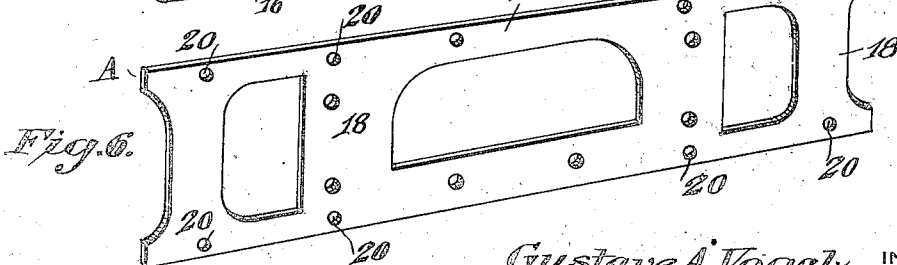
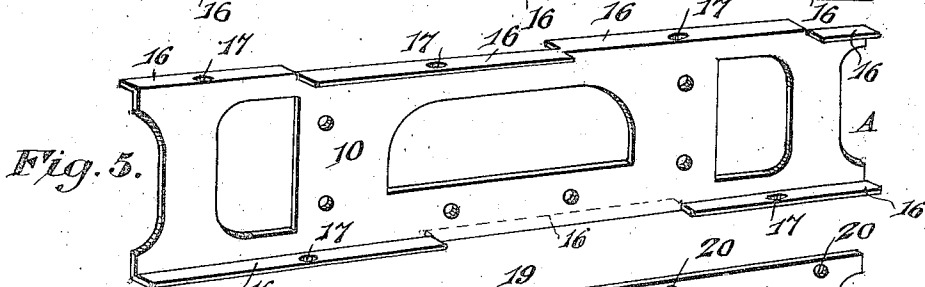
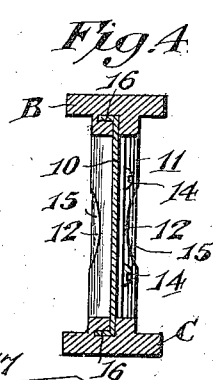
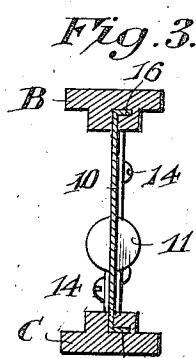
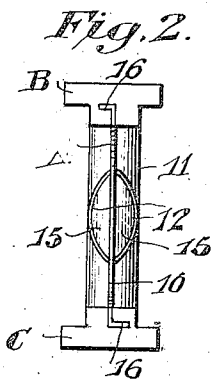
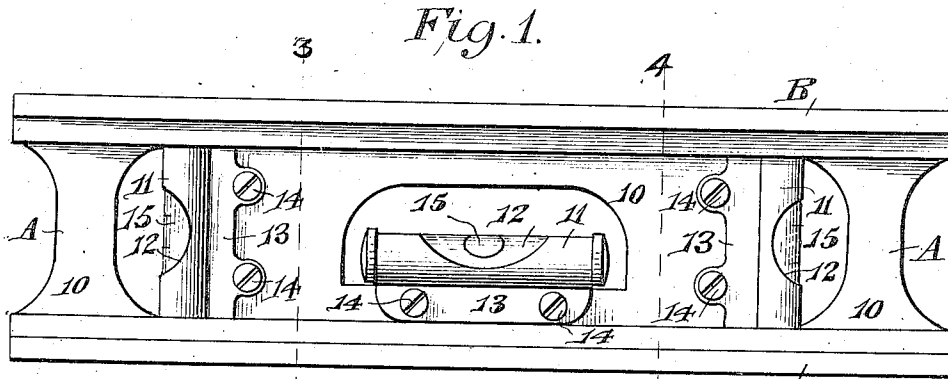


G. A. VOGEL.
 STOCK FOR SPIRIT LEVELS.
 APPLICATION FILED AUG. 11, 1917.

1,303,829.

Patented May 13, 1919



WITNESSES

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GUSTAVE A. VOGEL, OF NEW BRITAIN, CONNECTICUT.

STOCK FOR SPIRIT-LEVELS.

1,303,829.

Specification of Letters Patent.

Patented May 13, 1919.

Application filed August 11, 1917. Serial No. 185,780.

To all whom it may concern:

Be it known that I, GUSTAVE A. VOGEL, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented a new and useful Stock for Spirit-Levels, of which the following is a specification.

The invention relates to a spirit level, and more particularly to the class of spirit levels and plumbs.

The object of the invention is the provision of an instrument of this character wherein the stock or body, which is of I-beam cross section, is constructed partly of steel and partly of aluminum to insure lightness and strength and to eliminate the possibility of warping or bending.

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 a further understanding that while the drawing shows several practical forms of the invention, the latter is not confined to any strict conformity with the showing of the drawing, but may be changed and modified so long as such changes and modifications come within the scope of the appended claims.

In the accompanying drawings:—

Figure 1 is a side elevation of a combined level and plumb constructed in accordance with the invention.

Fig. 2 is an edge elevation thereof.

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

Fig. 4 is a sectional view on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of the steel plate constituting the stock.

Fig. 6 is a view similar to Fig. 5 showing a slight modification.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing, A designates the web portion, and B and C respectively the top and bottom bars or flanges, the web and flanges constituting a stock of an I-beam cross section. The web portion A is preferably made from a straight steel plate 10 having therein one or more transverse openings for receiving the bubble glass and bubble glass carrier.

In the particular form of stock shown in Fig. 1 of the drawing, three openings are

provided, the center one being employed for a level glass, while the end ones are employed for oppositely arranged plumb glasses. The arrangement of the parts is such that no part of the level glass or level glass carrier, stands beyond the plane of the bars or flanges B and C, with the result that all parts are protected from injury when the instrument is laid upon its side.

The level glass carrier and each plumb glass carrier comprises a tubular case 11, cut away at one side to provide a sight opening 12, at the middle upper part thereof. The case 11 is formed with a flange 13, which is co-extensive therewith longitudinally of the same, although the flange may be in the form of ears. Through this flange 13, are passed fasteners 14, preferably screws, detachably threaded in the plate 10, while within the case 11 is the bubble glass 15, of the usual construction. The plate 10 which is made from steel is preferably cut and bent at its longer edges to provide the alternate oppositely extending lateral flanges 16, in this instance the major number of which are provided with holes or apertures 17, it being understood, of course, that if found desirable all of the flanges may be perforated. The flanges 16 are anchored or embedded in the bars or flanges C, which are preferably made from aluminum, molded or cast about the longer edges of the plate 10, with the flanges 16 within said bars or rails.

In the molding or casting of the bars or flanges B and C, the metal will flow through the holes or apertures 17 and form a connection between the plate and the bars or flanges to insure the positive binding of said bars or flanges upon the plate.

The laterally extending flanges 16 of the plate 10, when anchored in the bars or flanges B and C, materially strengthen the instrument so as to avoid the possibility of the warping or bending of the plate 10 and thereby assuring maximum stiffness to the instrument.

In Fig. 6 of the drawing, there is shown a slight modification of stock in which the plate 18 made from steel, is devoid of flanges at its longer edges, and near these straight edges 19 are formed at intervals in the plate 18 holes or apertures 20 for the secure anchorage of said edges 19 in the top and bottom bars or flanges which are made from aluminum, cast or molded about the straight edges 19 of the plate 18 throughout the

length thereof, and in this manner the said top and bottom bars or rails will not become separated from the plate.

From the foregoing it is thought that the construction and manner of making the spirit level and plumb will be clearly understood, and therefore, a more extended explanation has been omitted.

What I claim is:

10 1. In an instrument of the character described, a stock of an I-beam cross section consisting of a steel plate having perforations at the longitudinal edges thereof, and
15 aluminum bars constituting flanges for the stock cast about the perforated edges of said plate, whereby said edges are embedded within the said bars.

20 2. In an instrument of the character described, a stock of an I-beam cross section consisting of a steel plate having its longitudinal edges flanged, and aluminum bars

constituting the flanges for the stock cast about the flanged edges of said plate, whereby said edges are embedded within said bars.

3. In an instrument of the character described, a stock of an I-beam cross section consisting of a steel plate having its longitudinal edges flanged and perforated, and aluminum bars constituting the flanges for the stock cast about the perforated and flanged edges of said plate, whereby said edges are embedded within said bars.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GUSTAVE ^{his} X A. VOGEL.
mark.

Witnesses:

MORRIS D. SAXE,
ABRAHAM R. POZZES.