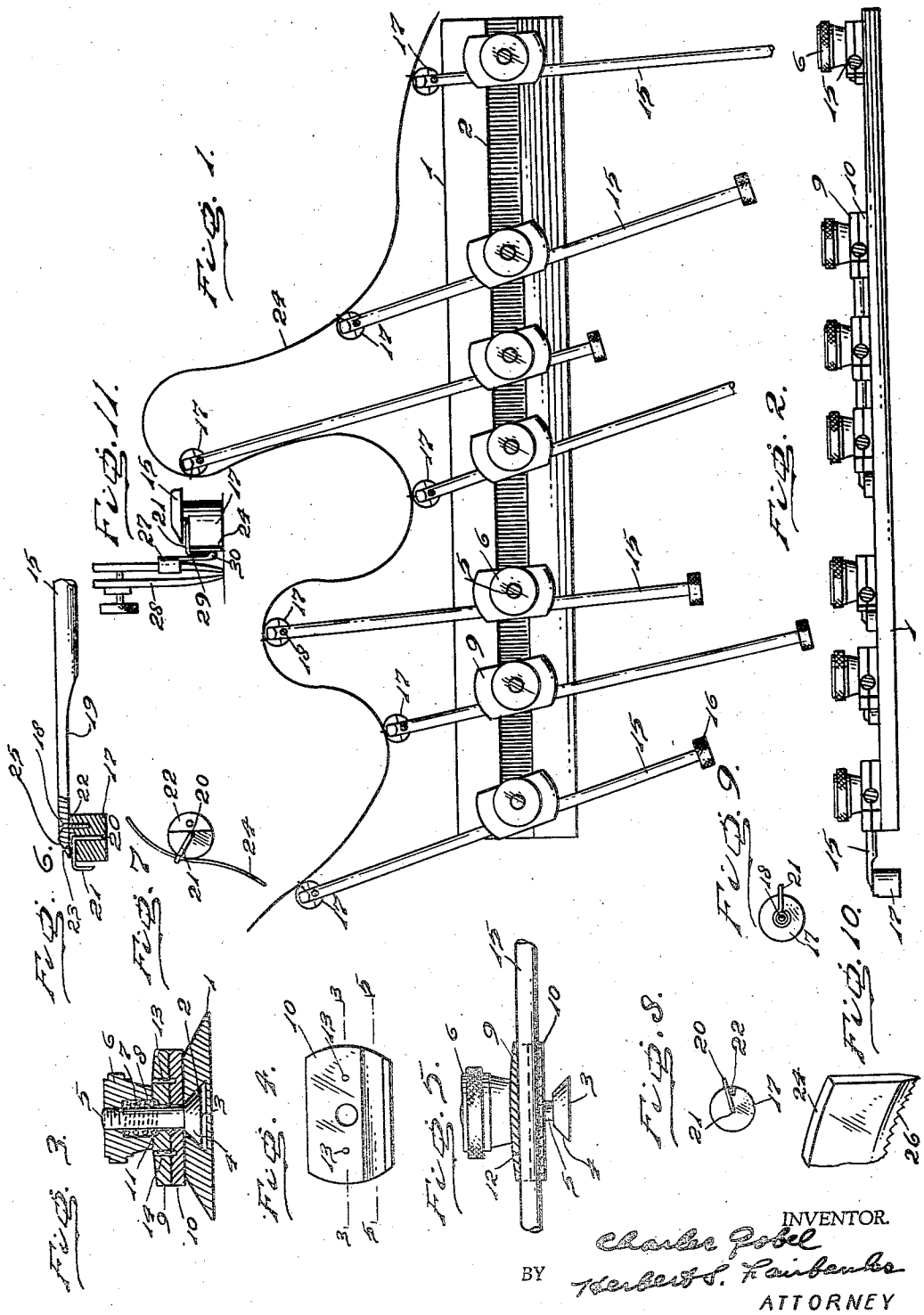
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DRAFTING INSTRUMENT

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INVENTOR.
Charles Gobel
BY Herbert S. Fairbanks
ATTORNEY

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DRAFTING INSTRUMENT

Charles Gobel, Philadelphia, Pa.

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The object of this invention is to devise a novel drafting instrument which will enable one to draw and to duplicate any desired curves.

A further object is to devise novel spline retaining mechanism and novel means to position such mechanism.

With the above and other objects in view as will hereinafter clearly appear, my invention comprehends a novel drafting instrument.

A further object is to devise novel spline holding mechanism which provides for its free adjustment throughout a desired number of degrees, and novel means for securing rods, which carry the spline holding mechanism, in the positions to which they have been adjusted to define the desired curve or curves.

Other novel features of construction and advantage will hereinafter more clearly appear in the detailed description and the appended claims.

For the purpose of illustrating the invention, I have shown in the accompanying drawings typical embodiments of it, which, in practice, will give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and my invention is not limited to the exact arrangement and organization of these instrumentalities as herein set forth.

Figure 1 is a top plan view of a drafting instrument embodying my invention.

Figure 2 is a sectional elevation.

Figure 3 is a section on line 3—3 of Figure 4, but showing also the base and fastening means.

Figure 4 is a top plan view of a bottom clamping member.

Figure 5 is a section on line 5—5 of Figure 4.

Figure 6 is a side elevation showing the forward end of a rod in section with a spline guide, and spline retainer in section.

Figure 7 is a detail of the spline guide, spline retainer and spline.

Figure 8 is a detail of the spline guide and spline retainer, to show a greater range of movement for the spline than that shown in Figure 7.

Figure 9 is a detail showing the spline retainer as capable of a full 360 degree movement.

Figure 10 is a perspective view of a portion of a spline on an enlarged scale.

Figure 11 is a side elevation of a spline guide and pen with a pen positioning clip.

Similar numerals indicate corresponding parts.

Referring to the drawing:

The drafting instrument has a base 1 of any desired material, but preferably of metal and having a slot 2 opening through its top wall and preferably also through its ends. The side walls of this slot may have any desired contour but as illustrated they converge upwardly in order to adapt the slot to receive a shoe 3 having a flat base, an upwardly converging wall 4, and a shank 5, the outer end of which is threaded to receive a nut 6, which is recessed, as at 7, to receive a spring 8. The outer wall of the nut may be knurled, as shown. The shank 5 passes through upper and lower clamping members 9 and 10, respectively, and the upper clamping member 9 is recessed as at 11 to receive the lower end of the spring 8. The clamping members have a longitudinally extending opening 12 formed by registering grooves in the clamping members. The clamping members may be provided with dowels 13 carried by one member and extending into openings 14 in the other member. The opening 12 is adapted to receive a rod 15 and clamp it in its adjusted position relatively to the base 1. The inner end of a rod 15 has a grasping handle 16 and its outer end is secured to the top of a cylindrical spline guide 17 by a fastening device 18, such as for example a screw.

The under wall of the rod 15 is cut away as at 19 so that the thickness of the rod is reduced for a desired distance from the guide 17.

The spline guide 17 has a central aperture 20 to receive one leg of a substantially U shaped spline retainer 21, the other leg of which extends downwardly along the outer periphery of the guide. The top wall of the guide 17 is cut away to provide an upwardly extending boss 22 which will provide for the movement of the spline retainer 20 through a desired number of degrees. In practice, this is generally about 300 degrees, but it may be substantially 360 degrees if desired.

A slot 23 is provided between a rod 15 and the top wall of the spline guide for free rotary movement of the base or upper stretch of the spline retainer 20.

24 is the spline. The rod 15 preferably has its top wall at its forward end inclining forwardly and downwardly as at 25.

Any desired number of curve defining assemblies may be used with the base depending on the length of the base, and, as illustrated, seven are shown, it being understood that this number can be increased or decreased in accordance with the contour of the desired curve which is to be made.

Assuming now that a curve as illustrated in Figure 1 is to be made, the rods 15 are each ad-

justed into the position indicated and the nuts **6** are tightened. The spline **24** assumes the position indicated, and the operator can now draw a line along the spline to make the predetermined curve for which the instrument has been adjusted.

Since the clamping members are rotatable on their shanks, the rods **15** and their adjuncts are rotatably adjustable when the nuts are loosened, and they can be longitudinally adjusted as may be desired.

The forward end of one rod may pass over the forward end of an adjacent rod due to the reduced thickness at the forward end of the rods, so that a curve can be drawn in which portions thereof cross each other.

The spline retainers hold the spline against the spline guides, and, since the spline guides are rounded, the spline can adjust itself longitudinally when being positioned for a desired curve, so that no kinks are formed in the spline.

In Figure 7, the boss is shown as providing for 180 degrees movement of a spline retainer, while in Figure 8, the range of movement is substantially 360 degrees.

While I have disclosed the spline guides as being carried by rods, it is to be understood that the word rod is to be construed as a member which is not necessarily round but which may have any desired contour in cross section and it may be solid or tubular.

It will be apparent that after the rods have been clamped to the base to define a desired curve, the drafting instrument may be moved as a unit from one place to another to make any desired reproductions of such curve.

In order that the spline closely engage the paper or tracing cloth, its lower edge may be indented or serrated as at **26** in Figure 10, and, if desired, the side walls may converge downwardly as shown in this figure.

I have found in practice that, when a pen is used instead of a pencil, there is sometimes, if the pen is not properly manipulated, a tendency for the ink in the pen to pass to the spline. In such cases, it is advantageous to use a clip **27** as shown in Figure 11 attachable to the fixed leg of a pen **28** and provided with a depending arm **29** terminating in an offset rounded portion **30** which bears against the spline and maintains the pen in spaced relation with the spline.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a drafting instrument, a base having a longitudinally extending slot, clamping devices mounted for rotatable and longitudinal adjustment relatively to said slot, rods longitudinally adjustable in said clamping devices, cylindrical bearings non-rotatably secured to the bottom of said rods at their forward ends, spline retainers in the form of pins rotatably carried by said guides, extending across their upper ends, and deflected downwardly in spaced relation to the peripheries of said guides, and a spline freely slidable between said pins and guides.

2. In a drafting instrument, a slotted base, rods mounted for rotatable and longitudinal adjustment in said slot, cylindrical guides non-rotatably fixed at the ends of said rods and extending beyond their forward ends, pins rotatably carried by said guides extending across their upper ends and deflected downwardly in spaced relation with the peripheries of said guides, and a spline freely slidable between said pins and guides.

3. In a drafting instrument, a slotted base, a shoe adjustable rotatably and longitudinally in the slot of said base, and having a threaded shank, clamping plates apertured to receive said shank and having off centre slot forming grooves, a nut engaging said shank and bearing against the upper of said clamping plates, a spring between said nut and said upper clamping plate, a rod in said slot, a cylindrical bearing fixed to the outer end of said rod, a pin pivoted at the center of said bearing extending across its top face and deflected downwardly in spaced relation to the periphery of said bearing, and a spline between said pin and bearing.

CHARLES GOBEL.