

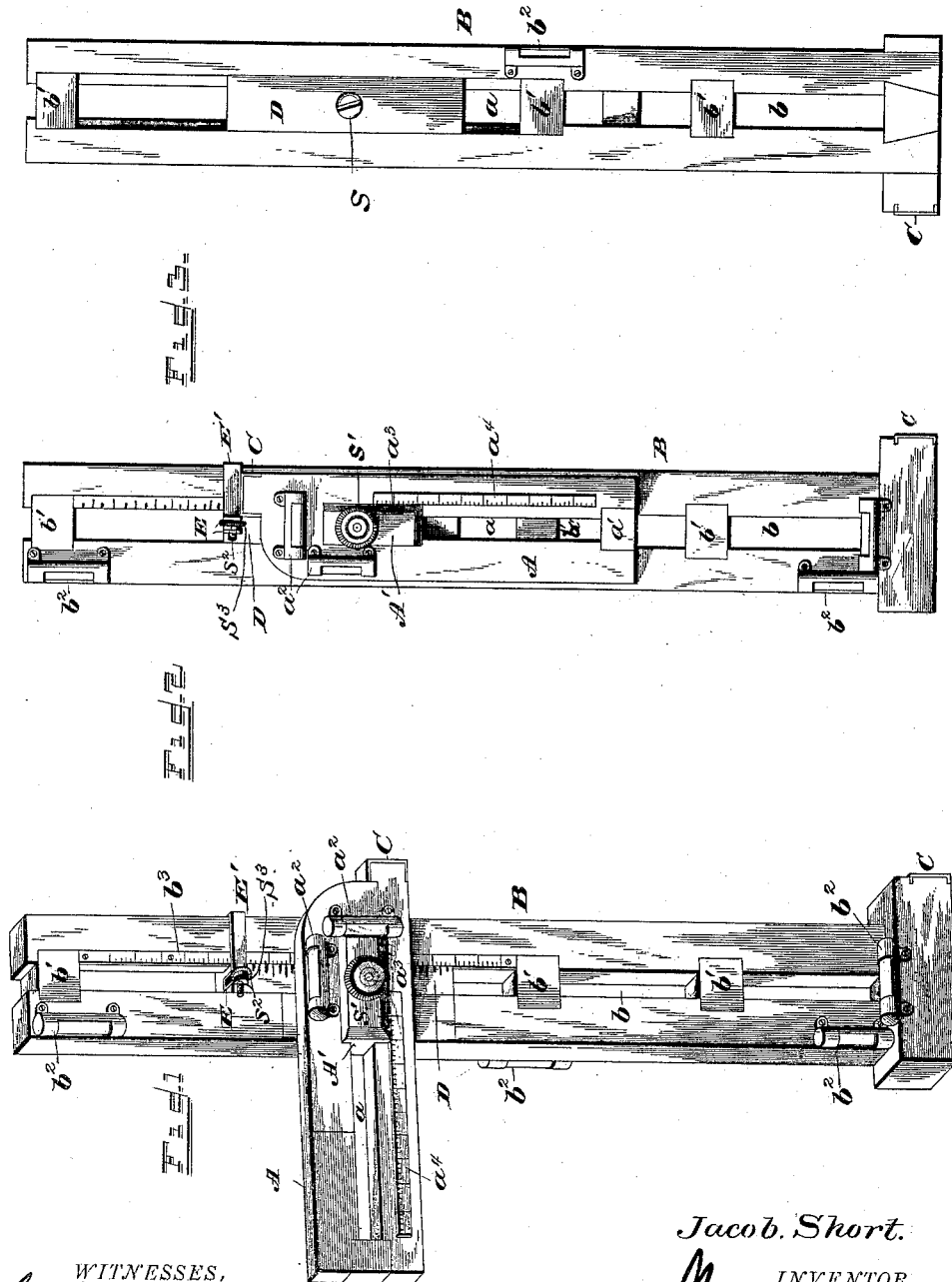
(No Model.)

J. SHORT.

INSTRUMENT FOR MEASURING VERTICAL AND HORIZONTAL DISTANCES.

No. 383,375.

Patented May 22, 1888.



WITNESSES,

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G. S. Elliott,
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INVENTOR,

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JACOB SHORT, OF CONCORDIA, KANSAS.

INSTRUMENT FOR MEASURING VERTICAL AND HORIZONTAL DISTANCES.

SPECIFICATION forming part of Letters Patent No. 383,375, dated May 22, 1888.

Application filed October 22, 1886. Serial No. 216,983. (No model.)

To all whom it may concern:

Be it known that I, JACOB SHORT, a citizen of the United States, residing at Concordia, in the county of Cloud and State of Kansas, have invented an Instrument for Measuring Vertical and Horizontal Distances on Hill-sides and other Unevel and Uneven Sur-faces, of which the following is a specification.

My invention relates to a measuring-instru-ment, and the object thereof is for taking ver-tical and horizontal distances on unlevel sur-faces, such as hillsides, roofs of houses, stair-landings, and all other measures where one point is higher than another, and for taking cross-sections in railroad and canal surveys.

For the manner in which this object is at-tained reference will be had to the accom-panying drawings, wherein like letters of ref-erence indicate similar parts in the several views, and in which—

Figure 1 is a perspective view of my improved device, showing the horizontal measuring-arm thereof in position. Fig. 2 is a front eleva-tion of the same, showing the horizontal arm folded down against the vertical arm. Fig. 3 is a rear elevation of the device as shown ar-ranged in Fig. 2.

A indicates a horizontal measuring-arm and B the vertical arm. Both of the arms A and B are formed with elongated slots *a* and *b*. Metallic shoes C are secured to the lower end of arm B, and in like manner a similar shoe may be applied to the arm A. The vertical arm B and the one end of the horizontal arm A are provided with stay or brace blocks *a'* and *b'*, the blocks *b'* intersecting the slots *b* in the vertical arm B at suitable intervals. The vertical arm B has spirit-levels *b''* arranged at its lower end in horizontal and vertical po-sitions adjacent to the shoe C and in a ver-tical position on the front side of the upper end thereof, near one edge. The rear of the said vertical arm is also provided with a similar spirit-level about midway the distance between the shoe C and the upper end thereof and near one edge. The arm A near one end is also provided with vertically and horizontally arranged levels *a''*, similar in construction and attachment to the levels *b''* on the arm B. The levels are all inclosed in metallic cases to prevent breakage.

D is a shifting or sliding block, which is suitably grooved and mortised and fits in and bears against the sides of the slot *b* in the arm B.

The arm A is in like manner provided with a stationary gage-block, A', which fits within the slot *a* and whose sides are slightly beveled, one side thereof being provided with a grad-uated scale, *a''*, which registers in connection with a graduated scale-strip, *a'*, secured on the said arm A adjacent to one edge of the slot *a*, as the said arm is moved. The one edge of the sliding block D is also formed with a graduated scale, which registers in connec-tion with a metallic scale-strip, *b''*, secured on the arm B adjacent to the one edge of the slot *b*.

The arms A and B are pivotally united by a set-screw, S, which passes through the blocks D and A' thereof, and said parts are stationarily clamped together by means of a clamping thumb-nut, S', engaging with the screw S.

The block D is capable of vertical adjust-ment, and in said adjustment carries the arm A therewith. The block A', however, is sta-tionary, except in its pivotal movement, and when a horizontal adjustment of the arm A is required the nut S' is loosened, and the said arm slid in either direction across the face of the arm B.

To clamp the block D in a stationary posi-tion against vertical movement, I form a slot in the upper end thereof, in which a metallic socket, E, is secured, the ends of which extend outward beyond the face of said block. A screw, S², formed upon one end of a metallic clamping-clip, E', is mounted in the project-ing ends of the socket E, said clip being bent at its opposite end to fit over the one edge of the arm B. A thumb-nut, S³, is mounted on the screw S² of the clip E', and by turning said nut in opposite directions the clip will either bear firmly upon or be loosened from the arm B, and thereby control the block D.

The instrument may be inverted, if so de-sired, and the arm A made vertical and the arm B horizontal.

I do not confine myself to the exact form herein shown in the construction of the de-vice, nor to any particular dimension or ma-

terial, as it can be slightly changed or varied in detail and made of any size and length desired and of either wood or metal.

Having thus described my invention, what I claim as new is—

1. The combination of the slotted arm B, the movable sliding block D in the slot thereof, slotted arm A, the stationary gage A', the said arms being pivoted to each other, as set forth, and the block D and gage A' being provided with scale-marks registering with graduated scale-strips, and the spirit-levels arranged on the said arms, as shown and described.

2. The combination of the slotted arm B, having the slot therein intersected by stay or brace blocks, a movable sliding block in said

slot, a metallic socket in the upper end of said sliding block, having a clamping-clip, E', in connection therewith formed with a screw-threaded end, the clamping-screw S², having a nut, S³, thereon, the arm A, having a slot with a stationary gage-block, A', therein, the screw and clamping-nut for securing the arms A and B together, the said screw passing through the sliding block D and the block A', the spirit-levels arranged on the arms A and B, as set forth, and the metallic shoes C, substantially as described.

JACOB SHORT.

Witnesses:

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