May 7, 1929. J. M. DENEEN 1,712,201

SPIRIT LEVEL

Filed Nov. 29, 1926

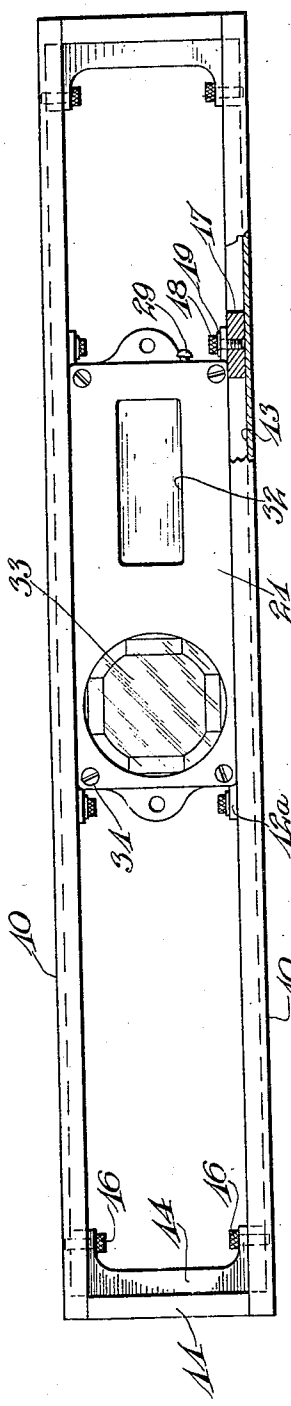

Fig. 1.

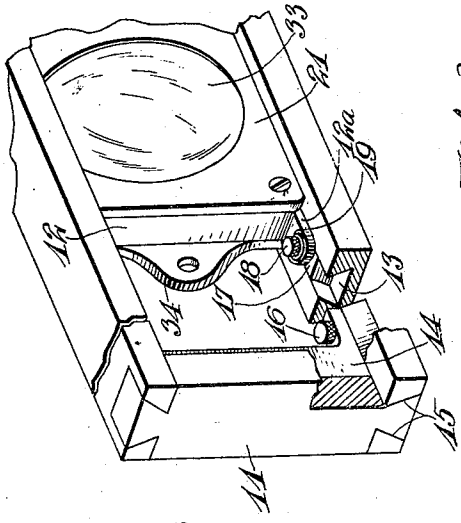

Fig. 3.

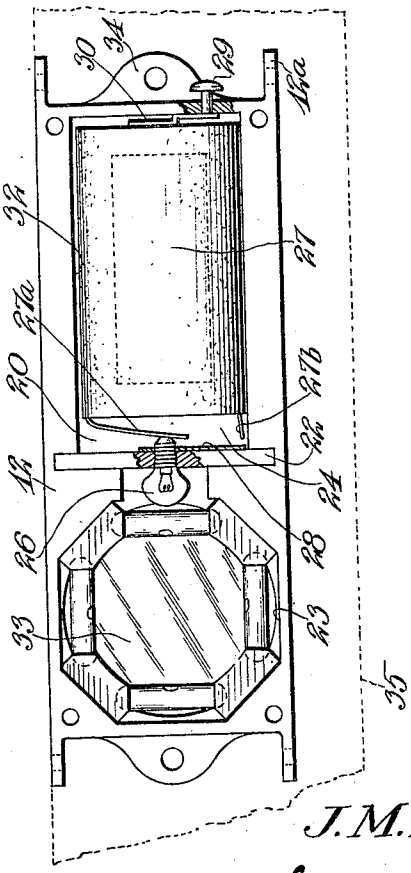

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN M. DENEEN, OF CHICAGO, ILLINOIS.

SPIRIT LEVEL.

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This invention relates to spirit levels of the type used by carpenters, masons and like artisans, and its principal object is to provide a level of this kind which may be read as easily in the dark as in the light.

A further object of the invention is to so design the novel level that it may be readily taken apart and compactly carried in the tool case.

Another object of the invention is to so design the novel implement that its leveling unit may be readily removed for use on a rule or straight-edge.

A final, but nevertheless important object of the invention is to construct the novel implement of few and simple parts, whereby it may be produced at low cost.

With the above objects in view, and any others that may suggest themselves from the specification and claim to follow, a better understanding of the invention may be gained by reference to the accompanying drawing, in which—

Figure 1 is an elevation of the device, partly in section;

Fig. 2 is an enlarged elevation of the leveling unit; and

Fig. 3 is a structural perspective view, partly broken away.

The novel level is of conventional form and material, except that it is more in the nature of a hollow frame, to render it light and collapsible. The structure comprises mainly top and bottom rails 10, end pieces 11 and an internal case 12 which embodies the leveling unit.

The inner faces of the rails 10 are grooved in dove-tail fashion, as indicated at 13, to receive webs 14 formed from the end pieces 11, and these grooves are cut through at the ends of the rails, as shown at 15, to secure a complete dove-tail joint with the extremities of the end pieces, as clearly shown in Figure 3. While the end pieces are snugly fitted to the rails, the joints are augmented by thumb screws 16 directed from the feet of the webs 14 into the rails.

The inner case 12 fits smoothly between the rails, and is made with perforated feet 12^a whereby the case may be secured where desired in the frame. For this purpose, small trapezoidal blocks 17 are snugly slid into the grooves 13 of the rails 10, these blocks being tapped so that when positioned opposite the feet 12^a, thumbscrews 18 may be directed through the latter to secure the case in the selected position. As the last-described adjustment is frequently changed, washers 19 may be supplied for the thumbscrews to prevent undue wear of the feet 12^a.

The case 12 is of open construction, having a permanent back 20 and a removable front 21. A partition 22 divides the case into a compartment 23 of octagonal form and one 24 of rectangular form. In the octagonal compartment is fitted a frame assembly of spirit tubes 25 vertically and horizontally arranged. Between this assembly and the partition 22 is a small electric light bulb 26, the base of the same being screwed through the partition to project into the chamber 24, in which is located a flashlight battery 27. One terminal 27^a of the latter is in the form of a spring which is urged against the center terminal of the bulb base; and the other terminal 27^b is a stem which is adapted to make contact with a plate 28 mounted on the shell or outer terminal of the bulb base when the latter is moved toward the bulb, lighting the latter. The battery is advanced by pressure on an external push button 29 whose stem enters the battery compartment through its outer end wall and carries a push plate 30 behind the battery. The tension of the spring battery terminal 27^a ordinarily maintains the battery in retracted position and the contacts 27^b and 28 separated.

The front 21 of the case 12 is secured to the latter by screws 31; and the front 21 and back 20 are each cut with an opening 32 to render the battery visible. When the front is removed, the partition 22 can also be slid out, to enable a new bulb to be fitted if the old one is defective or burned out.

Opposite the spirit tube assembly 25 the front 21 and back 20 carry suitably fitted sight lenses 33 in order to lend the case a smooth appearance, yet permit the spirit tubes to be viewed. The back 20 is also extended with apertured ears 34 to permit the case 12 to be used apart from its frame upon the typical rule or straight-edge 35 by securing the case to the latter with screws.

It will now be evident that when the level is used in a dark place, its spirit tubes may be readily illuminated by a push of the button 29, rendering the inspection of any tube an easy matter. The use of four tubes enables leveling to be checked from any direction. The construction of the implement is simple, and it can be easily taken apart to

occupy a minimum of space in the carrying case or tool box.

While the invention has been illustrated in preferred form, I am aware that it is capable of many minor changes and refinements, and I therefore wish to claim all such changes and refinements as coming within the scope and spirit of the apended claim.

I claim:—

A spirit level comprising a frame, a carriage slidably mounted in said frame, a plurality of spirit tubes on said carriage arranged in parallel pairs longitudinally and transversely to the frame, a self-contained electric light supply in said carriage arranged to illuminate one of said spirit tubes, means for positively locking said carriage at any desired point in said frame, frame reenforcing webs slidably mounted at either side of said carriage, and means for locking said webs in the desired position.

In testimony whereof I affix my signature

JOHN M. DENEEN.