No. 857,991. PATENTED JUNE 25, 1907.

W. A. GIBSON.

COMBINED LEVEL AND PLUMB.

APPLICATION FILED AUG. 6, 1906.

Fig. 1.

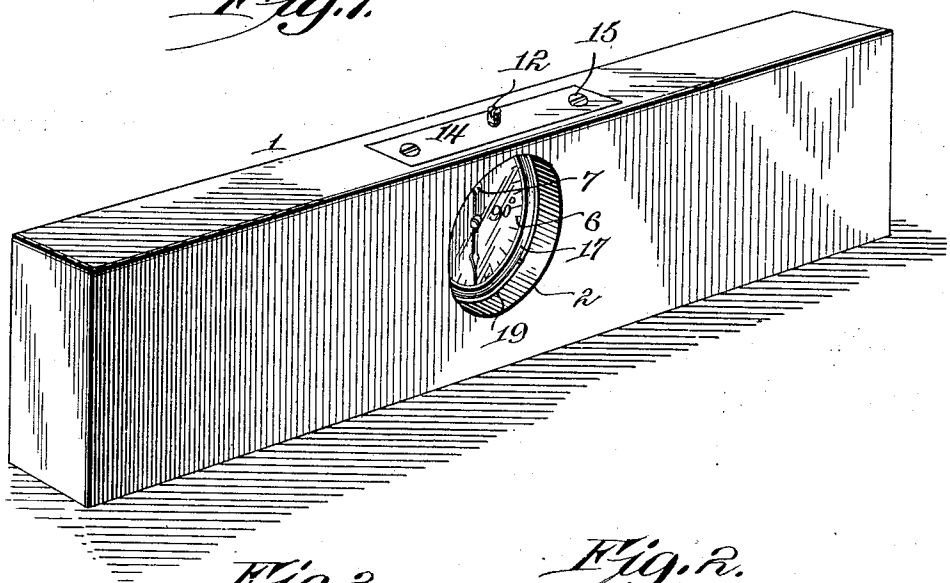


Fig. 3.

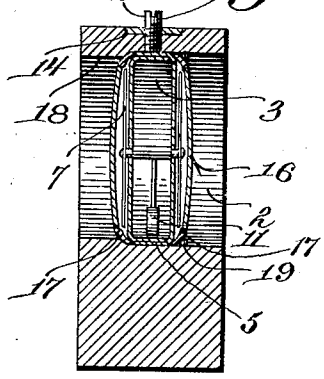


Fig. 2.

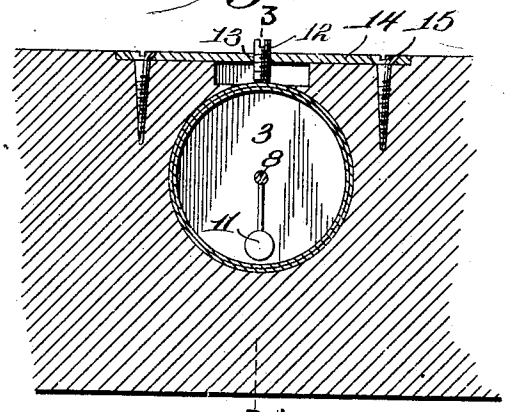


Fig. 6.

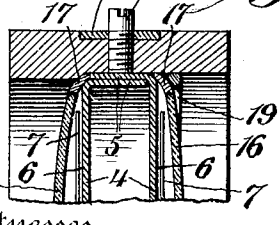


Fig. 4.

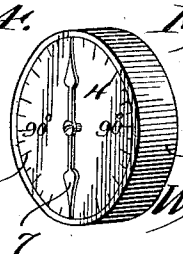
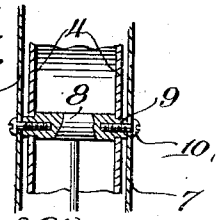


Fig. 5.



Witnesses

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COMBINED LEVEL AND PLUMB.

No. 857,991. Specification of Letters Patent. Patented June 25, 1907.

Application filed August 6, 1906. Serial No. 329,453.

To all whom it may concern:

Be it known that I, WILLIAM A. GIBSON, a citizen of the United States, residing at Enid, in the county of Garfield and Territory of Oklahoma, have invented a new and useful Combined Level and Plumb, of which the following is a specification.

The invention relates to improvements in combined levels and plumbs.

The object of the present invention is to improve the construction of combined levels and plumbs, and to provide a simple, inexpensive and efficient one designed for use as an inclinometer, and provided with indicating mechanism adapted to be readily trued-up, removed or replaced.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—Figure 1 is a perspective view of a combined level and plumb, constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the central portion of the instrument. Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2. Fig. 4 is a detail perspective view of the indicating mechanism. Fig. 5 is an enlarged transverse sectional view of the same, illustrating the manner of pivotally mounting the indicators. Fig. 6 is an enlarged detail sectional view on the line 3—3 of Fig. 2.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

1 designates a level stock or body, provided at its central portion with a circular opening 2, in which is detachably mounted a cylindrical casing 3, composed of two separable sections, each consisting of a disk 4 and an annular rim or flange 5, the rims or flanges 5 being telescoped or fitted one within the other, as clearly illustrated in Fig. 3 of the drawing. The outer faces of the disks 4 of the sections are preferably enameled, or otherwise coated to present white surfaces, and they are provided with graduations 6, which may be arranged in any desired manner, but the disks are preferably divided into four quarters, 90 degree marks being arranged at the ends of the horizontal diameter, as clearly indicated in Fig. 4 of the drawing. This arrangement will enable the angle or inclination to be read either at the top or bottom of the indicating mechanism, which is provided with double hands or indicators 7. The double hands or indicators 7, which are mounted on a horizontal spindle or pivot 8, extend from the center to the peripheral graduations 6, and are arranged to hang in a vertical position. Any deviation of the level stock or body from a horizontal position will be shown by the indicators, and the amount or number of degrees of the angle or inclination will be indicated at both the top and bottom of the indicating mechanism, by the position of the upwardly and downwardly extending hands or indicators on the graduated scale.

The spindle or pivot 8 is provided with reduced terminal portions 9, which extend through bearing perforations of the disks 4, and the hands or indicators 7 are secured to the terminals of the reduced portions by means of screws 10, which engage threaded sockets of the said reduced portions. The hands or indicators are spaced from the disks 4, and move freely over the same. They are maintained in a perpendicular position by means of a weight 11, which is in the form of a pendulum. The pendulum weight 11 consists of a stem, secured at its upper end in any preferred manner to the pivot or spindle, and having an enlargement or head at its lower end, as clearly shown in Figs. 2 and 3 of the drawing. Instead, however, of employing the pendulum weight, the lower arms or portions of the hands or indicators may be made heavier than the upper arms or portions. The indicators have a free relative rotary movement, and the level stock or body may be completely rotated without affecting the operation of the indicating mechanism.

The casing 3 is secured in the circular opening of the level stock or body by means of a set screw 12, which is mounted in a threaded opening 13 of a plate 14. The plate 14, which is let into the upper face of the level stock or body, and which is flush with the same, is secured to the said stock or body by means of screws 15, or other suitable fasten-

ing devices. The set screw 12 detachably secures the indicating mechanism within the opening of the level stock or body, and it will permit the indicating mechanism to be readily adjusted or trued-up, and will enable the same to be removed and replaced.

The hands or indicators are covered and protected by means of heavy crystals 16, mounted in suitable rims 17, which are fitted against the opposite faces of the casing. The level stock or body is provided at one side at the center of the opening 2 with an interior shoulder 18, against which one of the rims 17 is placed, and the other rim is engaged by a circular spring 19, which is in the form of a split ring, frictionally engaging the wall of the opening 2 and forming a stop for the other rim 17.

The parts of the indicating mechanism are designed in practice to be constructed of brass, or other suitable non-magnetic material, but they may be constructed of various materials to provide instruments of different grades.

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

1. An instrument of the class described comprising a body, a casing composed of separable sections having telescoping rims or flanges fitted together, a pivot or spindle mounted between and extending through the sections of the casing, an exteriorly arranged indicator mounted on the pivot or spindle, and means for securing the casing within the body.

2. An instrument of the class described comprising a body, a casing composed of separable sections having telescoping rims fitted one within the other, a pivot or spindle extending across the space between and passing through the sections, hands or indicators mounted on the pivot or spindle, rims fitted against the opposite faces of the casing, and crystals covering the hands or indicators and mounted in the last mentioned rims.

3. An instrument of the class described comprising a body having a circular opening and provided with an interiorly arranged shoulder, indicating mechanism having a cylindrical casing fitted in the said opening, crystals arranged at opposite sides of the indicating mechanism, one of the crystals being retained in place by the said shoulder, and a circular spring frictionally engaging the wall of the opening and the other crystal and retaining the casing and the crystals in the opening of the body.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM A. GIBSON.

Witnesses:
J. M. FILLEBROWN,
E. MUELLER.