

UNITED STATES PATENT OFFICE.

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SPIRIT-LEVEL.

970,729.

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To all whom it may concern:

Be it known that I, GEORGE W. LINGLE, a citizen of the United States, residing at Burlington, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Spirit-Levels, of which the following is a specification.

My invention relates to improvements in spirit levels, and the objects of my improvement are, first, the provision of a rigid and durable spirit level stock built up of thin sheets of metal; second, to construct a removable and adjustable glass tube holder adapted to prevent longitudinal displacement of the glass and to afford a sight-opening above and below the glass when reading; and, third, the production of a slidable marker secured to each member of the holder, the free end of the marker extending in the sight-opening to near the glass to indicate the desired position of the bubble. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a perspective view of my invention. Fig. 2, is a perspective view of a plate, two of which constitute a glass holder. Fig. 3, is a side elevation of the sheet metal stock. Fig. 4, is a cross sectional view on line 4—4 of Fig. 3.

Similar numerals refer to similar parts throughout the several views.

The stock (Figs. 1, 3 and 4) is composed of a plurality of sheets of metal, each consisting of a form of angle metal having two flanges, 7, 7, both placed on the same side of the web, 6, and flange-binders, 8, 8, embracing the flanges of the two pieces of metal. This construction avoids the employment of screws, rivets or other means of securing the parts, 6, 6, together. Suitable rollers or other desired means may be employed to compress the binders, 8, 8, into position to envelop the flanges, 7, 7.

The web of the stock consists of the webs 6, 6 (shown in Fig. 4) and has a plurality of spirit glass openings, 9, 10 therethrough, and screw holes, 11, 11, and elongated openings or slots, 12, 12, which latter make possible change of alinement of the spirit glass holder, 13, by loosening the screw which is projected through hole, 16, and through opening, 12, and through the hole, 16, in the companion plate, 13, it being understood there are two plates, 13, comprising each holder. As the two plates which constitute

the holder are identical in construction, description of only one is given. (See Fig. 2.) In assembling the parts, a plate, 13, is placed upon each side of the web of the stock so that the opening, 14, of the plate will register with the glass opening, 9, or 10, of the stock, and with the points, 19, 19, extending toward each other. This makes it possible to read promptly without regard to which edge of the stock is applied to the object to be measured.

The plate, 13, is preferably rectangular in form, with a longitudinal opening or slot, 14, to receive the spirit glass, 21. It has integral glass retaining bands, 15, at each end of the opening. The screw holes, 16, 16, permit securing the plate to the web of the stock. One of the screws is projected through hole, 16, and slot, 12, in the stock, thus making possible alinement of the plate, 13, in respect to web, 6. Each plate carries a slidable pointer, 17, with slot, 18, and points, 19, and which is secured by screw, 20. The points, 19, of each plate extend toward similar points of a companion plate.

The spirit glass, 21, has a metallic cap or end piece, 22, but I do not wish to limit myself to this form of constructing the spirit glass. The cap, 22, upon each end of the glass is secured in position by the use of a suitable cement for glass and metal, which is known to the art. It will be understood that the glass is filled with ether or other desired fluid sufficiently to leave a bubble, which will be read with reference to the pointer when a level or plumb is being sought.

Having thus fully described my invention, what I claim as new, and desire to protect by Letters-Patent, is,

1. In a spirit level, the combination of a stock with a web having a spirit-glass opening therethrough, a spirit-glass in the opening, plates adjustably secured to the web on opposite sides thereof and adapted to hold the spirit-glass in the opening and a slidable pointer secured to each plate with its free end adjacent to the spirit-glass.

2. In a spirit level, a stock having a web composed of a plurality of sheets of metal each having two flanges, and having flange-binders embracing the flanges of the sheets of metal, the web of the stock having a spirit glass opening therethrough, a spirit glass in the opening, plates adjustably secured to the web on opposite sides thereof

and adapted to hold the spirit glass in the opening, and a slidable pointer secured to each plate with its free end adjacent to the spirit glass.

- 5 3. In a spirit level, the combination of a stock having a web composed of a plurality of sheets of metal, each sheet having two flanges, and having flange-binders embracing the flanges of the sheets of metal, the
10 web of the stock having two spirit glass openings therethrough the longitudinal axis of one opening being at right angles to the longitudinal axis of the other opening, a

spirit-glass in each opening, plates adjust- 15
ably secured to the web of the stock on opposite sides of each opening and adapted to hold the spirit glass in the opening, and a slidable pointer secured to each plate with its free end adjacent to the spirit glass.

In testimony whereof I affix my signature 20
in presence of two witnesses.

GEORGE W. LINGLE.

Witnesses:

S. ELVA KELLOGG,
WALTER WAGNER.