

F. W. MARSTON.

Spirit-Levels.

No. 140,055.

Patented June 17, 1873.

FIG. 1.

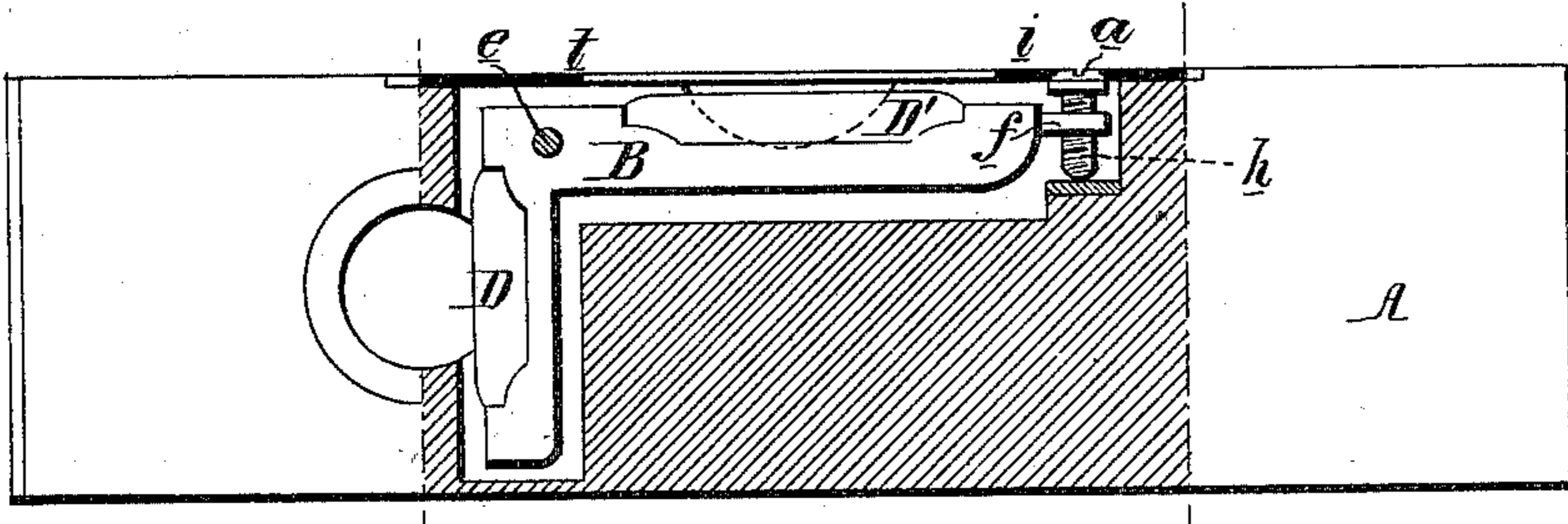


FIG. 2.

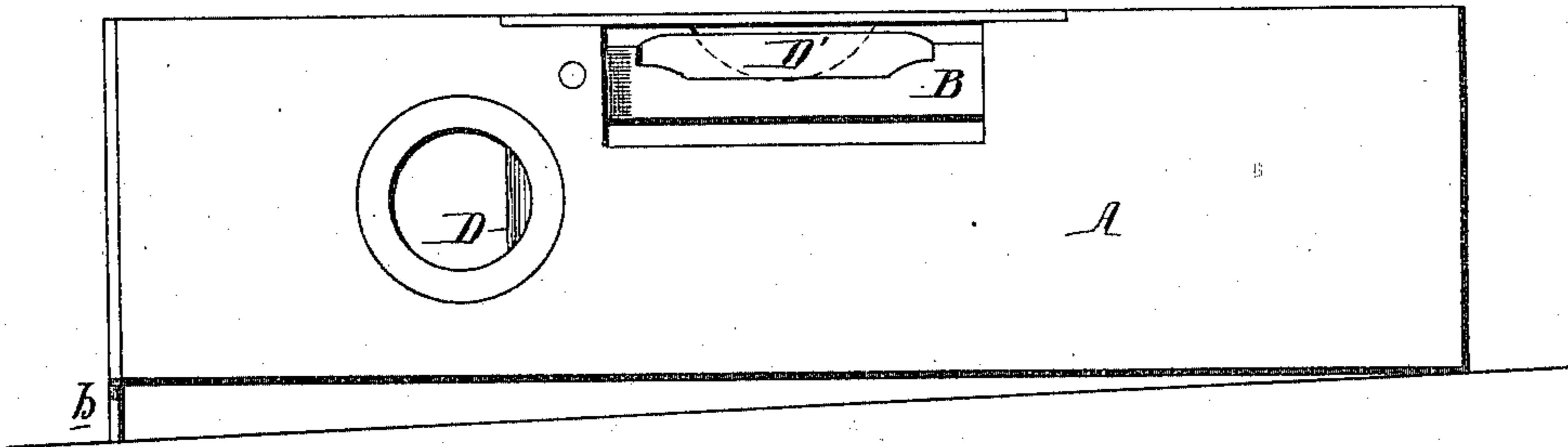
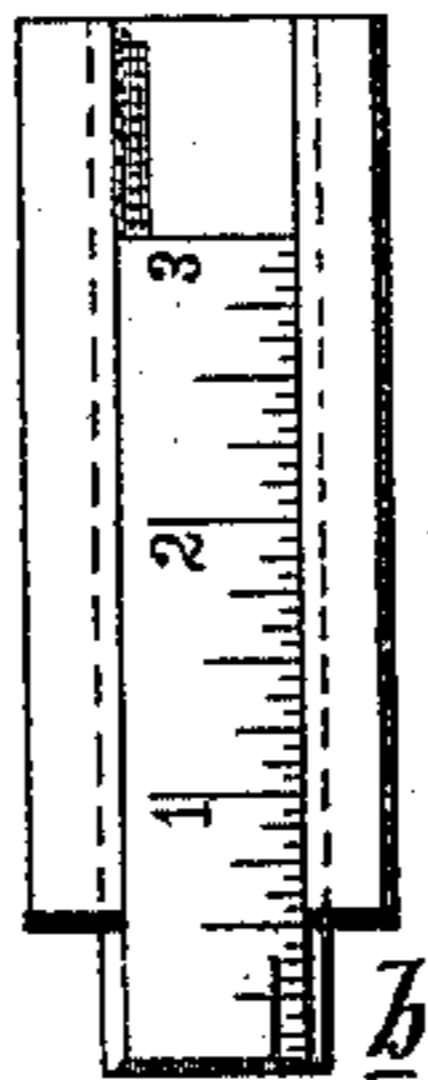


FIG. 3.



Witnesses, Harry Smith
John K. Hupertus.

Frank W. Marston
By his Attys.
Hawson and Son

UNITED STATES PATENT OFFICE.

FRANK W. MARSTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
JOAB MORSS, OF SAME PLACE.

IMPROVEMENT IN SPIRIT-LEVELS.

Specification forming part of Letters Patent No. **140,055**, dated June 17, 1873; application filed
March 5, 1873.

To all whom it may concern:

Be it known that I, FRANK W. MARSTON, in the city and county of Philadelphia, State of Pennsylvania, have invented an Improved Spirit-Level, of which the following is a specification:

The objects of my invention are, first, to insure the permanency of the relative position, at right angles to each other, of the two tubes of a spirit-level; second, to afford facilities for the ready adjustment of the said tubes; and, third, to determine the exact inclination from a horizontal or vertical plane of any object to which the level is applied.

I attain the first of these objects by confining at right angles to each other, and to one and the same frame B, shown in Figure 1 of the accompanying drawing, the two glass tubes D and D'; and the second object I attain by hinging the said frame to the block A, and by combining the frame with a controlling-screw, *a*, as shown in the drawing; and the third object I attain by a graduated scale, *b*, arranged to be adjustable in guides at the end of the block, as shown in Fig. 3 of the drawing. A recess is formed in the block for the reception of the frame B, which is provided with the projections or trunnions *e*, adapted to bearings in the said block. At the end of the long arm of the frame B is a projection, *f*, having an opening threaded internally and adapted to the thread of the set-screw *h*, which is confined between a plate in the block and the usual plate *i*, through the elongated opening in which the bubble in the tube D' may be observed.

By introducing an appropriate implement through an opening in the plate *i* this set-screw may be readily turned, and the frame B may be thereby so adjusted that its tubes shall exactly accord with the under face of the block. It should be understood that the two tubes D and D' are properly adjusted in the frame B, exactly at right angles to each other before the said frame is applied to the block; hence in subsequent adjustments of the frame in the block it is not necessary to regard more than one of the tubes, as the proper adjustment of one tube in respect to the block must be simultaneous with that of the other.

The duty of the adjustable scale in determining the exact extent of the departure from a vertical or horizontal plane (see Fig. 2) of any object to which the level may be applied, will be readily understood without explanation.

I claim as my invention—

1. A spirit-level in which the two tubes are adjusted at right angles to each other in the same frame, separable from the block, as and for the purpose set forth.

The tubes D D', secured at right angles to each other to a frame, B, and simultaneously adjustable by a screw, *h*, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK W. MARSTON.

Witnesses:

P. F. BROWN,
LEWIS G. CARR.