

(No Model.)

M. A. STEWART.
LEVELING INSTRUMENT.

No. 440,445.

Patented Nov. 11, 1890.

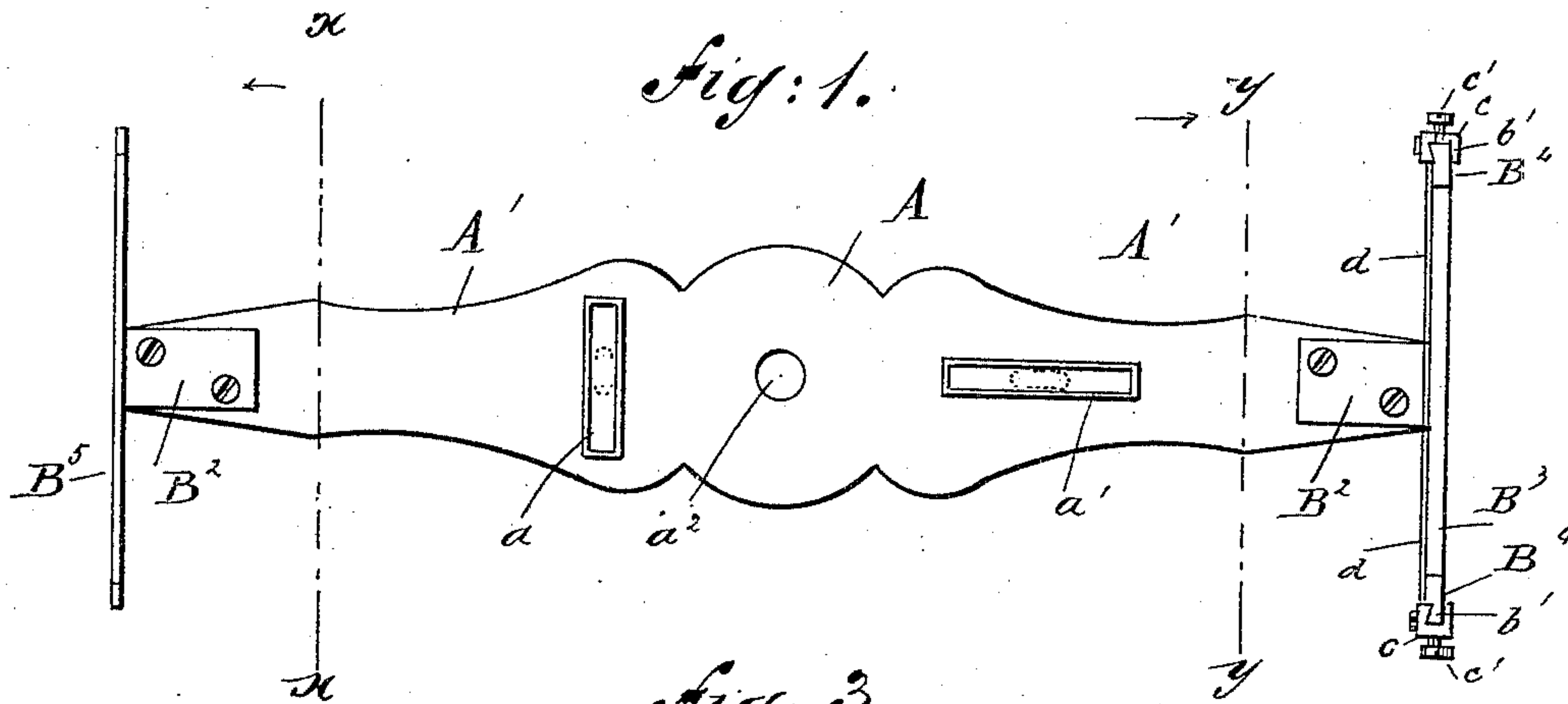


Fig: 3.

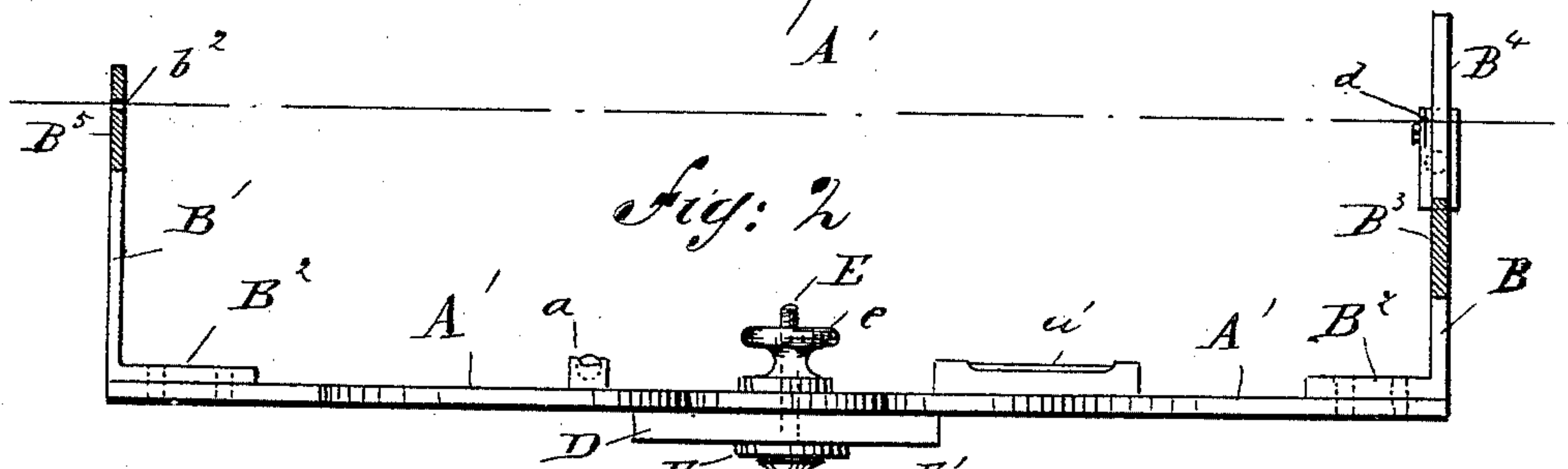
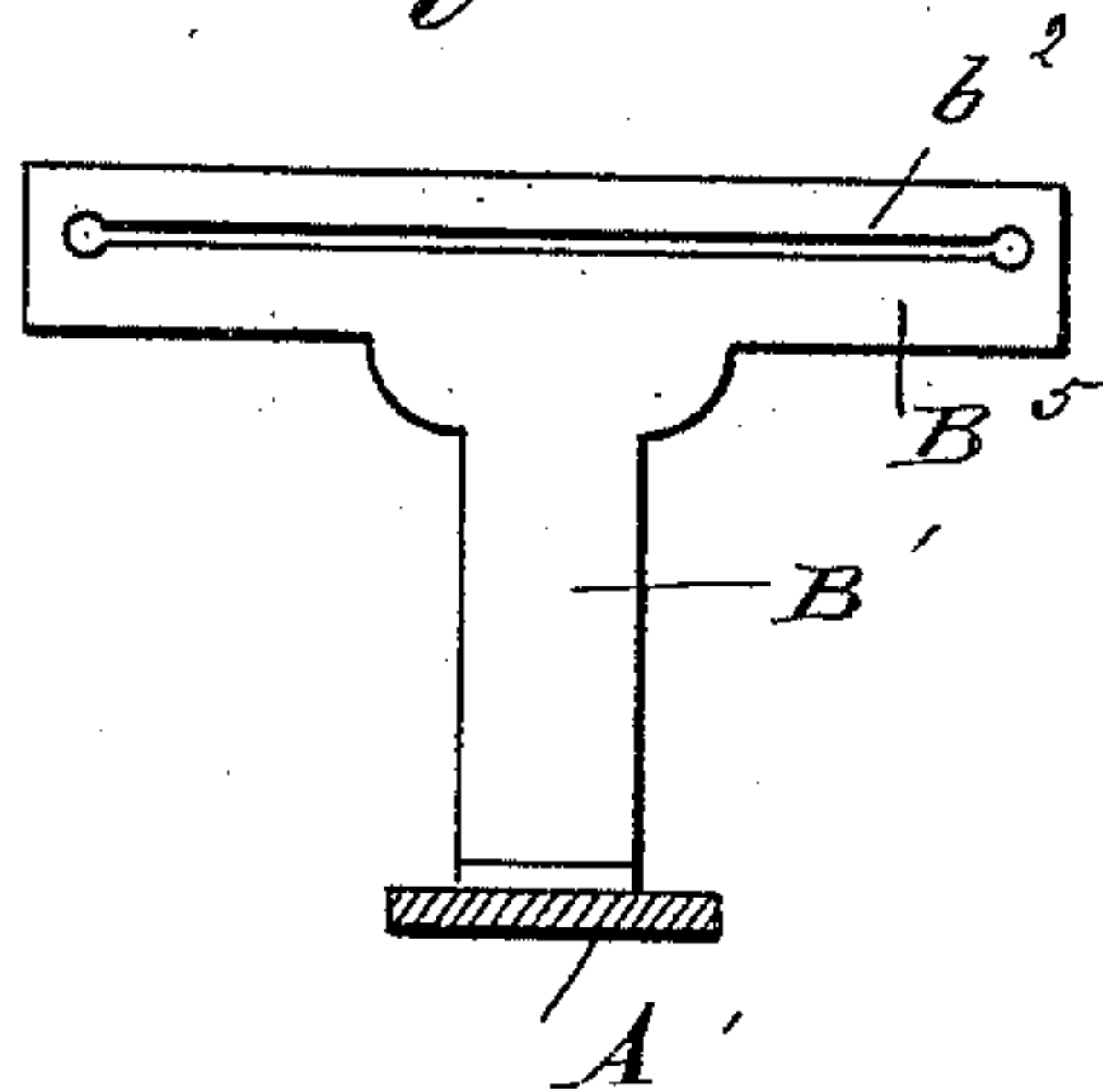
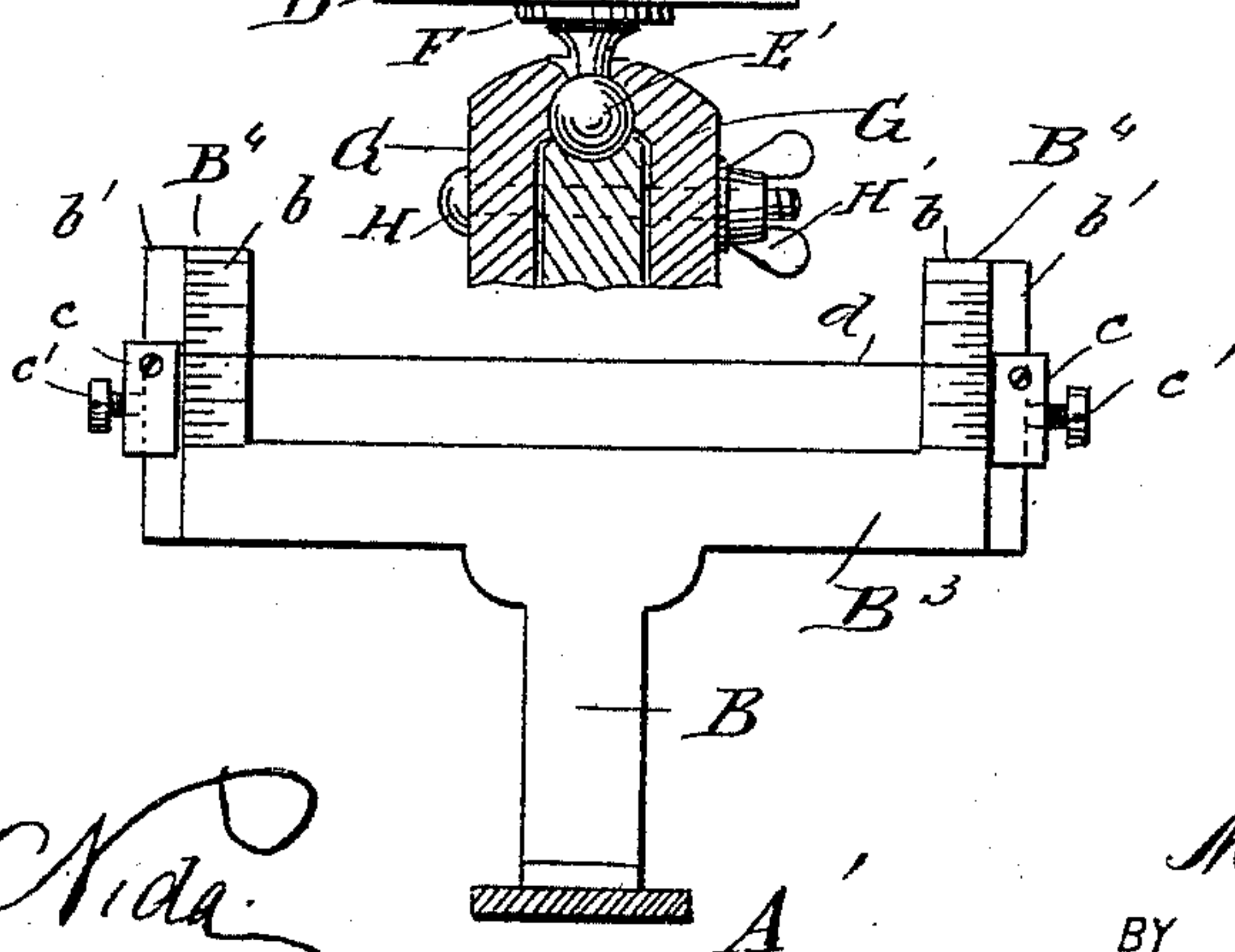


Fig: 4.



WITNESSES:

Chas. Nida
C. M. Clark

INVENTOR:

M. A. Stewart

BY

Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

MARCELLUS A. STEWART, OF CRYSTAL SPRINGS, MISSISSIPPI, ASSIGNOR TO HIMSELF AND AUGUSTUS LOTTERHOS, OF SAME PLACE.

LEVELING-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 440,445, dated November 11, 1890.

Application filed June 2, 1890. Serial No. 354,008. (No model.)

To all whom it may concern:

Be it known that I, MARCELLUS A. STEWART, of Crystal Springs, in the county of Copiah and State of Mississippi, have invented a new and Improved Leveling-Instrument, of which the following is a full, clear, and exact description.

My invention relates to improvements in leveling-instruments; and the object of my invention is to produce an instrument that may be quickly leveled both laterally and longitudinally, that may be easily held in position, and that will be especially adapted to leveling, ditching, and grading land, and to other analogous work.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the leveling-instrument embodying my invention with the stand removed. Fig. 2 is a side elevation of the same, partly in section, and showing the connection between the body of the instrument and the stand. Fig. 3 is a transverse section on the line $x x$ of Fig. 1, looking in the direction of the arrow; and Fig. 4 is a transverse section on the line $y y$ of Fig. 1, looking in the direction of the arrow.

The central body portion A is preferably circular in form, and is provided with two oppositely-extending horizontal arms A', one of said arms having a water or spirit level a mounted transversely thereon, and the other of said arms having a similar level a' mounted longitudinally thereon, so that said levels will be at right angles to each other.

Attached to the outer ends of the arms A' are the vertical standards B and B', said standards being provided with horizontal flanges B², which afford an easy means of attachment to the arms. The standard B is provided with a horizontal widened portion B³, each end of said portion having a vertical arm B⁴ formed thereon, and said arms are provided with suitable scales b , the scales being marked off into spaces preferably repre-

senting one-sixteenth of an inch each. The outer portions of the arms B⁴ are provided with vertical dovetailed tongues b' , and mounted upon said tongues, so as to slide easily thereon, are the slides c , having suitable set-screws c' therein, by means of which the position of the slides upon the tongues may be regulated. A sight-line d is fixed to the upper ends of the slides c , and extends above the portion B³ and parallel therewith from one slide c to the other. The standard B' is widened at the top to form the transverse arm B⁵, said arm having a longitudinal sight-slot b^2 therein, as best shown in Fig. 3.

Centrally fixed to the under side of the body A is a supporting-plate D, and extending vertically through said plate and through the perforation a^2 of the body A is the shaft E, which is screw-threaded at the top and provided with a suitable thumb-nut e , and which has at its lower end a ball E', said ball being inclosed by the jaws G, which are mounted on a tripod in the usual manner, and which needs no detailed description. The shaft E is provided with a suitable collar F between the support D and the jaws G. A bolt H extends through the jaws G and is provided with a suitable nut H', so that by tightening said nut the jaws may be forced upon the ball E', and the position of the level will be thereby fixed. It will thus be seen that the body A and arms A' may be swung vertically and their position fixed by the bolt H and jaws G, and that by loosening the thumb-nut e said parts may be swung horizontally and their position fixed by tightening said nut.

It will be seen that by having the levels a and a' arranged at right angles to each other the instrument may be quickly leveled in both directions—that is, longitudinally and laterally.

The device is operated in much the same manner as the ordinary surveyor's level. The operator sights through the slot b^2 and over the sight-line d . A target is carried in front of the instrument, and when the target appears either above or below the sight-line the carrier of the target is motioned up or down in the usual manner until the target is in perfect alignment. The operation is then repeated until the whole line is run.

The spaces on the scale *b* are preferably made one-sixteenth of an inch in width, and by moving the slides *c* so as to move the sight-line *d* the distance of one of said spaces
5 a change will be made in the grade of three-fourths of an inch to the rod.

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

10 1. The herein-described sight-bar, having vertical standards at its ends, one arm having a transverse sight-slot and the other having vertical parallel arms *B*⁴*B*⁴, provided with scales *b*, and vertically-movable slides *c c* on
15 the said arms and connected by the sight-line *d*, substantially as set forth.

2. In a leveling-instrument, the combina-

tion, with the body *A*, having arms *A'* and levels *a* and *a'* arranged at right angles to each other, said body being pivotally mounted 20 upon a stand, and having means, as shown, for fixing its position thereon, of the standard *B*, having the horizontal portion *B*³ and the upwardly-extending arms *B*⁴, said arms being provided with scales *b* and tongues *b'*, the ad- 25 justable slides *c*, mounted upon the tongues *b'* and connected by a sight-line *d*, and the standard *B'*, mounted upon the opposite arm *A'* and provided with a horizontal slot *b*², substantially as described.

MARCELLUS A. STEWART.

Witnesses:

J. W. W. NEWTON,

W. D. RAY.