

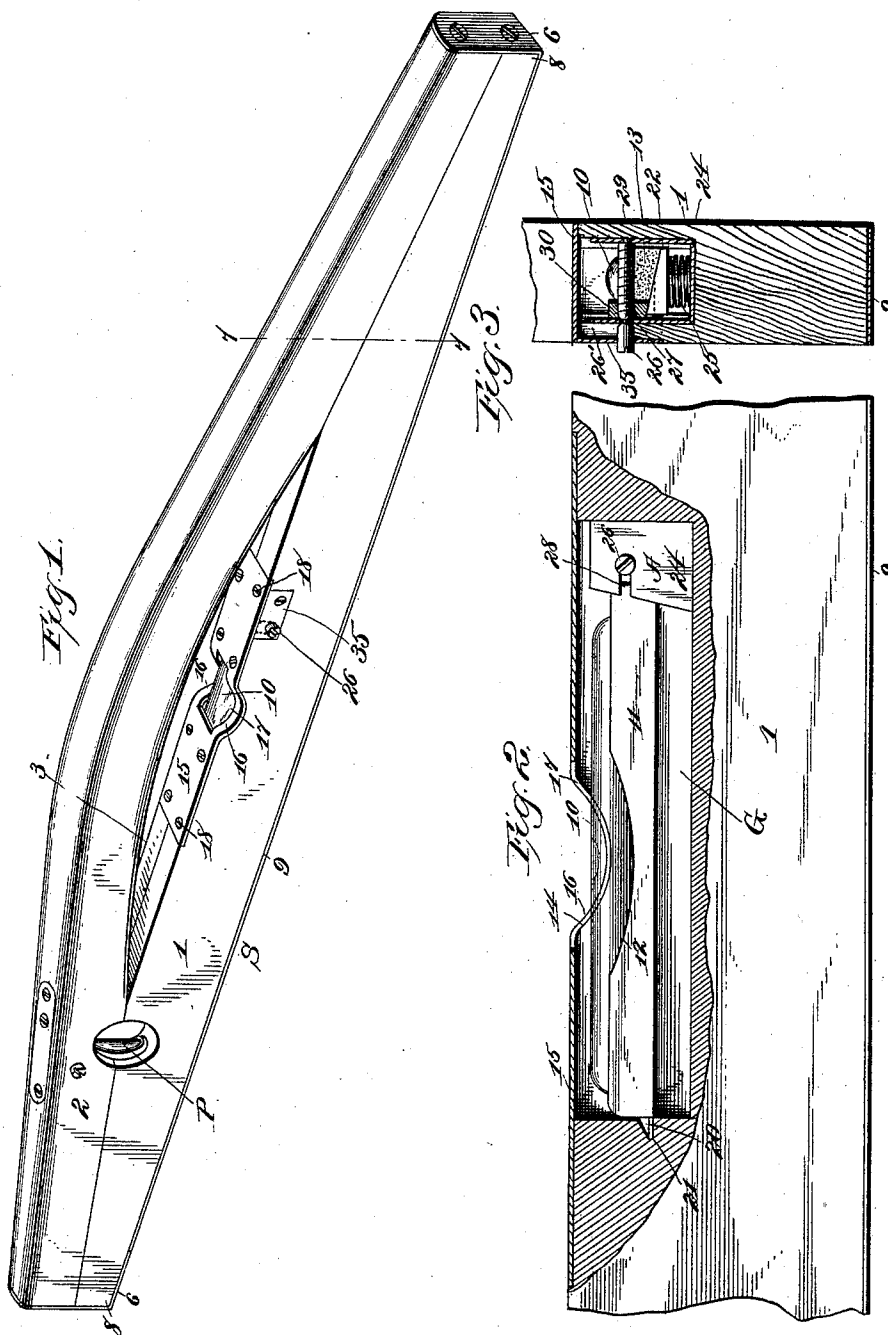
(No Model.)

2 Sheets—Sheet 1.

C. E. PETERSON.
SPIRIT LEVEL.

No. 465,882.

Patented Dec. 29, 1891.



Witnesses

Inventor

E. C. Mordeman.

Charles E. Peterson
By his Attorneys,

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(No Model.)

2 Sheets—Sheet 2.

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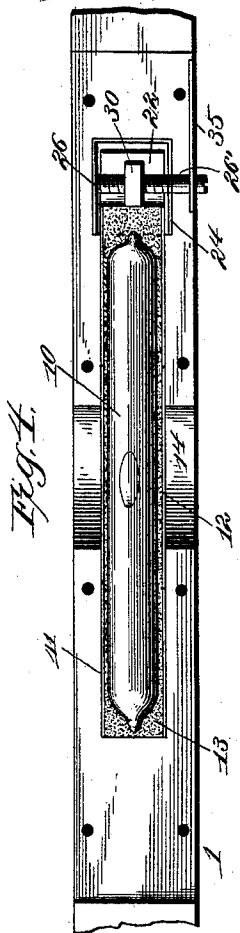


Fig. 7.

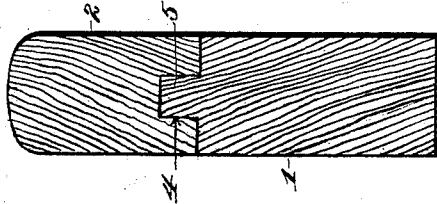


Fig. 5.

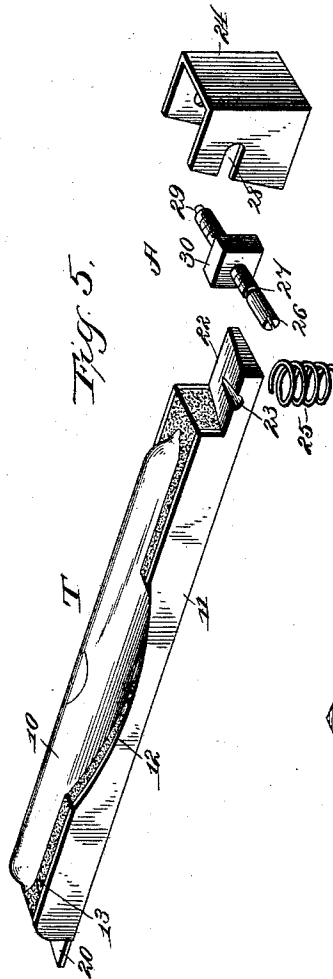
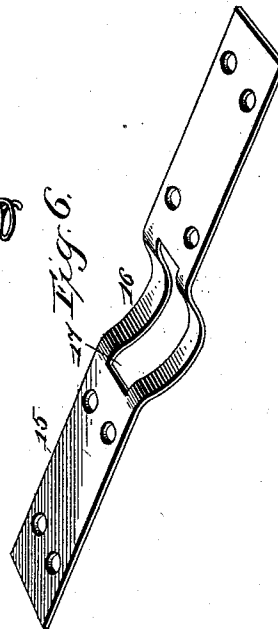


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES E. PETERSON, OF MARINETTE, WISCONSIN.

SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 465,882, dated December 29, 1891.

Application filed October 13, 1891. Serial No. 408,614. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. PETERSON, a citizen of the United States, residing at Marinette, in the county of Marinette and State of Wisconsin, have invented a new and useful Spirit-Level, of which the following is a specification.

This invention relates to measuring-instruments, and more especially to devices of that character known as "spirit-levels;" and the objects of the same are to improve the construction of the stock of the level and to provide improved means for rendering the spirit-tube adjustable in said stock.

To these ends the invention consists in the general and specific construction of parts hereinafter more fully described and claimed, and as illustrated on the accompanying two sheets of drawings, wherein—

Figure 1 is a general perspective view of this improved level. Fig. 2 is a side elevation; Fig. 3, a cross-section, and Fig. 4 a plan view showing the spirit-tube and the devices for adjusting its angle. Fig. 5 is a perspective detail of said devices slightly separated. Fig. 6 is a perspective detail of the protection-plate. Fig. 7 is a cross-section on the line 7 7 of Fig. 1.

Referring to the said drawings, the letter S designates the stock of this improved level, which is preferably made of wood in two members, with their grains at an angle to each other, so as to prevent the transverse warping of the stock. The lower member 1 is rectangular and straight, while the upper member 2 is curved throughout its length, as shown, leaving an opening 3 between the members, wherein is located the spirit-tube T, hereinafter described. The ends of the upper member 2 are provided with longitudinal grooves 4 on their lower sides, and 5 are tongues rising from the lower member and engaging these grooves, as seen in Fig. 7.

6 are plates secured to the ends of the stock, protecting the lower corners 8 thereof and preferably connected by a facing-plate 9, which extends throughout the length of the "face" or lower edge of the member 1, as shown. Within the stock thus formed is bored a transverse hole, and in one side thereof, preferably the side nearer that end of the stock, is located a spirit-tube P. This

tube is preferably of the same construction as that hereinafter described, with the changes necessary to locate it across instead of parallel with the stock, and its use with the face of said stock is to indicate a plumb-line in a manner which will be clear. The whole is of finely-seasoned wood, painted and ornamented and then thoroughly varnished to render it proof against the damaging effects of moisture.

The spirit-tube T comprises a glass tube 10, located within a metallic trough or casing 11, which is preferably cut away, as at 12, on the upper edges of its sides, at their centers, so that the bubble can be clearly seen from the side of the stock by looking obliquely into the opening 3. The tube is fastened within the casing by any preferred means, as by using plaster-of-paris or cement 13, which holds the tube within and from displacement from the casing, and the latter is held in the stock by the adjusting devices A, hereinafter described. The lower member 1 of the stock is provided with a deep groove G in its upper edge, in which the casing is located, and each wall of this groove is cut away, as at 14, opposite the cut-away portions 12 of the casing.

15 is a protection-plate which is secured across and closes said groove, the plate being depressed at its center, as at 16, to fit the cut-away portions 14 and having a slot 17, through which the tube 10 projects, as seen in Fig. 1. This plate is detachably secured to the upper edge of the lower member by screws 18, and when the latter are removed the plate can be taken off and the tube and adjusting devices bodily removed, as for cleaning and repair. The said adjusting devices consist of the following elements: At one end of the casing 11 is a lip 20, taking into a notch 21 at one end of said groove, within which the casing is seated, and holding this end of the casing against vertical movement. The other end of the casing is provided with an extension 22, which is beveled transversely on its upper face and grooved, as at 23, at its highest end. 24 is a frame surrounding the extension 22 and permitting its vertical movement, and 25 is a spring within the frame, beneath the extension, for normally raising the latter. 26 is a set-screw having an annular groove 27, wherein fit the edges of a notch 28 in one side of

said frame, the other end of the screw being reduced, as at 29, and journaled in the other side of the frame. On this screw is located a nut 30, preferably having its lower face beveled to correspond with the beveled face of the extension 22. The tube and adjusting devices are placed in the groove in the stock, the front end of the screw 26 passing down a notch 26' in one wall of said groove, as seen in dotted lines in Fig. 1, and a plate 35 is secured to the side of the stock, as there shown, the notched extremity of said screw projecting through this plate. The protection-plate 15 is then applied as above described.

In use, if at any time the device should get slightly out of level, or if it should be desired to have it indicate a line slightly out of level, a screw-driver is applied to the projecting end of the set-screw 26 (or this end may have a head whereby it can be turned by hand) and the screw is turned so as to move the nut 30 in the proper direction. In Fig. 3 it will be seen that as the nut is drawn out by the screw the extension 22 is lowered, whereas when the nut is passed in by the screw the spring 25 causes said extension to rise. The screw may be turned until the tube has been adjusted as is necessary or desirable.

Considerable change in the details may be made without departing from the spirit of my invention, and hence I do not limit myself to the specific construction shown and described.

What is claimed as new is—

1. In a level, the combination, with a stock comprising a lower straight member and an upper curved member, the ends of said members being connected and their centers being separated, of a spirit-tube located in the upper edge of the lower member beneath the curved portion of the upper member.

2. The herein-described stock for levels, the same consisting of a straight member and an upwardly-bowed member, the members being connected by tongues and grooves at their ends.

3. The herein-described stock for levels, the same consisting of a straight member and an upwardly-bowed member, the members being connected at their ends, and a plate secured to the face of the lower member and turned up and secured to each end of each member.

4. The herein-described stock for levels, the same consisting of a straight member and an upwardly-bowed member, the members being connected at their ends and each consisting of two longitudinal strips rigidly connected and with their grains at an angle.

5. In a level, the combination, with the stock having a longitudinal groove in one edge, whose walls are cut away at the centers of their lengths, of a metallic casing removably located within said groove and having its sides similarly cut away at registering-points, and a closed glass tube rigidly secured in said casing and nearly filled with liquid.

6. In a level, the combination, with the stock having a longitudinal groove at one edge, whose side walls are cut away at the centers of their lengths on their upper edges, of a metallic casing removably located within said groove and having its sides similarly cut away at registering-points, a closed glass tube rigidly secured in said casing and nearly filled with liquid, and a protecting-plate removably secured to the upper edges of said walls, having a slot at its center, through which the tube projects, and depressed each side of the tube.

7. In a level, the combination, with the stock having a groove, a frame located in one end of the groove and having a notch in one side, a set-screw projecting through said notch, having an annular groove engaging the walls thereof and having its inner end reduced and journaled in the other wall of the frame, and a nut on said screw having a beveled lower face, of a casing having a lip at one end detachably engaging a notch in the end of the groove, an extension at the other end fitting loosely in said frame and having a beveled upper face, an expansive spring between said extension and the bottom of the frame, and a spirit-tube secured in said casing.

8. In a level, the combination, with the stock having a groove, a frame located in one end of the groove, a set-screw journaled across said frame, and a nut on said screw, of a casing having a lip at one end detachably engaging a notch in the end of the groove, an extension at the other end fitting loosely in said frame and having a beveled upper face, an expansive spring between said extension and the bottom of the frame, and a spirit-tube secured in said casing.

9. In a level, the combination, with the stock having a groove, a frame located in one end of the groove, a set-screw journaled across said frame, and a nut on said screw, of a casing located in and adapted for rocking adjustment within said groove, a beveled extension at one end of said casing engaged by the nut, and a spirit-tube secured in the casing.

10. In a level, the combination, with the stock having a groove, one wall of which has an upwardly-opening notch, a spirit-tube located in said groove and adapted for rocking adjustment, and adjusting devices, substantially as described, also within said groove, the set-screw thereof projecting through said notch, of a plate detachably secured to the side of the stock and having a hole through which said screw projects, and a second plate removably secured to the edge of the stock above said groove.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES E. PETERSON.

Witnesses:

MAGNUS OLSON,
L. K. MACNEILL.