(No Model.)

H. GREEN.

SPIRIT LEVEL.

No. 450,457. Patented Apr. 14, 1891.

Fig. 1.

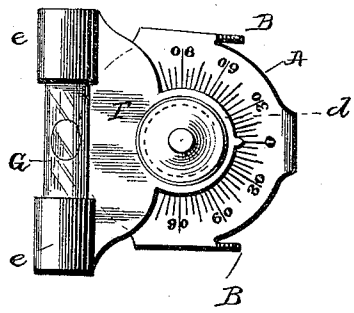


Fig. 2.

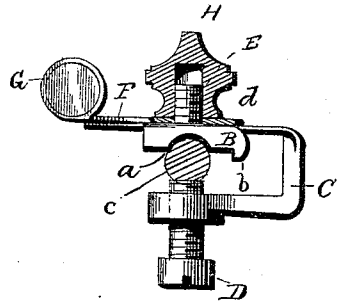
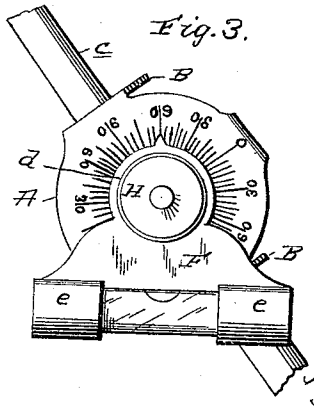


Fig. 3.



Witnesses:
C. H. Paeder
Thomas E. Turpin

Inventor
Harry Green
By James J. Sheehy
Attorney

UNITED STATES PATENT OFFICE.

HENRY GREEN, OF HARTFORD, ASSIGNOR TO THE ACME RULE COMPANY, OF SALISBURY, CONNECTICUT.

SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 450,457, dated April 14, 1891.

Application filed August 4, 1890. Serial No. 360,852. (No model.)

To all whom it may concern:

Be it known that I, HENRY GREEN, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Pocket-Levels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to improvements in that class of spirit-levels or indicators designed for use in conjunction with drill-rods and other boring-tools, to enable the operator to bore in the line of a predetermined angle; and the novelty will be fully understood from the following description and claims, when taken in connection with the accompanying drawings, in which—

Figure 1 is a top plan view of my improved spirit-level angle-indicator in position upon a drill or auger rod, the latter being illustrated in dotted lines. Fig. 2 is a side elevation of the same, the thumb-screw for fixing the index-plate being illustrated in vertical section and the drill-rod in transverse section. Fig. 3 is a front elevation of my improved indicator in position upon a boring-tool, the latter being pitched at an angle of sixty degrees.

In carrying out my invention I design casting the main or body portion of my improved device in one piece, as illustrated; but it is obvious that it may, if desired, be formed in several pieces and by means other than casting. The upper plate A of the main portion, which is circular in contour, as illustrated, is provided upon its face with a graduated quadrant, through the medium of which and the index-plate carrying the level the angle desired is attained.

Formed integral with and depending from the periphery of the circular plate A at diametrically-opposite points are lug branches B, which are preferably of a size in proportion as illustrated. These depending branches B are provided in their edge, as illustrated, with curvilinear recesses designed to afford a seat for the drill or auger rod, which is circular in cross-section, and the said branches are also provided at one end with a shoulder *b*, this latter construction being brought into play when the indicator is placed upon rods that are rectangular in cross-section.

Formed integral with and depending from the periphery of plate A, midway between the depending branches B, is an arm C, which is carried down a sufficient distance and then inward to a point approximately beneath the center of the plate A and in line with the two depending branches B. This arm C is provided at its end with a circular enlarged portion, as illustrated, which is provided with a screw-tapped aperture to receive a screw D, designed and adapted to bind upon the drill-rod, (indicated by *c*,) to fix the indicator thereon.

Rising from the center of the plate A is a post E, which is screw-threaded for a portion of its length, and is designed at once to serve as a pivot-post for the index-plate and to receive the interiorly-threaded binding-screw, presently to be described.

The approximately semicircular index-plate F is provided at a point about midway of its periphery with a reduced semicircular portion *d*, which is provided on its periphery with an index-point designed and adapted to register with the graduated points of the quadrant. This semicircular reduced portion *d* is also provided with a central annular aperture designed to take over the post E, around which the index-plate is adjusted. Upon the straight edge of the index-plate I attach the spirit-level G, which is composed of two cups or sockets *e*, suitably secured to the plate at the ends of the straight edge thereof, and the liquid-tube containing the spirit which is seated in said sockets and fastened therein in a suitable manner. The binding-screw H, which is designed to fix the index-plate at certain points or degrees upon the face-plate, is interiorly threaded, as illustrated, to take over the post E, and the said screw is also preferably milled upon its outer edge to allow the operator to readily turn the same.

In operation, should it be desired, for instance, to bore a hole on an angle of sixty degrees from the horizontal, the binding-screw H is loosened and the pointer of the index-

plate is made to register with the graduate 60 upon the face of plate A, as illustrated in Fig. 3. The drill or auger rod is then inclined until the spirit appears in the tube, when the desired angle is attained and the work of boring may commence. It will also be seen that as soon as the inclination of drill-rod varies from that mentioned the spirit will enter one of the cups or sockets and notify the attendant.

Having described my invention, what I claim is—

1. The combination, with a plate adapted to be fixed upon a drill-rod or the like and having a graduated quadrant upon its face and a threaded post rising from its center, of a plate provided with an annular aperture adapted to take over the post of the graduated plate and having a spirit-level at one end and an index-point at the other, and a binding-screw adapted to turn upon the threaded post to fix the index-plate upon the graduated plate, substantially as described, for the purpose set forth.

2. The combination, with the plate provided with the graduated quadrant upon its face and the threaded post rising from the center thereof, the depending branches formed integral with the plate at diametrically-opposite points and having the circular recesses in their edges and the depending shoulder at one end, and the arm formed integral with and depending from the periphery of the plate and carrying a vertically-disposed binding-screw, of a plate adapted to turn about the post of the graduated plate and having a spirit-level at one end and an index-point at the other end adapted to register with the graduations of the quadrant-plate, and a binding-screw adapted to turn upon the threaded post of the graduated plate to fix the index-plate, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY GREEN.

Witnesses:

FREDK. E. FULLER,

ALFRED W. JACOBS.