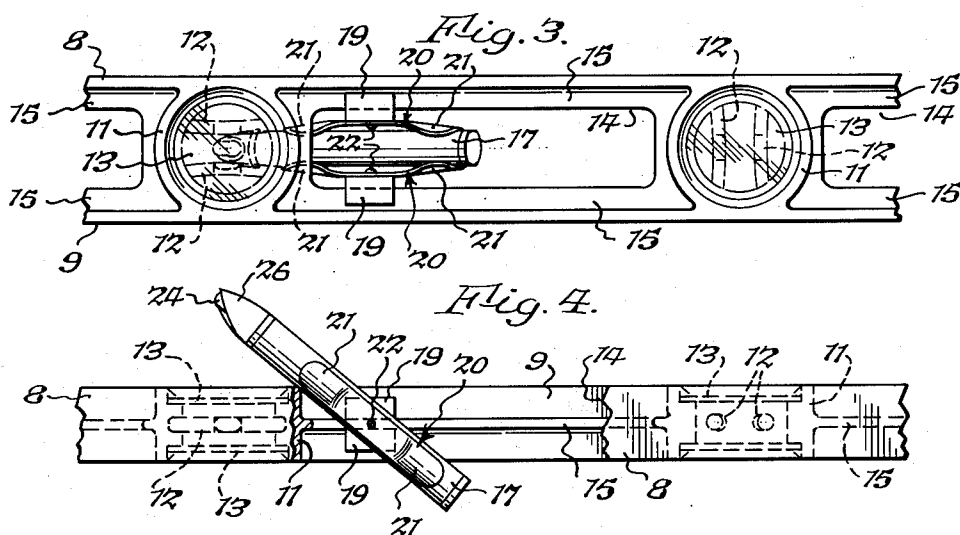
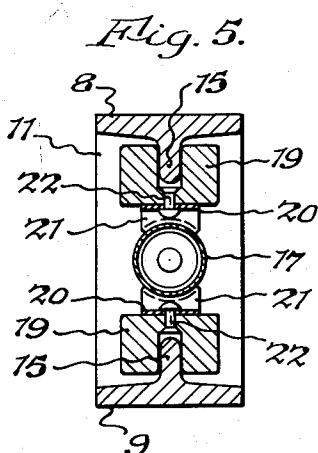
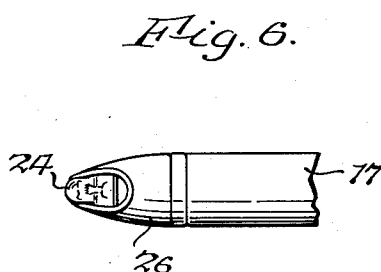


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ILLUMINATED SPIRIT LEVEL

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ILLUMINATED SPIRIT LEVEL

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4 Claims. (Cl. 240-6.44)

This invention relates to spirit levels of the kind commonly used by carpenters and other building trades.

An object of this invention is to apply to a spirit level of usual construction a flashlight which is readily adjustable both lengthwise of the level and at various angles thereto so as to illuminate the bubble tubes to best advantage.

Another object is to provide illuminating means for a spirit level which can readily be applied to a level without requiring any machining or other alterations of the level.

It is also an object of this invention to provide a flashlight mounting for a spirit level which enables the flashlight to be moved into different positions to illuminate several different bubble tubes without dismounting the flashlight from the level.

In the accompanying drawings:

FIG. 1 is a side view of a spirit level having applied thereto illuminating means embodying this invention.

FIG. 2 is a top plan view thereof.

FIG. 3 is a fragmentary front elevation thereof showing the flashlight in position to illuminate a bubble tube.

FIG. 4 is a top plan view showing the flashlight in the position shown in FIG. 3 with a portion broken away.

FIG. 5 is a transverse sectional elevation on an enlarged scale on line 5-5, FIG. 1.

FIG. 6 is a view of the end of the flashlight such as may be employed in connection with my illuminating device.

My improvements are illustrated in the drawings as used with a spirit level of well known construction having a frame comprising longitudinal frame members 8 and 9 integrally connected by end frame members 10 and also by hubs or hub-like parts 11 having eight openings in which the bubble tubes 12 are contained. These openings are closed at opposite ends by glass or other transparent disks 13 which protect the bubble tubes. The hub-like parts 11 are spaced apart and reinforce the level frame, and adjacent hubs generally have the bubble tubes arranged horizontally and vertically. The hubs are spaced apart and form between them open spaces 14. The frame members 8 and 9 also have inwardly extending reinforcing flanges or webs 15.

In accordance with my invention, I utilize the reinforcing flanges or webs 15 as rails to permit a flashlight 17 to be moved back and forth in an open space 14 of the level. For this purpose I provide a pair of blocks 19 which are preferably bifurcated or provided with slits into which the flanges or webs 15 may extend so that the blocks may ride along these rails. Each of these blocks 19 is provided with means for supporting the flashlight 17 and permitting the flashlight to move with and to be swung relatively to the blocks. In the particular construction shown for this purpose, I have provided each block with a flashlight gripper device 20 which is in the form of a spring which is slightly concave. These two springs face each other so that the flashlight can be readily inserted into the concave portion 21 of the springs and removably held therein. In order to best adapt the flashlight for cooperating with either of two adjacent hubs of the level, I pivot the springs to the blocks 19, for example, by means of pivots of any suitable type, such as studs or rivets 22, as clearly shown in FIG. 5. It will thus be seen that the flashlight may be moved lengthwise of the frame of the level by the sliding of the blocks 19

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on the webs or flanges 15, and the flashlight can also be swung about its pivots into various angular positions, for example, into a position parallel with the level, as shown in FIGS. 1, 2 and 5, in which it is protected against damage and out of the way when the level is being moved or handled, as in the daytime when no illumination is needed. The flashlight can also be moved lengthwise of the level and swung about its pivots 22 into positions such as shown in FIGS. 3 and 4, in which the bulb 24 of the flashlight can be positioned to illuminate the interior of a hub and thus render the bubble tubes clearly visible from the opposite side of the hub.

When it is desired to use the other hub of the level in which the bubble tubes are arranged perpendicular to the length of the level, the flashlight can be readily moved to the right from the position shown in FIGS. 3 and 4, by sliding the blocks 19 on the flanges or webs 15 and then turning the flashlight and the springs on the pivots 22 so that the light bulb will then be opposite the other hub of the level. In order to illuminate either hub, the outer end of the flashlight is preferably provided with a reflector 26 which is mounted on the housing of the flashlight to be turned so as to direct the light in any desired direction from the flashlight, for example into the other hub.

The construction described has the advantage that the flashlight can be readily replaced by sliding the same lengthwise of the springs out of the concave sections thereof and replacing it with another flashlight. When illuminating means are not necessary, the flashlight may be removed, whereupon the two blocks 19 may be removed from the flanges or webs 15, since the flashlight serves to support the blocks 19 in their operative positions. The structure recited also has the advantage that no changes in the level itself are necessary to apply my improved illuminating device thereto. The bubble tubes of levels have heretofore been illuminated by passing light through holes or openings in the hubs of the level, but this is not desirable since dirt or other foreign material can enter through the holes into the hubs. No openings or holes are necessary with my improved construction so that the interiors of the hubs remain clean. Also by means of my improved construction the bubble tubes can be seen better by directing light into one end of the hub and viewing the bubble tubes from the opposite ends.

It will be understood that various changes in the details, materials and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. In a spirit level having an elongated frame including longitudinal side members spaced apart to form openings between them, said frame also having hub-shaped parts connecting said side members and forming sight openings containing bubble tubes, said side members having longitudinal inwardly extending webs, that improvement which includes a pair of slides which are bifurcated to straddle said webs of opposite side members and slidable lengthwise thereof, and means mounted on said slides for pivotally supporting between them a flashlight for illuminating said bubble tubes.

2. A spirit level according to claim 1 in which said means mounted on said slides constitute springs pivoted on said slides and facing toward each other, a flashlight gripped between said springs and movable lengthwise of said sides and swingable about said slides into position to illuminate said bubble tubes.

3. In a spirit level having an elongated frame including longitudinal side members spaced apart to form open-

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ings between them, said frame also having hub-shaped parts connecting said side members and forming sight openings containing bubble tubes, said side members having longitudinal inwardly extending webs between adjacent hub-shaped parts, that improvement which includes a pair of slides bifurcated to straddle said webs of opposite side members and slidable lengthwise thereof, gripping members pivotally mounted on the inner faces of said slides, and a flashlight held by said gripping members and movable lengthwise of said frame with said slides 10

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and swingable about said slides to enable said flashlight to be moved into operative relation to either of said hub-shaped parts to illuminate the bubble tubes in either of said hub-shaped parts.

5 4. A spirit level according to claim 3 in which said gripping members are in the form of springs which removably support a flashlight.

No references cited.