WILLIAM L. APTHORP.

Improvement in Protractor and Parallel Ruler.

No. 127,210. Patented May 28, 1872.

Fig. 1.

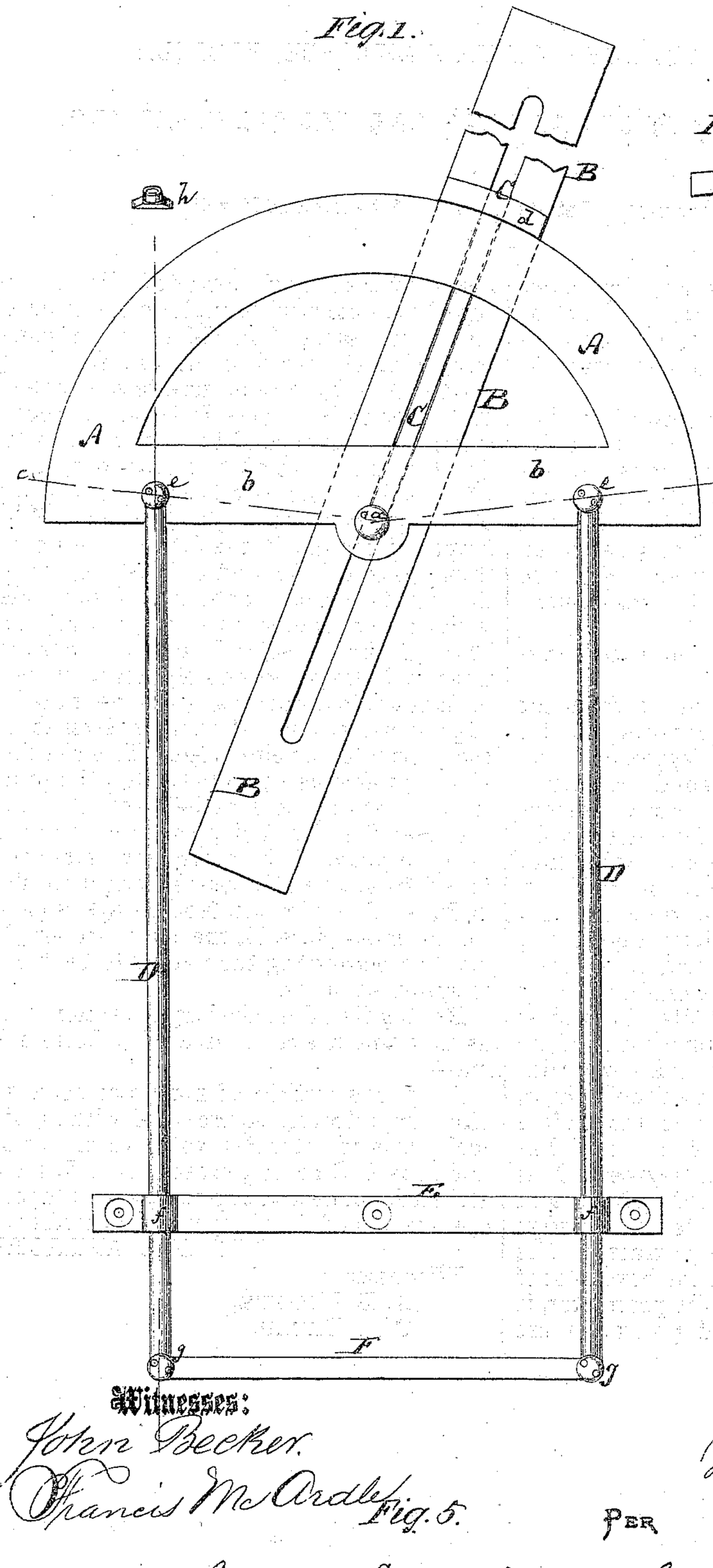

Fig. 2

Fig. 3.

Fig. 4.

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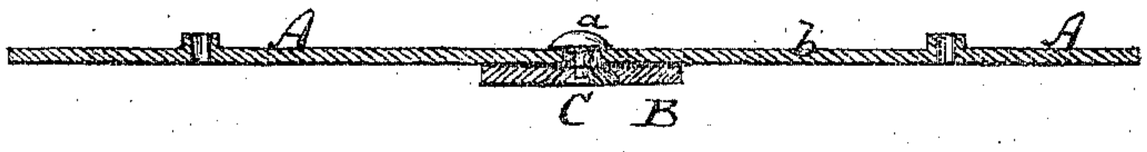
Fig. 5.



127,210

UNITED STATES PATENT OFFICE.

WILLIAM L. APTHORP, OF TALLAHASSEE, FLORIDA.

IMPROVEMENT IN PROTRACTORS AND PARALLEL RULERS.

Specification forming part of Letters Patent No. 127,210, dated May 28, 1872.

Specification describing certain Improved Universal Protractor and Parallel Ruler, invented by WILLIAM LEE APTHORP, of Tallahassee, in the county of Leon and State of Florida.

Figure 1 represents a face view of my improved protractor and ruler. Fig. 2 is a detail face view of the arm that carries the vernier. Fig. 3 is an edge view, partly in section, of the entire instrument. Fig. 4 is a detail longitudinal section of the slotted ruler when applied as part of a parallel ruler. Fig. 5 is a detail transverse section of the instrument on the line *c c*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to a new instrument convenient for draftsmen, surveyors, &c., for laying out angles of suitable degree, and providing parallel lines of any desired inclination. The invention consists in the new arrangement of parts, as hereinafter more fully described.

A is a semicircular protractor, divided into one-half degrees or otherwise, and made in usual manner. B is a common ruler or scale, made of ivory, wood, or metal, its edges being divided in suitable manner. The ruler has a beveled longitudinal slot extending nearly from end to end along its middle, the widest part of the slot being on the under side of the ruler. C is an arm, beveled to correspond with the slot in B, and pivoted by a suitable pin, *a*, to the bale *b* of the protractor, in the middle of the latter. At its outer end the arm C has a vernier, *d*, reading to single degrees. This vernier extends across the body of the arm and is arched, so as to fit with its concave edge nicely against the edge of the protractor. The body of the arm C resting in the bevel slot of the ruler B, and pivoted to the protractor, it is evident that the ruler and protractor are also connected by the pivot *a*. The ruler can thus be set at suitable angle on the protractor, and at the same time slid in or out, more or less, without affecting the angle. The protractor A is, by pins or screws *e*, attached to the upper ends of rods D D, which rods are straight and even, and fit through short tubes *f f*, that are swiveled to a cross-bar, E. The lower ends of the rods D are, by pins *g g*, pivoted to and connected by a cross-piece, F. The length of the rod F, the distance between the thimbles or tubes *f*, and the distance between the points *e e* of connection of the rods D with the protractor must be precisely equal. Through the cross-bar E are two or more countersunk holes for screws or tacks, wherewith to fasten it to a drawing-board, near the lower edge of same, where it remains fastened while the protractor is being used. To make the device available as a parallel ruler, the protractor A must first be detached from the rods D, the ruler B still carrying the arm C in its slot, being in place of the protractor united to the rods D by means of bevel-headed pins *h*, shown in Fig. 4. The ruler will then always be parallel to the cross-piece E, the swivel-tubes *f* and pivots *h* permitting the rods D to be inclined in suitable manner.

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

As a new article of manufacture, a semicircular protractor A, provided with longitudinally slotted ruler B, pivoted vernier-arm *c d*, and rods D D having cross-bars E F, all constructed, connected together, and adapted to operate as and for the purpose described.

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Witnesses:

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