No. 686,360. Patented Nov. 12, 1901.

G. W. SMIDDY & C. F. ZERN.

EXTENSIBLE LEVEL.

(Application filed May 4, 1901.)

(No Model.)

Fig. 1.

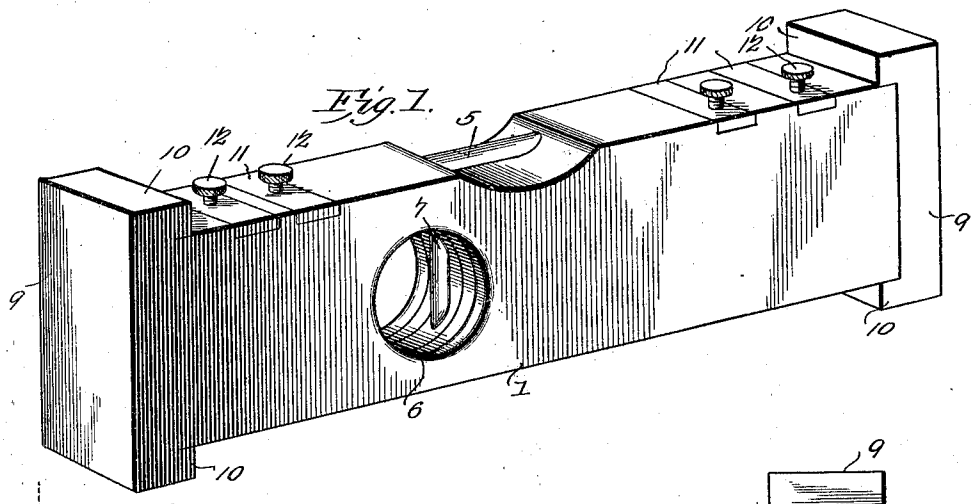


Fig. 4.

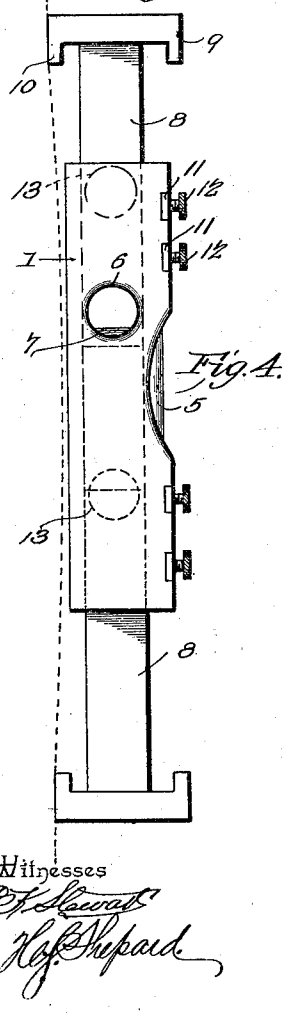


Fig. 3.

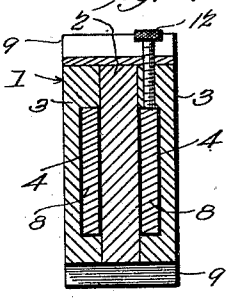
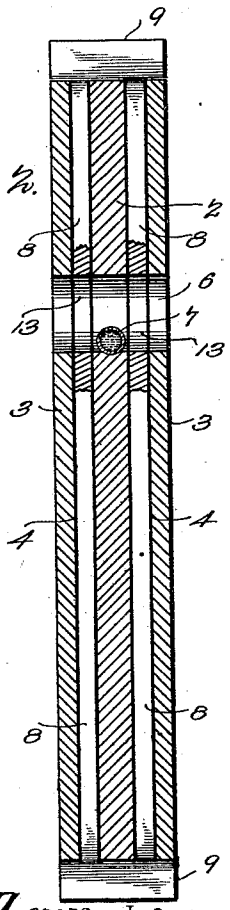


Fig. 2.



Witnesses
E. F. Stewart
H. J. Shepard

G. W. Smiddy and C. F. Zern, Inventors.
by Cushman & Co.
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE W. SMIDDY AND CHARLES F. ZERN, OF COLORADO SPRINGS, COLORADO.

EXTENSIBLE LEVEL.

SPECIFICATION forming part of Letters Patent No. 686,360, dated November 12, 1901.

Application filed May 4, 1901. Serial No. 58,787. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. SMIDDY and CHARLES F. ZERN, citizens of the United States, residing at Colorado Springs, in the county of El Paso and State of Colorado, have invented a new and useful Extensible Level, of which the following is a specification.

This invention relates to spirit-levels, and has for its object to provide an improved extensible level which is constructed so as to be extensible at either end or simultaneously at both ends. It is furthermore designed to arrange for adjustably locking the extensible parts, so as to obviate looseness thereof, and to construct the same so as to protect the opposite ends of the stock of the level, which is preferably formed of wood.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a level constructed in accordance with the present invention. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a transverse sectional view. Fig. 4 is a detail side elevation illustrating an application of the level for which it is particularly designed.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

Referring to the drawings, 1 designates a stock of ordinary shape and of any preferred size, preferably made of wood in three longitudinal equal sections, as best indicated in Fig. 3. The intermediate section 2 has smooth continuous opposite faces, while the inner faces of the opposite outer sections 3 are each provided with a longitudinal groove or channel 4, which is closed by the intermediate section, thereby forming a longitudinal slot extending for the entire length of the stock and opening outwardly through the opposite ends thereof. The sections are arranged to cross-grain and are glued tightly together, thereby forming a strong and durable stock which is not as liable to warp as a single-piece stock.

In the middle of one edge of the stock there is provided the usual longitudinal spirit-level 5, and a transverse opening 6 is formed through the stock, and a spirit-level 7 is mounted in one edge of the opening and at right angles to the longitudinal spirit-level in the ordinary manner.

Within each longitudinal slot of the stock there is slidably mounted an extensible section consisting of a flat blade-like stem 8, which is substantially as long as the stock and carries at its outer end a cross-head 9, which lies flat against the adjacent end of the stock and is of the same thickness, so as to be flush with the opposite side faces of the stock. The head is somewhat longer than the width of the stock and is provided with the opposite laterally and inwardly directed terminal projections or shoulders 10, which snugly embrace the adjacent end portions of the opposite edges of the stock, whereby the same are protected. It is designed to have the stem formed of steel and the head of brass, so as to be strong and durable. What will be termed the "front edge" of the stock is provided with the opposite pairs of metallic plates 11, located adjacent to opposite ends of the stock and let in flush with the outer surface thereof with thumb-screws 12, piercing the respective plates and the stock, so as to bear frictionally upon the adjacent edges of the respective stems for the purpose of adjustably locking the same in their adjusted positions, and thereby holding the same against looseness. Each stem is provided with a transverse opening 13, (shown in Fig. 2,) to be alined with the opening in the stock when the stem is entirely within the stock, so as to expose the transverse spirit-level or glass from opposite sides of the stock. It will here be observed that the transverse bubble-glass 7 is mounted in the intermediate section of the stock so that the extensible sections or stems lie at opposite sides thereof. When one extensible section is drawn outwardly and covers the transverse spirit-level, the latter is visible from the opposite side of the stock, and when

both sections are drawn outwardly the inner end of one section should be drawn outwardly beyond the transverse opening in the stock to expose the bubble-tube therein.

One of the advantageous features of the present invention has been illustrated in Fig. 4 of the drawings, in which the dotted line represents a bowed surface—as, for instance, one side of a door-frame, which ordinarily is very difficult to adjust by an ordinary level, as the stock thereof will rock upon the convex surface. In using the present level the extensible sections are drawn outwardly, so that the projections 10, at one edge thereof, lie against the respective top and bottom portions of the surface, which are straight, the intermediate portion of the level, which is the stock proper, being spaced out of contact with the bowed surface by the opposite terminal projections, the outer faces of which lie in the same plane. Thus the extended level may be accurately applied to the opposite end portions of the part to be straightened or plumbed, and the bow of the latter does not interfere with the level. This is also true whatever the positions of the extensible sections may be, as it is the ends of the heads that are applied to the part to be leveled or plumbed.

What is claimed is—

1. A level, having opposite longitudinal extensible sections, which are provided with outer terminal heads that project in opposite directions laterally beyond the sides of the stock, the outer faces of the projected portions at the same side of the stock being in the same plane.

2. A level, comprising a stock, having a plurality of longitudinal slots, opposite extensible sections slidably mounted in respective slots, and having outer terminal heads corresponding to the adjacent ends of the stock and projected in opposite directions at the opposite edges thereof, each head having opposite terminal and laterally inwardly directed projections normally embracing the adjacent end of the stock at the inward limit of the section, and the outer faces of the projected ends of the heads at the same side of the stock being in the same plane.

3. A level, comprising a stock having a transverse opening formed therethrough, a bubble-tube mounted transversely in the opening and located between opposite sides of the stock, a pair of extensible sections slidably mounted upon the stock and at opposite sides of the bubble-tube and also provided with openings corresponding to the opening in the stock at the inner limits of the sections.

4. A level, consisting of a stock, having a transverse opening, and a pair of longitudinal slots formed at opposite sides of the stock and intersecting the transverse opening, a transverse bubble-tube mounted in the transverse opening and in the middle of the stock, between the slots, a pair of slidable extensions mounted in the respective slots and provided with transverse openings corresponding to the opening in the stock at the inner limits of the sections, set-screws piercing the stock and in frictional engagement with the respective sections for adjustment thereof, and each section having an outer terminal transverse head corresponding to the adjacent end of the stock and fitting snugly against the same in the inner limit of the section, the opposite ends of the head being projected outwardly beyond the stock and provided with lateral terminal projections which embrace the adjacent sides of the stock, the outer faces of the ends of the opposite heads at the same side of the stock being in the same plane.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

GEORGE W. SMIDDY.
CHARLES F. ZERN.

Witnesses:
P. C. WRIGHT,
R. R. JOHNSTON.