

1,241,399.

E. A. KING.  
LEVEL.

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Patented Sept. 25, 1917.

Fig. 1.

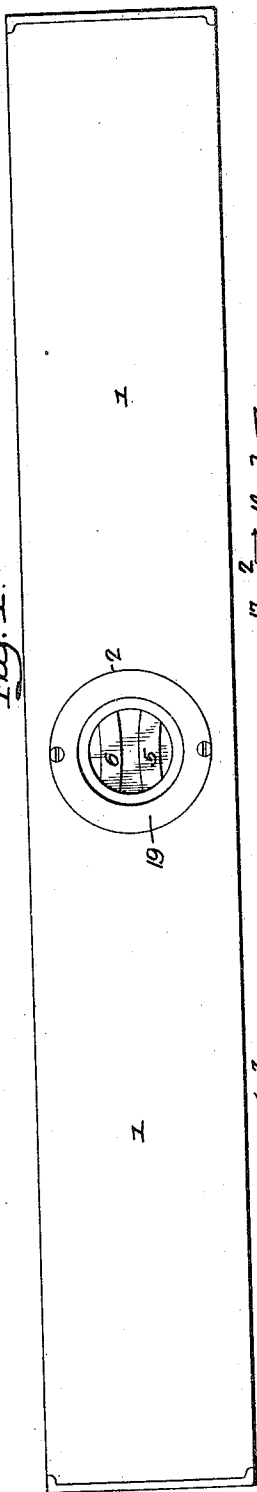


Fig. 3.

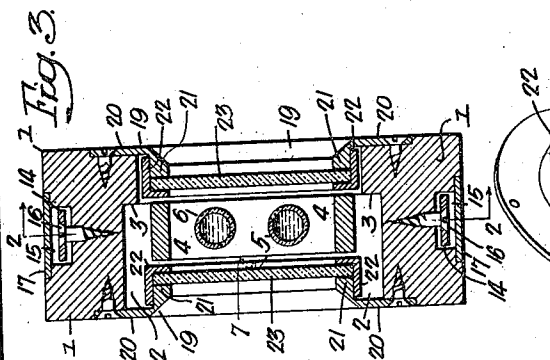


Fig. 6.

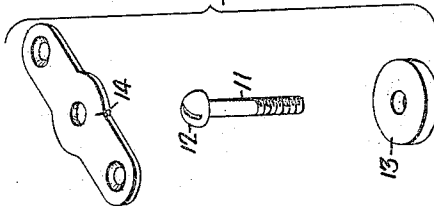


Fig. 5.

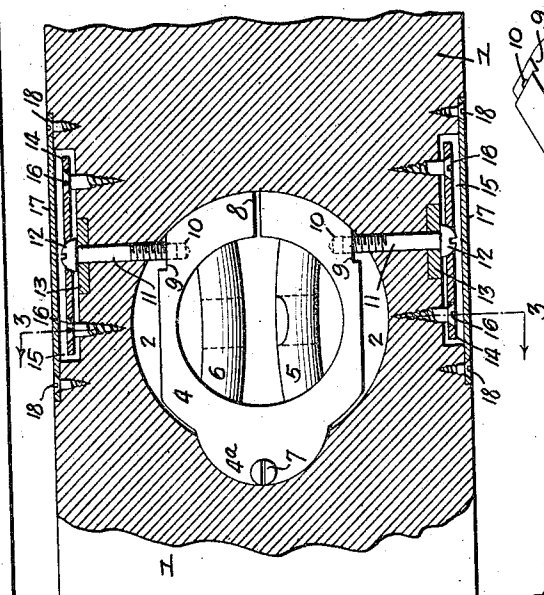
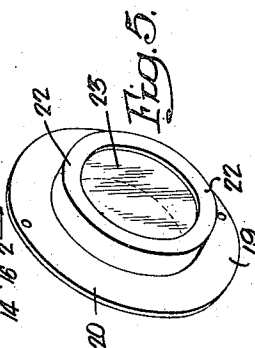


Fig. 2.

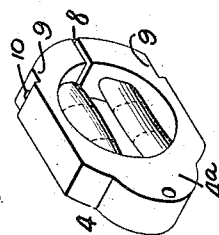


Fig. 4.

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by his Attorneys—  
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# UNITED STATES PATENT OFFICE.

ERNEST A. KING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HENRY DISSTON & SONS, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## LEVEL.

1,241,399.

Specification of Letters Patent.

Patented Sept. 25, 1917.

Application filed May 2, 1917. Serial No. 165,927.

*To all whom it may concern:*

Be it known that I, ERNEST A. KING, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Levels, of which the following is a specification.

One object of my invention is to provide means for readily adjusting the frame carrying the glass tube of a level so that it can be adjusted without dismantling the parts.

A further object of the invention is to provide a frame with two tubes and with means for independently adjusting each fork of the frame and thus independently adjusting the bubble in each tube.

The invention also relates to certain details of construction which will be fully described hereinafter.

In the accompanying drawings:

Figure 1 is a side view of my improved level;

Fig. 2 is a longitudinal sectional view of a portion of the level on the line 2—2, Fig. 3;

Fig. 3 is a sectional view on the line 3—3, Fig. 2;

Fig. 4 is a perspective view of the frame in which the glass tubes are mounted;

Fig. 5 is a perspective view of one of the glass plates inclosing the frame; and

Fig. 6 is a detached perspective view of the adjusting means.

Referring to the drawings, 1 is the ordinary wooden body portion of the level having an opening 2 at or near the center. This opening is reduced at one side to form a shoulder 3 on which rests the frame 4 carrying the two tubes 5 and 6. This frame is secured to the body portion by a headed screw 7, which enters the wooden body portion at the shoulder 3, the wood being cut away to receive the projecting portion 4<sup>a</sup> of the frame. The frame is split at 8 forming two forks, and one of the glass tubes is mounted in one fork and the other glass tube is mounted in the other fork. The frame is circular in form and the tubes extend across the open center of the frame, as clearly shown in Fig. 2. The frame is reduced in thickness at top and bottom, and at 9 a flat shoulder is formed which has a threaded opening 10 therein to receive an adjusting screw 11. The screws extend to each side of the level and the head 12 of each screw is mounted on a washer 13 and a clamp plate 14 is located in a recess 15 in the edge of the

body portion, as clearly shown in Figs. 1 and 2. The clamp plate 14 has a central opening therein, having beveled walls which fit the beveled, or rounded, head 12 of the screw 11. The clamp 14 is held by screws 16, which enter the wood of the body portion so that the adjusting screw can be readily held after adjustment. The screw, however, can be turned to adjust one of the forks of the frame 4 without removing the clamp plate 14. The adjusting mechanism is inclosed by a plate 17 adapted to a recess in the edge of the body portion and held by screws 18. There is one of these adjusting devices at each edge of the level. One controls the movement of one fork of the frame and the other controls the movement of the other fork of the frame.

I preferably inclose the opening in which the frame 4 is mounted by two frames 19, one located in each side. Each frame has a flange 20 secured to the body portion by screws, or other fastenings. Each frame has an extension 21, and between a flanged ring 22 and this extension is a glass disk 23. I preferably locate cement and other suitable material between the metal portions of the frame and the glass so as to make it waterproof and to allow for any expansion or contraction without the liability of breaking the glass.

It will be noticed that one of the glass tubes is curved in one direction and that the other is curved in the opposite direction so that when the level is used on one edge, the bubble in one tube will indicate whether or not the device is level, and, if the level be turned on the other edge, the bubble in the other tube will indicate the level.

By the above arrangement, the parts can be readily made and assembled and after being assembled they can be adjusted to make them accurate and in the event of a bubble in one of the tubes not indicating the level, a slight adjustment can be made without dismantling the frame in which the tubes are mounted.

It will be understood that the adjusting means shown may be used in connection with a plumb, as well as a level, without departing from the essential features of the invention.

I claim:

1. The combination in a level, of a body portion having an opening therein; a forked

frame mounted in the opening; a glass tube carried by each fork of the frame; and means for independently adjusting each fork of the frame.

- 5 2. The combination of a body portion having an opening therein; a frame mounted in the opening; means for securing the frame in the body portion, said frame having two curved forks; a tube mounted in  
10 each fork; and means for independently adjusting each of said forks.

3. The combination of a body portion having an opening therein; a frame mounted in the body portion; said frame having  
15 two forks; a tube mounted in each fork; a screw adapted to a threaded opening in each fork of the frame, the head of one screw being at one edge of the body portion and the head of the other screw being at the  
20 opposite edge of the body portion; and means for retaining the screws in a fixed position in respect to the body portion so that, when the screws are turned, the forks of the frame will be adjusted.

- 25 4. The combination of a body portion having an opening therein; a frame mounted in the opening and secured at one edge to the body portion; a glass tube carried by the frame; a headed screw extending into  
30 a threaded opening in the frame; a clamp plate having a tapered opening therein through which the end of the screw is exposed; and means for tightening the clamp plate, the screw being capable of being ad-  
35 justed without removing the clamp plate.

5. The combination of a body portion having an opening therein; a frame mounted in the opening and secured to the body

portion at one edge, the opposite end of the frame being split to form two forks; a 40 glass tube mounted in each fork; a headed screw extending into a threaded opening in each fork of the frame; a washer and a clamp plate between which the head of the screw is mounted; and means for adjustably 45 securing the clamp plate to the body portion so as to prevent the screw from turning after adjustment.

6. The combination in a level, of a body portion having an opening; a central frame 50 mounted in the opening; a glass tube carried by the central frame; two frames independent of the central frame, one frame being mounted on each side of the body portion and extending into the opening; a glass 55 disk mounted in each frame; and means for securing the disk to the said frame, whereby either frame and its glass disk can be removed without disturbing the central frame.

7. The combination of a body portion 60 having a shouldered opening therein extending from one side of the body portion to the other; a glazed frame extending into the opening at each side and secured to the body portion; a forked frame resting on 65 the shoulder and secured to the body portion at one side and free to move at the opposite side; an adjusting screw engaging each fork of the frame and extending toward each edge of the body portion; a 70 plate; and a washer mounted in a recess in the edge of the frame and arranged to clamp the head of each screw; and a cover plate for closing the recess.

In witness whereof I affix my signature.

ERNEST A. KING.