No. 662,991. Patented Dec. 4, 1900.

J. H. VAN LUVAN.

SPIRIT LEVEL.

(Application filed Feb. 4, 1898.)

(No Model.)

Fig. 1.

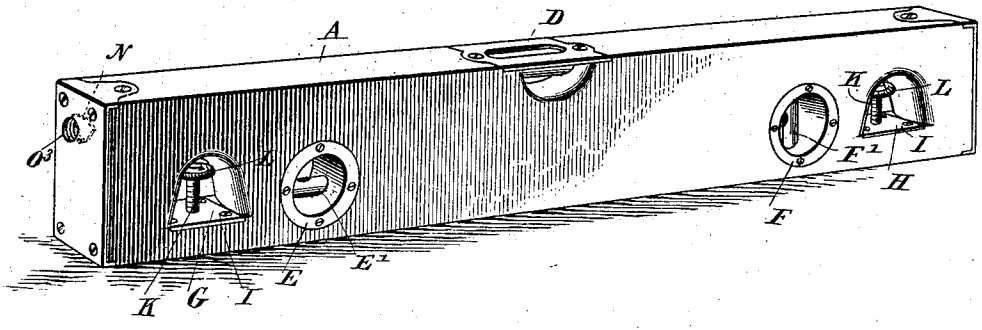


Fig. 2.

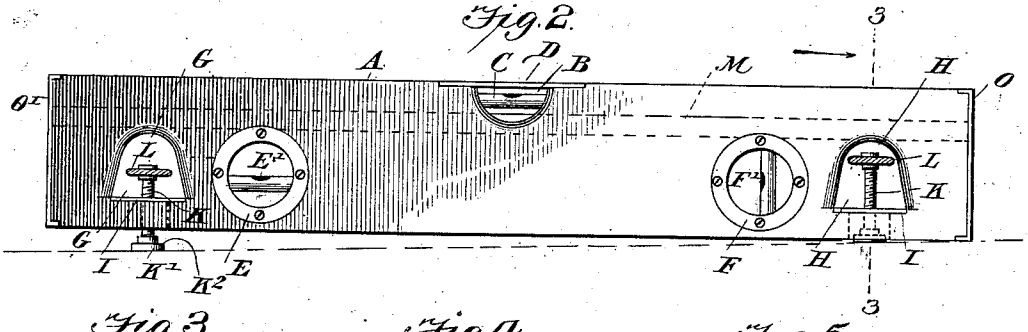


Fig. 3.

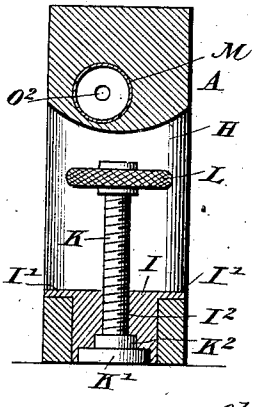


Fig. 4.

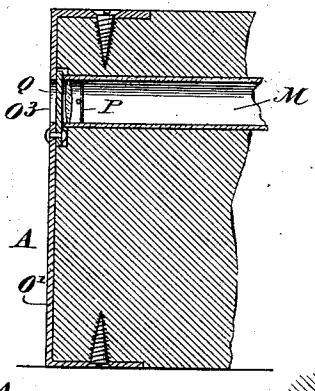


Fig. 5.

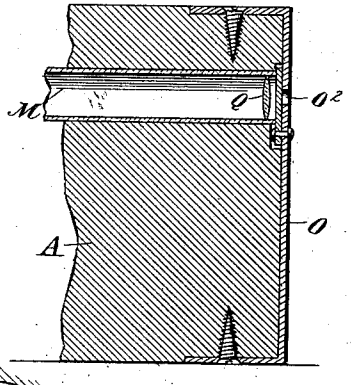


Fig. 6.

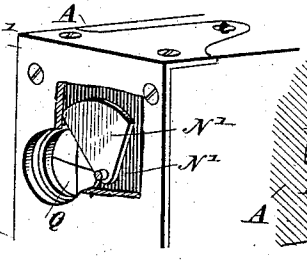
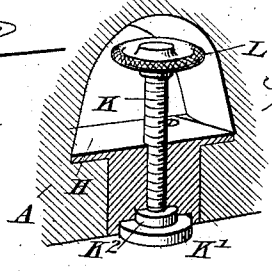


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOSIAH H. VAN LUVAN, OF WEST PITTSTON, PENNSYLVANIA.

SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 662,991, dated December 4, 1900.

Application filed February 4, 1898. Serial No. 669,167. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH H. VAN LUVAN, a citizen of the United States, residing at West Pittston, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Improvement in Spirit-Levels, of which the following is a specification.

My invention relates to certain improvements in spirit-levels, and has for one object to provide a device of this character which shall be thoroughly practicable and convenient and adapted to use in all kinds of construction-work where such instruments are required.

Another object of my invention is to provide means for readily and easily adjusting the said level to determine whether objects are plumb or level and also to determine the degree of inclination of objects.

A still further object of my invention is to provide improved sighting means in connection with the level, which, together with the minute adjusting means, produces an instrument which can be used in such mechanical work as requires the indication of levels, grades, or angles.

With these objects in view my invention consists in the novel arangement and combination of parts, such as will be hereinafter more fully described, and particularly pointed out in the appended claim.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a spirit-level embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 2 looking in the direction of the arrow. Fig. 4 is a longitudinal section of one end of my device. Fig. 5 is a similar view of the opposite end of my device. Fig. 6 is a detail perspective of one end of my device, a portion of the end plate being broken away to more clearly illustrate the shutter for closing and protecting the ends of the sight-tube. Fig. 7 is a sectional perspective view of my improved adjusting mechanism.

In the drawings, A designates the stock or frame of my level, which may be constructed of wood or any other suitable material and is made substantially rectangular in shape. In the longitudinal center of the frame A is formed a semicylindrical recess B for the reception of a level-tube C, which is filled with the usual liquid used in ordinary spirit-levels. A slotted plate D is secured over the top of this opening by means of screws or otherwise, having a longitudinal slot provided therein, so that the level-tube will be easily displayed therethrough. In the sides of the stock A, at a point equidistant from the ends thereof, I provide the socket-pieces E and F, extending transversely through the said frame, the socket E carrrying a horizontal leveling-tube E′ and the socket F carrying a vertical leveling-tube F′, the former being used for leveling horizontal surfaces and the latter for vertical surfaces.

Intermediate the socket-pieces E and F and the respective ends of the stock I provide the transverse openings G H, in the bottom of which is carried my improved adjusting means, the construction of which is substantially the same in both ends of the said stock, and is shown more particularly in Figs. 3 and 7 of the drawings, and may be described as follows: A metallic head I, having flanges I′ on its upper end, is suitably secured in a mortise extending through the bottom portion of the recesses G H and held therein by means of screws. Through the center of this head I, I provide a screw-threaded opening I^2 for the reception of a screw K. This screw K is provided on its lower end with a stationary base K′, provided with the shoulders K^2, adapted to fit in correspondingly-shaped recesses provided in the bottom of the head I. On the upper end of the screw K, I provide a stationary thumb-nut L, by which the screw K may be revolved to adjust or vary the position of the stock A as may be desired. The thumb-nut is large enough to be grasped between the thumb and fingers through the recess H and rotated sufficiently to properly adjust the level. In this manner the entire adjusting mechanism is within the surface of the level, and the adjustment can be made without the use of a screw-driver or other implement, and there is no danger of any of the

parts being screwed out of the level and lost, as each end of the adjusting-screw is provided with a permanent head, which prevents its removal. In the upper part of the stock or frame A is located the sight-tube M, which may be constructed of either glass or metal, running longitudinally therethrough and positioned slightly to one side of the center of said frame, so as to leave room for the shutters N, which are provided at each end of the said tube. On the ends of the frame A, I provide the plates O O′, having top and bottom flanges embracing the top and bottom of the said frame and secured thereto by means of screws. Side openings O^2 and O^3 are provided in these end plates in line with the sight-tube M, and the shutters N are pivoted to the said end pieces and adapted to slide in recesses N′, provided in the frame in the rear of said end pieces, the purpose of which is to close the ends of the sight-tube when not in use, so as to protect them from dust and dirt.

The usual centering-wires P are provided in the one end of the sight-tube in the rear of its lenses Q.

From the above description it will be seen that I have provided a device to ascertain if objects are level, plumb, or inclined, also affording means to ascertain the grade of the ground or other surface by sighting at a fixed point which is a known distance from the surface of the ground and which may be used to advantage in almost any class of construction-work, such as building walls, timber-work or streetwork, and grading for groundwork of any kind.

While I have illustrated and described the best means now known to me for carrying out my invention, I do not wish to be understood as restricting myself to the exact details of construction shown and described, but hold that any slight changes or variations, such as might suggest themselves to the ordinary mechanic, would properly fall within the limit and scope of my invention.

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

In a level, the combination with a body having a sight-tube and leveling-tubes, the sight-tube being provided with a lens and centering-wires located near one side of the body, and the body being recessed at each end of the tube toward the opposite side, a plate on each end of the body, perforated to register with the sight-tube, a shutter pivotally secured to said plate in position to fit in said recess and be moved over the end of the sight-tube, and means for supporting the level in a horizontal position on an inclined surface.

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Witnesses:
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