J. DAY.

SPIRIT LEVEL.

APPLICATION FILED JULY 23, 1908.

915,274. Patented Mar. 16, 1909.

Fig. 1

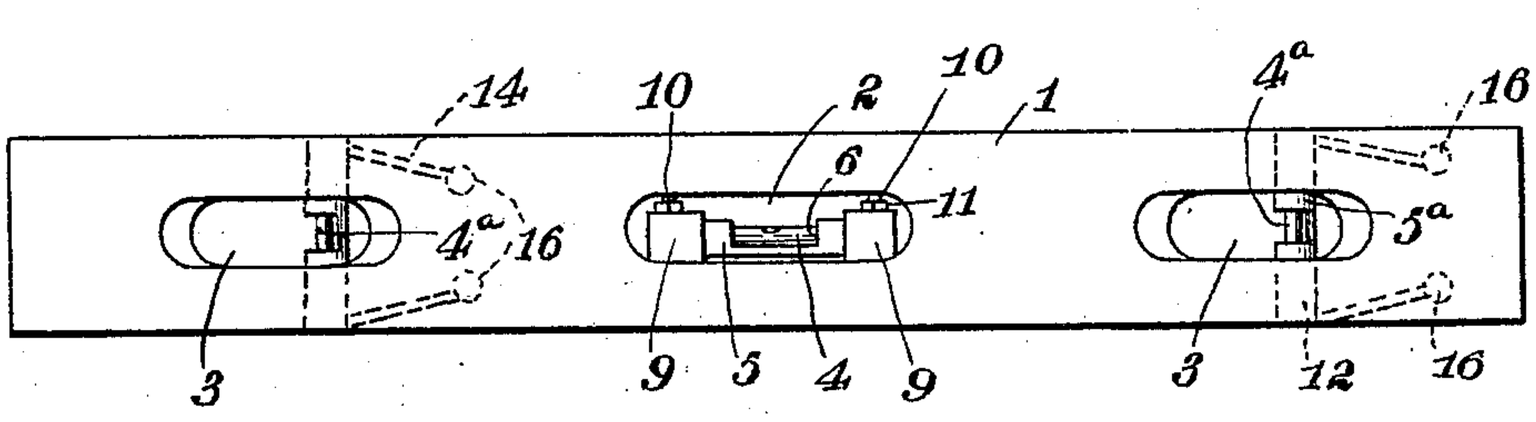


Fig. 2.

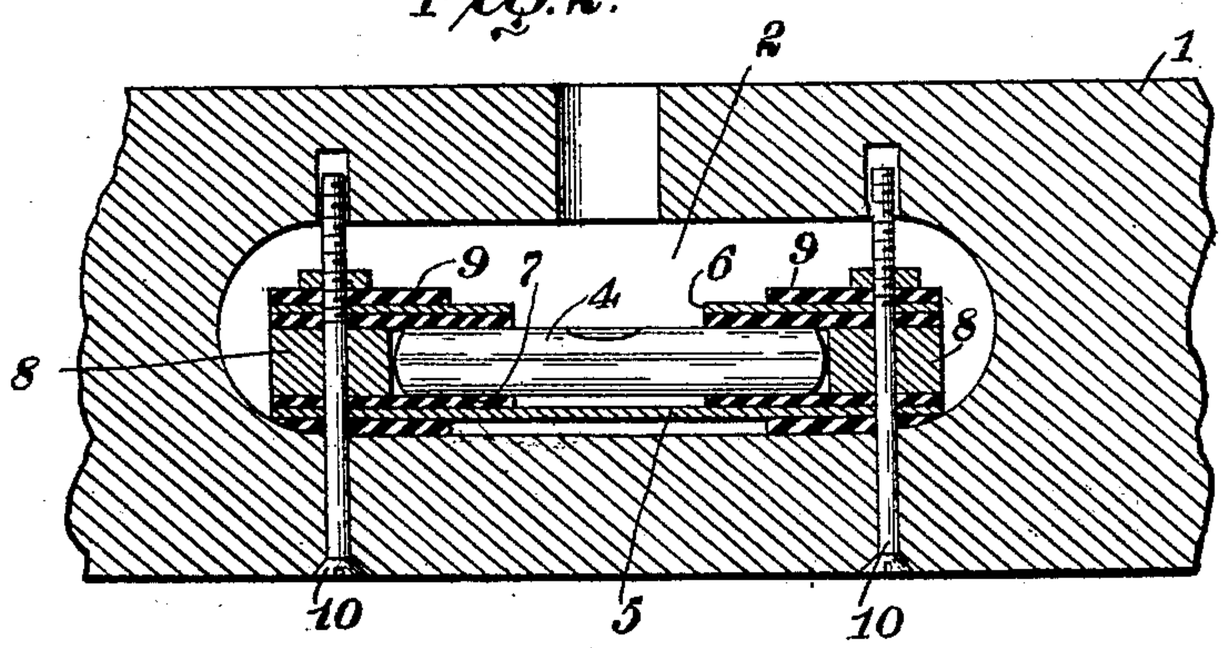
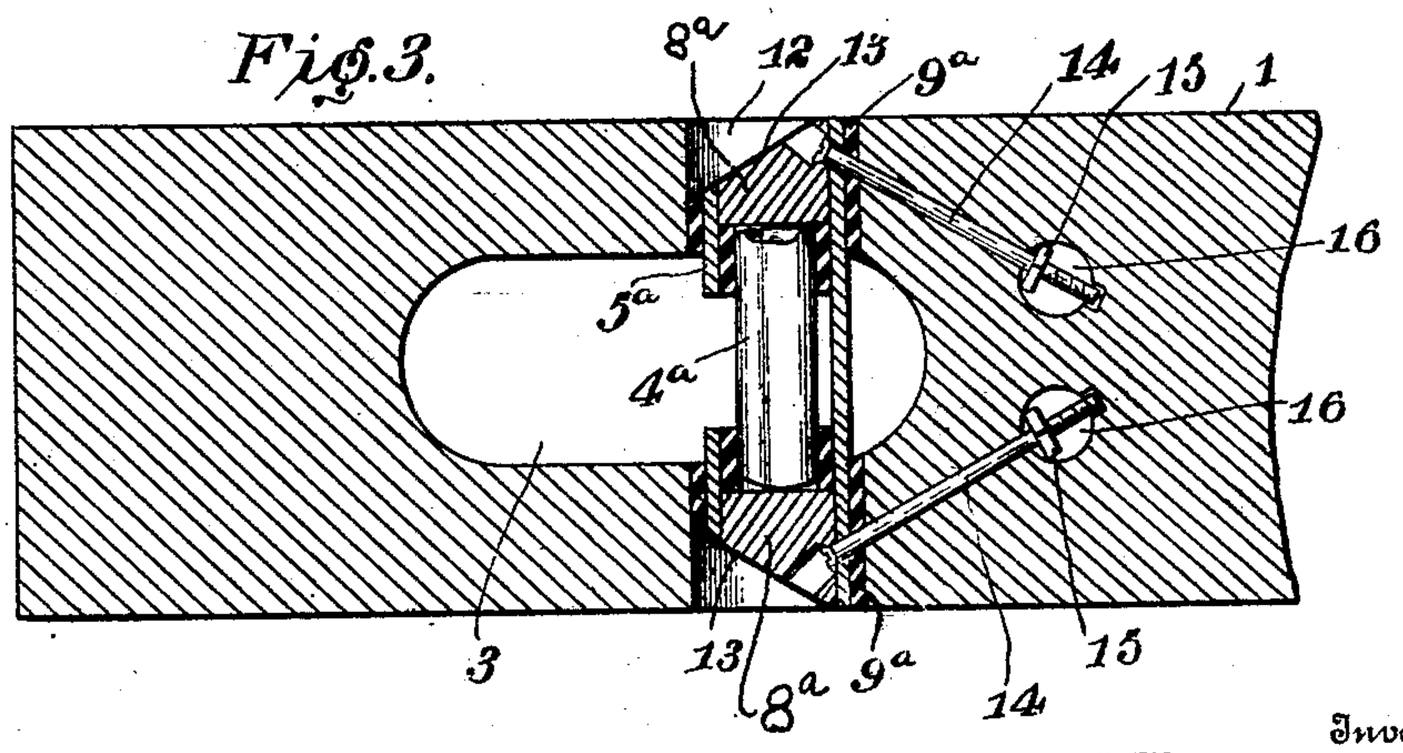


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JACOB DAY, OF DULUTH, MINNESOTA.

SPIRIT-LEVEL.

No. 915,274. Specification of Letters Patent. Patented March 16, 1909.

Application filed July 23, 1908. Serial No. 444,964.

To all whom it may concern:

Be it known that I, JACOB DAY, citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Spirit-Levels, of which the following is a specification.

The present invention relates to certain new and useful improvements in spirit levels such as are commonly employed by carpenters and like artisans, and more particularly to a novel means for mounting the bubble tubes upon the stock.

The primary object of the invention is the provision of a spirit level in which the bubble tubes are attached to the stock in such a manner as to admit of their being readily adjusted and held securely in an adjusted position.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a spirit level constructed in accordance with the invention. Fig. 2 is an enlarged longitudinal sectional view through the central portion thereof. Fig. 3 is a similar view through one of the ends thereof.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawing, the numeral 1 designates the stock of the level, the said stock having an elongated formation and being similar in shape to the stocks of the spirit levels in common use. This stock is formed with a central opening 2 and the end openings 3, the central opening having a bubble tube 4 arranged therein for coöperation with the longitudinal edges of the stock to indicate whether or not the surface upon which the stock is placed is horizontal, while the end openings 3 are provided with the bubble tubes 4^a which are arranged at right angles to the bubble tube 4 and serve to indicate whether or not the surface against which the stock is placed is vertical. The bubble tube 4 is fitted within a metallic barrel 5 having the central portion thereof cut away at 6 to expose the bubble, the ends of the bubble tube being surrounded by packing rings 7 of rubber or similar material by means of which the bubble tube is retained securely in position within the barrel. Plugs 8 of wood or similar material are inserted in opposite ends of the barrel 5 and the said ends of the barrel are also surrounded by the sleeves 9 which are formed of some yielding material such as rubber. The bolts 10 by means of which the bubble tube is secured to the stock pass transversely through the opposite ends of the metallic barrel 5 and are capped by the nuts 11, the sleeves 9 being interposed between the barrel and the stock and also between the barrel and the nuts 11. It will thus be obvious that by turning the bolts 10 the layers of rubber constituted by the sleeves may be either compressed or permitted to expand and the bubble tube thereby adjusted with respect to the stock as desired.

The end openings 3 each communicate with a transverse opening 12 within which the bubble tubes 4^a are received. These bubble tubes 4^a are mounted within metallic barrels 5^a similar to the previously described barrels 5, the ends of the barrels being surrounded by the rubber sleeves 9^a and filled with the plugs 8^a. It will be observed however that the opposite extremities of the barrels 5^a are beveled at 13 and passing through these beveled ends of the barrels from the interior thereof are the bolts 14 which are inclined with respect to the longitudinal axis of the stock so that the heads thereof may be readily engaged by a screw driver or like tool through the ends of the transverse openings 12. These bolts 14 are capped by nuts 15 arranged within transverse openings 16 which are disposed at right angles to the transverse openings 12. With this construction it will be obvious that as in the previous instance by tightening or loosening the bolts 14 the yielding layers of rubber constituted by the sleeves 9 and interposed between the barrels and the stock may be compressed or permitted to expand and the bubble tubes adjusted as required.

Having thus described the invention, what is claimed as new is:

1. The combination of a stock, a barrel having the middle portion thereof cut away, a bubble tube fitted within the barrel and exposed through the cut away portion thereof, sleeves of yielding material applied to the

ends of the barrel upon the exterior thereof, adjusting screws passing through the ends of the barrel and securing the barrel to the stock, and nuts threaded upon the adjusting screws, the said sleeves forming yielding layers between the barrel and the stock.

2. The combination of a stock formed with an opening connecting opposite sides thereof, a barrel fitted within the opening and having the ends thereof beveled, a bubble tube carried by the barrel, and adjusting screws engaging the beveled ends of the barrel and entering the stock at an angle to the opening.

3. The combination of a stock formed with an opening connecting opposite sides thereof, a barrel fitted within the opening and having the ends thereof beveled, a bubble tube carried by the barrel, adjusting screws passing through the beveled ends of the barrel from the interior thereof and entering the stock at an angle to the opening, and a layer of yielding material interposed between the barrel and the stock.

4. The combination of a stock formed with a transverse opening communicating near its opposite ends with bolt receiving openings which are arranged at an angle to the axis of the stock and terminate in transverse openings disposed at right angles to the first mentioned opening, a barrel arranged within the first mentioned transverse opening, a bubble tube carried by the barrel, adjusting screws engaging the barrel and passing through the bolt receiving openings, and nuts capping the adjusting screws and received within the second mentioned transverse openings.

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

JACOB DAY. [L. S.]

Witnesses:
N. S. BRUNER,
J. L. CROMWELL.