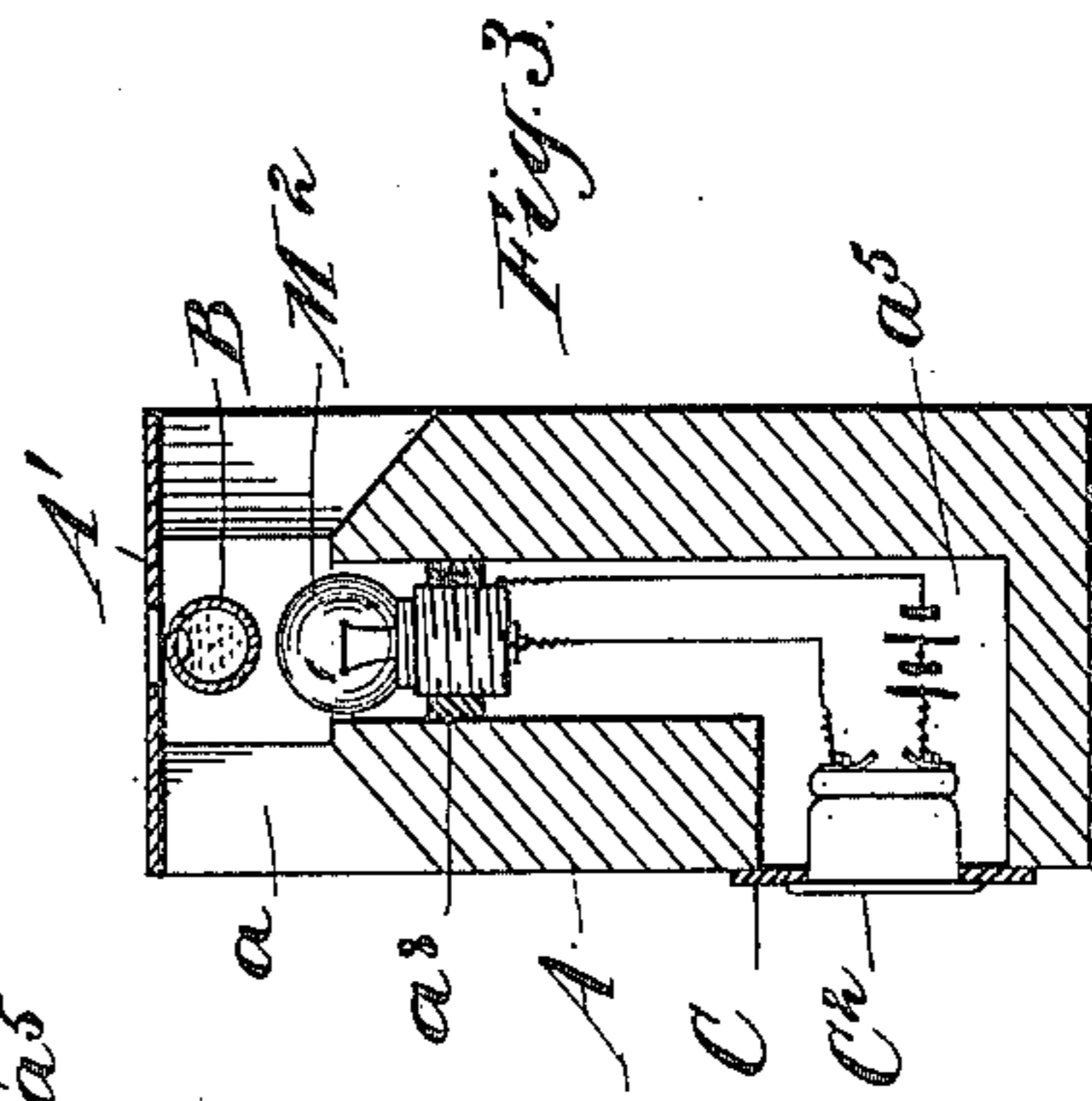
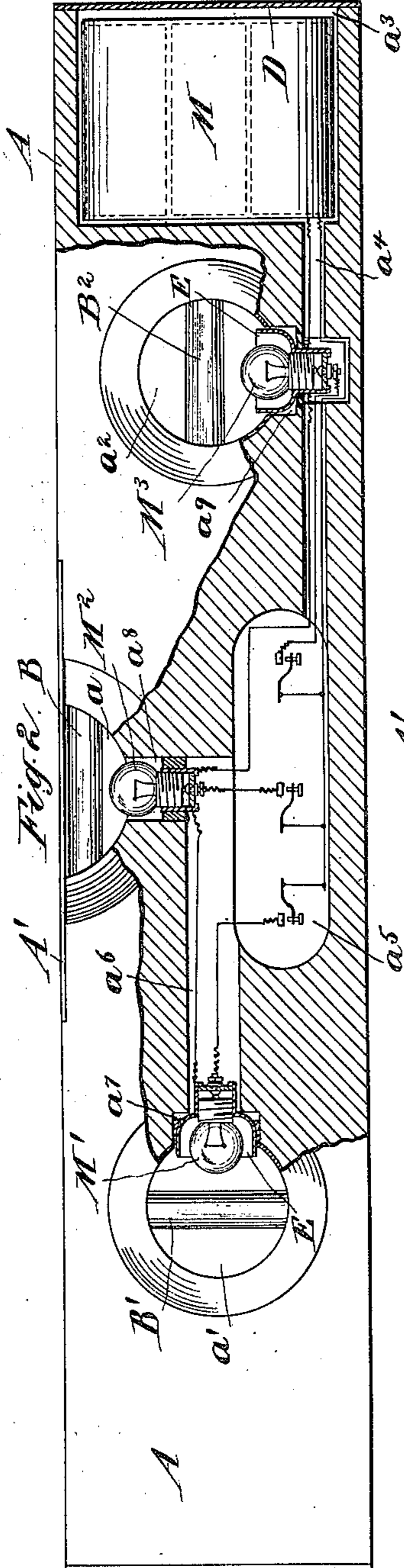
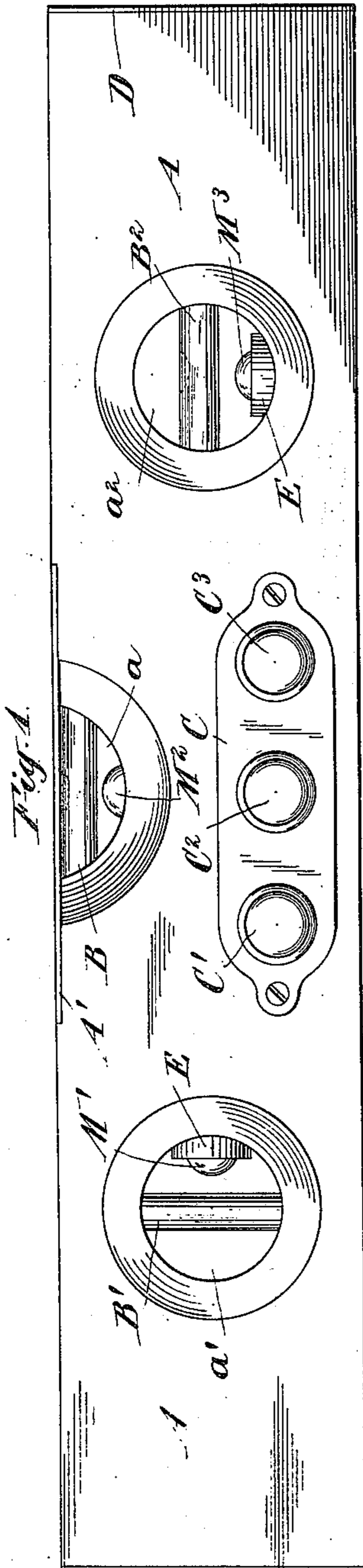


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SPIRIT LEVEL.  
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948,570.

Patented Feb. 8, 1910.



Witnesses:  
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Eldor Andersen,  
by his attorney,  
Charles R. Searle.

# UNITED STATES PATENT OFFICE.

ELDOR ANDERSEN, OF NEW YORK, N. Y.

SPIRIT-LEVEL.

948,570.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed January 7, 1909. Serial No. 471,038.

*To all whom it may concern:*

Be it known that I, ELDOR ANDERSEN, a subject of the King of Norway, residing in the city of New York, borough of Manhattan, in the county and State of New York, have invented a certain new and useful Improvement in Spirit-Levels, of which the following is a specification.

The invention relates to levels of that class in which a bubble-containing tube is mounted in a stock, and the object of the invention is to provide means for illuminating the tube to permit the position of the bubble to be observed when the level is used in poorly lighted situations.

The invention consists in certain novel features and details of construction and arrangement by which the above object is attained, to be hereinafter described.

The accompanying drawings form a part of this specification and show an approved form of the invention.

Figure 1 is a side view of the improved level. Fig. 2 is a similar view, broken away to show the arrangement of the lighting means. Fig. 3 is a corresponding transverse section, partly in elevation.

Similar letters of reference indicate the same parts in all the figures.

A is the stock, of cherry, mahogany or other suitable wood, having a central semi-circular notch or sight-opening  $a$  in the upper edge, containing the sight-tube B of glass protected by the slotted metal plate  $A^1$ , and circular sight-openings  $a^1$   $a^2$  extending from one face of the stock to the other and containing sight-tubes  $B^1$   $B^2$ , one of which is shown at a right angle to the long parallel edges of the stock. The arrangement and functions of these parts may be understood to be in all respects as usual and equipped with the usual adjusting means for the tubes.

At one end the stock is hollowed to form a pocket  $a^3$  adapted to contain a dry battery M of one or more cells, and  $a^4$  is a channel leading to a chamber  $a^5$  in the mid-length of the stock, open on one face of the latter and covered by a removable plate C in which is mounted a series of electric switches or push-buttons  $C^1$   $C^2$   $C^3$ . From the chamber  $a^5$  a channel  $a^6$  leads to a recess  $a^7$  in the sight-opening  $a^1$ , and  $a^8$  is a recess beneath the sight-tube B. A recess  $a^9$  in the other sight-opening  $a^2$  communicates with the channel  $a^4$ .

In each recess is mounted a small incandescent lamp  $M^1$   $M^2$  and  $M^3$  each connected by suitably arranged conducting wires with the push-buttons  $C^1$   $C^2$  and  $C^3$  and with the battery M. By pressing the button  $C^2$  connection is made from the poles of the battery through the lamp  $M^2$  beneath the tube B and excites the lamp which continues to glow as long as connection is maintained by depressing the button, emitting sufficient light to illuminate the tube and enable the user to see the position of the bubble therein. The buttons  $C^1$  and  $C^3$  perform a like service for the lamps  $M^1$   $M^3$  adjacent to the tubes in the side-sights  $a^1$   $a^2$ .

As a protection to the lamps  $M^1$   $M^3$  the socket for each is provided with a skirt or flange E which partially incloses the bulb, and also serves as a reflector directing the rays to the tube.

D is a metal plate protecting the end of the stock, also serves as a removable cover for the battery pocket and permitting the removal of an exhausted battery and the substitution of a new one as required.

The lamp  $M^2$  is introduced to its socket in the recess  $a^7$  through the switch-chamber  $a^5$ ; the others  $M^1$   $M^3$  are placed in position through their respective side-sight openings  $a^2$   $a^3$ .

By locating the lamps immediately beneath the tubes, as they are positioned for observation, the light is projected through and upon the tubes and the location of the bubble rendered clearly visible.

Although the invention is shown and described as applied to a level of the usual type having a wooden stock, it will be understood that it may be applied to other forms and to stocks of metal.

The level shown is provided with three tubes and lamps but levels having a greater or less number of tubes may be thus equipped, or one or two tubes may be provided with lamps, the other or others being unprovided.

The switches or push-buttons are shown arranged side by side in the midlength of one face of the stock and it is believed this disposition is the most convenient, but the buttons may be otherwise located if preferred.

I claim:—

The improved spirit level herein described, consisting of a stock having a sight opening in one edge and sight openings in

one face near opposite ends, a sight tube in the first-named opening, sight tubes in the other openings disposed at right angles to each other, said stock being formed at one  
5 end with a pocket, and with a chamber near its middle with a channel extending from said chamber substantially centrally of the stock to one of the sight openings, a recess leading from said chamber to the first-named  
10 sight opening, a channel leading from said chamber to the said pocket and having a recess at an angle thereto communicating with the other sight opening, lamp sockets

in said recesses, lamps supported in said sockets, a battery in said pocket, electrical 15 connections between said battery and lamps, push buttons in the side of the stock, and switches in said chamber connected with the battery and with the lamp sockets.

In testimony that I claim the invention 20 above set forth I affix my signature, in presence of two witnesses.

ELDOR ANDERSEN.

Witnesses:

CHARLES R. SEARLE,  
H. J. PETERSEN.