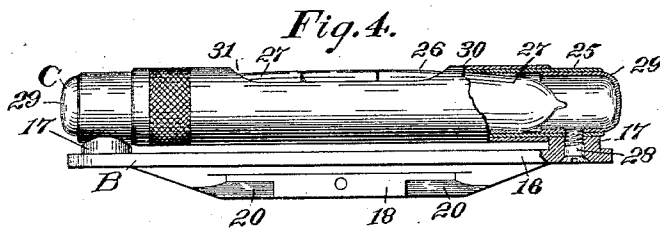
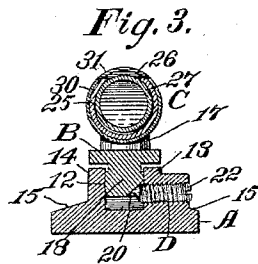
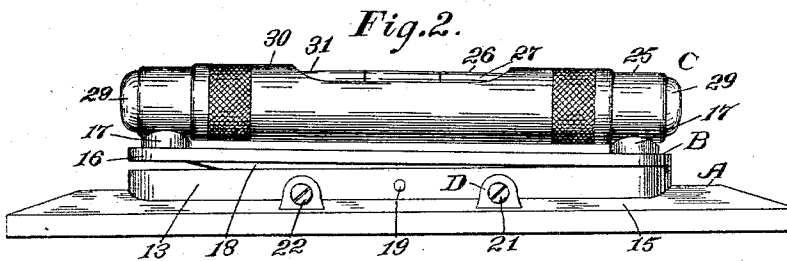
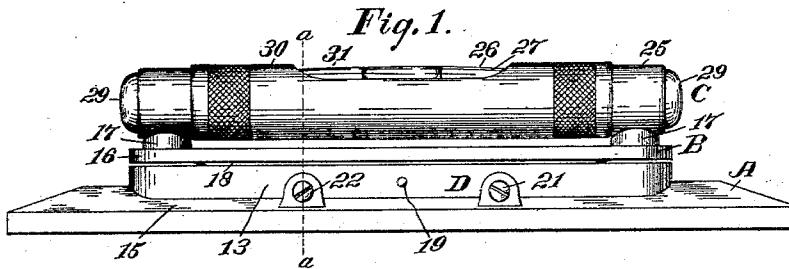


(No Model.)

J. A. TRAUT.
LEVEL.

No. 565,097.

Patented Aug. 4, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

JUSTUS A. TRAUT, OF NEW BRITAIN, CONNECTICUT.

LEVEL.

SPECIFICATION forming part of Letters Patent No. 565,097, dated August 4, 1896.

Application filed January 29, 1896. Serial No. 577,249. (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 levels; and the object of the invention is to provide an improved adjustable level or level device embodying means whereby the level thereof can be quickly and accurately adjusted to bring its bubble into position opposite its indicating-mark.

A further object of the invention is to provide an improved casing for the level glass or tube whereby the ends thereof will be protected from injury.

In the drawings accompanying and forming part of this specification, Figure 1 is a front view of this improved level device and shows the level thereof adjusted into position to have the bubble adjacent to its indicating-mark. Fig. 2 is a view similar to Fig. 1, but shows one end of the level adjusted to a greater degree than the other end thereof. Fig. 3 is a transverse sectional view taken in line *a a*, Fig. 1. Fig. 4 is a front view of the level and its carrier and shows in section the improved means for protecting the ends of the bubble glass or tube.

Similar characters of reference designate like parts in all the figures of the drawings.

This improved level or level device comprises, in a general way, a suitable base or support, (designated generally by A,) a carrier for the level, (designated in a general way by B,) and adjustable relatively to its support or base, a suitable level proper (designated in a general way by C) supported on the carrier in any desired way, and means (designated in a general way by D) for adjusting the carrier relatively to the base or support, and thereby the level.

The base or support A, which is adapted to rest on a plane surface, (in its preferred form shown,) has a suitable recess or groove 12 on its upper side for receiving the level-carrier B, in the manner hereinafter described, which groove or recess, in the construction shown, is formed by means of two upwardly-

extending parallel walls 13 and 14, preferably united at their ends by inclined walls 15.

The level-carrier B (in its preferred form shown) comprises a plate 16, having on its upper side any desired means, preferably adjacent to its ends, for supporting the level, which means, in the form shown, consists of suitable concaved seats in the nature of Y's 17, for receiving the level. The under side of this plate is provided with a suitable rib or projection 18, having beveled or inclined ends, and which rib or projection is adapted to rest in the recess or groove 12 of the base, and by means of which the carrier is pivotally secured for oscillatory movement by a pivot-pin 19, which projects through the walls 13 and 14 of the recess or groove and the rib or projection 18 of the carrier at the center of its length.

According to one form of means D for adjusting the carrier, and thereby the level supported by said carrier, (hereinafter described,) the rib or projection 18 has one of its sides (adjacent to its lower edge and adjacent to each end thereof) transversely beveled or inclined, as at 20. Projecting through one of the walls, as 13, of the recess or groove 12, is a suitable adjusting means, which, in the preferred form thereof, consists of a pair of adjusting-screws 21 and 22, having conical points adapted to engage the transversely inclined or beveled faces 20 of the rib or projection 18, whereby, on the actuation of said adjusting-screws 21 and 22, the carrier and its level will have one or both of its ends raised or lowered, as will be obvious without a further description thereof. These adjusting-screws not only constitute a means of adjusting the level, but also a means of supporting and binding the same in its adjusted position against movement; that is to say, by having the adjustable screws operating transversely to the plane of movement of the level they act as clamping means to bind the carrier B by means of its rib 18 against one of the upright walls of the groove or recess 12 of the base, and thus prevent movement or rattling of the instrument at all times.

The level proper, C, in its preferred form preferably comprises an open-ended casing of any suitable shape, but preferably tubu-

lar, having the usual sight-openings 26 and adapted to receive the bubble glass or tube 27, which may be secured therein in any suitable way, as by cement.

5 In levels as usually constructed the casing is closed at the ends thereof by solid closures or plugs, which frequently break the ends of the bubble glass or tube, which is extremely sensitive and delicate at its ends. In order, 10 therefore, to overcome this disadvantage in this construction, each end of the tubular casing 25 is closed by means of a suitable hollow cap 29, preferably corresponding with the shape of the casing 25, and therefore tubular, 15 closely fitting therein, and into which caps the ends of the bubble-glass project, (see Fig. 4,) whereby they are protected from breakage. These caps 29 are secured in position 20 by means of suitable fastening devices, preferably screws 28, extending through the tubular casing 25 and into threaded apertures of the caps 29, and which screws may also constitute the fastening means for securing the level in position on its carrier, as hereinafter 25 set forth.

A suitable protecting-cover 30, having an opening 31 corresponding with the sight-opening 26, may be secured on the level-glass casing, if desired, to protect the level-glass from 30 injury, the cover herein shown being rotatively secured on said casing.

The level C may be secured on its carrier B by any suitable means, whereby said carrier and level may constitute an adjustable 35 level; but in the construction shown said level is secured to its carrier by means of the screws 28, which extend through the Y's 17 and through the tubular casing 25 and into the wall of the tubular caps 29, whereby not 40 only is the level held on its carrier by such fastening-screws 28, but the caps 29 are also securely fastened in position in the tubular casing by the same means.

In the use of this improved device, when it 45 is desired to adjust the level to true the same, either one or both ends of the carrier may be adjusted to raise or lower either or both ends of the level—as, for instance, if it is desired to bring the level to a perfectly horizontal position 50 relatively to its base both adjusting devices 21 and 22 will be actuated for that purpose, whereby the conical ends of the adjusting-screws will engage the transversely-inclined faces 20 of the carrier and swing the 55 same on its pivot 19 to a position substantially as shown in Fig. 1 and clamp the same in such adjusted position. If, however, it is desired to adjust one end of the carrier, and thereby the level, to a greater degree than the other 60 end thereof, the adjusting device 21 is actuated to permit the conical point thereof to recede from one of the inclined faces 20 of the carrier a sufficient distance to permit such end to be lowered, and the adjusting 65 device 22 then turned to permit its conical point to engage the other inclined face 20 of the carrier, whereby it will raise such carrier,

and thereby the level, into the position desired.

By means of this improved construction, 70 the level can be easily and quickly adjusted to any desired position within the limits of the device, and by means of this improved bubble glass or tube casing, the ends of said bubble glass or tube, which are very sensi- 75 tive, will be protected from injury at all times.

Having thus described my invention, I claim—

1. In a device of the class specified, the 80 combination of a base or support; a level-carrier pivotally secured at the center of its length to said base or support for adjustment; and combined adjusting and clamping means disposed below and at each side of the 85 pivotal point of said carrier and operating transversely to the plane of movement thereof for adjusting one or both ends of said carrier relatively to said base and for clamping the carrier in its adjusted position against 90 one of the walls of said base.

2. In a device of the class specified, the combination of a base or support; a level pivotally secured at the center of its length to 95 said base or support for oscillatory adjustment; combined adjusting and clamping means disposed below said level and at each side of its pivotal point and operating transversely to the plane of movement thereof for 100 adjusting the same relatively to the base and for clamping said level in its adjusted position against one of the walls of said base.

3. In a device of the class specified, the combination of a base; a level; a carrier 105 therefor pivotally secured to said base for adjustment, and having transversely inclined or beveled faces at each side of its pivotal point; and means disposed below said level and at each side of the pivotal point of the carrier, and adapted to engage the trans- 110 versely-inclined faces of said carrier for adjusting the same.

4. In a device of the class specified, the combination of a base having a longitudinally-extending recess or groove; a level 115 pivotally secured to said base for adjustment within said recess or groove; and combined adjusting and clamping means disposed below said level and at each side of the pivotal point thereof and operating transversely to 120 the plane of movement of the same and for adjusting said level relatively to said base and for clamping the level in its adjusted position against one of the walls of the longitudinally-extending recess or groove. 125

5. In a device of the class specified, the combination of a base having a longitudinally-extending recess or groove; a level; a carrier therefor pivoted to said base and supported in said recess or groove, and having a 130 transversely-inclined face at each side of the pivotal point thereof; and a pair of adjusting-screws carried by said base and disposed below the level and having conical points, one

engaging each inclined face of the carrier to thereby adjust said carrier.

5 6. In a device of the class specified, the combination of a base having a longitudinally-extending recess or groove having inclined end walls; a level; a carrier therefor having a longitudinally-extending rib or flange having inclined ends, and also having transversely inclined or beveled faces, and
10 pivotally secured to said base centrally of the ends of said rib or flange and intermediate of its inclined or beveled faces; and adjusting devices carried by said base below said level, one on each side of the pivotal point of the
15 carrier, and engaging the inclined faces of said carrier to adjust the same.

7. In a level device, the combination of a base having a longitudinally-extending groove or recess; a carrier having Y's on its
20 upper face, and having a longitudinally-extending rib or flange on its under face, and pivotally supported in said groove or recess; and having transversely-inclined faces at each side of its pivotal point; a pair of independent adjusting-screws carried by said
25 base, one on each side of the pivotal point of

the carrier, and having their inner ends engaging the inclined faces of said carrier to thereby adjust the same; and a level supported on said Y's.

8. In a level device, the combination of a base or support having a groove or recess; a level-carrier having a rib or projection on its under face and having transversely-inclined faces, and pivotally secured in position for
35 adjustment in said recess or groove; adjusting-screws carried by said base, and having conical ends in engagement with the inclined faces of the carrier; a level comprising a tubular casing having a sight-opening; a bubble
40 glass or tube in said casing; and tubular caps closing the ends thereof and adapted to receive the ends of said bubble glass or tube; and fastening devices extending through the carrier and level-casing and into the tubular
45 caps, for securing said caps in position and said level on the carrier.

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Witnesses:

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