E. ERICSON.

Centering Square and Protractor.

No. 199,425. Patented Jan. 22, 1878.

Fig. 1.

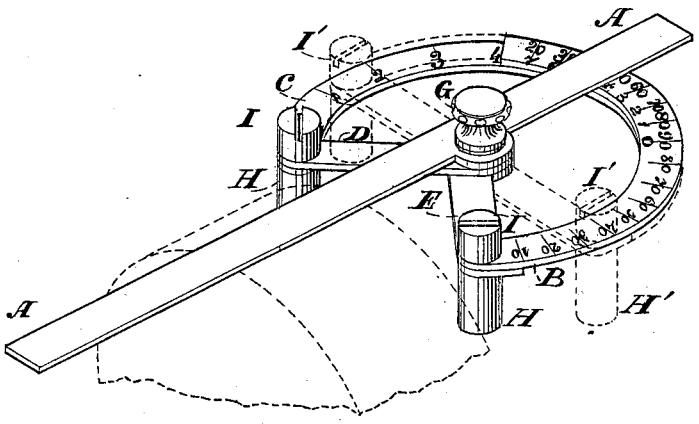
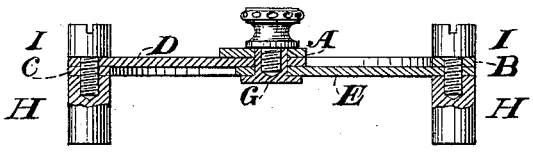


Fig. 2.



Attest:

Theod. Gulich,

R. Theo. Bladin.

Inventor:

Eric Ericsson,

Per, Francis H. Peat, Atty.

UNITED STATES PATENT OFFICE.

ERIC ERICSON, OF JOLIET, ILLINOIS.

IMPROVEMENT IN CENTERING-SQUARE AND PROTRACTOR.

Specification forming part of Letters Patent No. **199,425**, dated January 22, 1878; application filed November 10, 1877.

To all whom it may concern:

Be it known that I, ERIC ERICSON, of Joliet, in the county of Will and State of Illinois, have invented a new and useful Improvement in an Universal Drafting Instrument, to be used in the mechanical arts, particularly those of the machinist or pattern-maker, which invention is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is a perspective view of my instrument, showing the manner of applying it. Fig. 2 is a sectional view.

The object of my invention is to furnish a device for an instrument which shall be universally applicable in drawing right lines upon cylindrical or conical, concave or convex, surfaces; in drawing lines radial or diametrical to, or the centering of, a circle or circular arc, as a T or try square or bevel or protractor, and at the same time be adjustable to suit articles of varying size.

As shown by the drawings, the instrument consists of a blade or ruler, A, which swings upon the pivot G, the center of which is in line with one edge of the blade, and two graduated semicircular arcs, which slide one, B, upon the other, C, one end of each, respectively, being connected to the radial arms E and D, which have an angular movement about the center or pivot G. H H and I I are two projecting contact-pieces, useful in obtaining an ample bearing upon the ends of cylindrical articles, as shown by the broken lines in Fig. 1, the base of conic or the periphery of circular articles. They also constitute the fastening of the graduated arcs with the arms D and E. These, as well as the pivot G, are shown in section in Fig. 2. The arc B is graduated into divisions of ten degrees each, numbering from 10 on each side to 90 in the center, which is in a line drawn through the center of pivot G perpendicular to edge of arm E. This numeration is used when the arms and contact-pieces are set in the position shown by the broken lines at H′ H′ and I′ I′, Fig. 1, and the instrument is used as a square, level, or protractor. The graduations are also numbered from 0 to 8, beginning at division 90 and numbering toward the left, to be used in connection with the graduations upon arc C, which are placed twenty degrees apart, beginning at the shoulder formed by arm D, when used in drawing lines perpendicular to the end of a cylinder or base of a cone, as in forming the faces of teeth upon spur or bevel gearing. When used for this purpose the arms and contact-pieces H H are so adjusted as to obtain as broad bearing as possible, setting the free end of arc B to coincide with the nearest graduation upon arc C. The edge of the blade, which passes through the center of pivot G, is then set to the graduation bearing the same number on arc B. The whole is then clamped by the screw in pivot G.

The uses enumerated in the foregoing are but a few of the many to which my instrument is applicable, the operation of which under the circumstances will be obvious at once to any ordinarily skilled mechanic.

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

The radial arms D and E, contact-pieces H H and I I, and graduated arcs B and C connected therewith, in combination with blade A and pivot G, substantially as shown and described.

ERIC ERICSON.

Witnesses:
THEOD. GURLIEB,
L. THEO. FLODIN.