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J. MAYES  
SPIRIT LEVEL

Filed Nov. 6, 1926

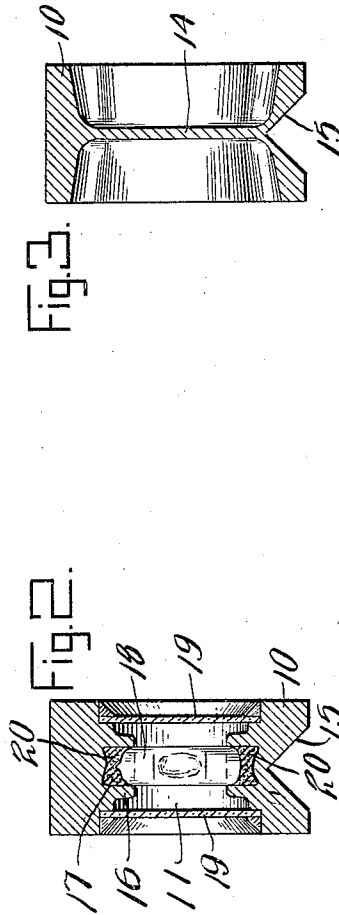
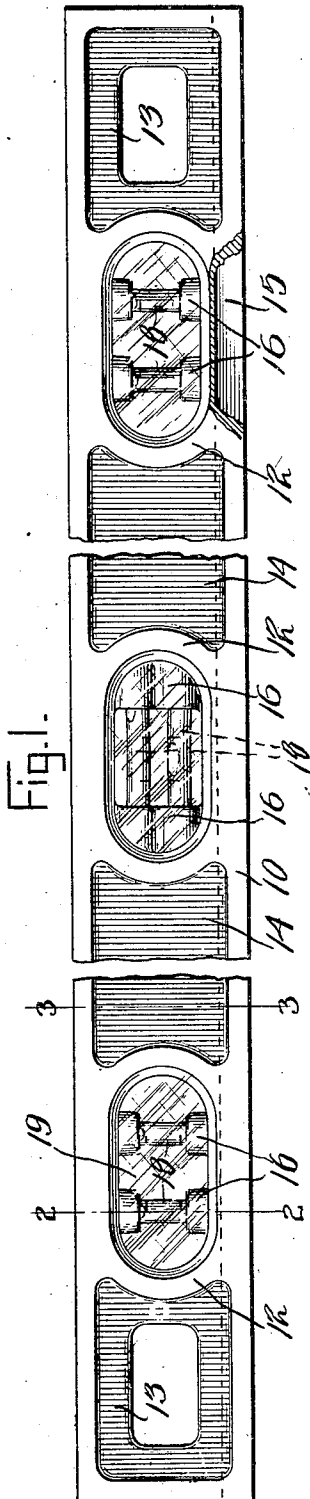
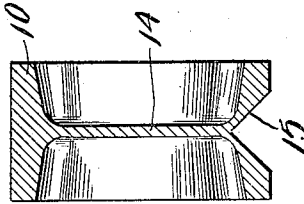


Fig. 3.



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## UNITED STATES PATENT OFFICE.

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## SPIRIT LEVEL.

Application filed November 6, 1926. Serial No. 146,775.

My said invention relates to spirit levels and it is an object of the invention to provide an improved level of light weight, strong and durable construction all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a side elevation,

Figure 2, a section on line 2—2 of Figure 1, and

Figure 3, a section on the line 3—3 of Figure 1.

In the drawings reference character 10 indicates a level body or stock of narrow construction provided with oval openings having integrally formed inwardly projecting vial holding lugs. The body 10 is preferably rectangular in shape formed of four flat sides having three oval openings 11 therebetween with an annular wall 12 surrounding the openings and joining the sides of the level. Such oval openings are preferably spaced one at the center of the level and one adjacent each end. The portion of the level between each end and the adjacent oval opening is provided with a centrally disposed inwardly extending strengthening web or flange 13 while between the center and end oval openings a solid centrally disposed strengthening web or partition 14 is provided.

One edge of the level is preferably provided with a V-shaped groove 15 adapted to fit onto shafts or pipes for leveling the same, and in order to provide a level of the requisite strength I provide the oval vial receiving openings with inwardly extending opposed lugs 16. Each lug is provided with a central aperture 17 into which one end of a vial 18 is adapted to be inserted. This structure permits the insertion of the spirit vials without weakening the level stock by providing receiving openings in the level stock proper whereby the vials are not susceptible to injury in use. The lugs and vials in the end openings extend transversely of the level while those in the center opening extend longitudinally of the level, the former being adapted for determining whether an object is perpendicular and the latter for determining whether an object is horizontal. By providing the center lugs as shown the length of vials required is materially lessened and the

cost of manufacturing is correspondingly reduced.

The vials are preferably curved as shown in order that the globule of one of each pair of vials may be out of the way when the device is being used.

The vials may be secured in the apertures in the lugs in any appropriate manner and the walls around the oval opening for each pair of vials is provided with a groove or channel for the reception of a cover glass 19 held in place by retaining means, as for example putty or the like. Also if desired, cushioning material 20 may be placed within the apertures in the lugs to prevent injury to the vials by contact with the metal at the bottom of the apertures in the lugs.

It will be obvious to those skilled in the art that various changes may be made in my device without departing from the spirit of my invention, and I, therefore, do not limit myself to what is shown in the drawings and described in the specification, but only as set forth in the appended claim.

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

A spirit level comprising a relatively thin hollow stock formed of a single piece of material and having an integral annular oval shaped wall at its center and a similar wall adjacent each end, each of which oval shaped walls defines an opening between the sides of the level, inwardly projecting opposed vial holding lugs formed integrally in each side of the oval shaped walls at the ends of the stock, inwardly projecting opposed longitudinally disposed vial holding lugs formed at the ends of the central oval shaped wall, a centrally disposed relatively thin strengthening web between the central oval shaped wall and the oval shaped wall adjacent each end of the stock and connecting the same, and an inwardly extending strengthening web between the oval shaped walls adjacent the ends of the stock and the adjacent end of the stock defining a substantially rectangular handle opening.

In witness whereof, I have hereunto set my hand at Port Austin, Michigan, this 3d day of November, A. D. nineteen hundred and twenty-six.

JOHN MAYES.