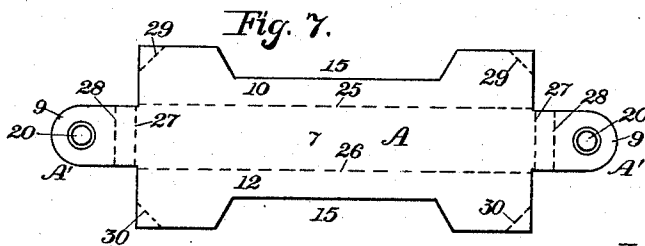
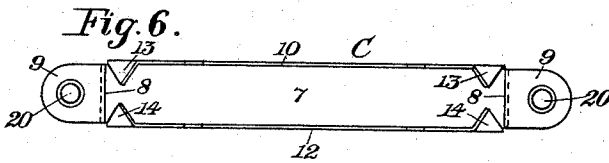
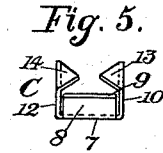
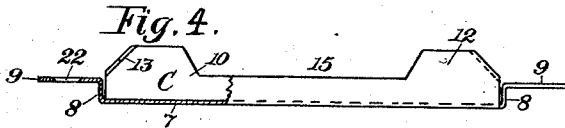
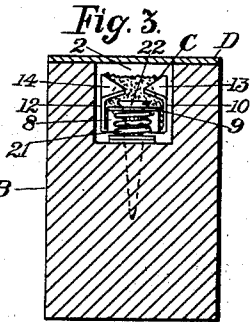
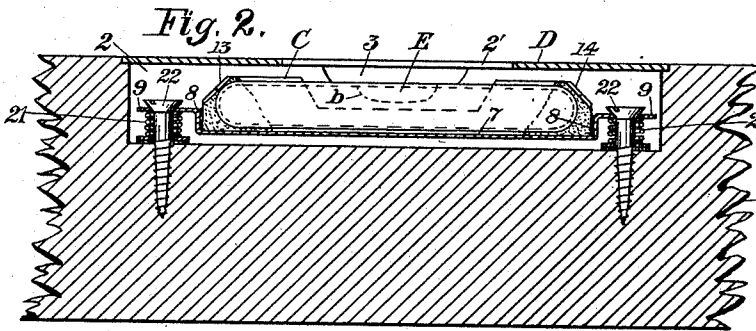
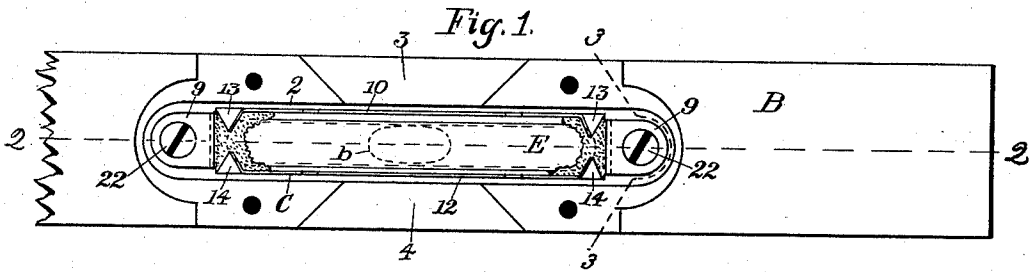


(No Model.)

J. A. TRAUT.  
LEVEL.

No. 523,023.

Patented July 17, 1894.



Witnesses:  
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Inventor:  
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By his Attorney:  
F. A. Richards

# UNITED STATES PATENT OFFICE.

JUSTUS A. TRAUT, OF NEW BRITAIN, CONNECTICUT.

## LEVEL.

SPECIFICATION forming part of Letters Patent No. 523,023, dated July 17, 1894.

Application filed February 3, 1894. Serial No. 498,991. (No model.)

### *To all whom it may concern:*

Be it known that I, JUSTUS A. TRAUT, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Levels, of which the following is a specification.

This invention relates to that class of levels known as "spirit-levels," and especially appertains to level-cases or level-glass-carriers therefor.

The object of my present invention is to provide a simple and efficient level-glass-carrier which will be light in construction and may be manufactured at small cost, and which may be quickly applied to a level-stock of any ordinary construction; also to so construct said level-case, and to provide means in connection therewith, whereby the same may be readily adjusted with relation to the level-stock to bring the same into accurate alignment.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a portion of a level embodying my present invention; in this view the top-plate is removed to more clearly show the level-case in position in level-stock. Fig. 2 is a vertical longitudinal section of the level taken in line 2—2, Fig. 1, the level-glass being shown in side elevation. Fig. 3 is a cross-sectional view taken in line 3—3, Fig. 1, looking toward the left hand in said figure. Fig. 4 is a side view, partially in section, of the level-case or level-glass-carrier. Fig. 5 is an end view of the level-case, looking toward the left hand in Fig. 4. Fig. 6 is a plan view of said level-case. Fig. 7 is a plan view of the sheet metal blank from which said level-case is constructed.

Similar characters designate like parts in all the figures.

The level-stock B, which may be of any ordinary construction, has a level-glass-receiving opening formed in its upper face, as shown at 2, and also has transverse openings, 3 and 4, formed in the sides thereof, through which observations may be taken. This recess 2 will be covered by the usual top, or guard-plate, D, which is slotted centrally, as at 2', to form a sight-opening, through which observations may be taken from the upper side of the level.

Adjustably supported in the recess 2, below the plate D, is a level-case, or carrier, C, in which is secured the level-glass E, the construction and organization of which will be hereinafter more fully described.

The level-case, in the preferred form thereof herein shown, will be constructed from a sheet metal blank such as shown in Fig. 7, and consists of the oblong base, or bottom wall 7, having its ends bent upwardly and outwardly as shown at 8 and 9, respectively, to form the resilient bearing-flanges; and the oppositely-disposed side-walls 10 and 12, extending from end to end of the base-portion between the supporting flanges 9, said side-walls having oppositely-disposed inwardly projecting plaster-retaining flanges, or prongs, 13 and 14, respectively, at their upper edges at both ends thereof, as shown most clearly in Figs. 1, 3, 5 and 6. These side-walls 10 and 12 will preferably be cut away at their middle portion as shown at 15, to enable the bubble *b* in the level-glass to be readily seen from either side of the case.

As will be seen by reference to the drawings, the level-glass case is of rectangular construction in cross-section, and, owing to this construction, it may be made from comparatively thin sheet-metal and still possess sufficient rigidity for the best practical purposes; the rectangular side walls being turned or bent upward at an angle as shown, rendering the body-portion of the level-case practically inflexible, so that when the level-glass is secured in place within the casing there is no possibility of disarrangement thereof in consequence of the springing of the body-portion of the case.

While it is desirable that the body-portion of the case in which the level-glass is permanently secured, should be rigid or inflexible, it is also desirable that the supporting ends thereof shall have some elasticity; it is also desirable that the level-glass case should have its bearings in axial alignment with the level-glass carried thereby. To accomplish this end, the level-case will be constructed from a sheet-metal blank such as shown in Fig. 7, as follows: The blank being first cut to the form illustrated in Fig. 7 with the I-shaped body-portion A having the longitudinal extensions A' at its ends, said body-portion will be first

bent up at right angles on the dotted longitudinal lines 25 and 26 to form the side walls 10 and 12, after which the end extensions A' will be bent upwardly on lines 27 and outwardly on lines 28, to form the end-walls 8, and outwardly projecting bearing-flanges 9, respectively, after which the end corners of the side-walls 10 and 12 will be bent inwardly on lines 29 and 30, to form the inwardly projecting flanges or prongs 13 and 14 for the purpose hereinafter described. These bearing-flanges 9 are formed as just described so that they will project in alignment with the axis of the level-glass E when the same is secured therein, said flanges being perforated as shown at 20 to receive the screws 22, by means of which the case is adjustably secured to the level-stock, within the recess 2.

The end-walls 8 and the inwardly projecting flanges 13 and 14 at the corners of the case, in connection with the sides and bottom wall of the case, form plaster-receiving pockets at the ends of the level-case, and also constitute holding-devices for preventing the displacement of said plaster, which plaster holds the level-glass in the case after the usual manner of securing level-glasses in holders.

The case may be supported at one or both ends (it being herein shown as supported at both ends) upon stiff spiral springs, 21, which are interposed between one or both end-flanges 9 and the bottom wall of the recess 2 in the level-stock, each flange being held down by means of a screw 22 which is extended through the said flange 9 and is screwed into the level-stock, as clearly shown in Fig. 2 of the drawings.

When it is desired to adjust the level-case vertically with relation to the level-stock, it is simply necessary to compress one or both of the springs, at one or both ends of the level-case, more or less, by means of the screws 22, and, owing to the slight flexibility of the supporting-flanges 9, a firm but somewhat elastic bearing is secured for said level-glass case, and also one that will conform to any slight irregularity in the organization, (as for instance when the screws are not perfectly at right angles to the bearing-flanges) without in any way distorting the body of the case.

In practice, the level-case will be located somewhat below the guard-plate and entirely free thereof, so that any slight bending or displacement of said plate will not affect the accuracy of the level.

Having thus described my invention, I claim—

1. The herein-described level, it comprising a recessed level-stock, a guard-plate covering the recess of said stock and having a sight-

opening therein, a level-glass-case having transversely-disposed glass-holding prongs and longitudinally-disposed resilient bearing-flanges at opposite ends thereof and adjustably carried between and remote from the guard-plate and stock upon supports connected with said resilient flanges and entirely disconnected from the guard-plate, substantially as described and for the purpose set forth.

2. In a level, the combination with the recessed level-stock and its guard-plate, of a level-glass-case open at one side thereof and having transversely and remotely-disposed glass-holding flanges and perforated longitudinally-projecting resilient bearing-flanges at opposite ends thereof, headed screws extending through the perforations in said bearing-flanges and into said stock, and springs interposed between the bearing-flanges and stock, substantially as described.

3. The herein described level, it consisting of the recessed stock, a guard-plate covering the recess of said stock, a longitudinally and transversely recessed level-glass case having transversely-disposed glass-holding prongs and longitudinally-projecting resilient bearing-flanges at opposite ends thereof, a level-glass secured in said case with its longitudinal axis in alignment with said bearing-flanges or approximately so, and resilient supports for the level-glass case consisting of screws revolubly secured in said stock and having heads in bearing contact with the flanges of the level-glass case remote from and covered by the guard-plate, and spiral springs interposed between the flanges and level-stock, substantially as described.

4. The herein-described level-glass carrier, or case, comprising a body having bottom and side-walls, the side walls of which have oppositely-disposed inwardly-projecting prongs, or flanges, at opposite ends thereof, and the bottom wall of which has upwardly and outwardly projecting end-flanges, substantially as described and for the purpose set forth.

5. The herein-described level-glass case, it consisting of a body-portion rectangular in cross-section and open at one side thereof, which body-portion comprises the bottom wall 7 having the upwardly and outwardly projecting, perforated bearing-flanges 9, the recessed side-walls 10 and 12, and the inwardly-projecting plaster-holding prongs 13 and 14 at each end of both side walls, substantially as described and for the purpose set forth.

JUSTUS A. TRAUT.

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