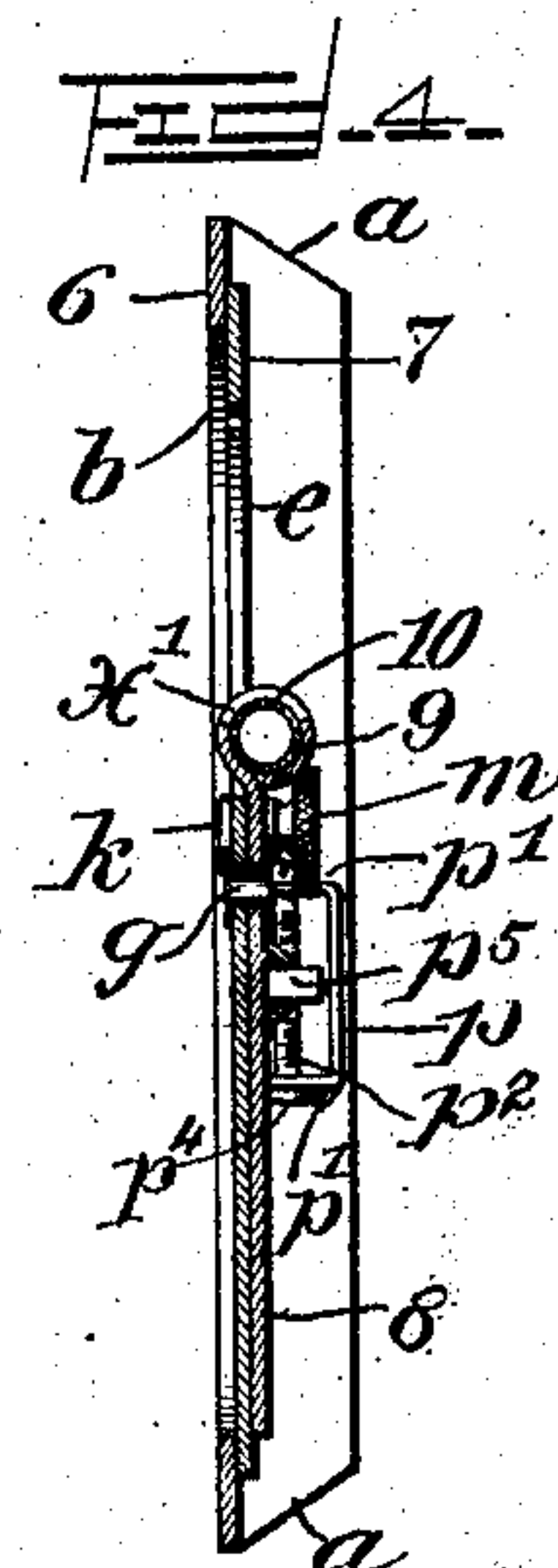
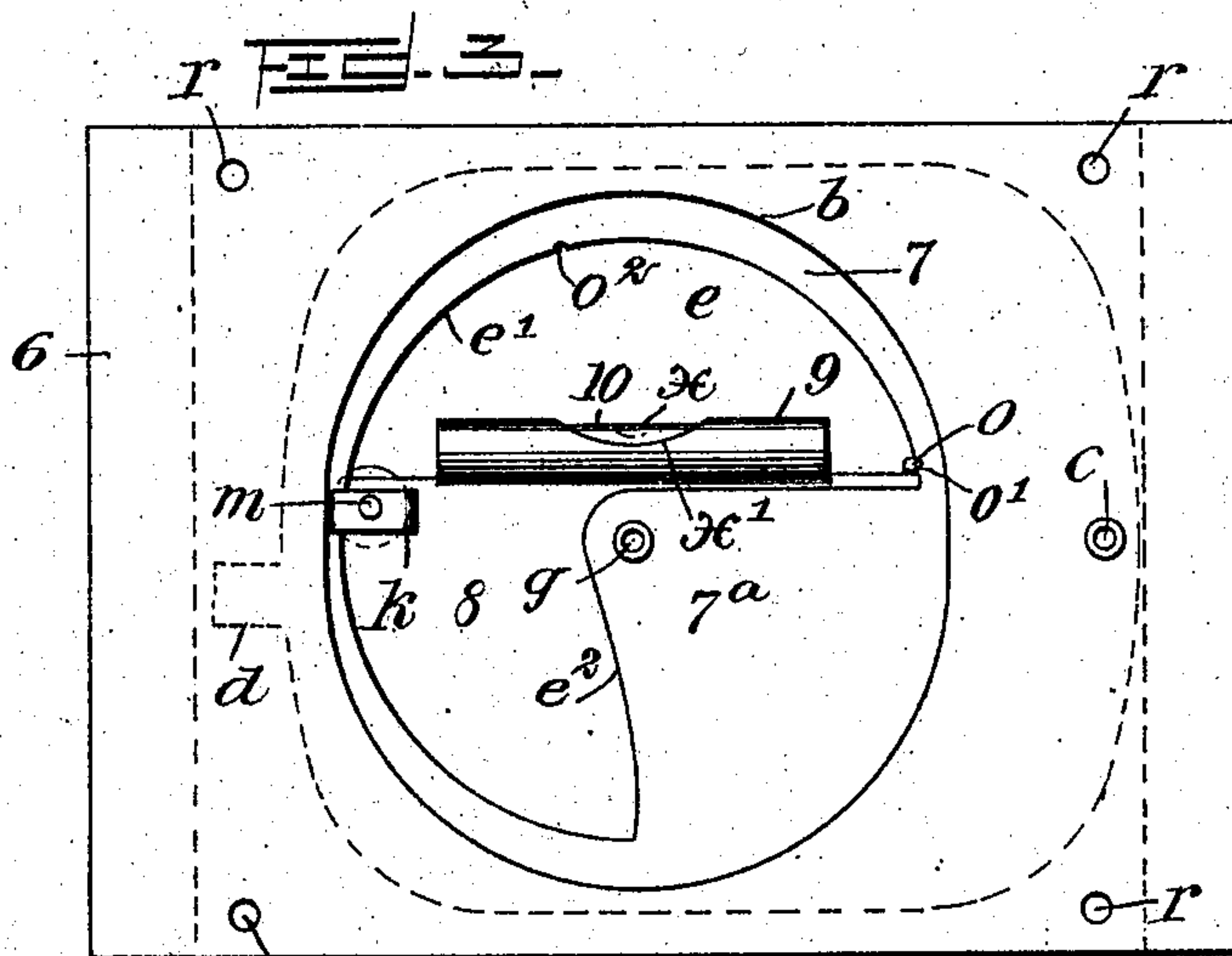
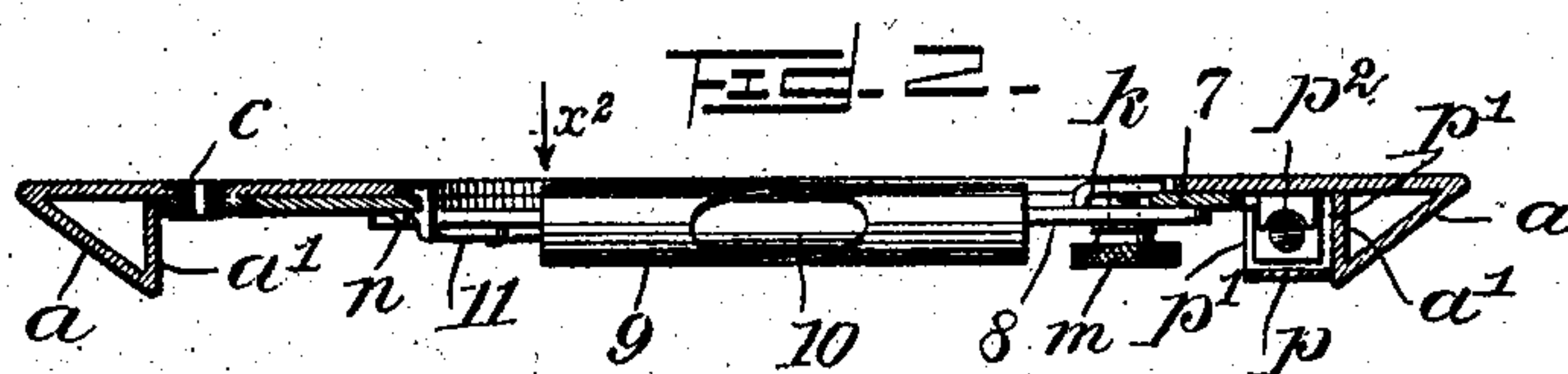
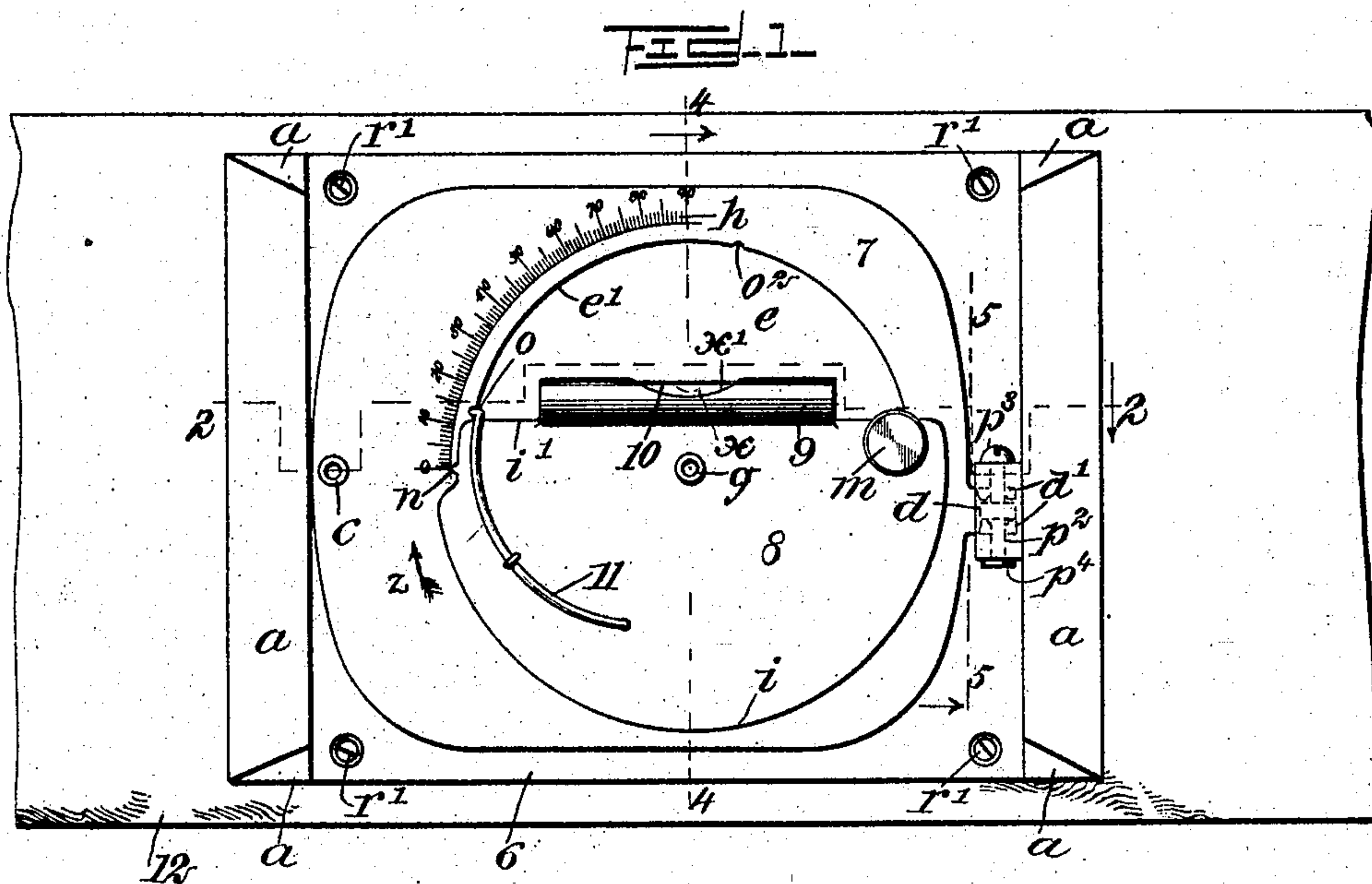


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W. A. DIMICK.  
PLUMB, LEVEL, AND INCLINOMETER.

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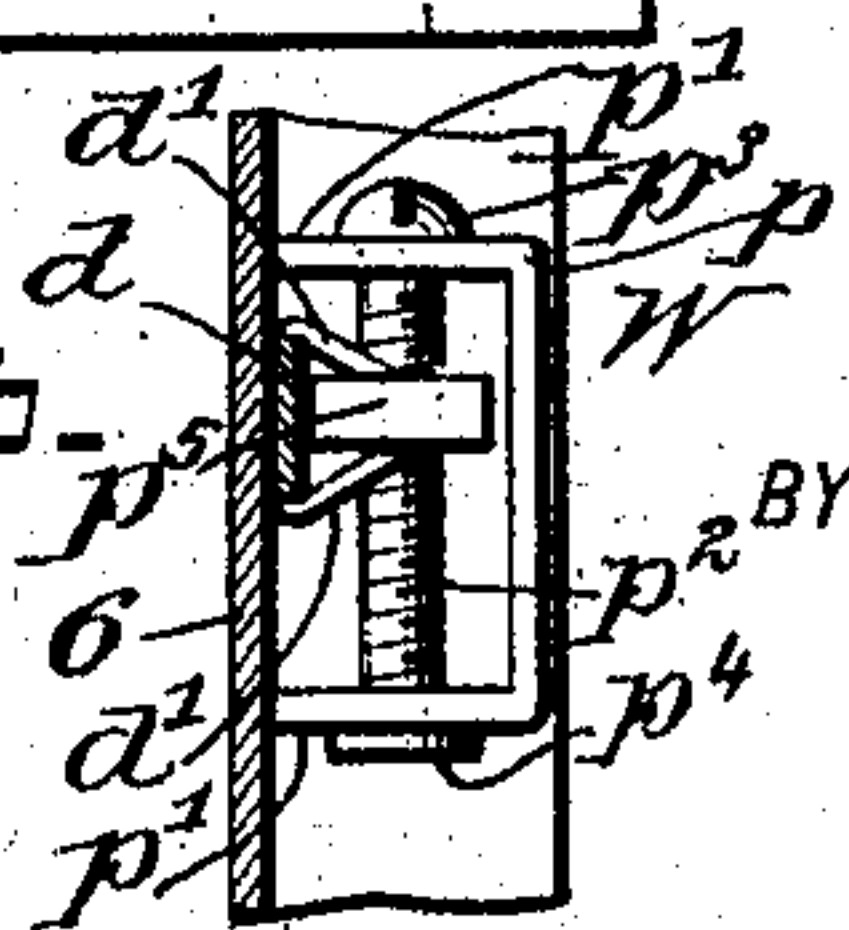


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# UNITED STATES PATENT OFFICE.

WINSLOW A. DIMICK, OF VANCOUVER, WASHINGTON.

## PLUMB, LEVEL, AND INCLINOMETER.

No. 815,690.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed November 23, 1905. Serial No. 288,757.

*To all whom it may concern:*

Be it known that I, WINSLOW A. DIMICK, a citizen of the United States, and a resident of Vancouver, in the county of Clarke and State of Washington, have invented a new and Improved Plumb, Level, and Inclinator, of which the following is a full, clear, and exact description.

This invention relates to an instrument of precision adapted for use in the construction of roadways and sidewalks or the erection of buildings of any character, so as to quickly and accurately determine if the structures or parts thereof are level or properly inclined or vertically positioned, as the character of the work may require, and has for its object to provide novel features of construction for an instrument of the character indicated which are very simple, compact, and convenient in service, affording a combined "plumb," "level," and "inclinator" in one small instrument, which may be readily secured upon a straight-edge of suitable length for service as required.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the subjoined claims.

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

Figure 1 is a side view of the improvement mounted upon a level-stock, shown broken away at each end. Fig. 2 is a longitudinal transverse sectional view of the instrument removed from the level-stock, taken substantially on the line 2 2 in Fig. 1. Fig. 3 is a reversed side view of the improved instrument seen in direction of the arrow  $x^2$  in Fig. 2. Fig. 4 is a transverse sectional view of the instrument substantially on the line 4 4 in Fig. 1; and Fig. 5 is an enlarged sectional view of details, taken substantially on the line 5 5 in Fig. 1, showing an adjusting device that is a feature of the invention.

A base-plate 6, which is of cast or plate metal having an essentially rectangular form, is provided for the support in proper positions of other details, and, as shown, an inwardly and upwardly inclined wall  $a$  is produced at each end of the base-plate transversely thereof, said sloped walls at their upper edges each joining a vertical transverse wall  $a'$ , that is at right angle to the

base-plate, and the ends of these walls are also sloped inward and upward, as is shown in Figs. 1 and 4, for a purpose that will be hereinafter explained.

Centrally in the base-plate 6 a nearly-circular-edged aperture  $b$  is formed, and over said aperture upon the normally outer surface of the base-plate an oblong scale-plate 7 is imposed and pivotally secured near one end of each plate, as indicated at  $c$  in Figs. 1 and 3, the opposite end of the scale-plate having a flat arm  $d$  projected therefrom, which engages an adjusting device, as will hereinafter be described. Nearly central in the scale-plate 7 an opening  $e$  is formed, that is preferably defined in its contour, as shown best in Fig. 3, one portion  $e'$  thereof representing about two-thirds of a circle somewhat less in diameter than the opening  $b$  in the base-plate 6 and the remaining portion  $e^2$  of said edge being angular and defining an essentially V-shaped wing  $7^a$ , that projects toward the center of the circular-edge portion  $e'$ , as shown clearly in Fig. 3. The radial center of the circular-edge portion  $e'$  is at  $g$  in the wing  $7^a$  near its angle, and concentric with said circular edge on the scale-plate 7 is a graduated scale  $h$ , that represents ninety degrees of a full circle, as is shown in Fig. 1, but may be increased in extent, if desired. Upon the scale-plate 7 a rockable plate 8 is mounted and pivoted at  $g$ , the pivot being preferably hollow or in the form of an eyelet that enables the tightening of the pivot conveniently if this becomes necessary, and the pivot  $c$  is of a like character for a similar purpose. The rockable plate 8 is preferably formed with a circular-edge portion  $i$ , that at its ends joins a straight-edge portion  $i'$ , and on the latter, near the pivot center  $g$ , a cylindrical casing 9 is formed or secured, that receives and carries securely a bubble-tube 10, of glass, that is nearly filled with liquid and produces an air-bubble  $x$  therein, as usual, which will appear in a small opening  $x'$  in the case 9 when the tube is level, or nearly so. The plate 8, which for convenience may be termed a "tube-carrier plate," overlaps with its circular defining edge  $i$  the circular-edge portion  $e'$  on the scale-plate 7. A plate-like resilient dog  $k$  is secured by one end on the normally rear side of the tube-carrier plate 8 and laps over the edge  $e'$  of the circular opening in the scale-plate 7, said dog being perforated and threaded in the perforation for reception of the threaded body of a clamping-screw  $m$ ,



the milled head on which is adapted for manipulation on the exterior of the instrument, as appears in Figs. 1 and 2. It will be seen that a turning adjustment of the clamping-screw *m* in a proper direction will press the resilient dog *k* and tube-carrier plate 8 into contact with the scale-plate 7 and bind the tube-carrier plate for its retention at any desired point of rotatable adjustment on said scale-plate. An index-finger *n* may project from the adjacent edge of the tube-carrier plate 8 toward the segmental graduated scale *h*, and when the bubble *x* in the tube 10 is disposed at the center of the opening *x'* in the casing 9, and thus indicates a level position for the instrument, the pointer or index-finger *n* will be positioned opposite the first graduation "*o*" or zero, on the scale *h*, as shown in Fig. 1. A preferably arcuate detent spring-arm 11 is secured on the tube-carrier plate 8 below the casing 9 and curves upward at one end thereof that terminates in a small toe *o*, and, as shown in Fig. 1, the toe *o* occupies a corresponding notch *o'* in the edge of the scale-plate 7, opposite and near to the graduated scale *h*, when the index-finger *n* is at zero thereon, thus serving to hold the level-tube horizontal for use as a spirit-level. In the circular edge of the opening in the scale-plate 7 a notch *o<sup>2</sup>* is formed, which is ninety degrees distant from the notch *o'*, and when the device is to be used as a plumb-indicator the tube carrier-plate 8 is turned on its pivot in direction of the curved arrow *z* in Fig. 1 until the toe *o* enters the notch *o<sup>2</sup>*, which will dispose the bubble-tube 10 in a plane at right angles to the plane it occupies when the tube is arranged for indicating a horizontal position.

The adjusting device hereinbefore mentioned is constructed as is clearly shown in Fig. 5, consisting, essentially, of a rectangularly-bent frame *p*, that projects forward on the base-plate 6, its projecting legs *p'* being secured to said base-plate respectively above and below the arm *d* on the scale-plate 7. Journaled in the legs *p'* is a screw *p<sup>2</sup>*, that is held in place free to rotate by a kerfed head *p<sup>3</sup>* at one end of the screw-body and a fixed collar *p<sup>4</sup>* at the opposite end thereof, the head and collar having loose contact with the exteriors of the legs *p'*. The thread on the body of the screw *p<sup>2</sup>* is quite fine, and upon said thread is screwed a nut-block *p<sup>5</sup>*. From the arm *d* extends two clamping members *d'*, that oppositely embrace the nut-block *p<sup>5</sup>*, engaging the sides thereof which are parallel with the legs *p'*.

It will be seen that by the application of a screw-driver to the kerfed head *p<sup>3</sup>* on the screw *p<sup>2</sup>* and turning the same the resulting traverse of the nut-block *p<sup>5</sup>* on said screw-body will slightly rock the scale-plate 7 on its pivot *c* and correspondingly incline the bubble-tube 10, this provision being of

great advantage in primarily adjusting the bubble-tube so as to insure accuracy, that is otherwise difficult to attain.

The device hereinbefore described is for effective service mounted upon the side of a preferably wooden straight-edge 12, that is, as its name indicates, true and straight on the working edge, perforations *r*, formed in the base-plate 6 near its four corners, enabling the fixture of the instrument upon the straight edge by insertion of screws *r'*, as is indicated in Fig. 1. The straight-edge 12 may be of any suitable length; and in case it is desired to read the indication of the bubble *x* from both sides of the level-stock or straight-edge 12 the latter may have an opening there-through.

When the instrument is to be employed in leveling a road-bed or sills and plate-timbers of a building-frame, the straight-edge may have considerable length. By rocking the tube-carrier plate 8 and casing 9 so as to cause the index-finger *n* to indicate on the proper degree on the scale *h* a correct inclination may be given to the bubble-tube for indicating the pitch to be given rafters of a roof or the incline of a road from its center to the gutters, as well as the outward slope for a sidewalk or pavement.

When the toe *o* of the spring-detent 11 is located in the notch *o<sup>2</sup>*, the instrument and its temporary stock 12 becomes a plumb-indicator that will show if upright timbers in a building are plumb, or, in other words, are exactly perpendicular, and, if necessary, enable their disposition in a vertical plane. The sloped transverse end walls *a* on the base-plate 6 facilitate the movement of the instrument over timbers or other material while in use, preventing the device from catching fast upon any obstruction if it is moved over the same endwise or from injury to the parts of the instrument, if laid face downward.

It will be noted that in itself the improved instrument is small, has its working parts compactly arranged, is easily secured upon a level-stock or a temporary straight-edge, and when removed therefrom may be conveniently carried upon the person. Furthermore, it is evident that the improvement is adapted for effective service either as a level, a plumb-indicator, or an inclinometer, requiring but a slight change in adjustment to adapt it for either of said uses.

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

1. The combination with a base-plate, a scale-plate pivoted near one end on the base-plate and having a partly-circular-edged opening therein, and also having a scale graduation partly around the circular-edged opening, of a tube-carrier plate pivoted upon the scale-plate, and a bubble-tube mounted upon the tube-carrier plate.



2. The combination with a base-plate having sloped end walls, and an aperture therein, of a scale-plate pivoted near one end on the base-plate having a partly-circular-edged opening therein and an angular wing, and also having a scale graduation partly around the circular-edged opening, of a tube-carrying plate pivoted on the angular wing of the scale-plate, a tubular casing on the carrying-plate, a bubble-tube held in the casing, and an index-finger indicating on the scale graduation.

3. The combination with a base-plate having an aperture therein, of an oblong scale-plate pivoted near one end on the base-plate over the aperture, an adjusting means connected with the opposite end of the scale-plate, said scale-plate having a partly-circular-edged opening therein and an angular wing, and also having a scale graduation partly around the circular-edged opening, of a tube-carrying plate pivoted on the angular wing of the scale-plate, a tubular casing mounted on the carrying-plate, and a bubble-tube held in the casing.

4. The combination with a base-plate having a curved-edged aperture therein, of an oblong scale-plate pivoted near one end on the base-plate over the aperture, an adjusting means connected with the opposite end of the base-plate and scale-plate, said scale-plate having a partly-circular-edged opening therein and a wing, and also having a scale graduation partly around the circular-edged opening, a tube-carrying plate pivoted upon the wing of the scale-plate, a tubular casing mounted on the carrying-plate, a bubble-tube in the casing, and an adjustable clamp carried by the tube-carrying plate and engaging the curved edge of the aperture in the base-plate.

5. The combination with a base-plate having a curved-edged aperture therein, of an

oblong scale-plate pivoted near one end on the base-plate over the aperture, an adjusting device connecting the base-plate with the opposite end of the scale-plate, said scale-plate having a partly-circular-edged opening therein and a wing, and also having a scale graduation partly around the circular-edged opening, a tube-carrying plate pivoted upon the wing of the scale-plate, a tubular casing mounted upon said carrying-plate, a bubble-tube in the casing, a resilient clamping means carried by the tube-carrying plate and engaging the curved edge of the aperture in the base-plate, and a resilient detent-arm mounted upon the tube-carrying plate and having a toe on its free end that may engage in notches formed in said curved edge of the aperture in the base-plate.

6. The combination with a level-stock having a straight-edge, of an instrument for indicating plumb-level and inclined planes, comprising a circularly-apertured base-plate securable on the level-stock and having inclined transverse end walls thereon, a scale-plate pivoted near one end on the base-plate, an adjusting device connecting the opposite end of the scale-plate with the base-plate, said scale-plate having scale graduations arranged on a curve, a tube-carrying plate pivoted on the scale-plate and adapted to indicate on the scale graduations, a bubble-tube carried by said carrying-plate, and a resilient detent-arm mounted upon the tube-carrying plate and having a toe on its free end, which may engage in notches formed in the curved defining edge of the aperture in the base-plate.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WINSLOW A. DIMICK.

Witnesses:

G. R. PERCIVAL,  
M. A. ROWLEY.