

(No Model.)

T. J. MEGOWN.
LEVELING INSTRUMENT.

No. 360,536.

Patented Apr. 5, 1887.

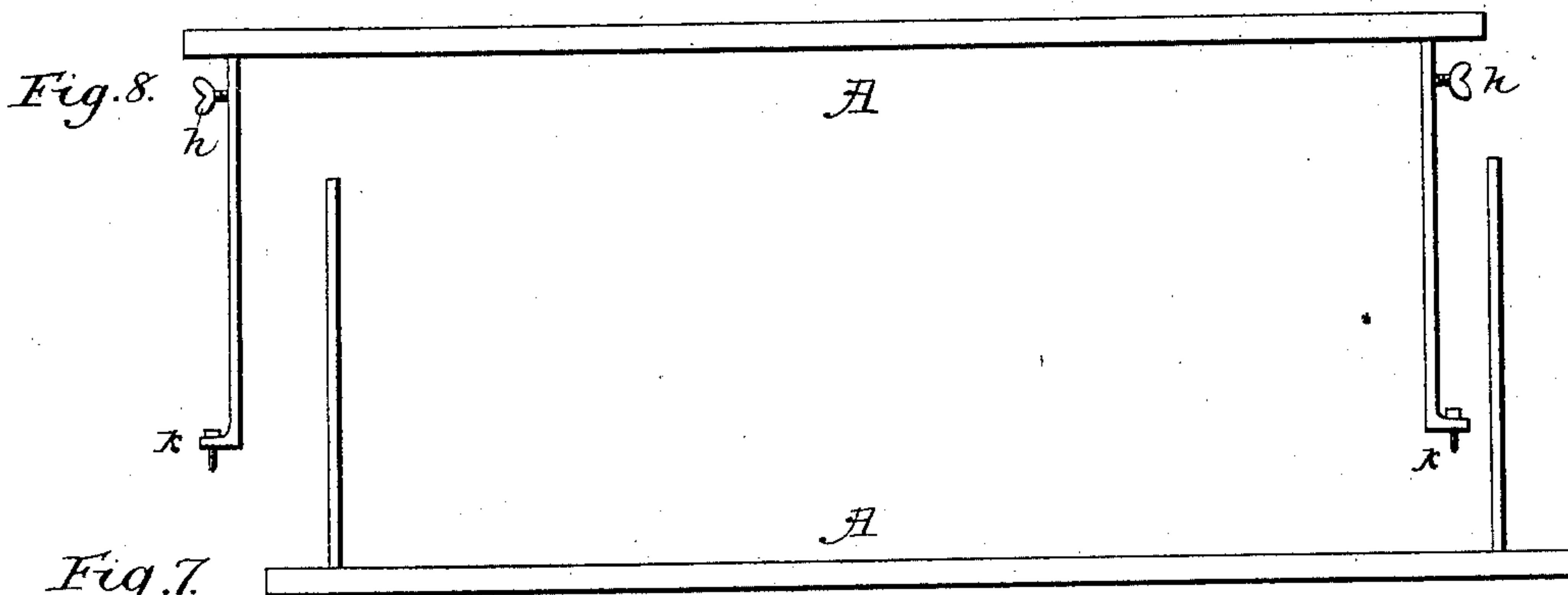
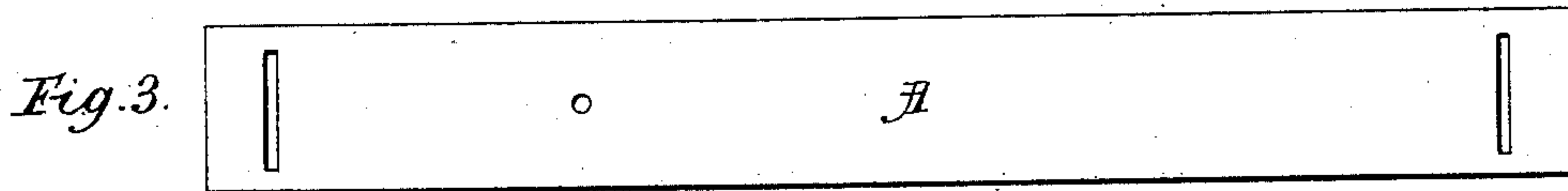
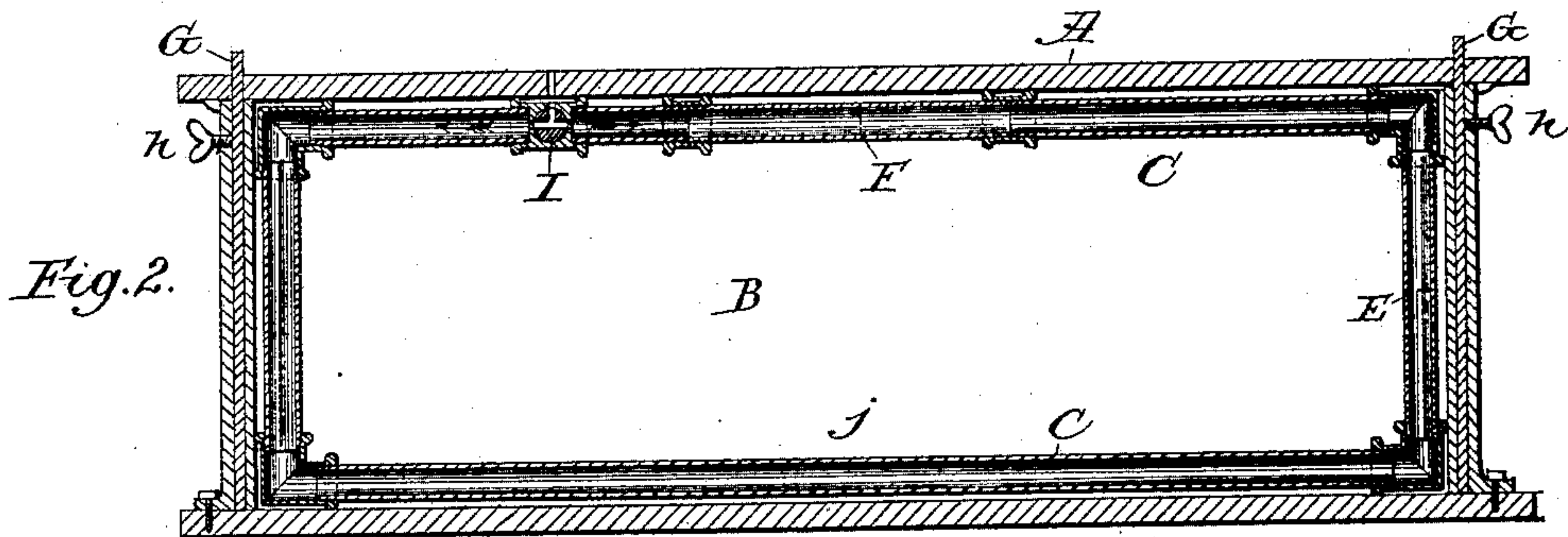
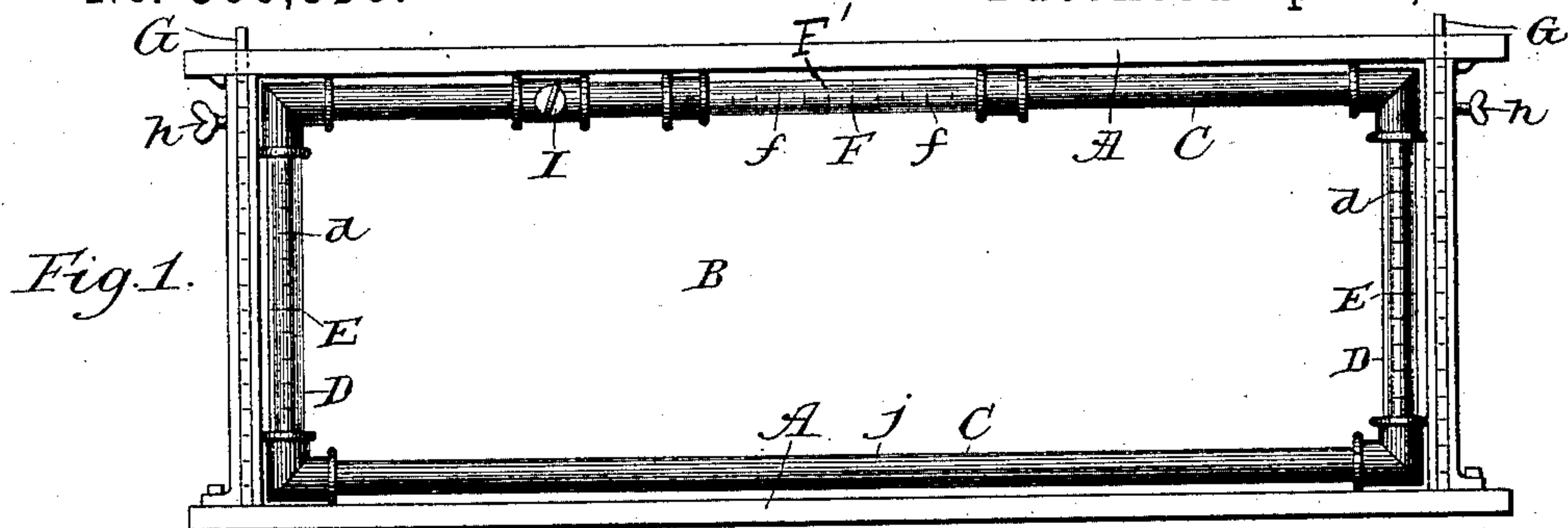


Fig. 7.

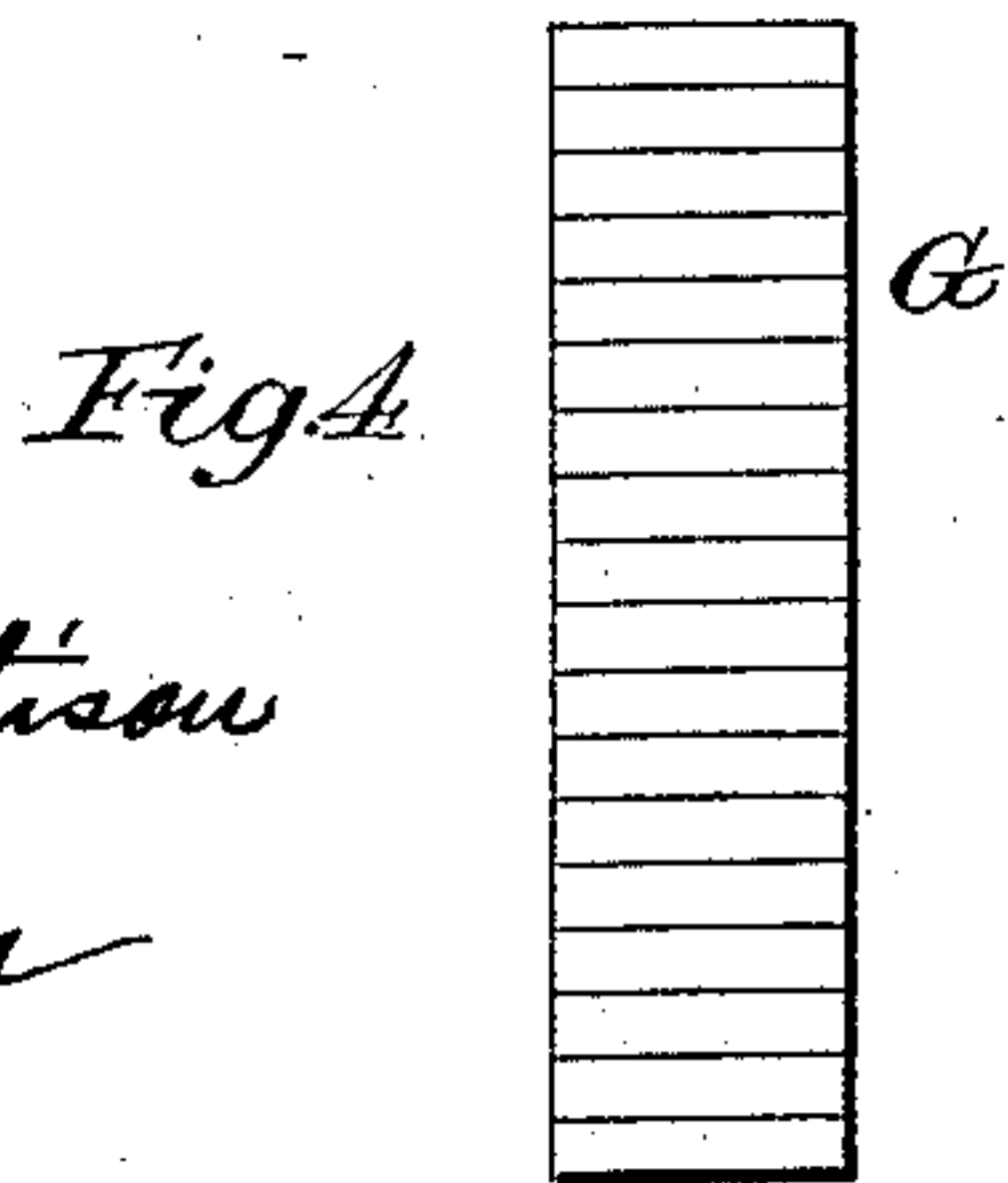
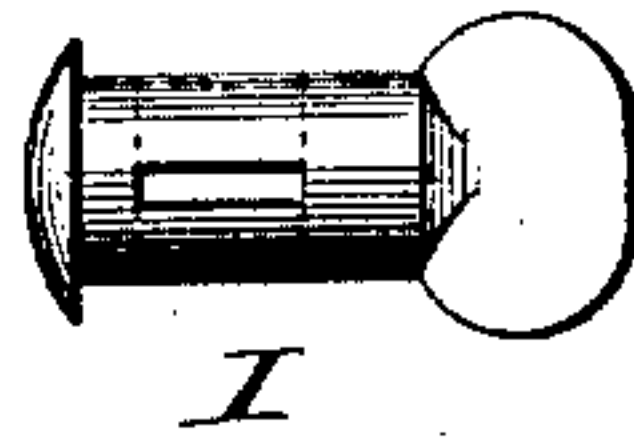


Fig. 6.



Fig. 5.



Inventor.

Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS JEFFERSON MEGOWN, OF BEAVER FALLS, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO ADAM STONE, OF SAME PLACE, AND HENRY CHARLES ISEMAN, OF ITHACA, MICHIGAN.

LEVELING-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 360,536, dated April 5, 1887.

Application filed August 5, 1886. Serial No. 210,146. (No model.)

To all whom it may concern:

Be it known that I, THOMAS JEFFERSON MEGOWN, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Levels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in levels, particularly that class in which a colored liquid inclosed in a tube is used as the indicating medium; and my said invention consists of a suitable case having open sides, at each extremity of which are arranged vertically-adjustable sights, and within which is mounted a tube containing the leveling-liquid, which tube forms a rectangle—that is, it has two long sides or portions parallel to each other, and two short ends, also parallel to each other, but at right angles to the top and bottom portions, which ends are of glass and provided upon their surface with a graduated scale, and within the top tube a three-way cock or valve is provided, as and for the purposes as will presently appear, and be pointed out in the claims.

The object of this invention is to form a simple, cheap, and practical as well as accurate instrument that will combine a level, grading-gage, and plumb; and to accomplish this I proceed as follows, reference now being had to the accompanying drawings for a better understanding of the details of construction and arrangement of the parts comprising my invention, and in which—

Figure 1 represents a side elevation of a combined level, grading-gage, and plumb constructed according to my invention. Fig. 2 represents a longitudinal vertical central section of elevation. Fig. 3 represents top, showing slots for sights and opening or vent for three-way cock; Fig. 4, one of the adjustable sights detached; Fig. 5, a three-way cock detached; Fig. 6, a vertical transverse section of three-way cock; Fig. 7, a detached side view of bottom plate with end pieces attached; Fig. 8, a detached side view of top plate with end pieces and screws *h h* attached, for the purpose of fastening plates *G G* in position.

A A represent the case or frame for containing the leveling-tube, which may be of any desired or appropriate dimensions, having open sides *B B* and closed top and bottom.

C C is the tube for containing the leveling-liquid, which tube may be entirely of glass, or the ends *D D* of glass and the long body portion of metal or other suitable material, connected by hollow joints at angles and other places shown in the drawings. As shown, this tube forms a rectangular figure having two long sides, *C C*, and right-angled ends *D D*, upon the face of which end portions is marked the level-line *E E*, with graduated scale above and below it, as at *D d*.

When desired to combine a plumb with the level, a portion of the top tube, as at *F*, is made of glass and graduated, as at *F'*, whereby, upon standing the instrument up on end, the perpendicular is indicated by the colored liquid in said tube upon the scale *ff*. By resting it upon its bottom, as in Fig. 1, the level is indicated at *E E*.

At each end of the case *A A* are mounted sights *G G*, graduated the entire length into inches and fractions thereof, as at *G G* in Fig. 4, and these sights are made capable of vertical adjustment in the frame, and when so adjusted are held at any desired elevation by thumb-screws *h h*, which pass through the end of the case and impinge against the slide, whereby the instrument is adapted for use in grading or taking elevations and other similar uses in connection with the level.

Referring again to the tube, it will be observed that a continuous free passage through the same is permitted for the liquid, and at its top portion a three-way cock or valve, *I*, is provided, whereby to admit air to the tube when in use for filling the same. When one of the openings is in a vertical position in the direction of the top plate, *A*, it will admit air into the tube, so as to prevent a vacuum, and thus produce a free flow of the liquid. When closed it prevents the escape of the liquid when the instrument is not in use.

The use of this instrument is the same as ordinary spirit-levels, except that the level-line is indicated at the sides and ends instead of top and center, as in ordinary levels, so that extreme accuracy is assured. I use colored liquid, as it will show plainer on the clear

glass and in shaded or darkened places. I fill tube *j* and about one-half of graduated glass tubes *D* with the colored liquid, as shown at horizontal dotted lines marked *E E*. When in proper horizontal position, the fluid or liquid touching the dotted lines *E E* will indicate a perfect level.

When grading or taking elevations, the instrument is first placed level and the end sights adjusted, which will indicate by the scale at its edge the exact elevation. In addition to this, the graduated scales and glass tubes are intended to aid, if required, in forming sharper angles or grades in connection with movable sights than movable sights are capable of doing themselves. This is indicated by the fractional marks above and below the level-lines at the extreme ends.

To use the device as a plumb, it may either be rested upon its end or with its bottom resting against the object.

The purposes of the three-way cock are to permit the tubes to be filled, and also to allow the free passage of air and liquid through it.

Having thus fully described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States, is as follows, viz:

1. In a level, the combination, with the frame or case having open sides, of the con-

tinuous open tube containing the leveling-liquid secured in said frame and forming a rectangle, the vertical short portions or ends of which are transparent and provided with a graduated scale thereon, and the top pipe with a valve or three-way cock, substantially as shown and described, for the purpose specified.

2. In a level, the combination, with the frame having open sides, of the continuous open tube for containing the liquid, having a valve at its top and vertical transparent ends with graduated scale thereon, and a top central transparent portion, also bearing a graduated scale, whereby the instrument may be used as a combined plumb and level.

3. In a level, the combination, with the frame having open sides and continuous tube having vertical transparent ends and valve in its top, and with or without the central transparent portion, of the sliding sights at each end of the frame bearing a scale the entire length of sights and secured by a pinch-screw, as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS JEFFERSON MEGOWN.

Witnesses:

JAMES ALTSMAN,

DAVID MCCLURG.