

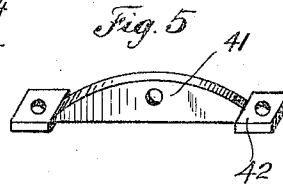
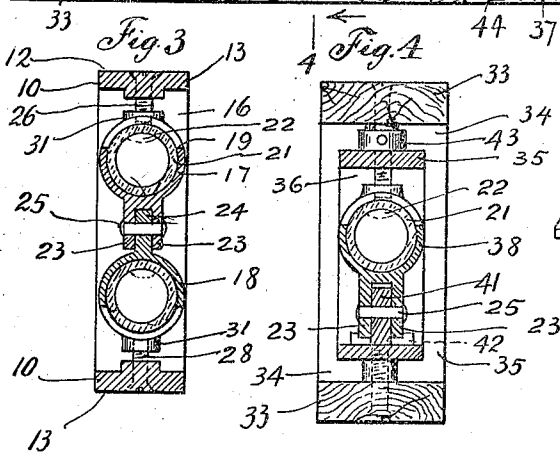
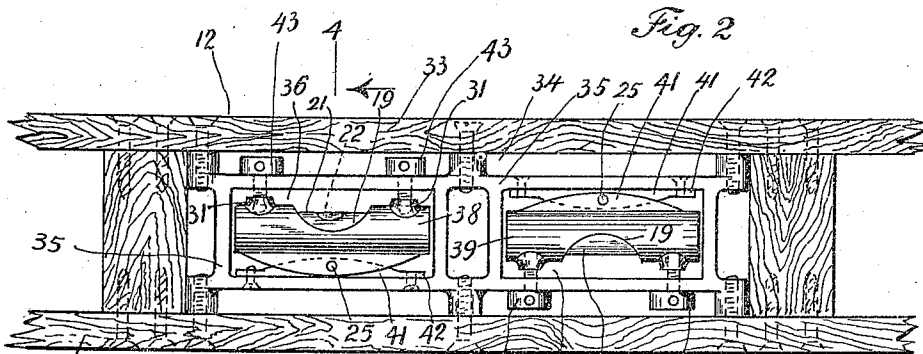
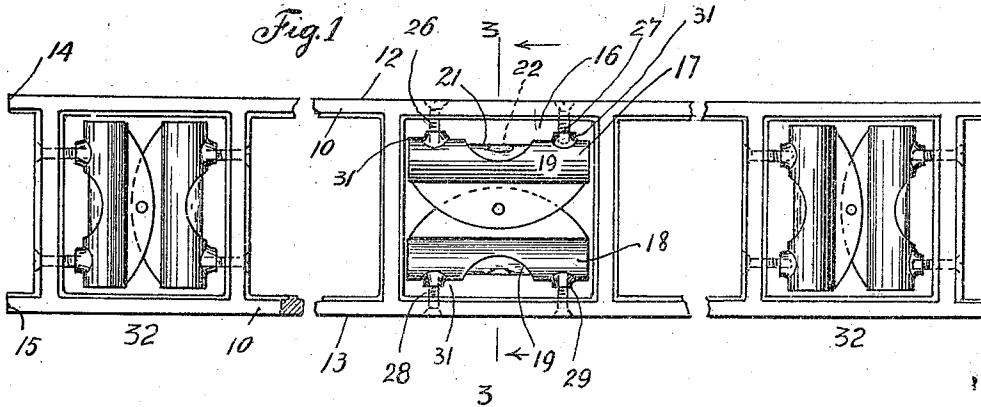
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LEVEL.

APPLICATION FILED MAY 13, 1918.

1,298,844.

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LEVEL.

1,298,844.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, AREND WICHERTJES, a subject to the Queen of Holland, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Levels, of which the following is a specification.

My invention relates to levels and has for its primary object, the provision of an improved mounting for the bubble glass of a level so that the same may be adjusted with relation to the straight edges of the level frame and held with extreme accuracy in any adjusted position. A further object is the provision of an improved construction and an improved arrangement of mountings whereby spaced, parallel straight edges of a level frame are each provided with its separate bubble glass adjustable with great accuracy in the frame. In connection with this second mentioned object, a further object is the provision of an arrangement of mountings whereby space within the level frame is conserved, the weight of the entire level minimized, and compactness of the mounting secured.

Other objects and advantages of my invention will appear from the following description, taken in conjunction with the accompanying drawings which form a part of this specification and illustrate the preferred embodiment of the invention.

In the drawings:

Figure 1 is a front elevation of a level embodying the present invention and with portions broken away to shorten the figure.

Fig. 2 is a similar view illustrating an arrangement modified from that of Fig. 1.

Fig. 3 is a section taken on line 3—3 of Fig. 1.

Fig. 4 is a section taken on line 4—4 of Fig. 2.

Fig. 5 is a perspective view of a pivot plate employed in the construction of Figs. 2 and 4.

Referring particularly to Figs. 1 and 3, numeral 10 indicates generally the frame of a level having the spaced, opposite, parallel straight edges 12 and 13 and the end projections 14 and 15 which are alined at right angles to the straight edges. In a squared aperture 16 formed within the frame 10 are positioned two bubble-glass holders, one numbered 17 for edge 13 and one numbered 18 for edge 12. These holders comprise cylindrical metal tubes, each cut away as at

19 to expose to view a bubble-glass 21 containing a bubble 22, the latter indicating in the usual way the truly horizontal position of its respective straight edge.

Two spaced, parallel lugs 23 are formed on the exterior of holder 17 and project toward holder 18, the latter being provided with an exteriorly formed fin 24 which fits between the lugs 23 and is connected thereto by a pivot pin 25. The lugs 23 and fin 24 are all fin-shaped so that there may be relative movement between the two holders about pin 25. The snug fit of fin 24 between lugs 23 maintains the two holders constantly in a common plane. Holder 17 is held in the frame by set screws 26 and 27 and pin 25; while holder 18 is held by set screws 28 and 29 and pin 25. These four set screws are threaded into the frame 10 and at their inner ends bear within hollowed bosses 31 formed for their reception on opposite sides of the cuts 19 of the holders. Viewing Fig. 1, should the left hand end of holder 17 be too high to accurately indicate the horizontal position of edge 13, it is adjusted by loosening set screw 27 and tightening set screw 26. This movement of the set screws and holder 17 has no adjusting effect whatever on holder 18, which latter remains exactly as it was before the movement of holder 17. By a similar operation of set screws 28 and 29 the holder 18 may be adjusted as required within the frame without affecting the position of holder 17. It will be noted that the interfitted holders 17 and 18 are held within the frame 10 only by the four set screws 26, 27, 28 and 29. Their removal and replacement when broken is therefore very quickly accomplished.

At 32 is indicated a set of holders in all respects the same as those numbered 17 and 18 but mounted in the frame 10 at right angles to edges 12 and 13 in order to operate in conjunction with the end projections 14. The holders indicated at 32 are adjustable in the same manner as holders 17 and 18.

Referring to Figs. 2, 4 and 5, a wooden level frame 33, recessed as at 34, is fitted with a holder bracket 35 formed with alined rectangular apertures 36 and 37 within which are respectively positioned bubble-glass holders 38 and 39 supplied with bubble-glasses 22 and cut away at 19 as mentioned heretofore. The holders 38 and 39 are duplicates of holders 17 and 18, but are connected by pivot pins 25 to fins 41 formed

on pivot plates 42 screwed or otherwise fastened into the bracket 35. The cuts 19 are turned in opposite directions so that the bubble in holder 38 coöperates with straight edge 13 and that in holder 39 with edge 12; these two holders being axially alined in the bracket 35, thereby admitting of the construction of a very narrow level frame 33 which will be light in weight and occupy little space in a tool chest. For adjustment of holder 38 I provide large headed set screws 43, the heads of which are transversely apertured for insertion of a light nail or other wire rod whereby they may be turned; these heads standing between frame 33 and bracket 35. The inner ends of these set screws 43 enter the hollows of the bosses 31. Similar set screws 44 hold holder 39 in place in the bracket and provide for its adjustment. Fin 41, by fitting snugly within lugs 23 of holders 38 and 39 prevent lateral movement of these holders within the bracket and frame, while operation of the set screws 43 and 44 as described above in connection with set screws 26 to 29 accomplishes any desired rotation of the holders 38 and 39 in the frame and about pivots 25.

While I have illustrated and described the preferred embodiment of my invention, it is obvious that one skilled in the art may make modifications thereof without departing from the spirit of the invention. I wish, therefore, not to be restricted to the precise construction shown, except in so far as the same is limited in the appended claims.

I claim:

1. In a level, the combination with a frame having opposite straight edges, of a bubble-glass holder for each edge, said holders being inter-connected for adjustment relative

to said frame in the plane thereof, and four set screws by means of which only said holders are retained within the frame.

2. In a level, the combination with a frame having opposite straight edges, of a bubble-glass holder for each edge, said holders being inter-connected for adjustment relative to said frame in the plane thereof, and four set screws by means of which only said holders are retained in the frame and adjusted.

3. In a level, the combination with a frame having opposite straight edges, of a bubble-glass holder for each edge, said holders being pivotally interconnected and adjustable with respect to the frame independently of each other.

4. In a level, the combination with a frame having opposite straight edges, of a bubble-glass holder for each edge, said holders being pivotally inter-connected at a point equidistant from the ends of each.

5. In a level, the combination with a frame having opposite straight edges, of a bubble-glass holder for each edge, said holders being positioned side by side within the frame, a lug on one holder overlapping a fin on the other holder, and a pivot pin connecting the overlapped portions.

6. In a level, the combination with a frame having opposite straight edges, of a bubble-glass holder for each edge, a flat lug on one holder projecting toward the other holder, a flat fin on said other holder paralleling and overlapping the lug, a pivot pin traversing said lug and fin, and a pair of set screws for each holder threaded into the frame and interfitted with the holder on opposite sides of said pivot pin.

In testimony whereof I affix my signature.

AREND WICHTERTJES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."