



# UNITED STATES PATENT OFFICE.

HARRY HUGHES, OF ALLIANCE, NEBRASKA.

## LEVEL.

SPECIFICATION forming part of Letters Patent No. 523,894, dated July 31, 1894.

Application filed August 22, 1893. Serial No. 483,725. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY HUGHES, of Alliance, in the county of Boxbutte and State of Nebraska, have invented a new and improved Level, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved level, which is simple and durable in construction, very effective in operation, and arranged to quickly indicate an angle if placed in an inclined position.

The invention consists principally of a balance lever, fulcrumed at its middle in the stock and provided at its ends with adjustable weights, the fulcrum pin of the lever being provided with pointers indicating on dials fixed on the stock.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement. Fig. 2 is a side elevation of the same with the stock cover removed. Fig. 3 is an enlarged transverse section of the same on the line 3-3 of Fig. 2. Fig. 4 is a sectional side elevation of part of the improvement, on the line 4-4 of Fig. 3; and Fig. 5 is an enlarged transverse section of the improvement on the line 5-5 of Fig. 2.

The improved level is provided with a stock A, of suitable dimensions, and formed with a recess A' extending longitudinally and normally closed by a cover plate A<sup>2</sup>, fastened by screws B, or other means, to the stock, as plainly shown in Fig. 1. In the recess A' is arranged a balance lever C provided at its middle with a transversely extending pivot or fulcrum pin D, journaled at one end in the side of the stock A and at its other end in the plate A<sup>2</sup>.

The balance lever C is formed on opposite sides of its fulcrum with rods C' and C<sup>2</sup>, in alignment with each other and adapted to indicate, at their ends, on graduations A<sup>3</sup> and A<sup>4</sup> respectively, formed on the stock A at the peripheral walls of transverse openings A<sup>5</sup> and A<sup>6</sup> respectively, arranged in the stock

near the ends thereof. On the rods C' and C<sup>2</sup> are adjustably held the weights E and E', for properly balancing the lever C so that when the stock A is placed in a horizontal position, the lever C will be in a like position, and the ends of the rods indicate on the zero points of the graduations A<sup>3</sup> and A<sup>4</sup>, see Fig. 2. The weights E and E' are preferably formed as nuts adapted to screw on the rods C' and C<sup>2</sup> respectively, but any other suitable means may be employed for adjusting the said weights. From the middle of the lever C extends upward a pointer C<sup>3</sup>, passing through a slot A<sup>7</sup> arranged in the top of the stock A, and indicating on a graduation F attached to the top of the stock, as plainly shown in Fig. 1.

On the outer ends of the pivot pin D are secured the pointers G, arranged within circular recesses A<sup>8</sup> formed in the faces of the stock A and its plate A<sup>2</sup>. The pointers G indicate on graduations H arranged on the faces of the stock and plate to indicate the angle of deviation whenever the stock is placed in an inclined position. In order to lock the balance lever C in position when it is desired to prevent the said lever from moving in relation to the stock, and in order that the friction between the lever and the stock may be regulated to take up wear, I provide the opposite faces of the said lever, at its middle, with hubs C<sup>4</sup>, C<sup>5</sup> mounted to turn in bearings I arranged in the stock and cover plate, each bearing being provided with a movable half I', see Fig. 4, held on screws I<sup>2</sup> and adapted to act as a brake on the hubs.

It will be seen that when the lever C is properly balanced by adjusting the weights E and E', then the said lever will stand with the ends of its rods C', C<sup>2</sup> in a zero position on the graduations A<sup>3</sup>, A<sup>4</sup>, as well as with the pointer C<sup>3</sup> and the pointers G likewise in zero positions. Now, whenever the stock A is inclined, then the counterbalanced lever C will indicate the angle of deviation by the several pointers indicating correspondingly on their graduations. It is also understood that the device can be readily used for plumbing purposes, by so adjusting the weights E and E' respectively that one side of the balance lever C will be heavier than the other, the pointers C<sup>3</sup> then indicating the vertical position or the deviation on the graduations A<sup>3</sup>, A<sup>4</sup>.

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

1. A level, comprising a stock, a balance lever fulcrumed at its middle in the stock, adjustable weights each held near one end of the said lever, and pointers attached to the pivot pin of the said lever and indicating on graduations arranged in the faces of the stock, substantially as shown and described.

2. A level, comprising a stock formed with transverse openings near its ends, graduations on the peripheral walls of the said openings, and a balance lever fulcrumed at its middle within the said stock and provided at its ends with rods indicating on the said graduations, substantially as shown and described.

3. A level, comprising a stock formed with transverse openings near its ends, graduations on the peripheral walls of the said openings, a balance lever fulcrumed within the said stock and provided with rods indicating

on the said graduations, and weights adjustably held on the said rods, substantially as shown and described.

4. A level comprising a stock, a balance lever pivotally connected therewith, and having arms extending in opposite directions from its pivot, adjustable weights held on each of the said arms, and indicating devices connected with the lever, substantially as described.

5. A level comprising a stock, a balance lever pivotally connected therewith and provided with hubs at its fulcrum, and sectional bearings for the hubs of the said balance lever one half of the said bearings being rigidly connected to the stock, and the other halves being adjustable in relation thereto, as and for the purpose set forth.

HARRY HUGHES.

Witnesses:

H. C. SMITH,  
J. E. LUCAS.