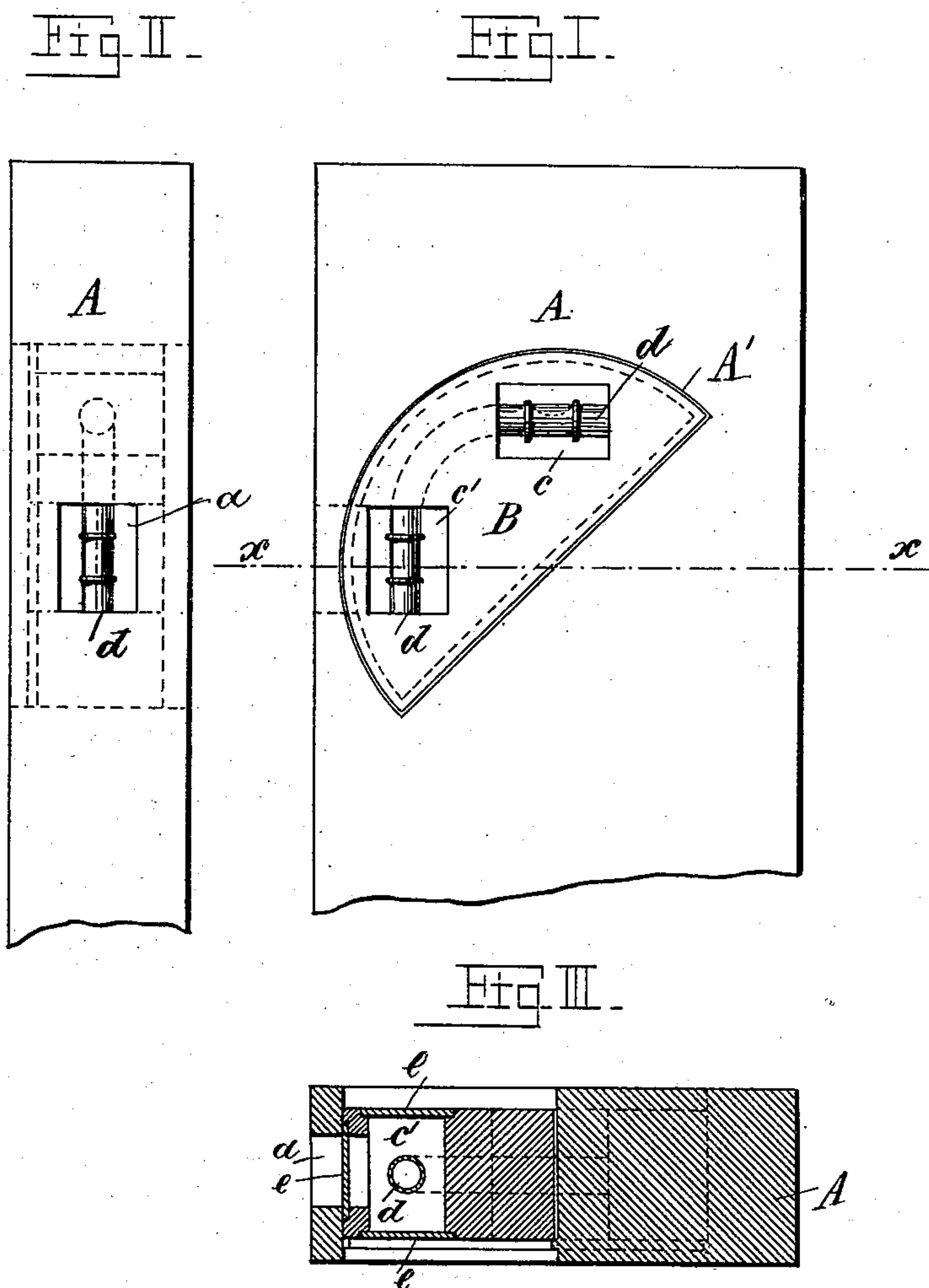


(No Model.)

L. MENZ.
SPIRIT LEVEL.

No. 506,855.

Patented Oct. 17, 1893.



Witnesses:
W. C. Corlies
Martin H. Olsen

Inventor:
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UNITED STATES PATENT OFFICE.

LOUIS MENZ, OF BERLIN, GERMANY, ASSIGNOR OF ONE-HALF TO PAUL KREBS, OF SAME PLACE.

SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 506,855, dated October 17, 1893.

Application filed March 30, 1891. Serial No. 387,071. (No model.)

To all whom it may concern:

Be it known that I, LOUIS MENZ, mason, a subject of the King of Prussia, and a resident of Berlin, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Water-Poises, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has reference to straight edges with spirit or water levels of the kind adapted for use both horizontally and vertically, that is to say as a level for determining the horizontality of an object or surface, 15 and also the perpendicularity of an object or surface, to which it is applied. In such straight edges according to this invention the leveling tubes are arranged within a common holder, so that the straight edge can be used 20 in an easy and convenient manner and so that the leveling tubes can be readily and accurately inserted in place within and removed from a straight edge of any suitable length by an unskilled person. In straight 25 edges with water levels of the kind mentioned heretofore constructed the leveling tubes have been arranged at two separate parts of the straight edge, and have not been capable of being readily removed and replaced. 30 Consequently the levels are rendered practically useless by the slightest inaccuracy in the straight edge such as would be produced by warping of the wood caused by the levels being placed at different parts thereof, or from 35 other cause. These disadvantages are obviated according to this invention by arranging both leveling tubes in one holder that is removably inserted in the straight edge near one end thereof. Warping of the wood is 40 thereby completely obviated, because a continuous mass of wood can be left intact on one side of the holder, and should the straight edge become inaccurate from any cause, the holder can be easily removed therefrom and 45 inserted in another one.

A straight edge with levels constructed according to this invention is illustrated in the accompanying drawings.

50 Figure 1 is a front elevation; Fig. 2 a side elevation; and Fig. 3 a section on the line $x-x$ of Fig. 1.

A is a portion of a straight edge formed near one end with a semi-circular hole A' for the reception of a correspondingly formed holder B. The straight side of the semi-circular hole A' may advantageously be arranged 55 at an angle of forty-five degrees to the lower side of the straight edge so that the holder will be caused by gravity to place itself always at the same angle, even if the holder 60 should not exactly fit the hole A'. The holder is formed with two openings c, c' at right angles to one another, in which the leveling tubes d, d' are secured so as to be also at 65 right angles to each other.

Instead of using two leveling tubes, one tube may be used as indicated in dotted lines this tube being so bent that its end portions are at right angles to each other and have one air bubble only which can move into each portion 70 of the tube according to the position in which the straight edge is placed. The tubes, or the end portions of the one tube if this be used, are protected by glass plates e . a is an opening in the narrow side of the straight 75 edge through which the tube d can be readily inspected to ascertain the position of the air bubble when using the straight edge in a horizontal position.

What I claim, and desire to secure by Letters Patent of the United States, is—

In a spirit level, a straight edge, A, provided with a semi-circular aperture, A', near one end thereof, and an opening, a , at one edge thereof leading into said aperture, in 85 combination with a semi-circular holder, B, adapted to fit said aperture and provided with two openings, c, c' , arranged at right angles to each other, and two leveling tubes, d, d' , set 90 respectively in the openings, c, c' , at right angles to each other and parallel with the sides and ends respectively of the straight edge, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LOUIS MENZ.

Witnesses:

W. BINDEWALD,
W. SCHWICHTAL.