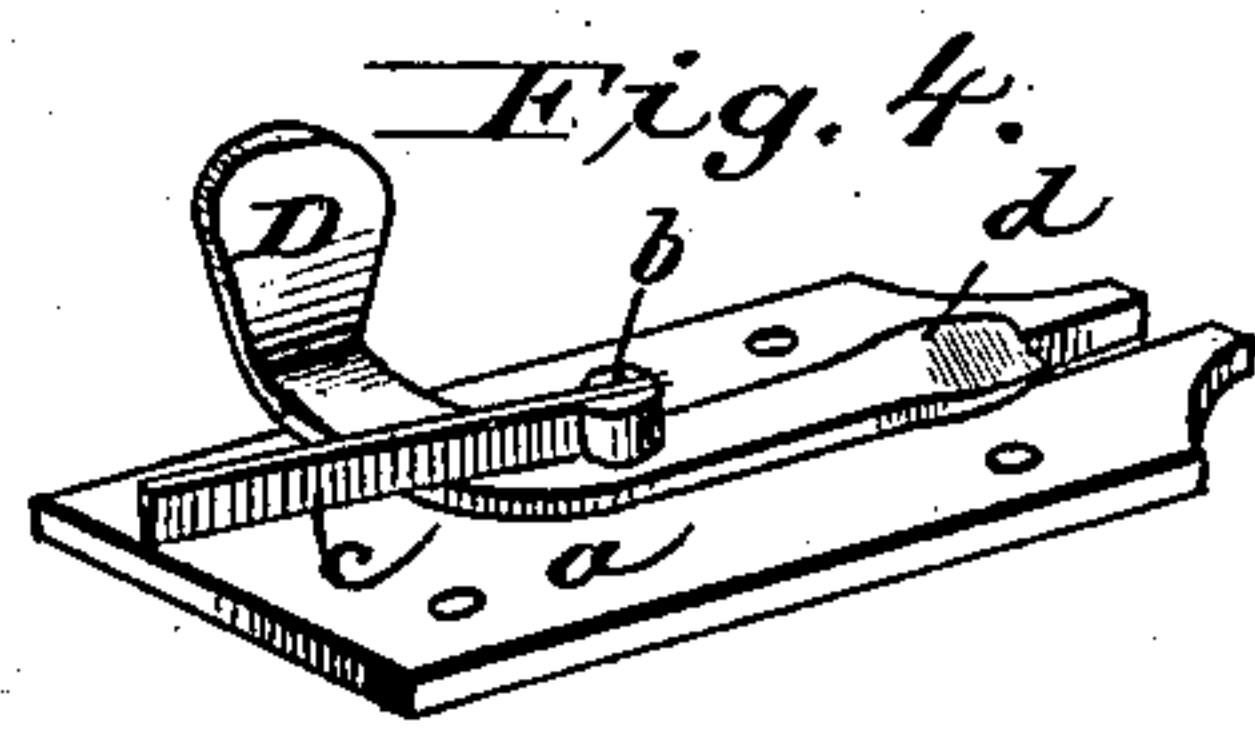
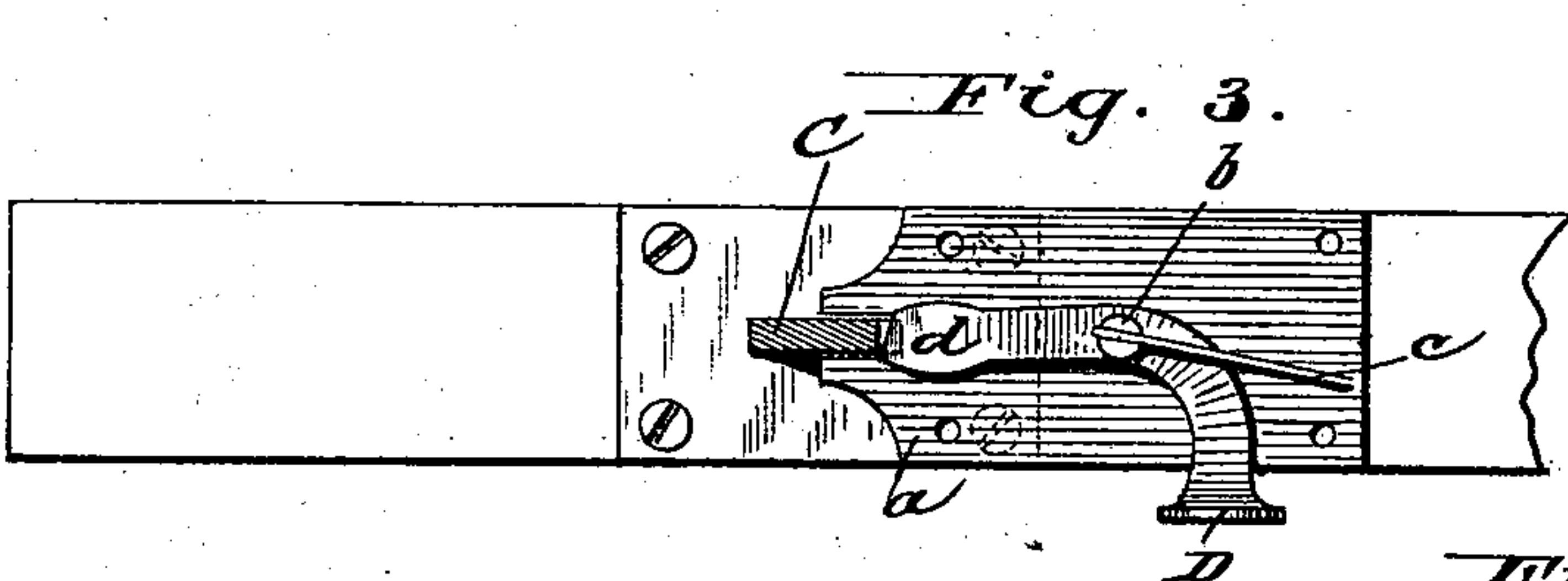
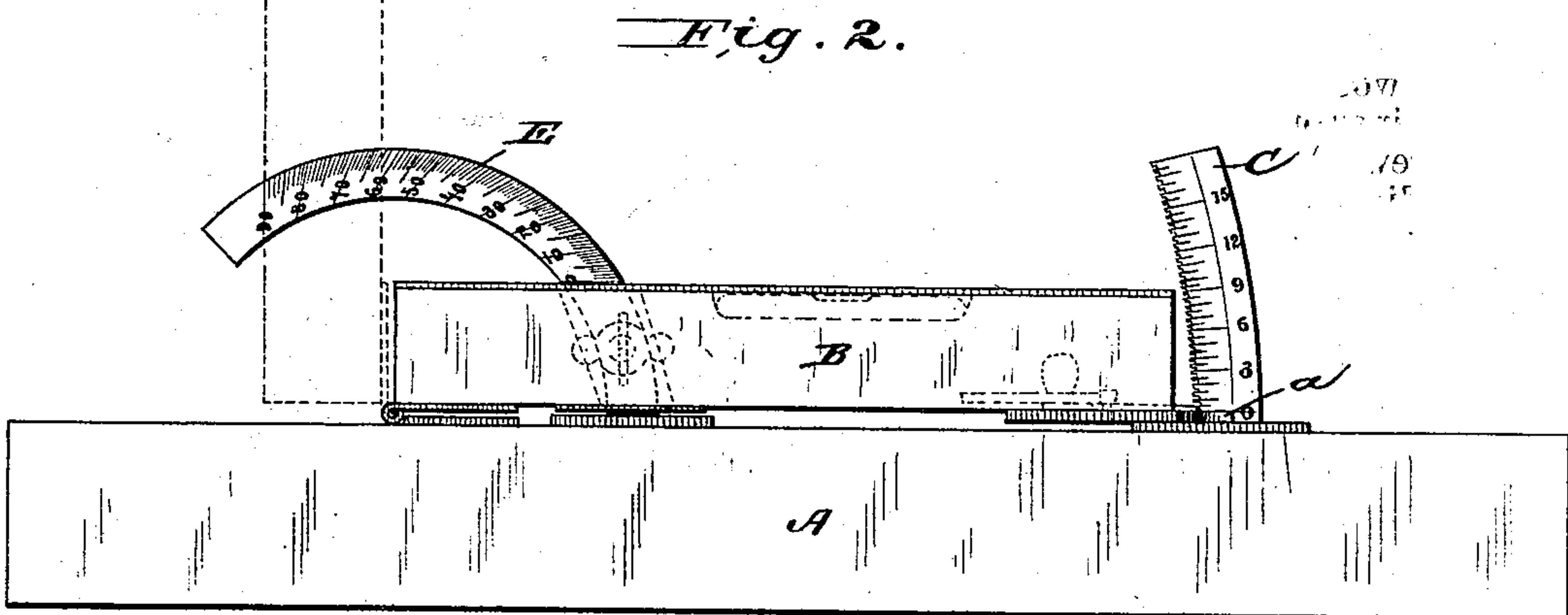
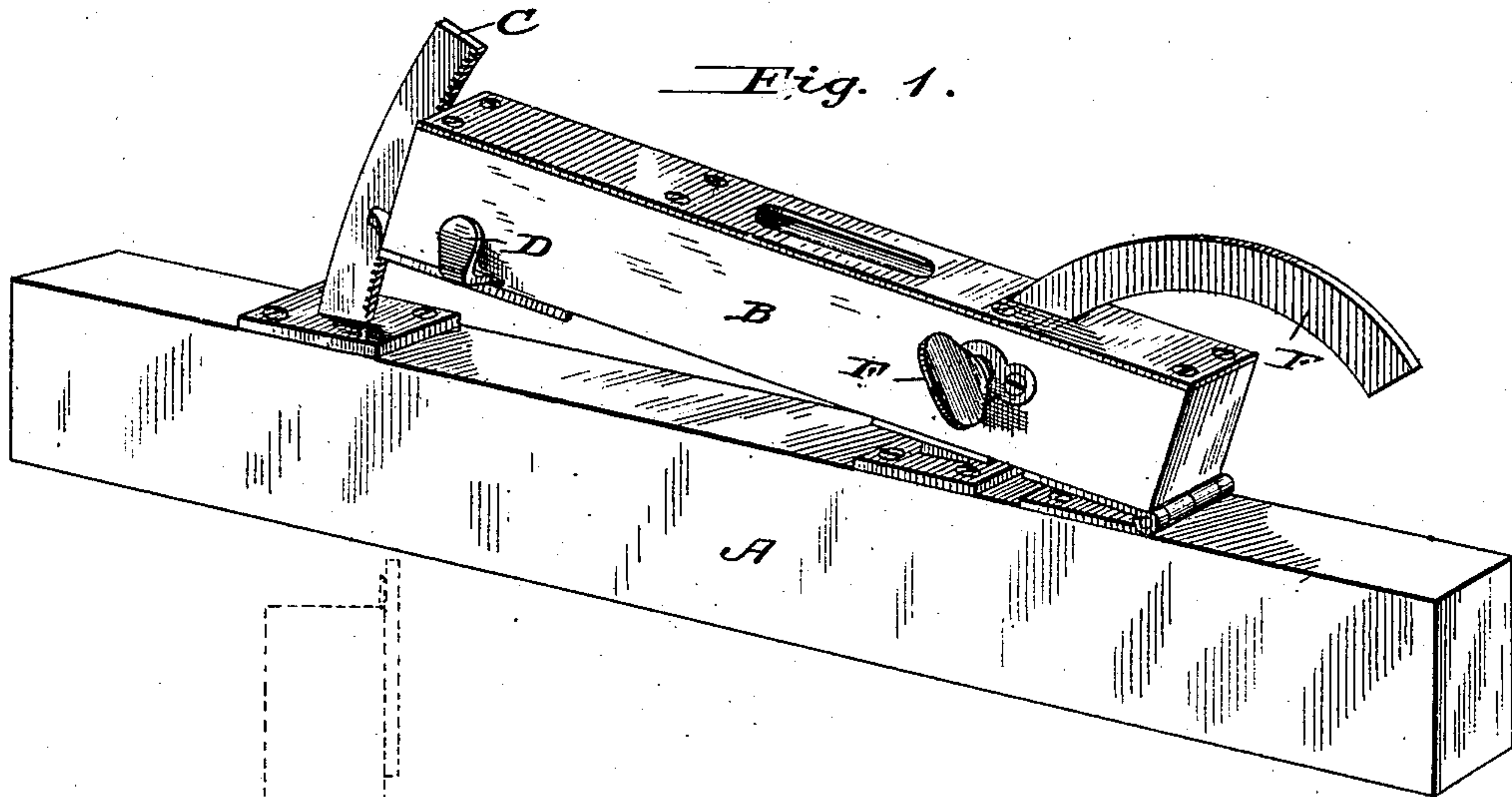


F. C. DAVIDSON.
Clinometer.

No. 226,723.

Patented April 20, 1880.



Attest:
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Frank C. Davidson
Inventor.

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Atty.

UNITED STATES PATENT OFFICE.

FRANK C. DAVIDSON, OF MAHOMET, ILLINOIS.

CLINOMETER.

SPECIFICATION forming part of Letters Patent No. 226,723, dated April 20, 1880.

Application filed February 16, 1880.

To all whom it may concern:

Be it known that I, FRANK C. DAVIDSON, a citizen of the United States, residing at Mahomet, in the county of Champaign and State of Illinois, have invented certain new and useful Improvements in Clinometers; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to a clinometer specially adapted for ascertaining the slope or fall of ditches for laying drain or tiles.

The invention more particularly relates to a base-piece of wood or other material to which is hinged a spirit or other level having a spring-bolt or set-screw adapted to engage a graduated arc to indicate the fall in inches or fractions thereof to the foot or rod in a given ditch.

In the drawings illustrating my invention, in which like parts are similarly designated in the several figures, Figure 1 is a perspective view of my clinometer; Fig. 2, a side elevation thereof; Fig. 3, a partial top-plan view, showing the spring-bolt; and Fig. 4, a perspective view of the spring-bolt removed.

The letter A designates a base of wood or other material, to the upper edge of which is hinged or jointed at one end a spirit or other level, B. At the free end of this level, or that end opposite its hinged end, is fixed a finger, index, or pointer, *a*, which may be slotted, so as to embrace or saddle a graduated and notched or toothed arc, C.

The arc C may be of metal, and is rigidly secured to the top of the base in a longitudinal plane perpendicular thereto.

The under side of the level-stock may be recessed to receive a bolt or push-piece, D, which may be conveniently pivoted in the index-plate *a* at *b*, the pivot turning in said plate, and resilience being imparted to the bolt by a spring, *e*, bearing against the pivot at one end, and confined in the level-stock at the other.

The end *d* of the bolt projects from the end of the level-stock sufficiently far to engage with the notches in the arc C to hold the level at the desired inclination.

The readings are preferably made below the index.

To extend the applicability of the implement to the indication of falls of great extent, a second or auxiliary arc, E, may be arranged to project through the level-stock at or near its hinged end, and so aid in sustaining it, or may be otherwise connected with it, such arc having a radius equal to the radius of the arc described by the level-stock. The level is adjusted to the desired angle upon this auxiliary arc and held by means of a set-screw, F, in the instance here given fitted in the level-stock. The readings on this auxiliary arc are taken from the top line of the level-stock.

This device is used by assuming the bed to be a straight-edge and setting the level at the desired angle thereto by securing it thereat either by the spring-bolt to the arc C or by the set-screw to the arc E. This angle indicates the desired fall to be given to the ditch, and this fall is indicated by the level when the straight-edge or base obtains in the bed of the ditch an inclination sufficient to bring the level to the horizontal.

My invention is specially adapted for securing a perfect and uniform fall in tile-ditches; but it will be seen that it is applicable elsewhere.

Having described my invention, what I claim is—

1. The combination of a base, A, a level, B, hinged at one end, with a pointer, *a*, and spring-catch-retaining device D, attached to the other end, and a graduated notched arc, C, for holding said level at a given point, substantially as shown and described.

2. A holding device or catch consisting of a plate, *a*, and pivoted bolt D, turning in said plate, and provided with a spring, *e*, attached to the pivot at *b*, substantially as shown and described.

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

F. C. DAVIDSON.

Witnesses:

J. C. WARE,
H. F. WILSON.