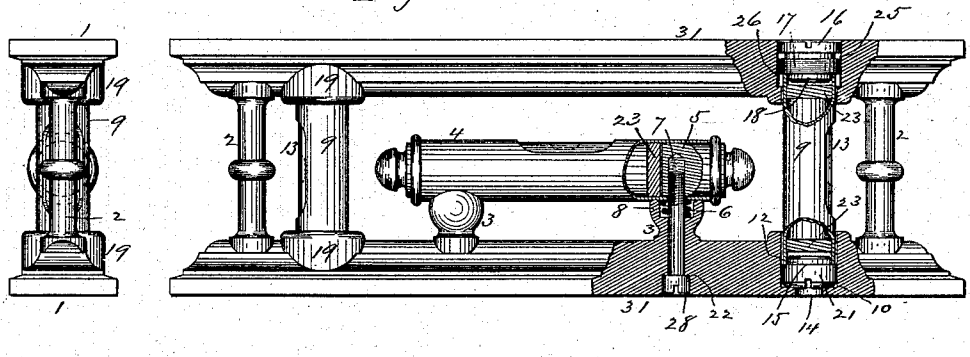
(No Model.)

L. L. DAVIS.

SPIRIT LEVEL AND PLUMB.

No. 288,624. Patented Nov. 20, 1883.

Fig. I



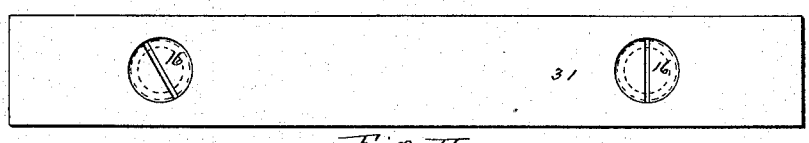


Fig. II



Fig. IV

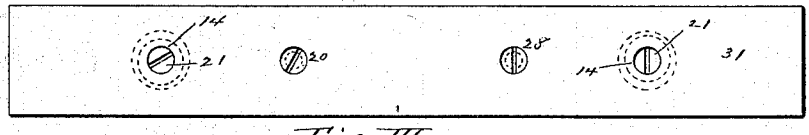


Fig. III

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UNITED STATES PATENT OFFICE.

LEONARD L. DAVIS, OF SPRINGFIELD, MASSACHUSETTS.

SPIRIT LEVEL AND PLUMB.

SPECIFICATION forming part of Letters Patent No. 288,624, dated November 20, 1883.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, LEONARD L. DAVIS, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Combined Spirit Level and Plumb, of which the following is a specification and description.

The object of my invention is to provide a cheap, durable, and convenient level and plumb combined in a single frame or stock, with mechanism for adjusting and securing the tube containing the bubble-glass of the level and that containing the bubble-glass of the plumb in the frame; and I accomplish this by the mechanism substantially as hereinafter described, and illustrated in the accompanying drawings, in which—

Figure I is a side view of the frame or stock with a portion of the same in section, showing the mechanism for securing the bubble-glass tube of the level and that of the plumb in position, and for putting each into proper adjustment with the edges of the frame or stock. Fig. II is a plan view of one edge of the frame or stock. Fig. III is a plan view of the other edge of the same; and Fig. IV is an end view of the eccentric block for adjusting the plumb bubble-glass tube in position.

In the drawings, 31 represents the frame or stock, which consists of two longitudinal bars united by two connecting-rods, all which I make of cast metal, with an enlargement or protuberance at 19, which is counterbored to receive the bubble-glass case, which consists of a metallic tube, 9, into which the bubble-glass 13 is inserted from either end, and there secured by calcined plaster or other suitable material, as at 23, leaving the tube 9 open at both extreme ends, as shown clearly in Fig. I. The counterbore into which the tube 9 and its fastenings are inserted is made from one edge of the frame or stock, and a smaller hole, 14, is made, preferably axial with the counterbore, in the opposite edge of the stock or frame. A block, 21, is provided with a slot in one end to insert a screw-driver, and a cylindrical projection, 12, is made on the other end, which is eccentric with the main part of said block, as shown in Fig. IV, and in dotted lines in Fig. III, and this eccentric projection is of suitable diameter to snugly fit the bore of the tube 9, and turn therein. The opposite edge of the frame or stock is counterbored or enlarged at 25, into which a screw-plug, 16, may be turned, having a cylindrical projection, 18, thereon, made axial with the screw-plug and of a diameter to snugly fit the bore of the tube at the end. In securing this bubble case or tube in proper position the eccentric block 21 is placed in its recess, and upon or against the interior shoulder, 10, and with the slot in its end toward the hole 14, and the case or tube 9 is then inserted into the counterbore from the other edge of the frame or stock, with the extreme end of the tube 9 bearing against the shoulder 15 of the eccentric block, and the eccentric projection 12 inserted within the tube. When this is in place, the screw-plug 16 is turned into the open end of the counterbore, with the axial projection 18 within the open end of the tube 9, and with the end of the latter bearing slightly against the shoulder 26 of the screw-plug. This secures the tube 9, containing the bubble-glass for the plumb-level in its place in the frame or stock.

The bubble-case or tube 4 for the level I secure in position as follows: The bubble-glass being secured in the tube or case 4 by calcined plaster or cement 23, as before mentioned, each end of the tube is left open sufficiently to insert a snugly-fitted plug, 5, and through one side of the tube 4 and into the said plug 5 is made a screw-hole, 7. This tube 4 is fitted upon two supports or standards, 3, in each of which is made a recess, 8, to receive a spring, 6, which bears against the tube 4, and a hole is made from the outer edge of the frame or stock to receive a screw, 28, whose head has a bearing against the shoulder 22 of the counterbore, to receive the head of the screw, the threaded end of the screw being turned into the screw-hole 7, made in the plug 5, and each end of the tube 4 is secured in the same manner.

If the plumb level or tube 9 should not be in position at right angles to the edges of the frame or stock 31, the screw-plug 16 may be loosened with a screw-driver from its bearing against the end of the tube 9, and the block 21 is then turned with a screw-driver inserted through the hole 14, to move the eccentric 12 and the end of the tube in which it is fitted toward one end or the other of the frame or

stock, as the case requires, and when the tube is adjusted into the proper and desired position, the screw-plug 16 is turned in firmly against the tube 4, and the latter is clamped endwise between the screw-plug 16 and the eccentric block 21, and cannot then be easily displaced or moved out of adjustment by any sudden jar.

If the level or bubble-case 4 should not be in a position parallel with the edges of the frame or stock 31, one or the other or both of the screws 28 may be turned with a screw-driver to move either or both ends of the case 4 more or less remote from the supports or standards 3, the springs 6 in the recesses in the standards operating to move the case away from the standards, and the screws operating to move it toward them, according as the screws are turned in one direction or the other.

I am aware that the bubble-case of a level has heretofore been adjusted in a wooden stock or frame by an eccentric mechanism, in which case the tube containing the bubble-glass was provided with projecting studs, which were inserted into corresponding recesses made in the wooden stock, by which means the said tube was held in place at one end, and a separate plug had to be firmly secured in the other end of the tube. The recesses for the said projections soon became enlarged, however, and the wood shrunk away from the projections, so that the tube could not be held in place after a time, and it is not practical to make such recesses in metal without involving expense. The construction herein shown and described requires no metal plug secured in the end of the tube to furnish a journal-bearing in the eccentric block, and the adjustment of the bubble-glass case or tube is easily and quickly made, and the tube is more firmly held from misplacement.

Having thus described my invention, what I claim as new is—

1. The combination, with the frame or stock 31, of the tube 9, having the bubble-glass secured therein, the shouldered block 21, provided with the eccentric projection 12, fitted to turn in one open end of said tube, and the shouldered screw-plug 16, provided with the axial projection 18, fitted into the other open end of said tube, whereby said tube and the bubble-glass secured therein may be adjusted and clamped into the desired position in the said frame or stock, substantially as described.

2. The combination, with the frame or stock 31, of the standards 3, the springs 6, the tube 4, having a level bubble-glass secured therein, a plug, 5, secured in each end of said tube 4, and the screws 28, each turned through said frame or stock and the standards and into a threaded hole in the plugs 5, to adjust and secure the level bubble-glass and its case in a position parallel with the edge of said stock or frame, substantially as described.

3. In a combined spirit level and plumb, the frame or stock 31, the plumb bubble-glass tube 9 adjustable and secured therein by means of the shouldered eccentric block 21 at one end and the shouldered screw-plug 16 at the other end, and the level bubble-glass tube 4, adjustable and secured therein by means of the standards 3, the springs 6, plug 5, secured in each end of said tube, and the screws 28, turned through said frame and standards and into a threaded hole in each said plug, substantially as described.

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