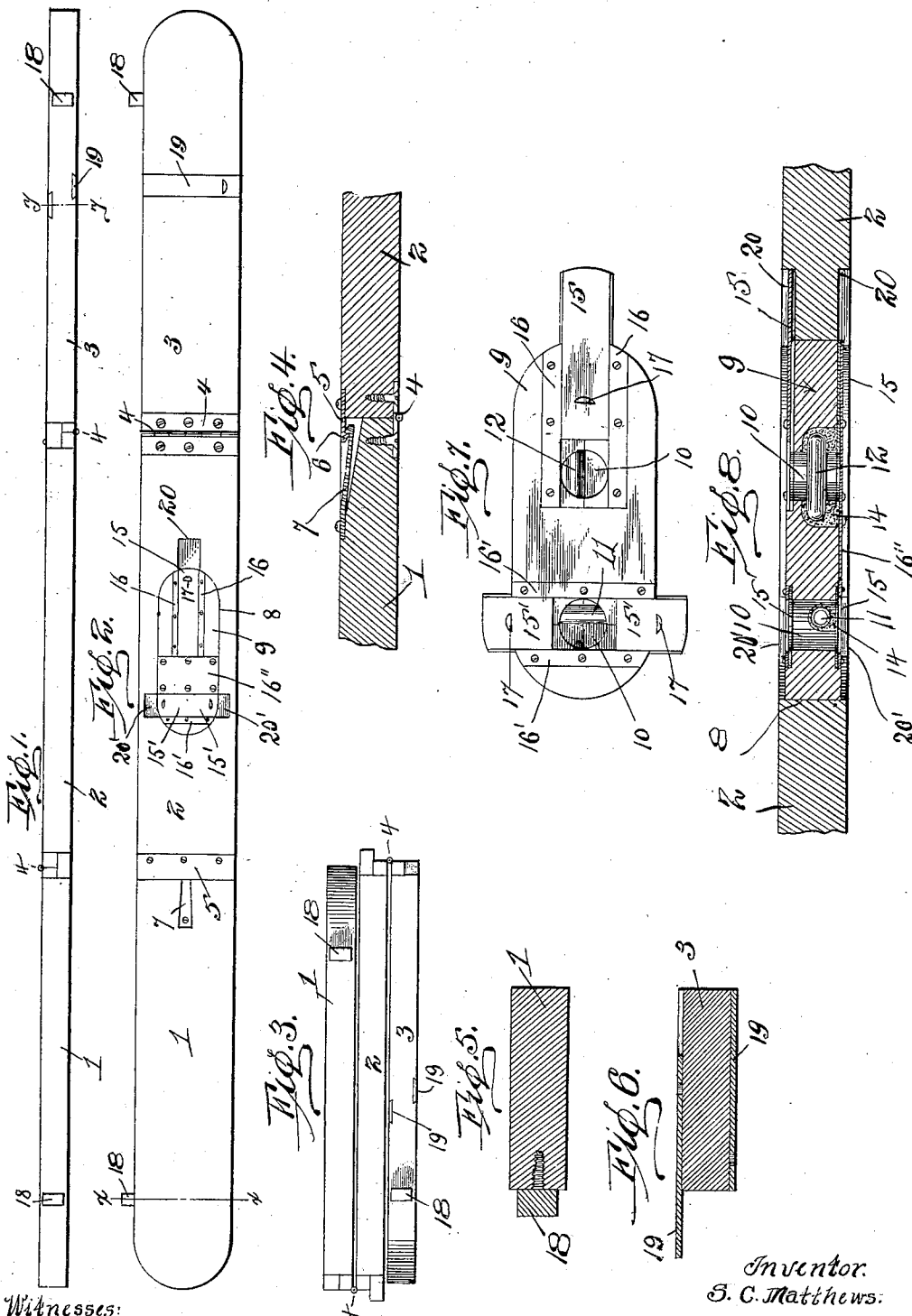


No. 863,415.

PATENTED AUG. 13, 1907.

S. C. MATTHEWS.
PLUMB AND LEVEL.

APPLICATION FILED AUG. 10, 1906.



Witnesses:

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PLUMB AND LEVEL.

No. 863,415.

Specification of Letters Patent.

Patented Aug. 13, 1907.

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To all whom it may concern:

Be it known that I, SANFORD C. MATTHEWS, a citizen of the United States of America, residing at West Elizabeth, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Plumbs and Levels, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in levels, and the invention has for its primary object to provide a folding level, which can be conveniently carried in a carpenters kit or box.

Another object of this invention is to provide a folding level having shielded or protected level glasses.

A further object of this invention is to provide certain attachments for a level which will permit of the level being used after its edges have been injured or disfigured.

A still further object of this invention is to provide novel means in connection with a level whereby the same can be used upon an inclined plane for determining a level plane with relation to the inclined plane.

A still further object of this invention is to provide a simple and inexpensive level, which will be accurate and precise, and free from all danger of injury from ordinary use.

With the above and other objects in view, which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be hereinafter more fully described.

Referring to the drawing, like numerals of reference designate corresponding parts throughout the several views, in which:—

Figure 1 is an edge view of my improved level, Fig. 2 is a plan of the same, Fig. 3 is an edge view of the level in a folded position, Fig. 4 is a longitudinal sectional view of a portion of the level, illustrating one of the hinges thereof, and means for locking said hinge in a fixed position, Fig. 5 is a cross sectional view of the level taken on the line $x-x$ of Fig. 2, Fig. 6 is a similar view taken on the line $y-y$ of Fig. 1, Fig. 7 is a plan of a detachable level glass housing as detached from the level, and Fig. 8 is a longitudinal sectional view of the same, as positioned within a level.

To put my invention into practice, I construct my improved level of three sections or parts, 1, 2 and 3. These parts being connected together in alinement with one another constitute a level of an ordinary size, such as are commonly used by carpenters, masons, and similar artisans.

The sections 1 and 3 which form the ends of the level are hinged to the central section 2, as at 4, the section 3 being hinged to the opposite edge of the section 2 from that of the section 1, whereby the sections 1 and 3 can be folded upon each side of the central section 2, as

illustrated in Fig. 3 of the drawing. To maintain the sections in longitudinal alinement with one another, I provide the confronting edges of the sections with transverse plates 5 forming teeth 6, which are engaged by resilient hook-shaped latches 7 secured to the sections 1 and 3. The sections of the level when moved into alinement with one another, are automatically locked together, and at any time it is desired to close or fold the level, it is only necessary to press the resilient latches 7 to release the hinged sections of said level.

The central section 2 of the level is provided with an oblong opening 8 in which is mounted a level glass housing 9. The housing 9 is preferably constructed of a material similar to the level, and is provided with two transverse openings 10 in which are mounted level glasses 11 and 12, said glasses having their ends embedded in plaster of paris or a similar material 14. The housing 9 is firmly secured within the cavity 8 in any suitable manner. The glasses are arranged at right angles to one another whereby the housing member 9 is of less thickness than the body 2, whereby recesses are left in the opposite faces of the body, and communicating with the ends of the cavity for the housing are recesses 20, the recesses being disposed in the opposite faces of the body and extending longitudinally thereof. Formed in the opposite faces of the body opposite the other cavity 10 are similar recesses 20'. Bearing upon the opposite faces of the housing 9 and in alinement with the sides of the cavities 20 are guide members 16 having dovetail inner edges, and adapted to receive slides 15, the slides adapted to bear over the opposite ends of the cavity 10 when in one position and with their outer ends projecting in the cavities 20 when in open position, thus forming shields or guards for the longitudinal level-glass.

Attached to the opposite faces of the body 9 and spaced apart at opposite sides of the cavity 10 for the transverse level-glass are spaced guides 16' having dovetail inner edges, and slidable between these guides are guide plates 15' adapted when in closed position to cover the transverse level-glass, and to extend into the cavities 20' when in open position, whereby shields are provided for the transverse level-glass when required. At one side of the body 9 one of the guide members is enlarged laterally as shown in Fig. 2 to extend over the plaster of paris binding material by which the level-glass 11 is held in place. By this arrangement it will be noted that no portion of the housing 9 or its attachments project beyond the general surface of the body 2, consequently there is no danger or damage to these parts by coming in contact with the surrounding objects. The plates 15 and 15' are provided with thumb recesses 17 to assist in moving them.

An attachment for my improved level consists of two blocks 18 detachably connected to the level near the

ends thereof by threaded studs, as illustrated in Fig. 5, these blocks being used when the edge of the level has been injured to such an extent as to interfere with the accuracy of the level.

- 5 In order that the level may be used to determine a horizontal plane with relation to an inclined plane, I provide the section 3 of the level with two plates 19 supported in dovetail grooves upon opposite sides of one of the sections of the body, as for instance the section 3, 10 the plates being thus in position to be protruded longitudinally from either side of the body. By this means the plates 19 may be adjusted with their ends projecting from the body of the implement to any required extent to support the body at an incline, and thus provide 15 a simple means whereby the implement may be employed in determining a horizontal plane relative to an inclined plane. The slides 19 will fit their sockets with sufficient firmness to be held by friction only.

- The housing member 9 with its attachments is held 20 by friction only, and may be readily removed for attachment in another body in event of injury, or the wearing of the body to which it is attached. The housing may thus be employed in connection with any form of straight edge or similar implement.

- 25 From the foregoing description it will be observed

that I have devised a novel folding level which can be easily and quickly manipulated to determine the angularity of any plane.

Such changes in the details of construction as are permissible by the appended claims, may be resorted to 30 without departing from the spirit and scope of the invention.

What I claim and desire to secure by Letters Patent, is:—

An implement of the class described comprising a body 35 having a transverse opening and having recesses in the opposite faces of the body communicating with said opening, a housing engaging said opening and provided with spaced transverse apertures, level-glasses secured respectively in said apertures at right angles to each other, 40 guides attached to said housing at opposite sides of the level-glass apertures and in alinement with the side edges of said recesses, slides movable between said guides and adapted to cover said level-glass apertures when in one position and to enter said body recesses when in the other 45 position.

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

SANFORD C. MATTHEWS.

Witnesses:

MAX H. SROLOVITZ,

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