

(No Model.)

A. D. GOODELL.

SPIRIT LEVEL.

No. 310,046.

Patented Dec. 30, 1884.

Fig. 1.

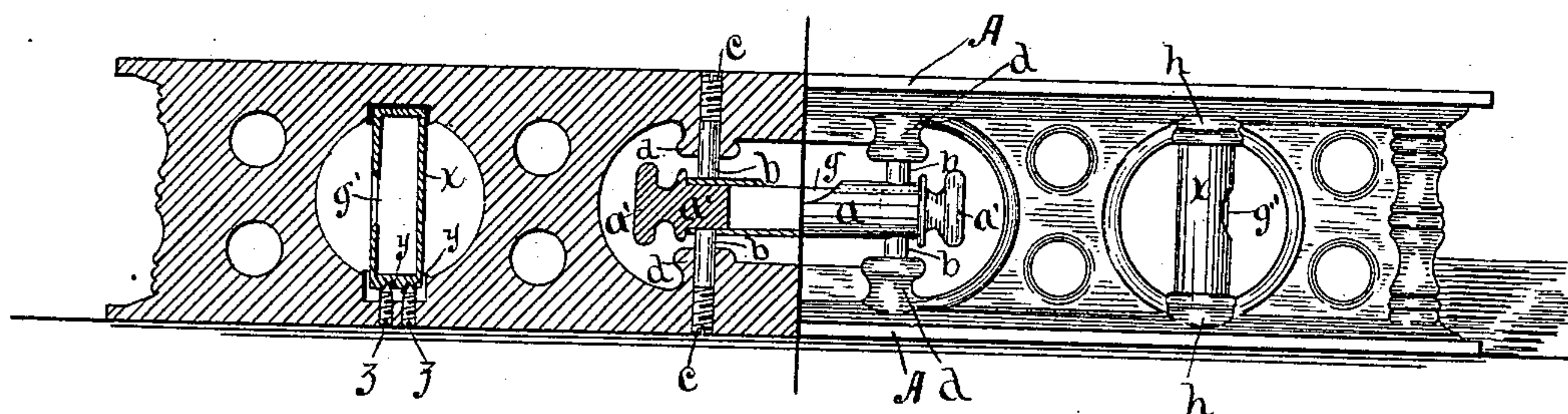


Fig. 2.

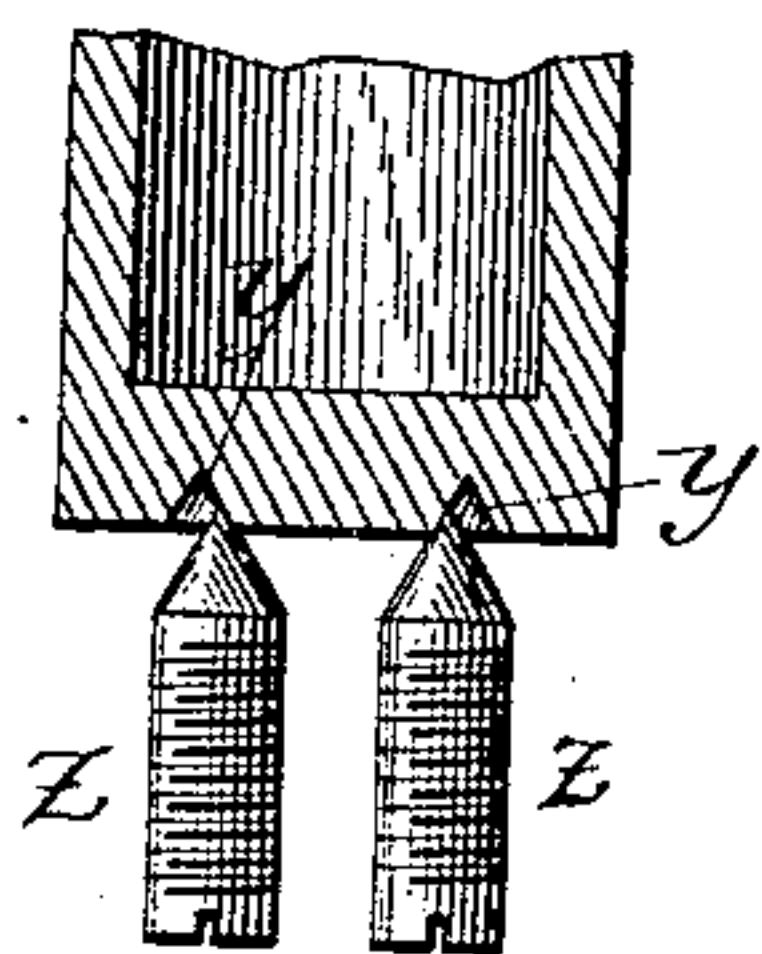
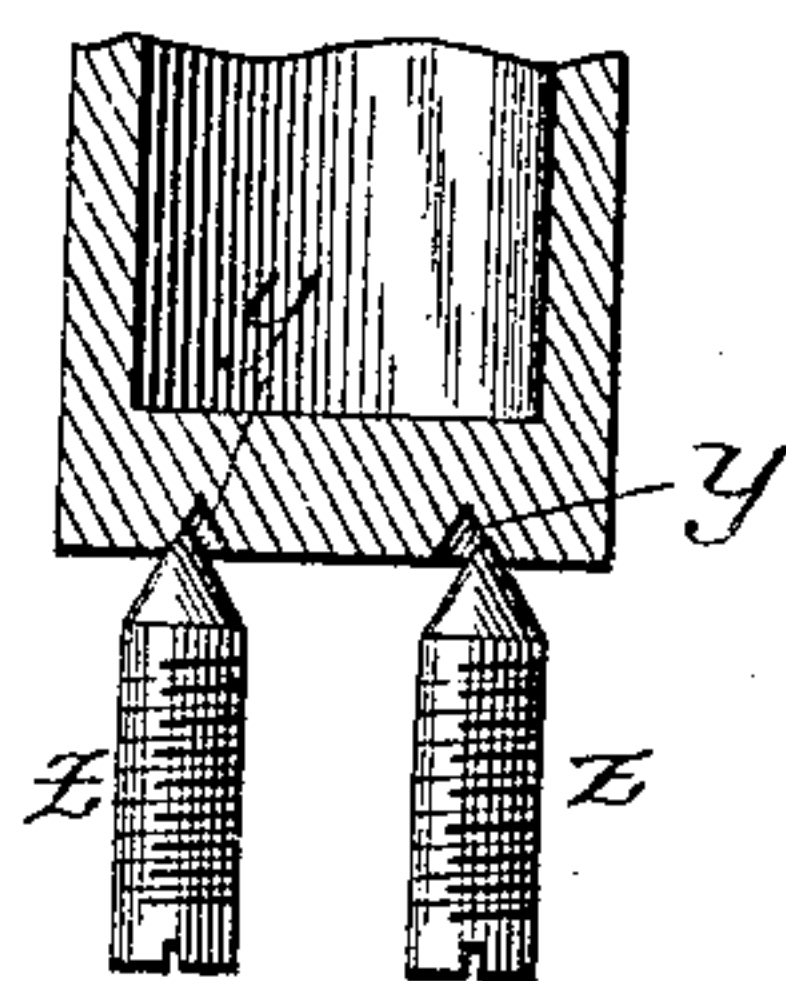


Fig. 3.



WITNESSES:
Chas. S. Gooding,
E. H. Hulme.

INVENTOR:
Albert D. Goodell,
by Bowdoin S. Parker,
his Atty.

UNITED STATES PATENT OFFICE.

ALBERT D. GOODELL, OF MILLER'S FALLS, MASSACHUSETTS, ASSIGNOR TO
THE MILLER'S FALLS COMPANY, OF SAME PLACE.

SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 310,046, dated December 30, 1884.

Application filed July 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, ALBERT D. GOODELL, of Miller's Falls, in the county of Franklin and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Plumbs and Levels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts.

My present invention has special reference to the novel manner of holding and adjusting the plumb and level glasses.

Figure 1 represents a plumb and level embodying my said improvements, part being shown in elevation and part in sectional elevation. Figs. 2 and 3 are a sectional view of the adjusting device for the plumb, as also shown in connection with the level in Fig. 1.

A is the frame, made preferably of metal. *a* is the level-glass case. *a' a'* are plugs inserted in the ends of case *a*. *g* is the level-glass seen through the sight-opening in case *a*. On each side of the frame are placed projections *d d*. Inserted in these are the screws *c c*, two on each side, and which are threaded in projections *d d*. Between the ends of the screws *c c* and the case *a* are placed the slides *b b*, which move in the projections *d d*, one end of the slides being pressed by the point of the screws and the other against the case or against the plugs *a' a'*, as the case may be, and as hereinafter explained. Of course it would be possible to press the screw ends directly against the level-case and plugs; but the adjustment would not be as good. It is manifest that the slides could be placed directly against the case *a* upon both sides, or against the level-glass, if no case were used; but the way shown in drawings is better in many ways, and which consists in placing the slides *b b* upon one side directly against the case *a*, and in placing the ends of the opposite and corresponding slides *b b* against the plugs *a' a'*, apertures being made in the case *a* for the purpose. The portion of case shown in section illustrates the manner of use. The plugs *a' a'* are made to fit the interior surface of the case *a*. Thus four screws are used—two on each side—and the arrangement of case and

plugs overcomes the liability of harm by expansion and contraction of the frame or of the contiguous parts. By moving the screws out and in, the adjustment of the glass is always perfect, and the parts are held rigidly in place without springing or breakage. The compensating arrangement of case and glass and case and plugs, coacting with the slides supported by the screws, enables me to produce a most perfectly adjusted and delicate level at the minimum cost. The plumb-glass is placed near the end of the frame, at of course right angles to the level-glass. Upon each side of the frame I form a socketed projection, *h*. The plumb-glass *g'* is placed in plumb-glass case *x*. One end of the plumb-case is formed solid, and in this end are made two circular *V*'s or countersunk holes, *y y*. Nearly opposite the holes *y y*, but at a slightly greater or less distance apart, are placed two screws, *z z*, with points tapering to correspond with the holes *y y*. The screws are threaded in the frame in the same manner as level-screws *c c*, and all entering from the faces of the plumb and level frame *A*. The opposite end of the case *x* fits the socket *h* upon the corresponding side. It is not necessary to place adjusting-screws at both ends of the plumb-case *x*. The points of both screws *z z* enter the outer circle of the circular *V*'s or holes *y y*, but in a plane out of the center of said holes. It is therefore manifest that by adjusting the screws at varying distances out and in, the end of the plumb-case *x* will be adjusted up and down, and whenever both are pressed against the end of the case will securely hold it in place. All the screws enter the face of the frame sufficiently so that they will not protrude upon either face in any adjustment of the glasses that may be made. The adjusting device for the plumb-glass is shown clearly in Fig. 2. I preferably place the level-glass in the center of the frame and a plumb-glass near each end, and form the frame to be used upon either or both of its faces.

Having now described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of the frame *A*, provided with projections *d d d d* and sockets *h h*, and plumb and level glasses, arranged and

adapted to be held in place and adjusted by the slides *b b b b*, and screws *c c c c* and *z z*, operated from the faces of the frame A, all substantially as and for the purposes set forth.

- 5 2. In an organized level, the adjustable slides *b b b b*, in combination with suitable adjusting-screws and the level-case or level-glass holder, substantially as and for the purposes set forth.
- 10 3. The combination of the frame A, screws *c c c c*, slides *b b b b*, case *a*, plugs *a' a'*, and level-glass *g*, all arranged and adapted to operate substantially as and for the purposes set forth.
- 15 4. In a plumb and level, the combination of a level-glass case provided with plugs and slides movable and independent of the actuating mechanism, and arranged so that the ends of the slides upon one side shall rest against
- 20 the said case and the ends of the opposite and corresponding slides shall rest against the plugs inserted in the ends of said case and adapted to overcome the deflection of the level-glass, all substantially as and for the
- 25 purposes set forth.
5. In a plumb and level, the frame A, provided with sockets *h h*, in combination with

the plumb-glass *g'* and case *x* and screws *z z*, arranged as and for the purposes set forth.

6. In a plumb and level, the combination of the plumb-glass case *x*, provided with countersunk holes *y y* and pointed screws *z z*, and adapted to hold and adjust the plumb-glass, substantially as and for the purposes set forth.

7. In a plumb and level, the combination of a plumb-glass case socketed in the frame at one end, and adapted to be held and adjusted by means of two screws operated from the face of the frame, suitably arranged in relation to tapering holes formed in end of said case, all substantially as and for the purposes set forth.

8. In a plumb and level, the herein-described compensating device for level-glass, consisting of the case *a* and plugs *a' a'*, so arranged that the holding and adjusting mechanism shall press the shell of the case upon one side and the plugs upon the opposite side, substantially as and for the purposes described.

A. D. GOODELL. [L. S.]

Witnesses:

FRANCIS M. THOMPSON,
ALEX. H. CLAPP.