

T. O'HAGAN.
PLUMB-LEVEL.

No. 173,990.

Patented Feb. 22, 1876.

Fig. 1.

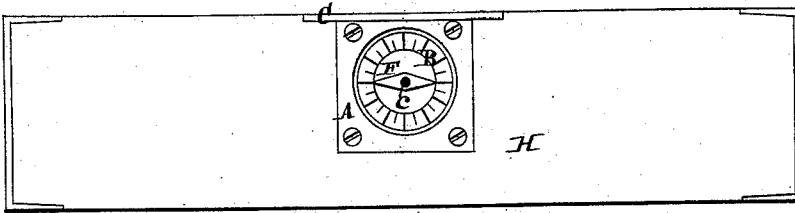
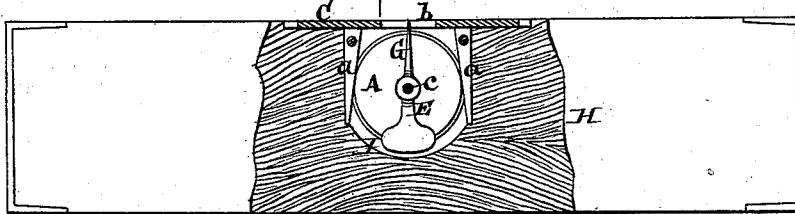


Fig. 2.



Fig. 3.



x

Fig. 4.

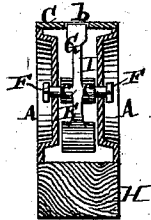
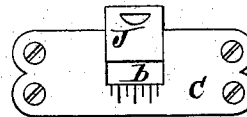


Fig. 5.



Witnesses.

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IMPROVEMENT IN PLUMB-LEVELS.

Specification forming part of Letters Patent No. **173,990**, dated February 22, 1876; application filed February 4, 1876.

To all whom it may concern:

Be it known that I, THOMAS O'HAGAN, of the city, county, and State of New York, have invented a new and useful Improvement in Plumb-Levels, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a side view of my improvement. Fig. 2 is a top view thereof. Fig. 3 is a longitudinal section of the same. Fig. 4 is a cross-section in the line *x x*, Fig. 1.

Similar letters indicate corresponding parts.

My invention relates to certain improvements in plumb-levels, and has for its object to simplify and lessen the cost of construction of such instruments.

My improved level is composed of two side plates, either or both of which are provided with a circular scale, and which are connected together by a top plate having an opening, on the edge of which is marked a secondary scale, while between the side plates is hung a pendulum carrying hands, which are arranged to indicate on the several scales the correct reading of the instrument, in such a manner that the latter may be read either from the top or from the side.

This instrument is adapted to be used in connection with an ordinary stock, which is provided with a suitable opening for its reception; or it may be used independently of the stock, as hereinafter more fully set forth.

In the drawing, the letters *A A* designate the two side plates of my level, each of which is preferably provided with a circular scale, *B*, and *C* is the top plate, through the medium of which the side plates are connected to each other. This top plate *C* is provided with lugs *a a*, Fig. 3, to which the two side plates *A A* are fastened by means of screws or rivets; but, if seen fit, one of the side plates may be cast directly with the top plate. In the top plate *C* is formed an opening, *b*, and on the edge or edges of this opening is marked a scale, *D*. (See Fig. 2.)

The last-named scale *D* may be similar to or different from the circular scales *B* above mentioned; and, if desired, one may be marked with degrees, while the other indicates the in-

clination of the instrument in fractions of feet and inches to the foot.

Between the side plates *A A* is hung a pendulum, *E*, by means of pivots *c c*, which are placed concentric of the circular scales *B*, marked on the said side plates. The pivots *c c* are fast to the pendulum *E*, so as to move or oscillate therewith, and the pivots, moreover, extend through the side plates *A A*, as seen in Fig. 4. To that portion of the pivots *c c* extending through the side plates *A A* are fastened hands *F*, which, being thus brought side by side with the circular scales *B*, serve to indicate on such scales the correct reading of my level. In addition to the hands *F*, the pendulum is provided with a hand, *G*, which is situated between the side plates *A A*, and is arranged to protrude through the opening *b* in the top plate, so that by this hand *G* the level of the instrument is indicated on the scale *D*, marked on the edges of the opening *b*, as before stated.

It is obvious that by this arrangement my level can be accurately read both from the top and from the side or sides.

That portion of the side plates *A A* containing the circular scales *B* is preferably sunken, as seen in Figs. 1 and 4, so as to form recesses for the reception of the hands *F*, which hence do not project beyond the surface of the side plates *A A*, and are not liable to become impaired when the instrument is allowed to rest on its side.

I prefer to fasten my level to a stock, *H*, which is provided with an opening, *I*, for its reception, and to this end the top and side plates *A A* are provided with holes for the passage of screws or rivets, whereby the instrument may be fastened. By making the lower edges of the side plates *A A*, however, perfectly true, the instrument can be used independently of the stock *H*.

By the above means I obtain a level which is simple in its construction, and which can be furnished at a comparatively low cost.

My instrument can be conveniently set in an ordinary plumb-rule or straight-edge for leveling, and the cumbersome plumb-ball can be dispensed with.

In Fig. 5 I have shown a sliding plate or

door, J, combined with the opening *b* in the top plate. This plate is intended to be closed when my level is not in use, and by means thereof dust or dirt is excluded from the interior part of the instrument.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the side plates A A, either or both having a circular scale, B, the top plate C, having an opening, *b*, and scale

D, and the pendulum E, carrying hands F and G, the whole being adapted to operate substantially as hereinbefore set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

THOMAS O'HAGAN. [L. S.]

Witnesses:

CHAS. WAHLERS,

E. F. KASTENHUBER.