May 24, 1938. O. L. MELVIN 2,118,470

COMBINED PLUMB AND LEVEL

Filed Sept. 19, 1936

Fig. 1.

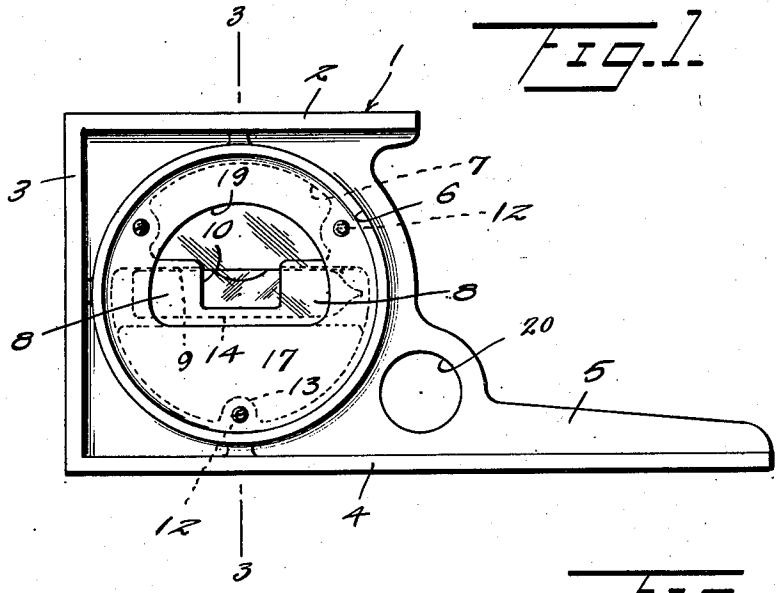


Fig. 2.

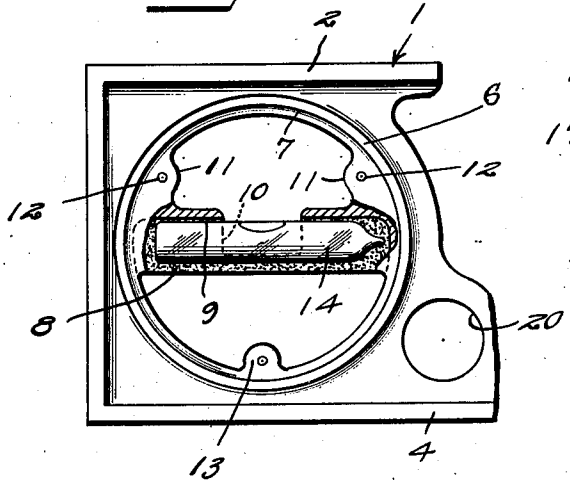
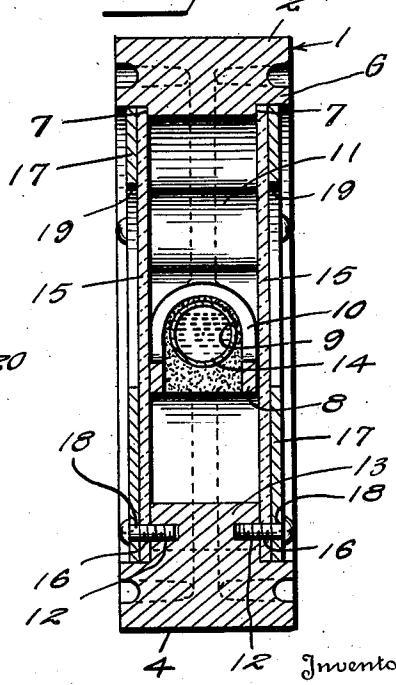


Fig. 3.



Inventor

O. L. Melvin

By Watson E. Coleman

Attorney

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COMBINED PLUMB AND LEVEL

Oscar L. Melvin, Columbus, Ohio

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3 Claims. (Cl. 33—211)

This invention relates to the class of geometrical instruments and pertains particularly to improvements in squares and levels.

The primary object of the present invention is to provide an improved instrument designed for use as a square, level, or plumb, which is so designed that it may be readily cast in metal or other material that may be cast or formed in molds or dies and may have the several individual parts easily and quickly assembled whereby a strong and durable instrument may be inexpensively manufactured.

Another object of the invention is to provide in an instrument of the above described character, novel means of forming and supporting in operative position, a bubble glass holder and of securing the glass in the holder so that it may be easily viewed from either side of the instrument but will be securely held in place and shielded from possible injury.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Figure 1 is a view in side elevation of the complete instrument embodying the present invention.

Fig. 2 is a view in side elevation of the body portion of the instrument with the cover glass and plate removed and showing the bubble glass holder in section.

Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

Referring more particularly to the drawing wherein like numerals indicate corresponding parts throughout the several views, the numeral 1 generally designates the body of the instrument, and this is made up or cast in a single unit. This body comprises a frame-like portion which is relatively broad and has the three sides, which are indicated by the numerals 2, 3, and 4, two of which sides are in spaced parallel relation while the third connects two ends of the parallel sides and is perpendicularly related thereto. The outer faces of these three sides of the instrument are flat so that any one of these faces may be readily placed against the surface of a body to determine if the same is properly placed.

Within the frame 1 is a relatively thin web 5 and in casting the frame there is formed integral with this web the annulus 6. The inner edge of the annulus 6 upon each side is cut back or countersunk to form the shoulder 7 so that the wall of the annulus adjacent each shoulder forms a frame for bodies hereinafter described.

Extending across the diameter of the annulus is a bridge piece 8 which is in parallel relation with and midway between the two parallel sides 2 and 4 of the frame. The underside of this bridge piece or that side adjacent one of the two sides of the frame, is cut out to form the channel 9, and a transverse recess 10 is formed in the bridge in the side opposite from the open side of the channel 9.

At each end of the bridge portion 8 upon one side thereof the bosses 11 are formed which are provided with outwardly directed screw openings 12, and a similar boss is formed at the opposite side of the bridge and upon the inner surface of the annulus 6, as indicated at 13.

The numeral 14 designates a standard bubble glass or tube. This is disposed in the channel 9 of the bridge and secured therein by suitable cement. After the bubble glass has been properly positioned in the channel 9 there is then placed against each of the shoulders 7 of the annulus a transparent disk 15 which may be of glass, celluloid, or any other suitable material. Each of these disks is provided with openings 16 which correspond with the openings in the bosses 11 and 13, and there is then placed over each transparent disk 15 a cover plate 17 also provided with screw openings, as indicated at 18, and having a window opening 19 which permits the area 10 of the bridge 8 to be viewed. In this area the central part of the bubble glass 14 is exposed so that when the instrument is in use the location of the bubble in this area will determine whether or not the body against which the instrument is placed is properly positioned.

After the plates 15 and 17 have been disposed within the frames formed at the sides of the annulus 6 they are secured by suitable screws which are passed through the openings 16 and 18 and into the bosses which form an integral part of the cast instrument body. It will thus be seen that the bubble glass will be effectively shielded while at the same time it may be viewed from every side of the instrument.

One of the two parallel sides of the instrument is extended beyond the free end of the

opposite side and the web 5 is provided with an opening 20 in which a finger may be engaged for supporting the instrument in working position and which may also be used for hanging up the instrument.

From the foregoing it will be readily apparent that the instrument herein described may be economically produced and will be of strong and durable character, and in addition will provide an efficient square and level or plumb. In using the instrument as a level the flat surface of the long side 4 is placed upon the work and in using the instrument as a plumb the rightangularly related side 3 will be disposed against the work and in this manner the one bubble glass will serve both uses.

What is claimed is:

1. An improved spirit level, comprising a frame, an annulus secured within the frame, a bridge integral with and extending across the diameter of the annulus in parallel relation with a side of the frame, the bridge having a channel formed longitudinally therein which opens in a direction at right angles to the long axis of the channel and a transverse recess which passes through the channel and opens oppositely thereto and in a direction at right angles to the said long axis, and a bubble glass secured in said channel and having a portion exposed through said recess.

2. In a spirit level, a frame, an annulus secured within the frame, a bridge integral with and extending across the diameter of the annulus in parallel relation with one side of said frame, the bridge having a channel formed longitudinally therein which opens in a direction at right angles to the long axis of the channel and a transverse recess which opens into the channel and opens oppositely to the channel and in a direction at right angles to said long axis, a bubble glass secured in said channel and having a portion exposed through said recess, a cover glass in each side of the annulus, and a securing frame over each glass and having a semi-circular opening, the straight side of which is in a plane transversely of the frame with the side of the bridge through which said channel opens.

3. In a spirit level, a frame, an annulus secured within the frame, a bridge integral with and extending across the diameter of the annulus in parallel relation with a side of the frame, the bridge having a channel formed longitudinally therein which opens in a direction at right angles to the long axis of the channel and a transverse recess which passes through the channel and opens oppositely to the channel and in a direction at right angles to said long axis, a bubble glass secured in said channel and having a portion exposed through said recess, said annulus being cut inwardly upon both sides to form frame shoulders, a transparent disk against each of said shoulders, and a retaining plate secured over each disk and having a sight opening through which the portion of the tube exposed through said bridge recess may be viewed.

OSCAR L. MELVIN.