

(No Model.)

C. M. BARTLETT.
LEVEL.

No. 501,641.

Patented July 18, 1893.

Fig. 1.

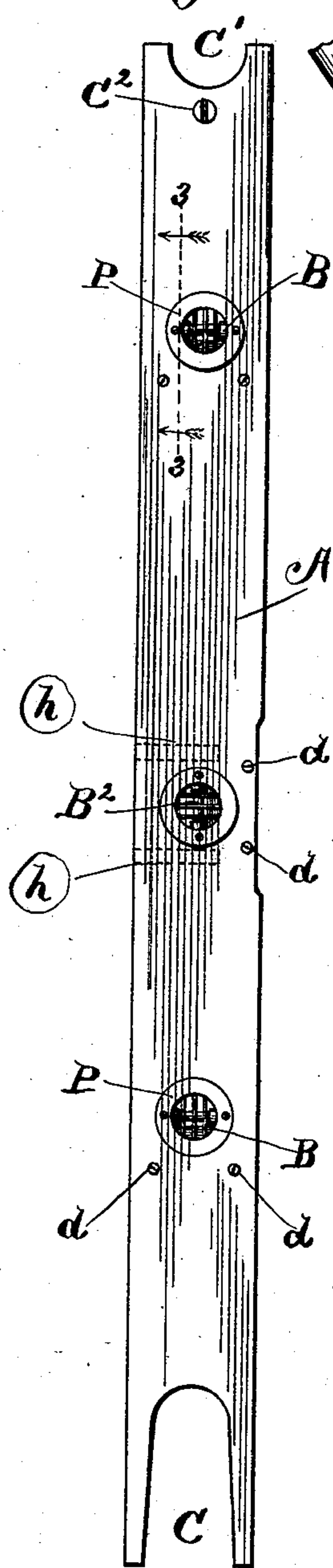


Fig. 2.

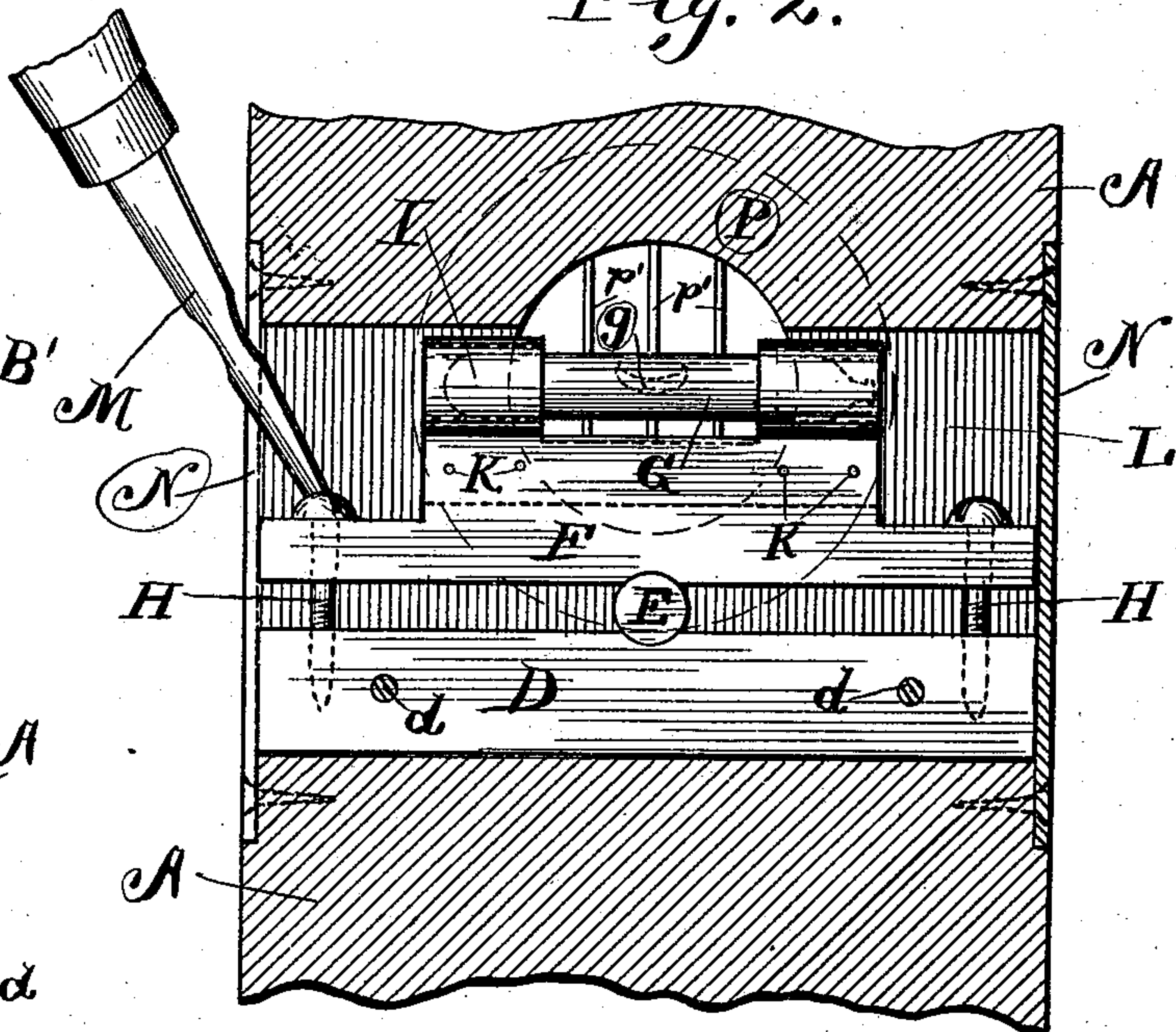


Fig. 3.

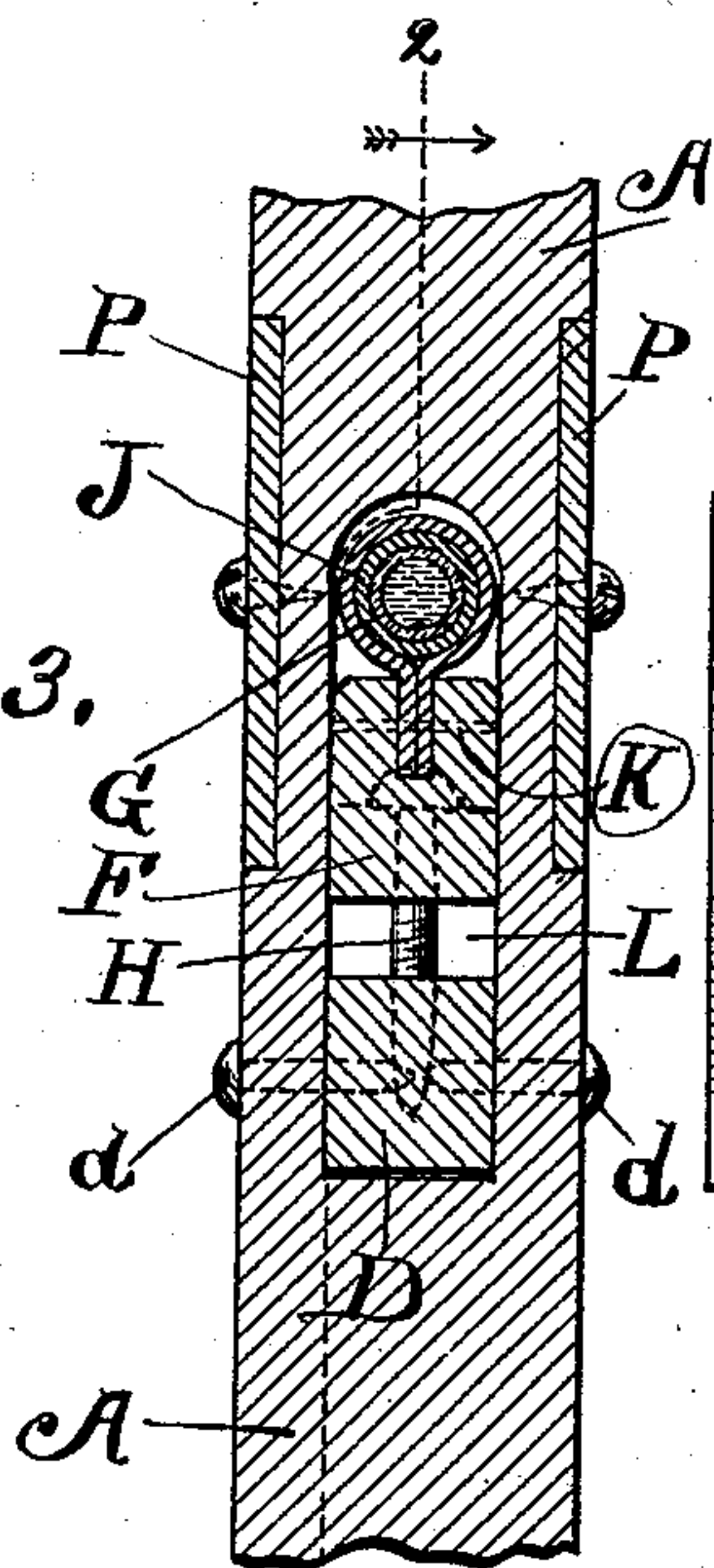
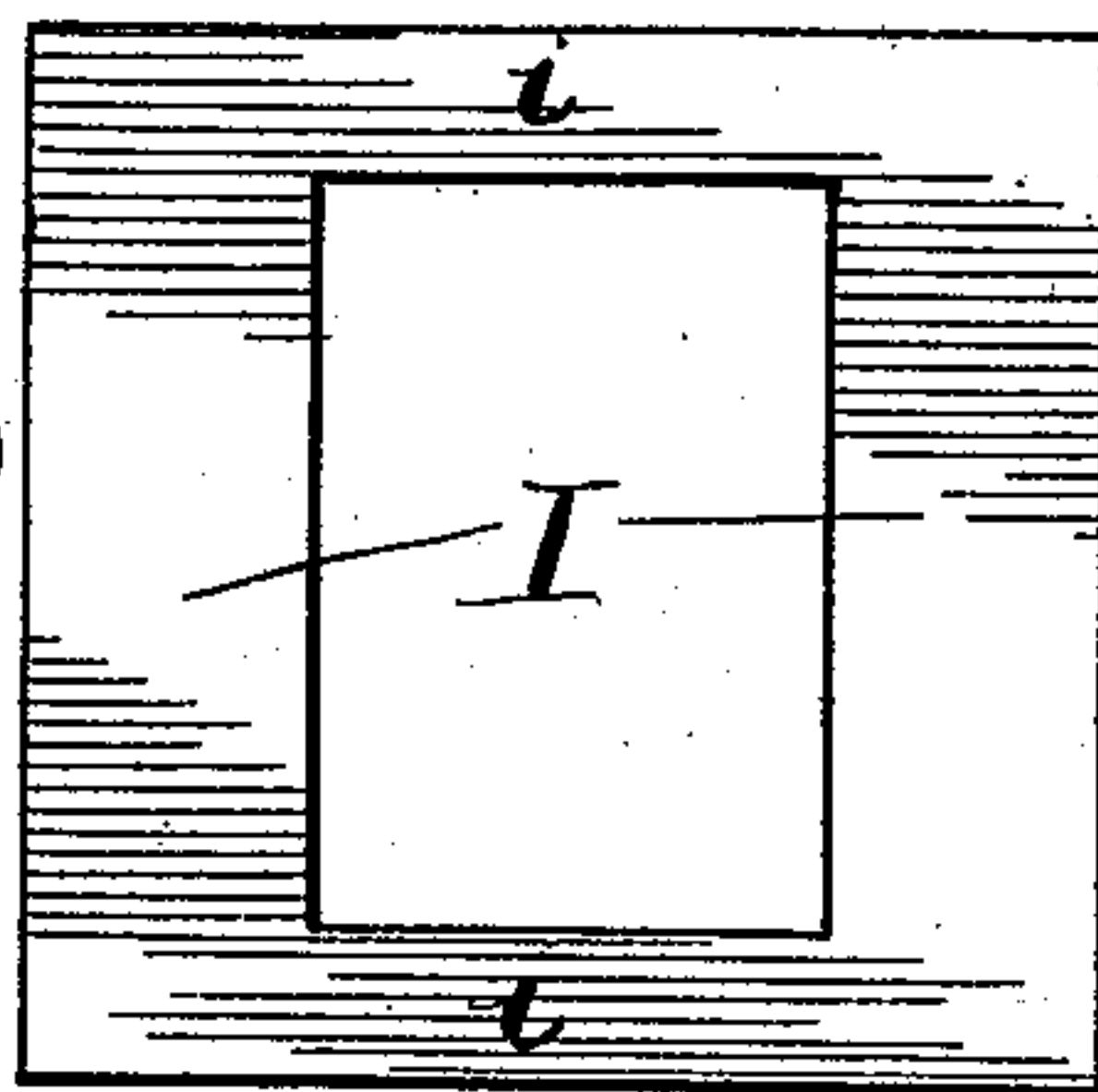


Fig. 5.



Fig. 4.



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LEVEL.

SPECIFICATION forming part of Letters Patent No. 501,641, dated July 18, 1893.

Application filed October 31, 1892. Serial No. 450,420. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. BARTLETT, a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Levels, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete description sufficient to enable those skilled in the art to understand, make, and use the same.

The object of my invention is to obtain what is ordinarily known as a mason's or a carpenter's level, that can be constructed cheaply, adjusted accurately, and used for a considerable time without breakage or loss of adjustment.

In the drawings referred to:—Figure 1, is a level specially adapted for bricklayers and masons, embodying my invention; Fig. 2, a cross-section thereof, on line 2—2 of Fig. 3, viewed in the direction indicated by the arrows; Fig. 3, a sectional view on line 3—3 of Fig. 1, viewed in the direction indicated by the arrows; Fig. 4, a plan view of an element forming part of the device, such element consisting of a blank of ductile sheet metal designed to be bent up to form a holder for the vial forming part of the level; and Fig. 5, an end elevation of the blank illustrated in Fig. 4, and bent up in position to receive such vial.

The same letter of reference is used to indicate a given part where more than one view thereof is shown in the several figures of the drawings.

A, is the casing of a level, specially adapted for bricklayers, such adaptation consisting of the two bubbles, as I term them, B, B', for plumbing masonry, and bubble B², for leveling. The ends C, C', of casing A, with screw C² designed for the placing of a plumb-bob and line on the level, in case of emergency, is also used solely for bricklayers' or masons' levels. It is to be understood, however, that such ends C, C', respectively, and the screw C², form no part of my invention, as such a construction, or the equivalent thereof, is now and has heretofore been used in the construction of masons' and bricklayers' levels.

The respective bubbles B, B', and B², are duplicates each of the other, and are secured

in the casing A in the same manner, the lettering B, B', and B² being given thereto, respectively, for convenience of reference. The construction of these bubbles is illustrated in Figs. 2 to 5, inclusive, and consists of the bar D, fulcrum E, said fulcrum being a short length of rod or shaft, bar F, holding the vial G, by means hereinafter described, and screws H, H', connecting the bars D and F together, and holding them firmly in proper adjusted position. The vial G is secured in the bar F by means of the blank form I illustrated in Fig. 4, being bent up into the form illustrated in Figs. 2, 3 and 5, with the ends of the vial G inserted in the circular part thereof, there being interposed between the ends of the vial and the circular part of the sheet metal holder formed by the blank I, the flexible backing J, preferably composed of india rubber or felt. The blank I is formed of ductile sheet metal, preferably lead or tinned copper, and after such blank is bent up, as described, and had inserted therein, as set out, the backing J, the parts *i, i*, of such sheet metal blank are inserted in a groove in bar F, and held securely in place by pins K. I construct the blank I of ductile metal in order that the same may be pressed by the fingers closely to the flexible packing J interposed between it and the vial G, before the parts *i, i*, of the holder formed by the bending up of such blank is inserted in the groove in bar G, and secured therein. In order to adjust the vial G, contained in the bubbles B, B', respectively, so that the bubble *g* contained therein shall be "true," as it is termed, with the casing A, screws H, H', respectively, are turned so that bar F shall rock on fulcrum E inserted between the bars D and F until the adjustment desired is obtained. And in order to adjust the bubble B², I provide the holes *h, h*, (indicated by dotted lines in Fig. 1,) into which holes the blade of a screw-driver can be inserted to reach the head of the screws H, H', respectively. The screws H, H', are, of course, turned into the bar D so that the heads of such screws shall rest with sufficient firmness against bar F to prevent displacement in ordinary usage of the level.

L, is the slot cut in casing A, into which slot

is slid the bubbles B, B'. A like slot is cut in the casing for the insertion of bubble B².

In making the level herein described, each one of the constructions consisting of the bars, the fulcrum interposed between and the vial held thereby is slid into the groove therefor in the casing A of the level, and bar D of such construction is firmly secured in such casing by pins or screws *d, d*, so that the bottom of such bar D is not in contact with the casing A, that is to say, such construction is held in place by such pins or screws *d, d*. The level is then tested, and if out of adjustment, screws H, H', are, respectively, turned and the level thereby "trued," by the insertion of the screw-driver M, in substantially the manner illustrated in Fig. 2. When the level is properly adjusted caps N, N, (indicated by dotted lines in Fig. 2,) are, respectively, secured in place to protect the end of the several slots lettered L, L, respectively, from the entrance of dirt thereinto.

P, P, are guards placed over the hole in the casing A through which the respective bubbles B, B', B², are viewed, such guard consisting of the ring *p*, and wires *p', p'*, respectively.

By constructing the frame-work and vial constituting the respective bubbles B, B', B², in the manner illustrated, and inserting them in the casing A, and there securing them substantially as described, the swelling or shrinkage of such casing A, has but little, if any effect, upon the bars D and F respectively, or upon the ductile metal with the interposed flexible material, holding vial G in place in bar F.

Having thus described my invention, what

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

1. A spirit level consisting of a bar, a second bar placed above such bar, a fulcrum interposed between such bars, a screw on each side of the fulcrum holding the bars in place and against the fulcrum, a vial containing liquid having an air bubble therein, a sheet metal strap extending around the ends of the vial, a flexible lining interposed between the vial and the sheet metal strap, a groove in the top bar, with such sheet metal strap surrounding the vial extending into and secured in such groove, and a casing adapted to contain the same; substantially as described.

2. A spirit level consisting of a bar, a second bar placed above such bar, a fulcrum interposed between the bars, a screw on each side of the fulcrum, such screws holding the bars in place and against the fulcrum, a vial containing liquid with an air bubble therein, a sheet metal strap extending around the ends of the vial, a flexible lining interposed between the vial and the sheet metal strap, a groove in the top bar, with such metal strap surrounding the vial extending into and secured in such groove, a casing having a mortise therein into which the above described construction is inserted, and pins extending through the casing and into the bottom bar of such construction and holding it in place suspended thereon; substantially as described.

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