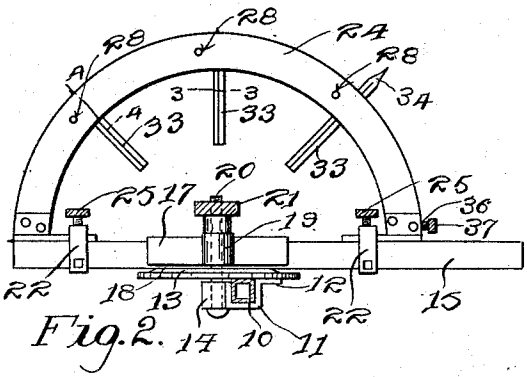

Fig. 2.

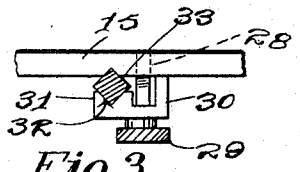

Fig. 3.

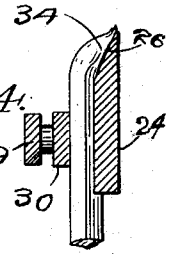

Fig. 4.

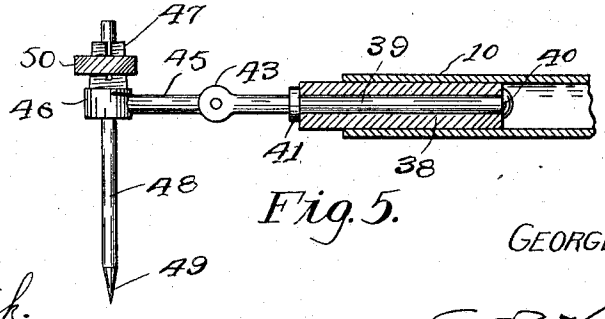

Fig. 5.

Witnesses

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2 SHEETS—SHEET 2.

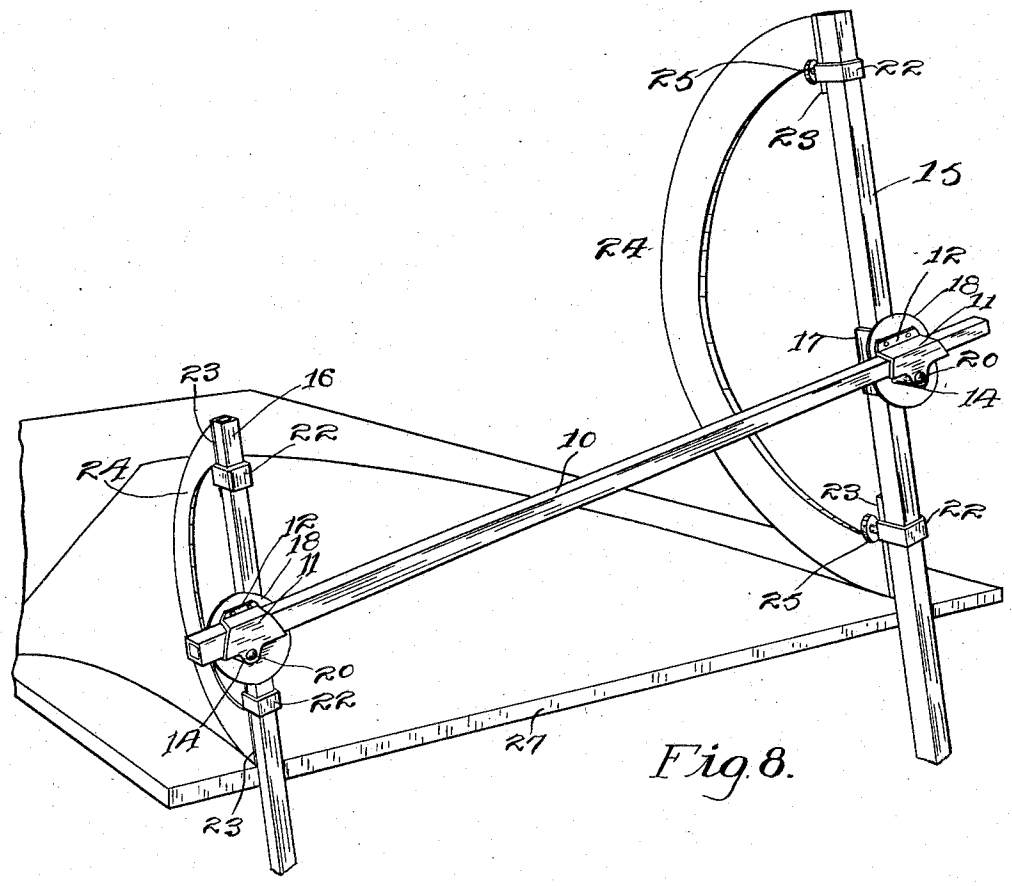

Fig. 8.

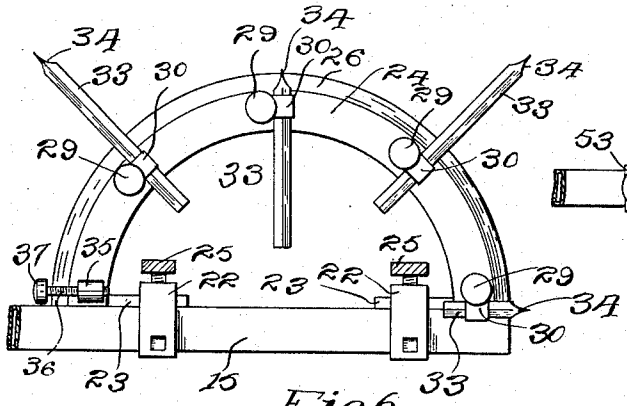

Fig. 6.

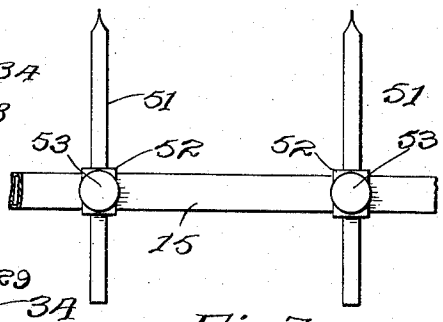

Fig. 7.

Witnesses

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DRAFTING INSTRUMENT.

1,015,423. Specification of Letters Patent. Patented Jan. 23, 1912.

Application filed March 20, 1911. Serial No. 615,613.

To all whom it may concern:

Be it known that I, GEORGE H. CARDELL, a citizen of the United States, residing at Reno, in the county of Washoe and State of Nevada, have invented certain new and useful Improvements in Drafting Instruments, of which the following is a specification.

This invention relates to drafting instruments of the type shown in my Patent No. 984,347 issued February 14, 1911, and the principal object of the same is to provide an instrument in which the parts thereof are adjustably connected so that they can be readily "set" to lay out patterns of regular and irregular shape.

Preferred and practical embodiments of the invention are shown in the accompanying drawings wherein:—

Figure 1 is a top plan view of the improved drafting instrument. Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a similar view taken on the line 3—3 Fig. 2. Fig. 4 is a fragmentary sectional view taken on the line 4—4, Fig. 2. Fig. 5 is a fragmentary longitudinal sectional view showing an end attachment for the main bar of the instrument. Fig. 6 is an end view. Fig. 7 is a plan view of one of the transverse bars, the scribing segments being omitted and pricking rods substituted. Fig. 8 is a detail perspective view, the rods of the segments being omitted.

The improved drafting instrument comprises a straight elongated hollow bar 10 that is preferably rectangular in cross section and has one flat surface thereof provided with graduations designating inches and fractions thereof. Clamping plates 11 transversely overlap and are slidable on bar 10, said plates being provided with flanges 12 at one end that are fastened to and hold disks 13 in contact with one longitudinal surface of said bar, and at an opposite end with pivot ears 14. Hollow bars 15 and 16, which are preferably rectangular in cross section, extend transversely of bar 10 and are straddled by clamping plates 17 that carry disks 18, and pivot ears 19. Ears 14 and 19 are pivotally connected by the bolts 20 which extend through disks 13 and 18, nuts 21 being carried by bolts 20 to lock the plates 11 and 17 together and also clamp said plates rigidly to the bars 10, 15, and 16. Bar 15 is longer than bar 16, and both bars are provided with graduations designating inches and fractions thereof. A pair of clamping bands 22 slidably embrace each of the bars 15 and 16, and straddle the ends of flat flanges 23 carried by semicircular scribing segments 24. Set screws 25 are employed for adjustably locking the bands 22 to the bars 15 and 16. The segments 24 are preferably formed of flat metal and are arranged edgewise, and the inner surfaces of their outer edge portions are beveled, as indicated at 26.

It will be clear from the foregoing description that bars 15 and 16 can be moved longitudinally of bar 10 as well as pivotally, and that the segments 24 can be adjusted longitudinally of the bars 15 and 16, thus giving a wide range of relative adjustments of the parts. In Fig. 8 the instrument is shown in use, and it will be understood that the segments are arranged on the bars 15 and 16, so that said bars have free lower end portions that are rocked across on edge on the drawing board 27 to cause the outer longitudinal edges of the segments which have been previously inked to mark the longitudinal lines on the drawing surface for a cone.

The segments 24 are provided with regularly spaced threaded transverse openings 28 for the reception of the screws 29 that hold the clamps 30 to said segments. The clamps are arranged on the inner surfaces of the segments 24 and have thickened angular free ends 31 that are provided with grooves 32 which are preferably V-shaped for holding the rods 33 in radiating relation on said segments. The rods 33 have pointed beveled outer ends 34 that lie snugly against the beveled portions 26 of the segments. The clamps 30 permit the rods 23 to be adjusted longitudinally and it will be clear that their pointed ends will penetrate the drawing paper and thereby lay out the pattern so that inking of the outer edges of the segments 34 will not be necessary. The inner surfaces of the segments 24 are provided with laterally projecting lugs 35 which are engaged by the screws 36 that project beyond the scribing edges of said segments so that their heads 37 will serve as pivotal supports when the instrument is rocked across the drawing so that said scribing edges will not contact with the drawing. As will be obvious, the screws 36 are only used when the rods 33 are used. A bearing block 38 is tightly fitted in one end of bar 10 and a

shaft 39 is rotatable therein. A head 40 and a collar 41 prevent longitudinal movement of shaft 39 by contacting with the ends of block 38. The projected outer end of shaft 39 is enlarged and bifurcated as indicated at 43, and an end ear 44 of an arm 45 projecting from a sleeve 46 is pivotally mounted therein. The upper portion of sleeve 46 tapers longitudinally and is split and externally threaded to form a resilient clamp 47. A rod 48 extends through sleeve 46 and has a penetrating point 49 at one end for engaging the drawing. Rod 48 is adjustably locked to sleeve 46 by the nut 50 that engages the clamp 47. With this construction it will be clear that the bar 10 can be rotated and vertically moved while the rod 48 is engaged with the drawing.

In Fig. 7 a modified form of the invention is shown wherein penetrating rods 51 are held transversely of the bars 15 and 16 by, and are adjustable in, the clamps 52 that are locked to the said bars by the set screws 53.

In all forms of the invention, it will be clear that the parts can be relatively adjusted and that the clamping means employed for connecting said parts are such that when fastened they hold the parts in rigid relation.

What I claim as my invention is:—

1. A drafting instrument comprising an elongated main bar, clamping members longitudinally adjustable on said bar, transverse bars, clamping members through which said transverse bars are longitudinally adjustable, means for pivotally connecting the clamping members and adapted to clamp the same upon the bars, and marking means carried by said transverse bars.

2. A drafting instrument comprising a main bar, transverse bars, clamps on the main bar, means for pivotally and longitudinally adjustably connecting the transverse bars to the clamps, and marking means adjustably connected to said transverse bars.

3. A drafting instrument comprising a main bar, clamps longitudinally adjustable thereon, transverse bars, clamps longitudinally adjustable thereon, means for pivotally connecting the clamps of the transverse bars to the clamps of the longitudinal bar, and marking means carried by the transverse bars.

4. A drafting instrument comprising a main bar, clamps longitudinally adjustable thereon, transverse bars pivotally and longitudinally adjustably connected to said clamps, semicircular segments having end flanges, means for adjustably locking said flanges to the transverse bars, clamps carried by the segments, and penetrating means adjustably mounted in and held in radiating relation on said segments by said clamps.

5. A drafting instrument comprising a main bar, transverse bars, clamps adjustable on the main bar, means for pivotally and longitudinally adjustably connecting the transverse bars to the clamps, clamping means longitudinally adjustable on the transverse bars, and scribing segments carried by the last mentioned clamping means.

6. A drafting instrument comprising a main bar, transverse bars adjustably connected thereto, clamping bands adjustable on said transverse bars, and scribing segments connecting said bands.

7. A drafting instrument comprising a main bar, clamping means adjustable thereon, transverse bars, means for pivotally connecting the transverse bars to said clamping means, scribing segments carried by said transverse bars, and rods radiating from said segments and provided with penetrating points.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. CARDELL.

Witnesses:
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F. P. SCHROEDER.