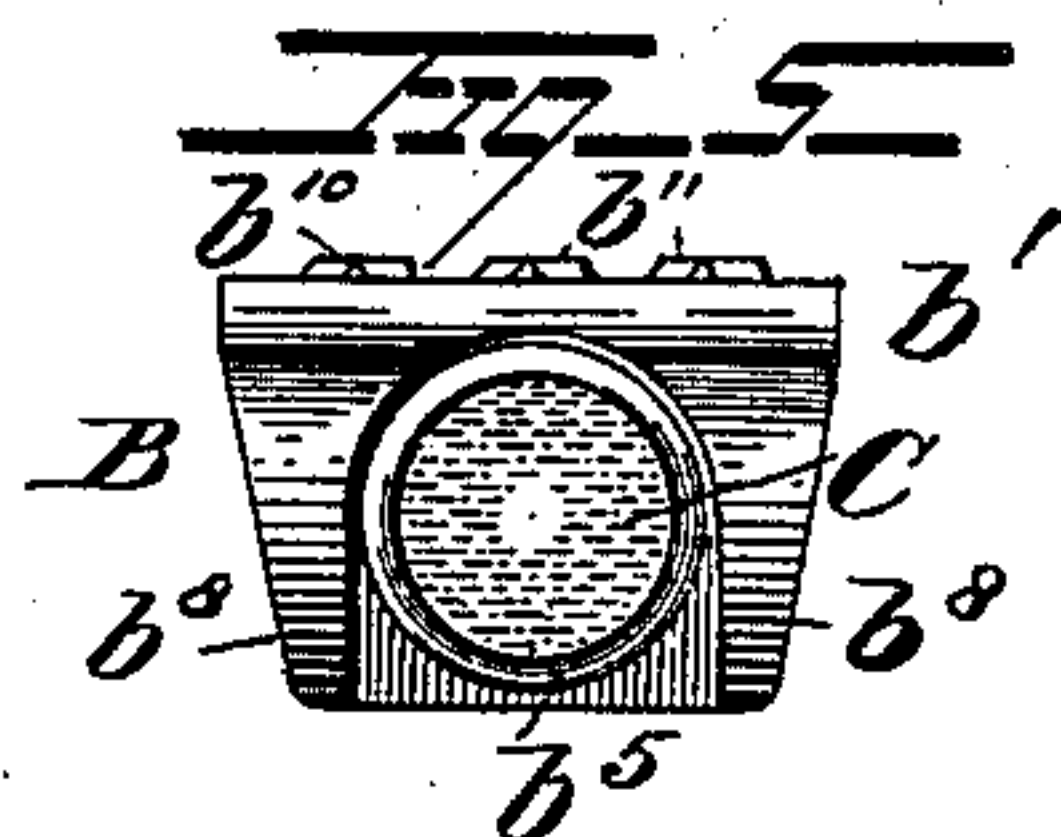
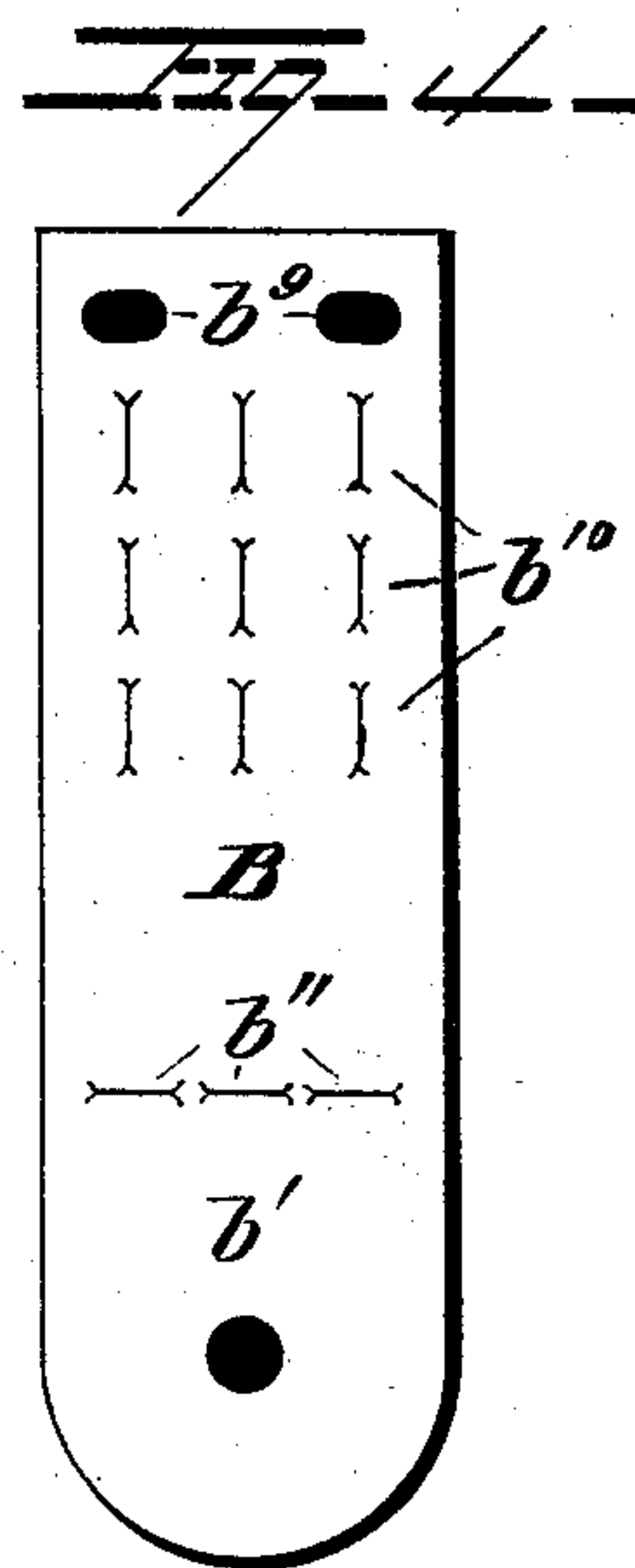
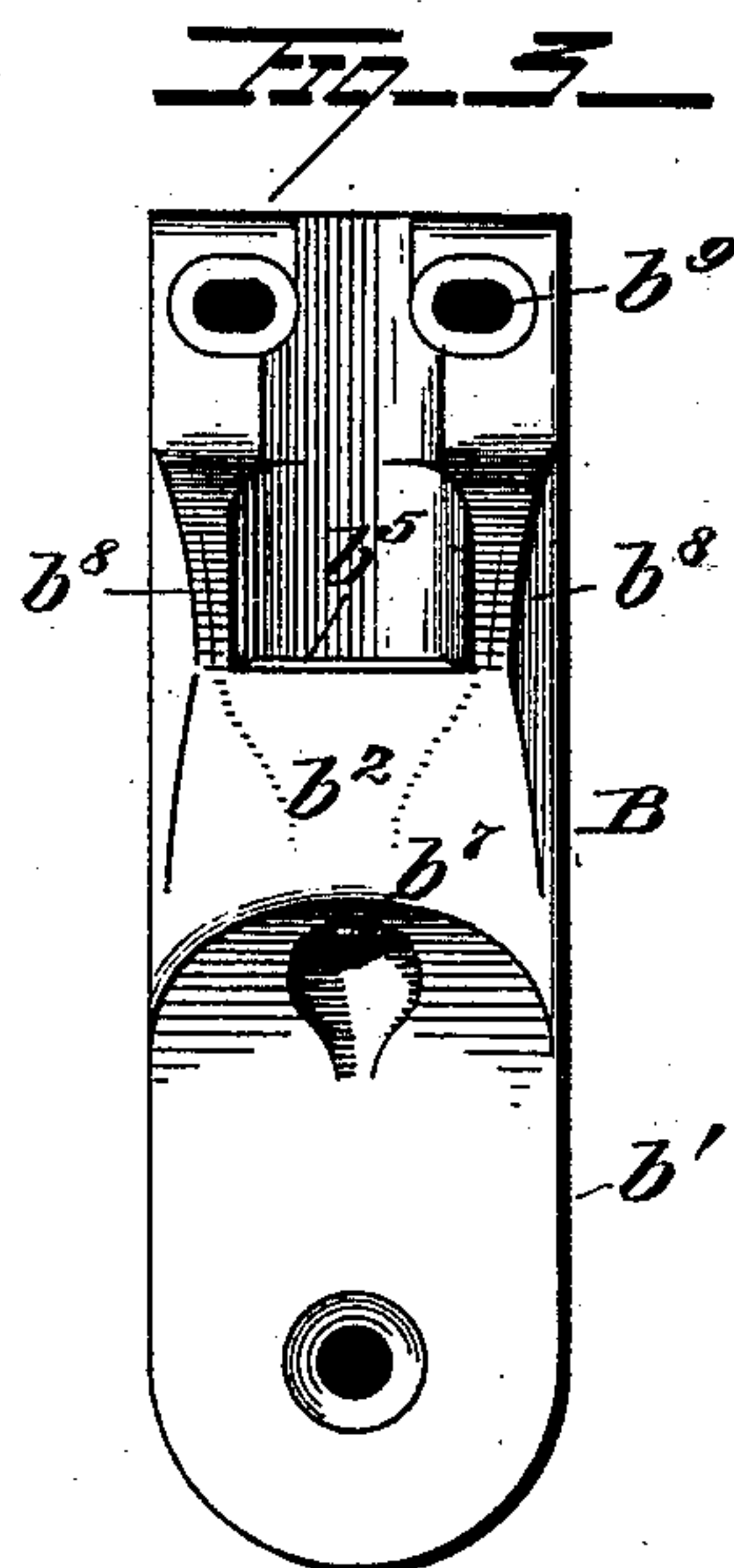
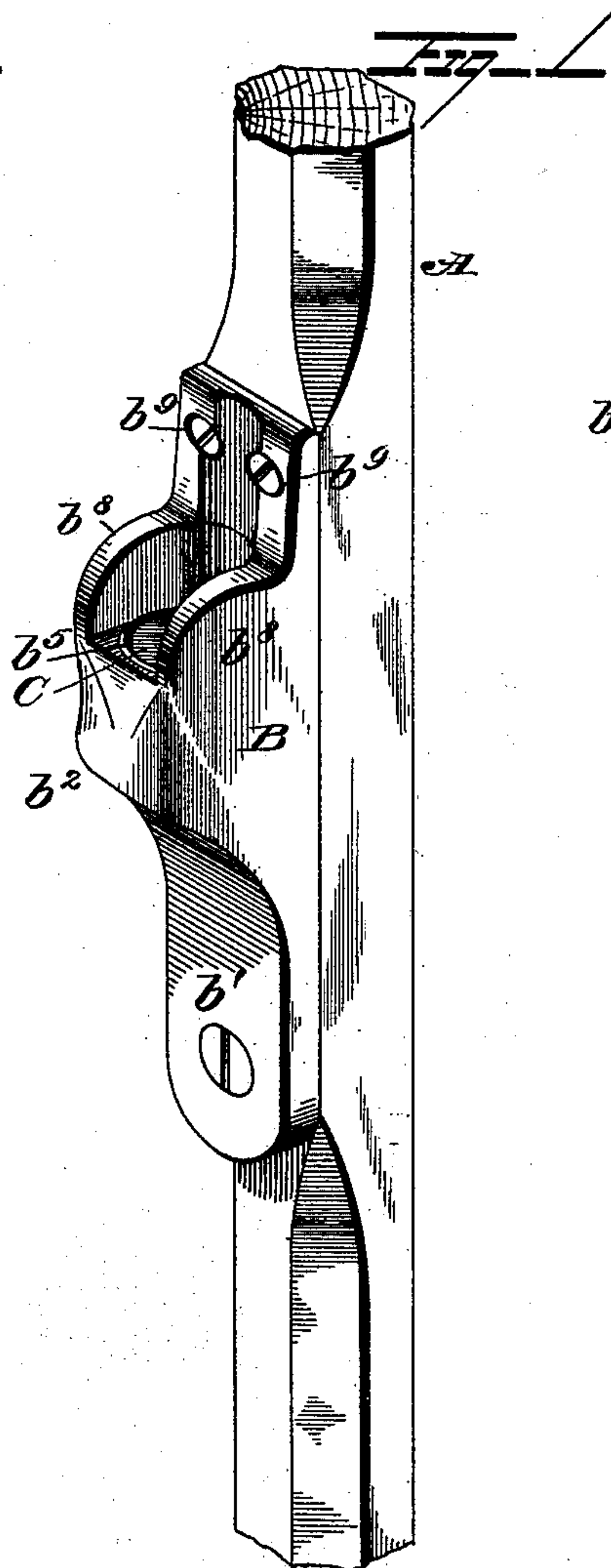
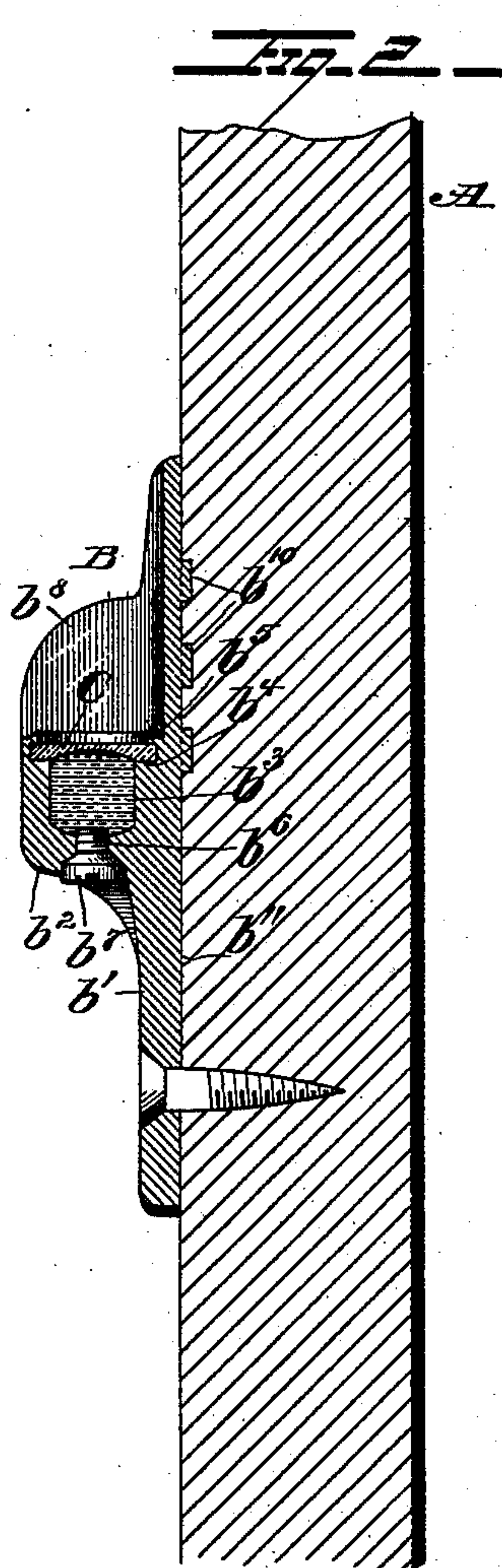


(No Model.)

J. G. JACKSON.
SPIRIT LEVEL.

No. 392,124.

Patented Oct. 30, 1888.



WITNESSES:

Wm. Nolan
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UNITED STATES PATENT OFFICE.

JOHN G. JACKSON, OF HOCKESSIN, DELAWARE.

SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 392,124, dated October 30, 1888.

Application filed June 5, 1888. Serial No. 276,095. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. JACKSON, a citizen of the United States, residing at Hockessin, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Spirit-Levels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

10 Figure 1 is a perspective view of the level as attached to a vertical rod. Fig. 2 is a central vertical section thereof. Fig. 3 is a front view of the level detached. Fig. 4 is a rear view of the same. Fig. 5 is a plan.

15 This invention relates to improvements in that class of spirit-levels which are used in connection with level or target rods, surveyors' and engineers' flag or sighting poles, &c., the object of the invention being to provide
20 a level which shall be simple and compact in its construction and capable of ready attachment and accurate adjustment to all kinds of vertical rods or plumb-rules.

The improvements consist, first, in having
25 the spirit-containing recess within an integral elongated base-piece adapted to be longitudinally attached to the vertical rod or pole, whereby the level, as a whole, is compact and may be readily and accurately applied to any
30 rod or plumb-rule; secondly, in securing the glass cover in the top of the spirit-containing recess by means of a rim or flange which is an integral part of the upper edge of the metal inclosing said recess, and which is turned over
35 tightly against the cover, whereby a tight joint is secured and the admission of air to the recess is prevented; thirdly, in providing the bottom of said recess with a screw-hole through which it (the recess) is charged with
40 spirit, in connection with a suitable screw which works in said hole and constitutes a means of closing the same and of adjusting the size of the air-bubble when the spirit partly evaporates; fourthly, in providing wings
45 or projections on each side of the face of the level, whereby the glass is protected from accidental breakage; fifthly, in providing the base-plate with transverse screw-slots at the top, whereby minute vertical adjustment of the level
50 to the rod may be secured; and, sixthly, in

providing the back of said base-plate with longitudinal and transverse projections adapted to be forced into the wooden rod when the proper adjustment of the level is determined, whereby the accidental displacement of the
55 device is prevented.

Referring to the annexed drawings, A denotes the vertical leveling rod or pole, and B the level secured thereto. The body or frame of this level consists of a casting provided
60 with a vertical elongated base, b^1 , and a forward projection, b^2 . In the latter is formed a recess or cell, b^3 , wherein the spirit, preferably alcohol, is contained. Near the upper edge of this recess is an annular offset or seat, b^4 ,
65 for the covering-glass C, which is preferably plano-concave, and at the edge of said recess is a vertical flange or rim, b^5 , which projects somewhat above the glass.

In order to hermetically seal the cell b^3 , I
70 first secure the glass to its seat b^4 (which is slightly below the top of the recess) by some suitable cement which is insoluble in alcohol, and then, after the cement becomes partially
75 hardened, I bend over or "clinch" the rim tightly against the glass by any well-known means, thereby effectually securing the glass in place. The recess is charged with the spirit through a countersunk screw-hole, b^6 , formed
80 in the bottom thereof, which hole is subsequently sealed by means of a corresponding screw, b^7 . This screw provides a ready means by which to adjust the size of the air-bubble in the recess. When it becomes necessary to re-
85 charge the recess, it is merely required to remove the screw. If found needful for greater tightness or security, this screw may be cemented after adjustment by means of a suitable cement.

To aid in protecting the glass cover from ac-
90 cidental breakage, I provide the casting on each side of said cover with upwardly-projecting lateral wings or projections b^8 , as shown, and as a ready means to permit the minute adjustment of the level to the rod I
95 form horizontally-elongated screw-holes b^9 in the base-piece b^1 . In order to guard against accidental misplacement, both vertical and lateral, of the level, I provide the back of
100 said base-piece with vertical projections b^{10}

and horizontal projections b^1 , adapted to be sunk by the pressure of a vise or other means into the wooden rod when the level is properly adjusted thereon.

5 It will be seen that a level constructed as above described is compact, simple in construction, not liable to get out of order, and can be readily and accurately applied to all kinds of vertical rods or plumb-rules.

10 Having thus described my invention, I claim as new and wish to secure by Letters Patent—

1. In a spirit-level of the class recited, the combination of the vertical base-plate, the forward projection integral therewith, the
15 vertical spirit-containing recess formed directly in said projection, and the transparent cover secured over said recess, substantially as described.

2. In a spirit-level of the class recited, the
20 combination of the base-plate, the liquid-containing recess, and its transparent cover set into the top of said recess and secured in place by the turned-over flange b^2 , substantially as and for the purpose specified.

25 3. In a spirit-level of the class recited, the combination of the base-plate, the liquid-con-

taining recess, its transparent cover, and the screw-hole and adjusting-screw, substantially as and for the purpose set forth.

4. In a spirit-level of the class recited, the
30 combination of the vertical base-plate, the forward projection, the vertical spirit-containing recess formed directly in said projection, the plano-concave transparent cover secured over said recess, and the vertical protective
35 flanges formed on the sides of said projection and base-plate, substantially as described.

5. The combination, with the vertical leveling-rod, of the spirit-level attached thereto, said level comprising a vertical base-plate
40 provided with screw-slots, a series of rear studs or projections, b^{10} b^{11} , a forward projection, B, a spirit-containing recess in said latter projection, and a transparent cover secured
45 over said recess, substantially as described.

In testimony whereof I have hereunto affixed my signature this 30th day of May, A. D. 1888.

JOHN G. JACKSON.

Witnesses:

WM. B. JACKSON,

A. B. GILLESPIE.