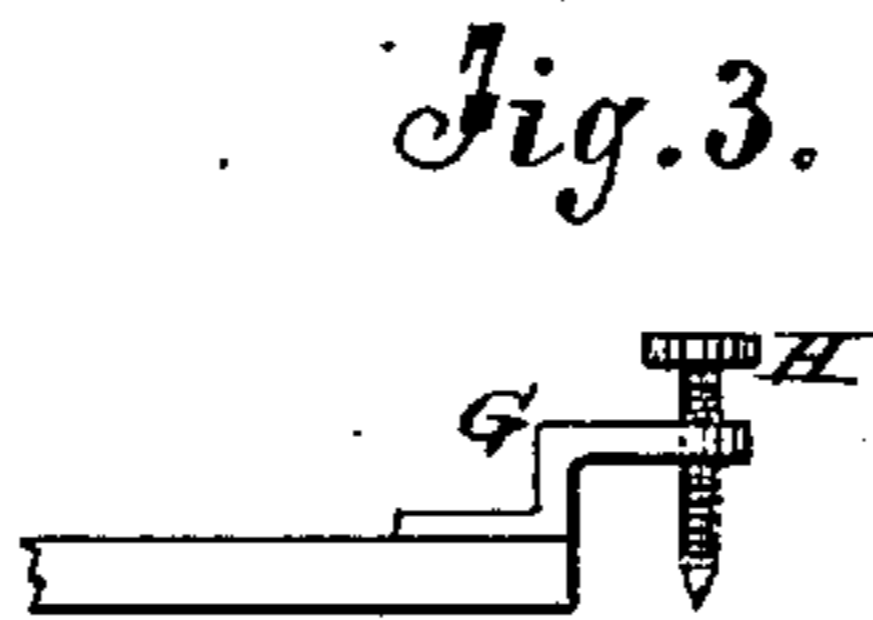
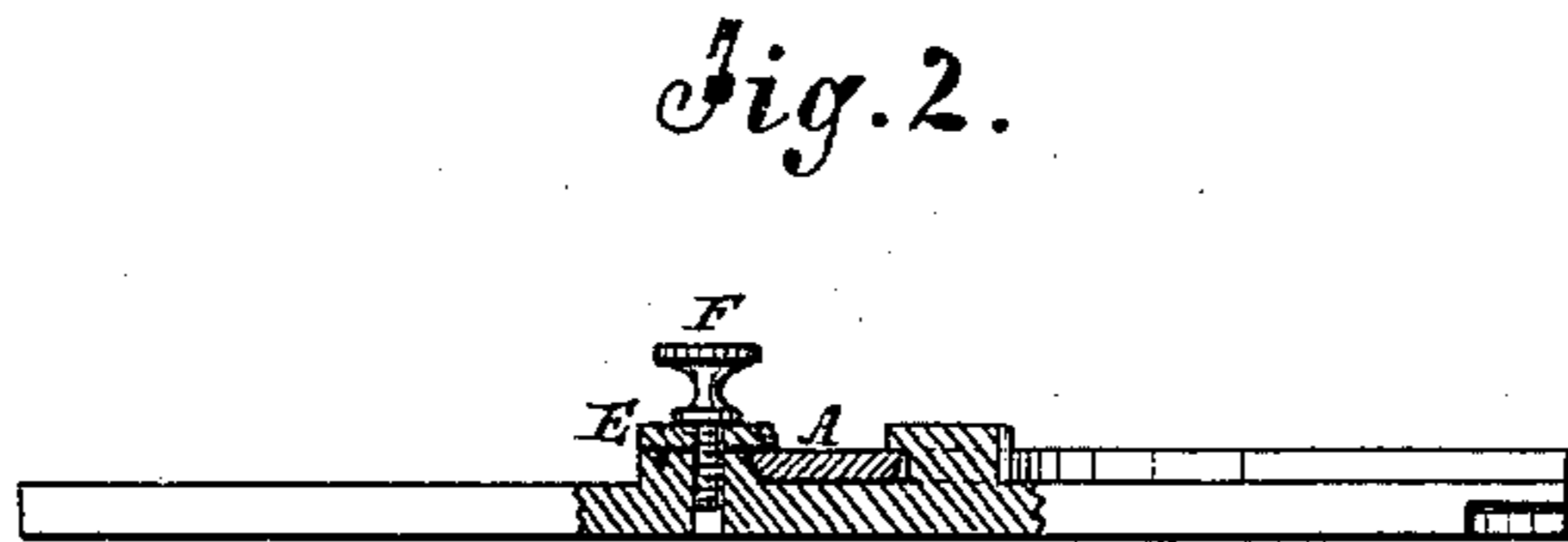
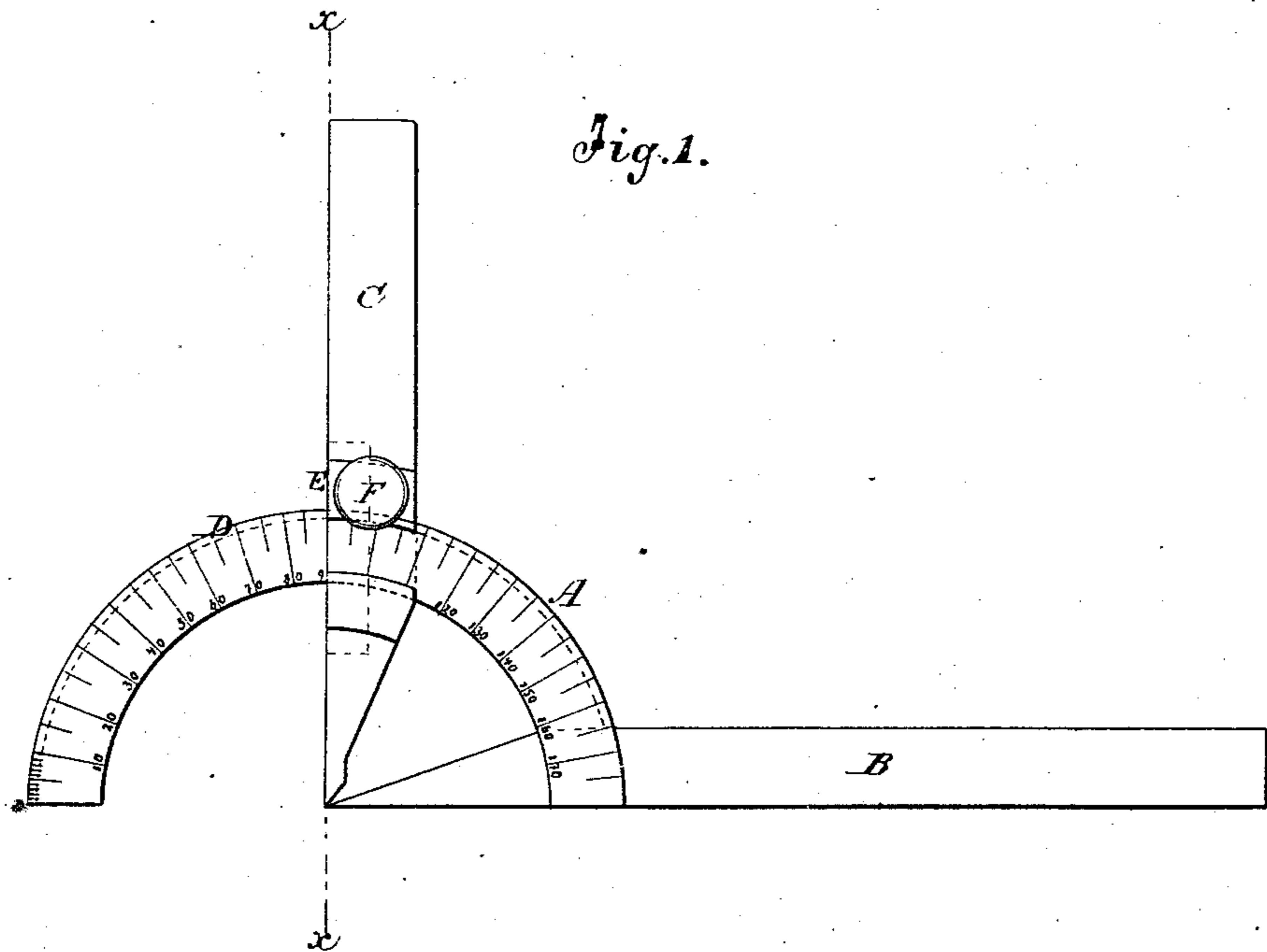


A. H. DODD.
Protractor.

No. 161,392.

Patented March 30, 1875.



WITNESSES:

A. Benneisen & Co.
A. F. Terry

INVENTOR:

Alvin H. Dodd
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALVIN H. DODD, OF NEW YORK, N. Y.

IMPROVEMENT IN PROTRACTORS.

Specification forming part of Letters Patent No. **161,392**, dated March 30, 1875; application filed January 18, 1875.

To all whom it may concern:

Be it known that I, ALVIN H. DODD, of the city, county, and State of New York, have invented a new and Improved Protractor, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claim.

Figure 1 represents a plan; and Fig. 2 is a sectional side view taken through the line *xx*.

Similar letters of reference indicate corresponding parts.

In the case here presented, the graduated arc or circle A has a fixed arm, B, whose base shall be a true line from the center, and extending through the zero-point. On the said arc or circle A I have one or more movable arms, C, which travel thereon, and in order to secure accuracy in the set of the said arms I have the outer periphery of the arc or circle made with an incline, as shown at D, which bears against a similar incline in the recess on the arm. Thus, when the plate E is clamped

by turning the thumb-screw F, it will bear down on the arc A, and thus cause the arm C to be drawn closely to the inner periphery of the same.

The points of the movable arm or arms all verge to the center, but do not touch. It is designed to have one of the points provided with a raised piece, G, for the reception of a screw, H, with a fine point, which will mark the center.

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

The protractor A, having bar B rigidly attached at one end and extending to the center thereof, in combination with the bar C, adjustably attached to said protractor by clamp E and screw F, as shown and described.

ALVIN H. DODD.

Witnesses:

CHARLES H. NASH,
T. B. MOSHER.