

No. 667,264.

Patented Feb. 5, 1901.

F. A. TIBBALS.
PROTRACTOR.

(Application filed June 14, 1900.)

(No Model.)

FIG. 1.

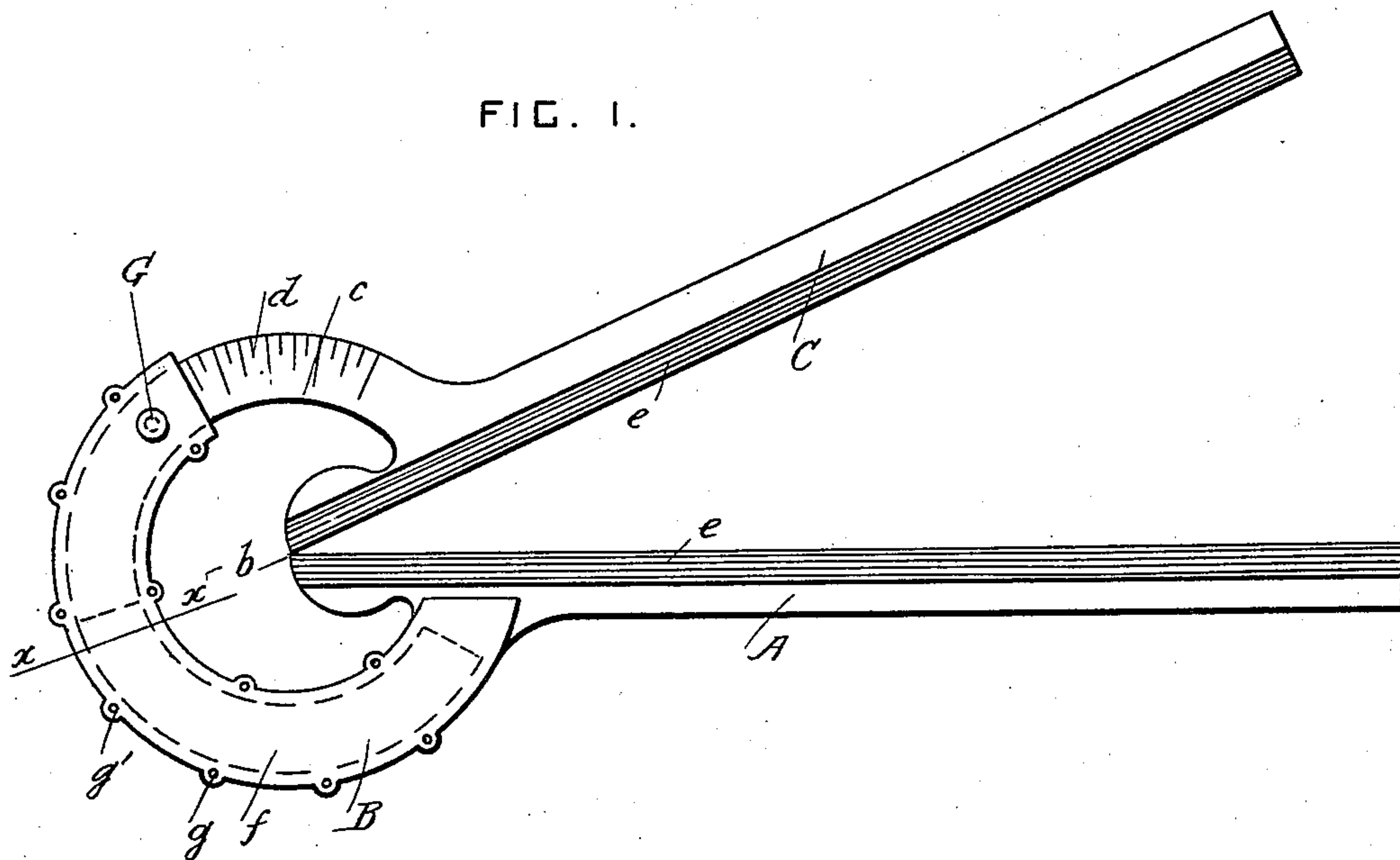


FIG. 2.

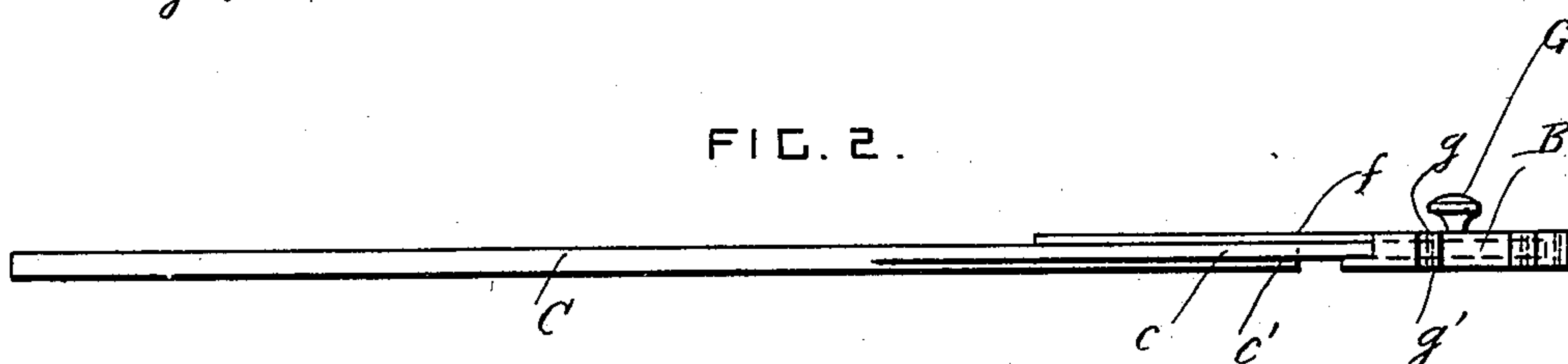
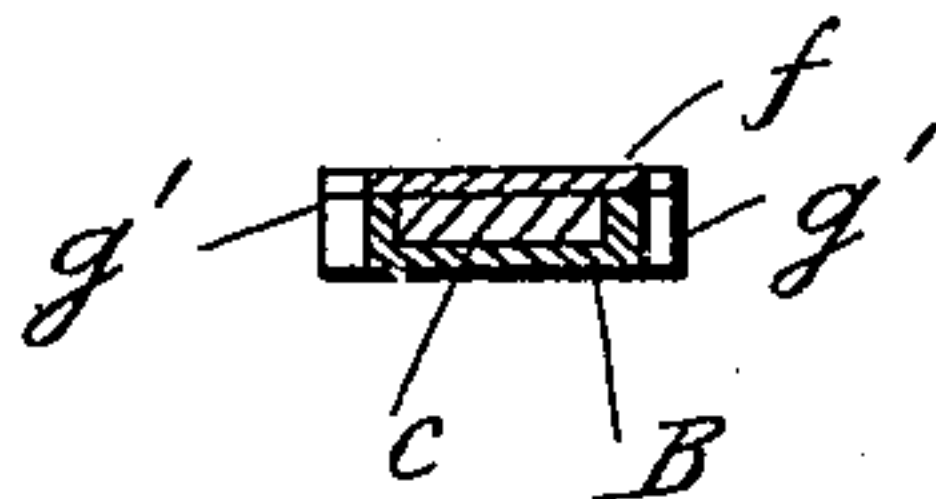


FIG. 3.



WITNESSES
A. G. Neumann.
Wm. H. Bates

INVENTOR
Frank A. Tibbals
by Herbert W. Jenner.
Attorney

UNITED STATES PATENT OFFICE.

FRANK ARTHUR TIBBALS, OF LYNN, MASSACHUSETTS.

PROTRACTOR.

SPECIFICATION forming part of Letters Patent No. 667,264, dated February 5, 1901.

Application filed June 14, 1900. Serial No. 20,330. (No model.)

To all whom it may concern:

Be it known that I, FRANK ARTHUR TIBBALS, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Protractors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to protractors and rulers; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a plan view of the instrument. Fig. 2 is a side view. Fig. 3 is a cross-section taken on the line $x x$ in Fig. 1.

A is one arm of the protractor or ruler, which is provided with a tubular socket B at one end, formed on a circular arc having its center at b , which is one end of the arm A. C is the other arm of the protractor or ruler, which is provided with an offset bar c , which is formed on the same circular arc as the socket B and which is slidable within it. One end of the arm C is arranged at the point b , so that the arms may be set at any angle and will always converge to the point b . As

the bar c is offset at c' from the under side of the arm C, the two arms always lie in the same plane. The bar c is provided with a numbered scale d , which indicates the angle at which the arm C is set. Both arms A and C are provided with beveled ruling edges e .

The socket B has a cover-plate f , which is secured to it by rivets g , which pass through laterally - projecting bosses g' on the said socket and its cover.

G is a thumb - screw or other approved clamping device for securing the bar in the socket, and thereby locking the said arms when set to any desired angle.

What I claim is—

The combination, with an arm provided with a tubular socket having a cover-plate secured to it on one side, said socket and plate having laterally-projecting bosses for the fastening devices; of an arm provided with a curved bar which is slidable in the said socket, substantially as set forth.

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

FRANK ARTHUR TIBBALS.

Witnesses;

ALICE J. MURRAY,
FRED. K. DAGGETT.