Oct. 18, 1955 E. C. STANKAWITZ 2,720,709

LEVEL

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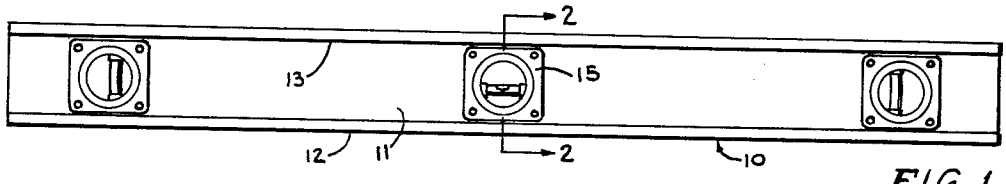


FIG. 1

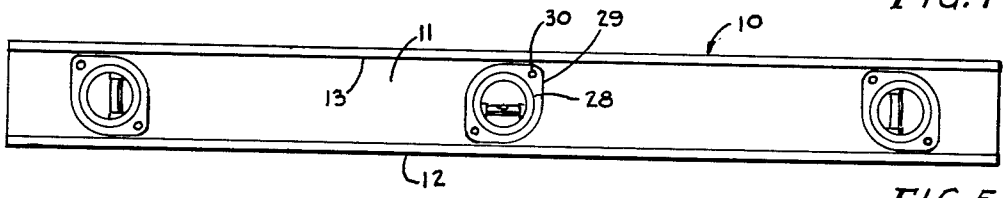


FIG. 5

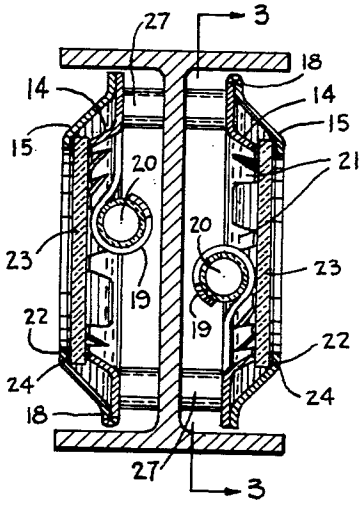


FIG. 2

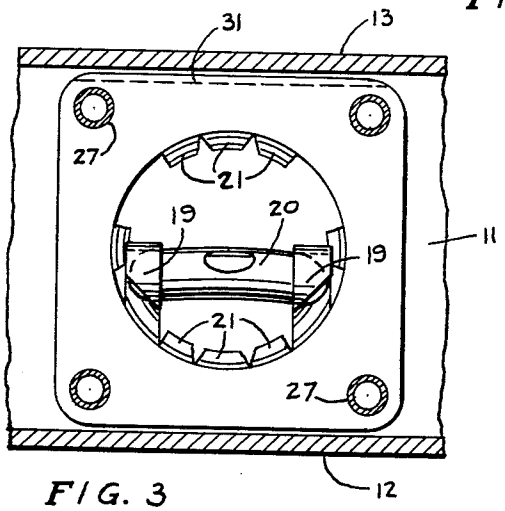


FIG. 3

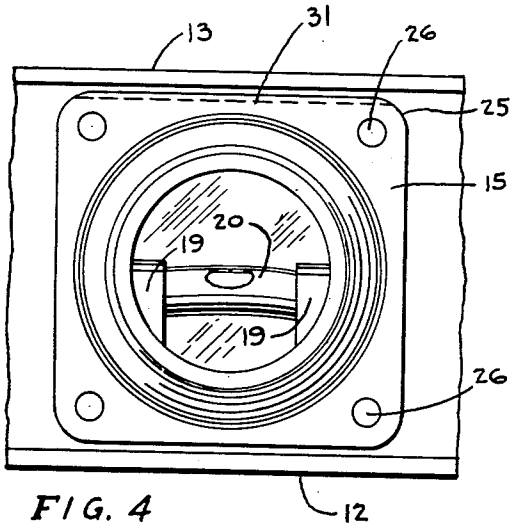


FIG. 4

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LEVEL

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3 Claims. (Cl. 33—211)

The present invention relates to carpenter's and mason's levels and has for its principal object to provide a new and improved level constructed by radically new and economical methods using materials not heretofore used for such a device.

Another object of the present invention is to provide a level which may be assembled from extruded aluminum or magnesium structures commonly in use for other construction purposes and commonly available in many sizes and cross sectional shapes.

A further object of the present invention is to provide a level which may be assembled from a kit form by an inexperienced person and may be adjusted to any special angle desired for any special purpose.

A still further object of the present invention is to provide a level which has the bubble vial holder constructed of inexpensive stock material and of such design and form that it may be manufactured with few operations on a stamping and forming machine with inexpensively constructed and mounted dies.

These and other objects and advantages of the present invention will be fully apparent from the following description when considered with the annexed drawing, in which,

Fig. 1 is a plan view in elevation of a preferred embodiment of the invention,

Fig. 2 is an end view in cross section of the preferred form of the invention as seen on line 2—2 of Fig. 1,

Fig. 3 is a rear view in elevation as seen on line 3—3 of Fig. 2,

Fig. 4 is a front view of the holder portion of the invention showing its appearance in the preferred embodiment, and

Fig. 5 is a plan view in elevation of a second embodiment of the invention.

Referring in more detail to the drawing, in which like numerals indicate like parts throughout the several views, the preferred embodiment is seen in Figs. 1 to 4 to consist of an I-shaped body **10** of extruded or rolled aluminum or magnesium, or other light weight material which is rigid and lightweight, and has a web **11** and two flat work-engaging surfaces or flanges **12** and **13**. Such a body is of conventional material and easily obtained, although any special shape or form may be adapted to this invention without extensive alteration.

On one or both sides of the web **11** is secured the bubble vial holder consisting of a metal sheet member bent back on itself to form two frame members **14** and **15**, each having a central hole or aperture **16** and **17**, respectively, and being joined to each other along the one edge **18** on which they were folded. The frame members **14** and **15** are easily formed on stamping machines to oppositely dished faces before folding, which may be a final operation in their assembly in confronting face to face relation with their apertures over each other.

The frame member **14** which is disposed in confronting face to face relation with the web **11** is upstruck on its

inner or web-facing face with a pair of strips each rolled into a socket **19** to hold the ends of the bubble vial **20**, the sockets being on the sides of the aperture and opposite to each other, with the other sides struck in the other direction to form more or less resilient fingers **21**. The other frame member **15** has its rim around the aperture flattened as at **22** to form a bezel which holds the glass plate **23** in place over the bubble vial when assembled, the gasket **24** protecting the plate **23** against breakage due to any minute irregularity in the plane of the bezel. The fingers **21** bear at their ends against the glass plate to keep it snug against the other and outer frame member **15**.

In the preferred embodiment of Figs. 1 to 4, the general outside appearance of the outer frame member **15** is substantially square with neatly rounded corners **25**, and is provided with a hole **26** in each corner for mounting on the web **11**, with the spacers **27**, as seen in Fig. 2 providing room behind the inner frame member **14** for the width of the vial **20**.

The second embodiment shown in side elevation in Fig. 5 is constructed and assembled in the same manner, the only change being in the dies which stamp and cut the metal sheet member so that the finished appearance of the outer member **28** is somewhat diamond-shaped with rounded corners **29** and a pair of holes **30**.

In either of the embodiments, the folded edge as indicated at **31** in Figs. 2 and 3 serves to stiffen the frame members at that point and provides a reference edge, indicated in Fig. 3 by the dotted line by means of which the vial holder is aligned with the flange of the body, so that the bubble is properly centered when the work-engaging surface or flange face of the body is level, or in the desired position. In some instances, the vial is at a 45° angle to the flange face, for use in carpentry; while road builders prefer the vial to be set at an angle as small as 2° so that when the flange face is laid on a pavement side, a proper water runoff slope is indicated when the bubble is centered in the vial.

In addition to the two preferred embodiments here shown and described, other embodiments may be made and practiced within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. In a spirit level, a body having a flat work-engaging surface; and a bubble vial holder comprising a sheet member bent back upon itself to form a pair of frame members connected together along one edge, said frame members each being dished and having a centrally disposed aperture and being disposed in nested confronting face to face relation to each other, said frame members being secured in spaced face to face relation to said body on a side thereof, the one of said frame members facing said body being formed on its inner face with a pair of strips rolled each on itself to form sockets disposed on two opposite sides of the aperture of said one frame member, said one frame member being formed on its other face with outwardly projecting resilient fingers on the other sides of the aperture, the other of said frame members being formed with a bezel around its aperture, said sockets being adapted and arranged to support a bubble vial by its ends in the aperture in said one frame member, and said frame members being adapted and arranged to support a glass plate between them in edge contact with said bezel and with said fingers bearing against said glass plate to maintain such contact.

2. In a spirit level, an I-shaped body having work-engaging surfaces and a web; a bubble vial holder comprising a sheet member bent back upon itself to form a pair of square frame members connected together along one edge, each of said pair of frame members being

dished and having a centrally disposed aperture and being disposed in nested confronting face to face relation to each other, said pair of frame members being secured in spaced face to face relation to said body on said web, the one of said pair of frame members facing said web being formed on its inner face with a pair of strips rolled each on itself to form sockets disposed on two opposite sides of the aperture of said one frame member, said one frame member being formed on its other face with outwardly projecting resilient fingers on the other sides of said aperture, the other of said pair of frame members being formed with a bezel around its aperture, said pair of frame members being adapted and arranged to support a glass plate between them in edge contact with said bezel and with said fingers bearing against said plate to maintain such contact, said sockets being adapted and arranged to support a bubble vial by its ends and behind said plate.

3. In a spirit level, an I-shaped body having work-engaging surfaces and a web; a bubble vial holder comprising a sheet member bent back upon itself to form a pair of substantially diamond-shaped frame members connected together along one edge, each of said pair of frame members being dished and having a centrally disposed circular aperture, said pair of frame members being secured in spaced face to face relation to said body on said web, the one of said pair of frame members facing said web being formed on its inner face with a pair of strips rolled each on itself to form sockets disposed on two opposite sides of the aperture of said one frame member, said one frame member being formed on its other face with outwardly projecting resilient fingers on the other sides of said aperture, the other of said pair of frame members being formed with a bezel around its aperture, said pair of frame members being adapted and arranged to support a glass plate between them in edge contact with said bezel and with said fingers bearing against said plate to maintain such contact, said sockets being adapted and arranged to support a bubble vial by its ends and behind said plate.

No references cited.