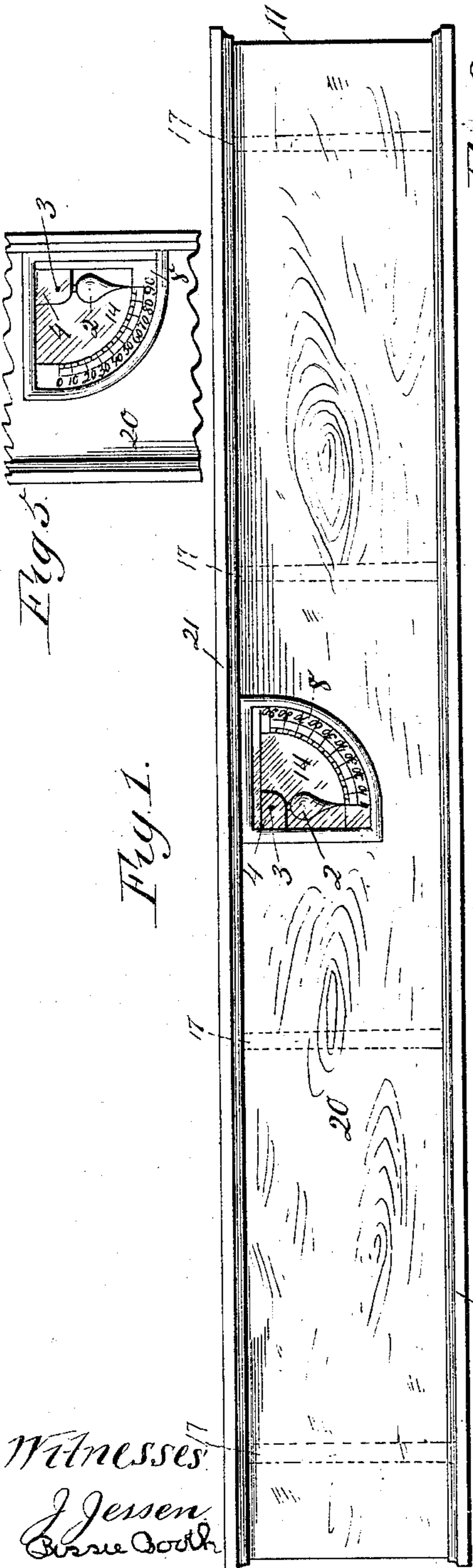


(No Model.)

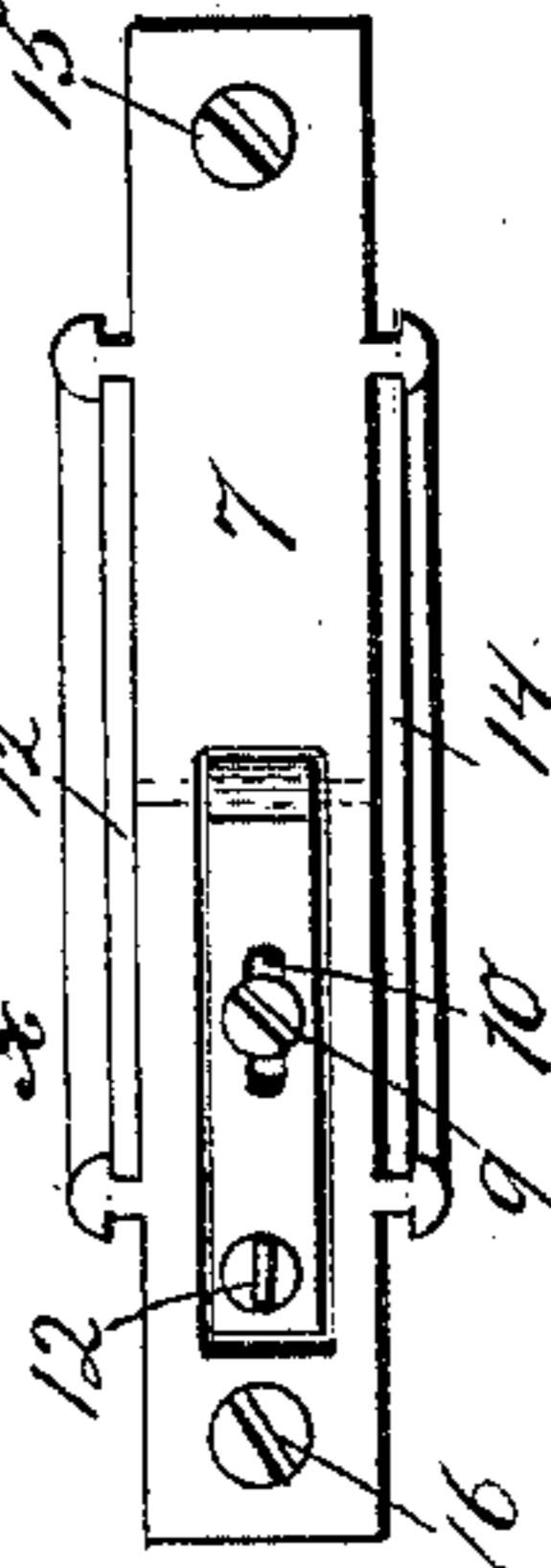
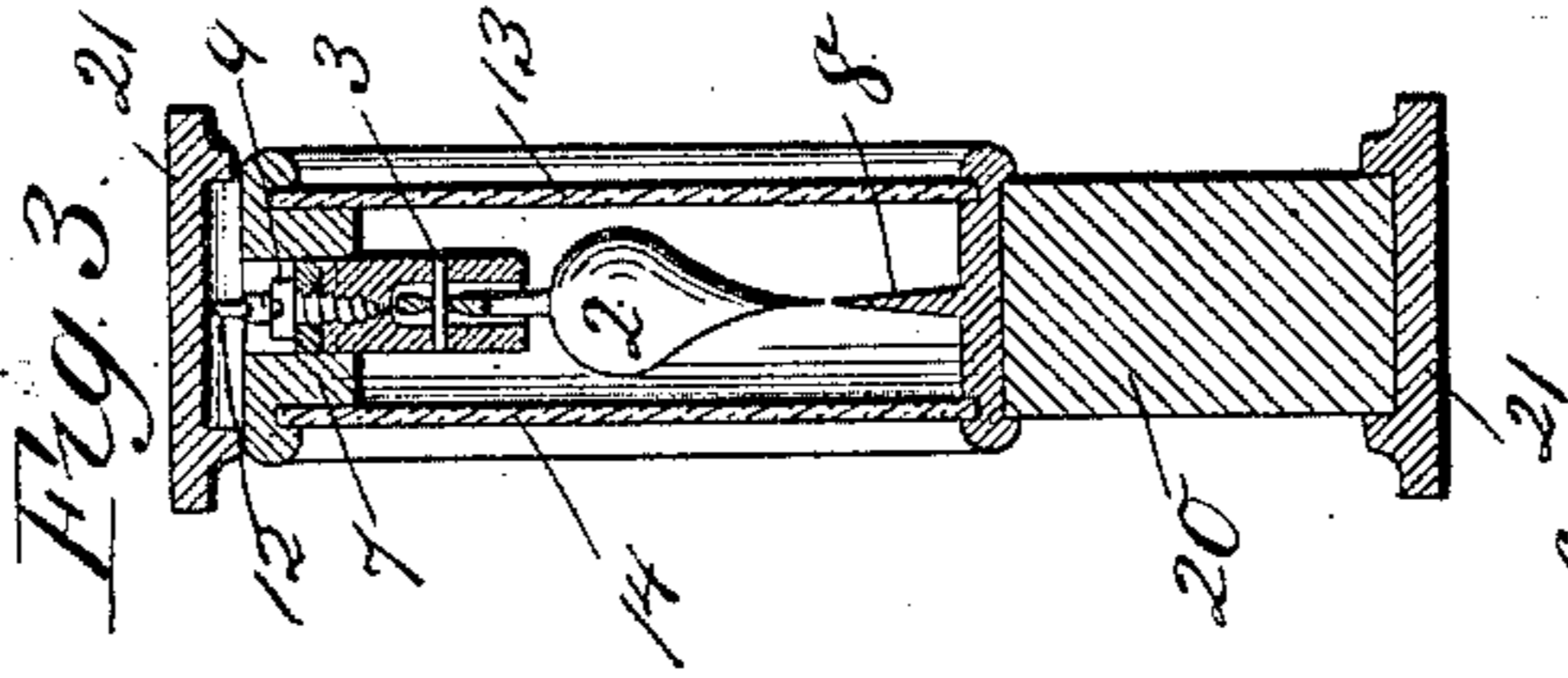
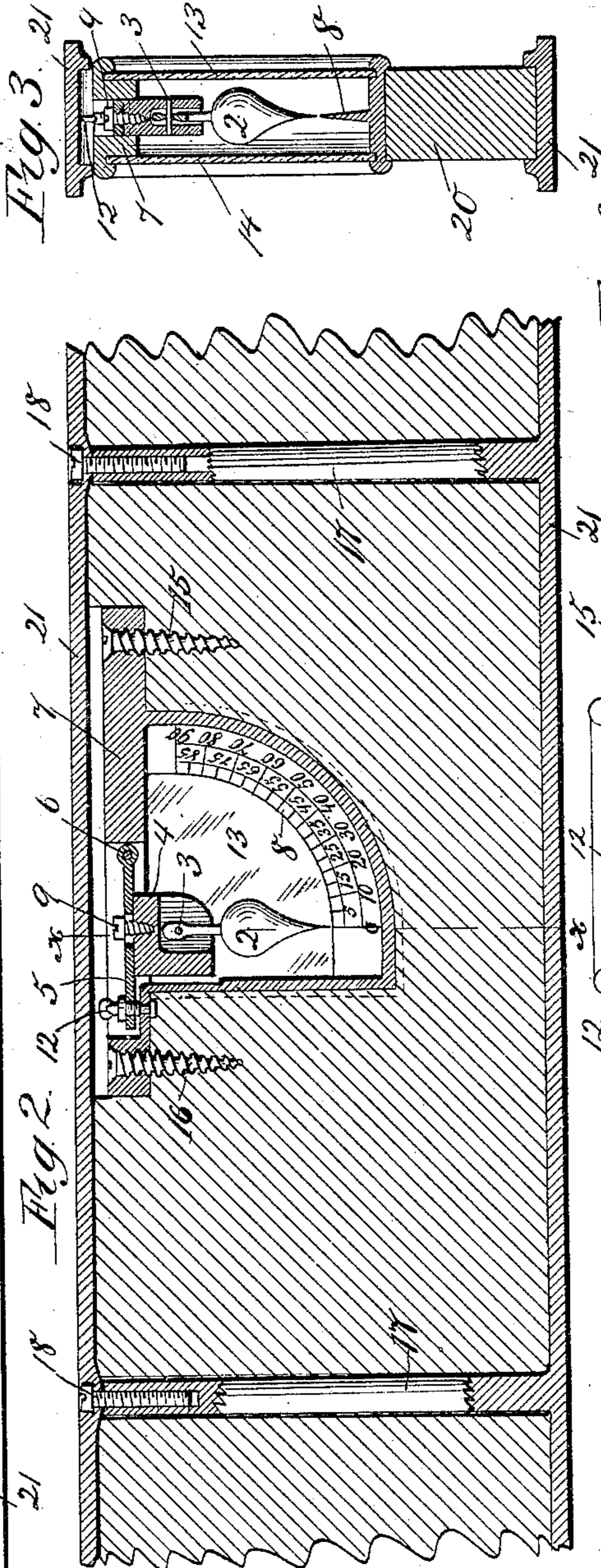
N. JENSEN.  
PLUMB LEVEL.

No. 433,570.

Patented Aug. 5, 1890.



Witnesses  
J. Jensen  
Barre Cook



Inventor  
Nils Jensen.  
By Paul H. Munn, Atty.

# UNITED STATES PATENT OFFICE.

NIELS JENSEN, OF MINNEAPOLIS, MINNESOTA.

## PLUMB-LEVEL.

SPECIFICATION forming part of Letters Patent No. 433,570, dated August 5, 1890.

Application filed April 11, 1890. Serial No. 347,426. (No model.)

*To all whom it may concern:*

Be it known that I, NIELS JENSEN, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Carpenters' Levels, of which the following is a specification.

My invention relates to carpenters' levels, and is designed to do away with the old form of spirit-level and to provide a level by which the angle of inclination is indicated upon and may be read from the instrument.

My invention consists in providing a quadrant-shaped casting bearing a quadrant of a dial with the degrees marked from 1 to 90 in a suitable mortise in the side of the level-block, in connection with a pivoted pointer-weight which is adapted to swing through an arc of somewhat more than ninety degrees. The pivot of this pointer is made adjustable both longitudinally and vertically by hanging the same upon a slotted lever in such manner that the pivot-block bearing the pointer may be adjusted longitudinally and clamped in position by a set-screw inserted through a slot in the lever into said block. The said lever is adapted to swing upon its separate pivot and to be lowered or raised at the opposite end by a suitable screw.

My invention consists, further, in providing metal caps or boxes upon the edges of the level-block and removably secured thereto.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of a carpenter's level embodying my invention. Fig. 2 is a sectional elevation of the same. Fig. 3 is a sectional view taken upon line  $x x$  of Fig. 2. Fig. 4 is a detail view of the top of the quadrant-casting, showing the lever upon which the pivot-block for the pointer-weight is hung. Figs. 5 and 6 are details.

The pointer-weight 2 is loosely hung upon the pivot 3, provided in the pivot-block 4, and is adapted to assume a vertical position regardless of the pitch of the level. This pivot-block 4 is hung on the lever 5, which is in turn pivoted at 6 into the main quadrant-casting 7. The quadrant-casting 7 is cast in the form shown to leave an open space between the dial-bearing rim 8 and the side and top of the casting. As the level is tilted from

the horizontal, the pointer-weight swings upon its pivot and assumes a vertical position over the dial-rim, thus indicating thereon the exact angle at which the level is inclined. In order to bring the pivot upon which the pointer-weight swings into the exact center of the circle of which the dial-rim forms an arc, I provide means for adjusting the same up or down or to one side or the other. I accomplish this by hanging the pivot-block 4 upon the swinging lever 5 by the set-screw 9, which is adapted to be adjusted sidewise in the slot 10 in the lever 5. For instance, if the pointer did not hang exactly over the zero-mark when the level was lying on its edge, this screw would be loosened in the slot and the block moved until the pointer exactly registered with the zero-mark on the dial. Again, if when the level was stood upon its end the pointer did not register with the mark 90, the screw 12, provided in threaded openings through the lever 5, and the quadrant-casting would be tightened down or loosened to move the pivot 3 up or down in the cavity of the quadrant. Thus the pointer would be made to indicate exactly.

The glass plates 13 and 14 are adapted to be held in the slots provided in the main quadrant-casting 7 and to protect the register while still leaving it visible. The casting 7 is secured in the slot in the level-block by two screws 15 and 16, and may be made adjustable therein by these screws; but I have not considered this a necessary feature.

I provide the metal caps or boxes 21 on the long edges of the level-block for the purpose of preserving the same and to provide perfectly level and parallel sides for the same. These metal caps are secured upon the edges of the block by the four tie-bolts 17. (Shown in dotted lines in Fig. 1 and in detail in Fig. 2.) The main parts of these bolts are cast or securely and permanently fixed to the under cap and extend nearly through the block. The ends of these are tapped out, and the upper cap upon the edge of the plain block secured thereon by the screws 18, adapted to screw into the end of said tie-bolts. The heads of these screws 18 are countersunk into the upper metal cap, thereby leaving the surface of the cap smooth.

I claim as my invention—

1. The combination of the quadrant-frame 7, provided with the dial 8 and secured in an open mortise, the block 20, with the pivoted lever 5, adapted to be moved radially by the threaded screw 12 in the opening provided in the casting 7, and the pivot-block adapted to be secured in position in the slot 10 of said lever 5 by the set-screw 9, the pointer-weight 2, adapted to swing through an arc corresponding to an arc of said quadrant-dial upon the pivot 3, provided in the pivot-block 4, said casting being provided with means for permanently securing the glass guards 13 and 14 in position in the sides of said block.

2. The combination, in a carpenter's level, of the wooden block thereof, with the metallic caps or boxes 21 and 22 upon the edges of the same and secured thereto by legs or bolts 17, secured to cap 22 and extending through the said block 20, and the screws 18, adapted to be inserted through the caps 21 and into the threaded ends of the said bolts 17, said screws having their heads countersunk into the surface of said cap 21, substantially as shown and described.

3. The combination, with a quadrant-frame

7, provided with the dial 8 and secured in an open mortise, of level-block 20, with the pivoted lever 5, adapted to be moved radially in the slot provided in the casting 7, the pivot-block adapted to be secured in position in the slot 10 of said lever 5 by the set-screw 9, the pointer-weight 2, adapted to swing through an arc corresponding to the arc of said quadrant-dial upon the pivot 3, provided in the said pivot-block 4, the glass guards 13 and 14, secured in the lugs provided on the said casting 7, and the metallic caps or boxes 21 and 22, provided upon the edges of said level-block 20 and secured thereto by tie-bolts extending from the inner surface of cap 22 through said block, and screws inserted through the cap 21 into the ends of said tie-bolts 17, said screws having their heads countersunk into the surface of said cap 21, substantially as shown and described.

In testimony whereof I have hereunto set my hand this 4th day of April, 1890.

NIELS JENSEN.

In presence of—

BESSIE BOOTH,  
C. G. HAWLEY.