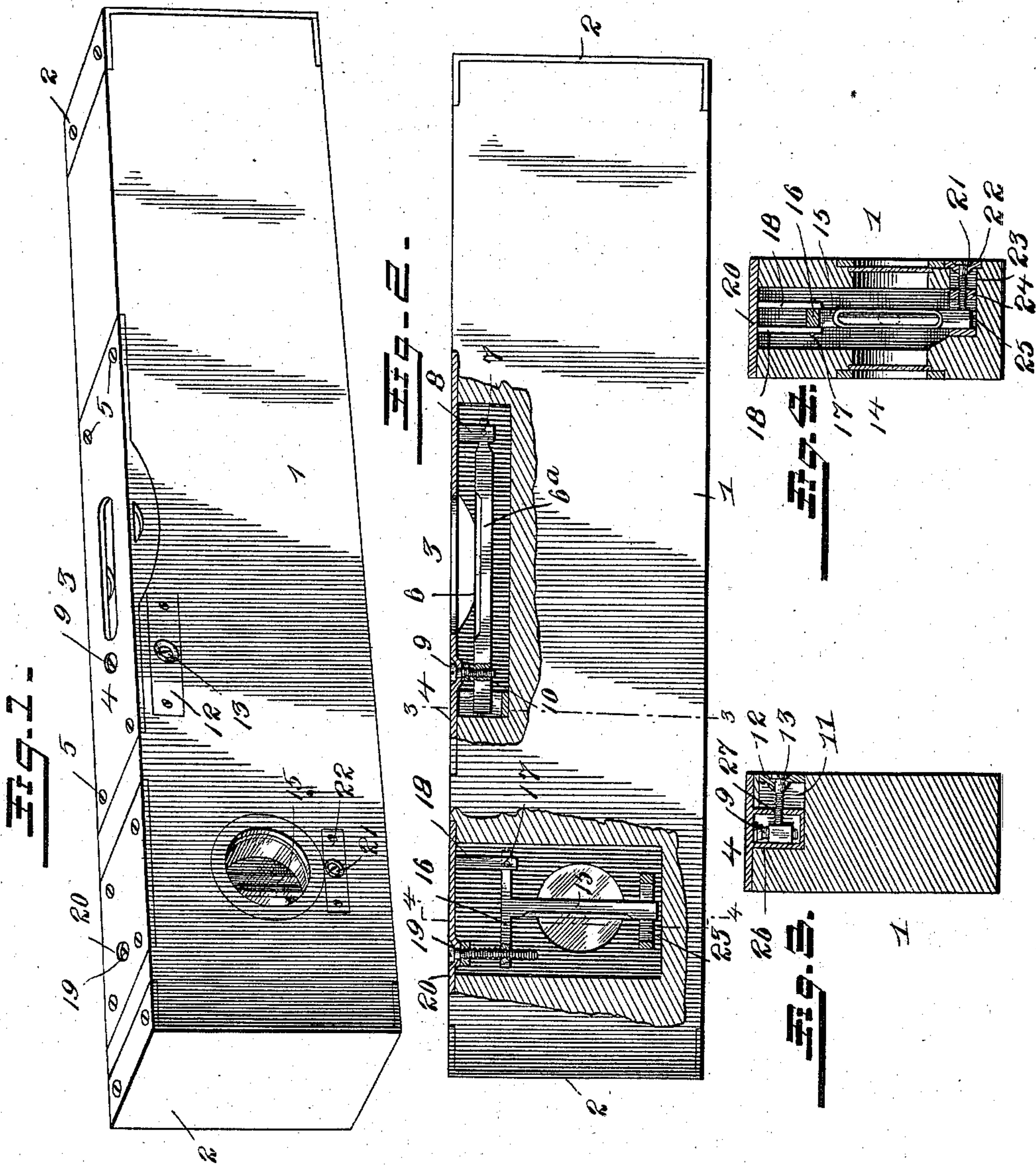


(No Model.)

R. L. PHEARS.  
SPIRIT LEVEL.

No. 574,110.

Patented Dec. 29, 1896.



Witnesses

*H. J. North*  
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# UNITED STATES PATENT OFFICE.

ROBERT LEE PHEARS, OF KANSAS CITY, MISSOURI.

## SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 574,110, dated December 29, 1896.

Application filed October 25, 1895. Serial No. 566,853. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT LEE PHEARS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Spirit-Level, of which the following is a specification.

My invention relates to a combined spirit-level and plumb, and has for its object to provide simple and efficient means for locking the bubble-glasses at the desired adjustment to prevent disarrangement by jarring.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings, Figure 1 is a perspective view of a level constructed in accordance with my invention. Fig. 2 is a side view, partly in section, of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 2. Fig. 4 is a transverse section on the line 4 4 of Fig. 2.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the body of the level, which may be of any suitable material, such as wood, with the ends provided with metallic tips 2, and 3 represents the leveling device having a face-plate 4, secured by suitable screws 5 to the body of the level, a bubble-glass 6, carried by a bar 6<sup>a</sup>, pivoted, as at 7, to the hangers 8, which depend from the face-plate 4, and an adjusting-screw 9, having its head exposed at the outer surface of the face-plate and engaging a threaded opening 10 in the bubble-glass-supporting bar 6<sup>a</sup>. Communicating with the space below the face-plate 4 is a lateral cavity 11, closed by a face-plate 12, and mounted revolubly in the face-plate 12 is a locking or set screw 13, adapted to impinge against the side of the bubble-glass-supporting bar 6<sup>a</sup> when the latter has been adjusted to the proper position. In the same way the plumb mechanism 14 includes a bubble-glass-supporting bar 15, provided at one end with a cross-head 16, which is fulcrumed at 17 to suitable hangers 18, and is engaged at the other end by an adjusting-screw 19, exposed at the outer side of the face-plate 20, and after said bar has been arranged at the desired

adjustment it is locked by means of the set-screw 21, mounted in a face-plate 22, let into the side of the body of the level. This face-plate 22 is provided with a bracket 23, having a parallel-sided guide 24, in which the free end of the bar 15 operates, the locking-screw 21 being mounted in an opening in the face-plate and a corresponding opening in the bar 25, forming the outer side of the guide 24.

The face-plate 4 of the leveling device is similarly provided with a depending frame or bracket 26, forming a guide for the adjustable end of the bar 6<sup>a</sup>, and the set-screw 9 is threaded in an opening in one side of this frame, as shown at 27.

From the above description it will be seen that the ordinary means for adjusting the supporting-bar of a bubble-glass are supplemented by means for securing said bar at the desired adjustment to prevent the jarring of the device from disarranging said bar, the means for locking the bar in place consisting simply of a set-screw threaded in suitable bearings in the body of the level in a plane perpendicular to the adjusting-screw or to the plane of movement of the free end of the bubble-glass-supporting bar in order to clamp said bar firmly against one side of the guide in which its free end operates.

The special advantage of the arrangement of the parts of the plumb mechanism resides in the fact that one end of the supporting-bar 15 is provided with a cross-head terminally connected, respectively, to the supporting bracket or hangers and the adjusting-screw, while the other end is fitted in a guide and is secured at the desired adjustment by a binding or set screw, whereby both ends of the supporting-bar are firmly secured to prevent displacement and vibration independently of the body or frame of the level.

It is necessary in devices of this class to provide positive means for guiding the bubble-glass, whereby lateral vibration or deflection thereof may be positively prevented, particularly when by reason of the arrangement of the parts it is necessary to attach the adjusting devices to one end of the bubble-glass, as by the use of a cross-head, such as illustrated at 16. The fixed guide 23 for the free end of the bubble-glass maintains the latter positively in the plane of the cross-head



against deflection by warping or otherwise, and at the same time combines with the set-screw 21 to form an efficient lock for securing the bubble-glass in its adjusted position.

5 It is obvious that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

10 Having described my invention, what I claim is—

15 A spirit-level having a body or frame provided with lateral sight-openings, a swinging bubble-glass-supporting bar 15 provided at one end with a cross-head 16 which is pivoted at one extremity, as at 17, a terminally-exposed adjusting-screw threaded in the other

extremity of the cross-head, a parallel-sided fixed guide 23 in which the free extremity of the supporting-bar opposite to said cross-head 20 operates, to prevent lateral deflection and vibration, and a terminally-exposed set-screw 21 threaded in one side of said guide and impinging at its extremity against the side of the supporting-bar to lock the latter at the de- 25 sired adjustment, substantially as specified.

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

ROBERT LEE PHEARS.

Witnesses:

FRANK J. REINHART,  
PHILIP W. REINHARDT.