INCLINOMETER

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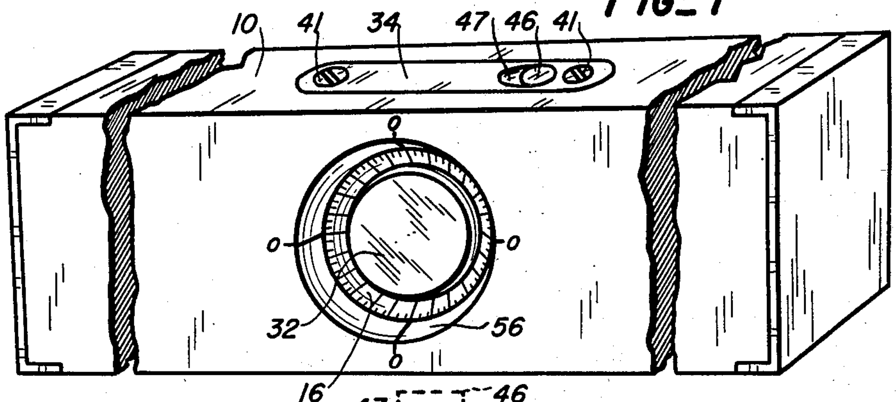
FIG_1



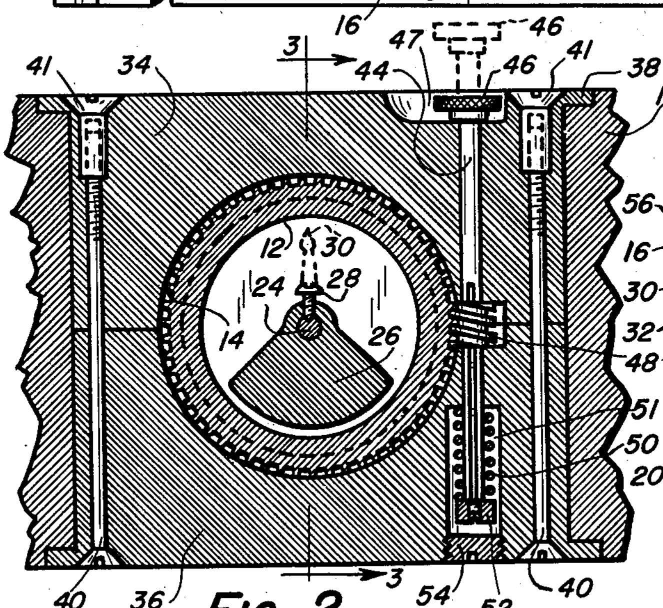


FIG_2

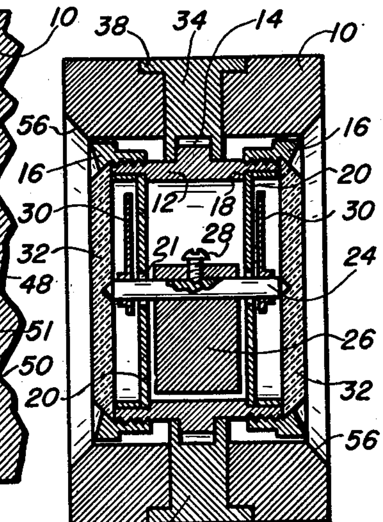


FIG_3

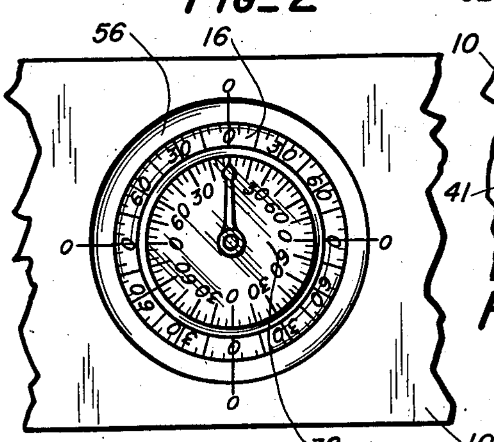


FIG_4

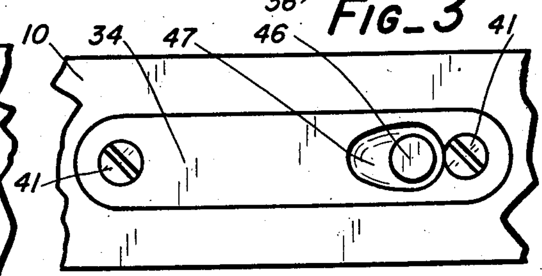


FIG_5

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INCLINOMETER

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3 Claims. (Cl. 33—215)

Our invention relates to improvements in an inclinometer which is particularly useful in determining true horizontal and vertical planes as well as in establishing grades for pavements, floors, and the like, where it is desirable to provide proper drainage.

It is a customary practice in the construction trade to employ inclinometers for testing the vertical or horizontal accuracy of walls, floors, and the like, and it is also an important consideration that such devices be provided with means whereby they may be altered to indicate the degree in which a wall or floor or other plane surface may be off the vertical or horizontal according to the requirements of the construction problems to be met.

Such a variable inclinometer must be simple to use as well as be simple to produce in order that they may be made available to the greatest number of persons who may be required to use such instruments.

It is an important object of our invention to provide an improved inclinometer which is simple and efficient to construct and may be operated with a minimum of difficulty to vary the set of the indicator mechanism.

Another object of our invention relates to the provision of a revolvable barrel for an inclinometer and simple means for revolving or changing the relation of barrel with relation to its mount or base member.

Other advantages and objects of the invention will be more apparent during the course of the following description which, taken in view of the accompanying drawing, form the primary disclosure of our invention.

In the drawing, wherein we have shown a preferred form of the invention and in which changes and alterations are contemplated within the scope and spirit of the subjoined claims,

Figure 1 is an isometric perspective view of our improved inclinometer, with portions broken away for the convenience of illustrating our invention.

Figure 2 is a longitudinal sectional view, enlarged to bring out the details of our inclinometer,

Figure 3 is a sectional view taken on the plane indicated by line 3—3 of Figure 2,

Figure 4 is a detailed face view of the inclinometer scale, and

Figure 5 is a plan view of the upper face of the inclinometer.

The numeral 10 designates a bar of any material suitable in which an inclinometer may be mounted. The inclinometer essentially comprises the cylindrical barrel 12 that is provided with an outer circumferential pinion gear 14. At each end the barrel is threaded to receive undercut bezel rings 16, 16. Interiorly, the hollow cylinder 12 has annular shoulders at 18 that receive the indicia bearing discs 20, 20 that have central openings 21. A shaft 24, having the pendulum weight 26 attached thereto by means of the set screw 28, has its ends protruding through the opening 21 from between discs 20, 20, and is provided with indicator fingers 30 on either end to lie in juxtaposition with relation to the outer faces of the indicia bearing discs 20. The ends of the shaft 24 may be pointed and are journalled for axial movement in suitable bearings on the transparent discs 32 that are held against the ends of the cylinder 20 by means of the bezel rings 16.

Journal halves 34 and 36, flanged at 38, are fitted into slot 37 through the member 10 and form semi-circular journals for the cylinder 12 to position it in alignment with a hole through the member 10 that intersects the elongated slot 37. Bolts 40 and countersunk nut members 41 pass through the mounting members 34 and 36 and clamp them securely together. By reason of the flanges 38 being larger than the slots through the member 10, dislodgment of the journal from the mechanism will be prevented.

A splined shaft 44, provided with a head 46, is mounted in the members 34 and 36 for rotary as well as sliding movement. A worm gear 48 is fitted to the splined portion of the shaft 44 for rotation with the shaft and at the same time the shaft may be withdrawn with relation to the worm by lifting the head 46 from the depression 47 provided therefor, without disengaging the worm 48.

Rotary pressure applied to the head 46 will cause the worm to effect rotary movement of the cylinder 12 about its axis to vary the readings obtainable.

A spring 50 in a recess 51 presses against the bottom of that recess expansively against the collar 52 on the lower end of the shaft 44. This arrangement retracts the shaft head 46 into its recess when the withdrawing pressure is released. The recess 51 may be closed by a plug 54 to prevent the accumulation of dirt and the like that might impede the action of the spring.

We have shown in Figure 4 that the beveled face of the bezel ring 16 is provided with numerical indicia and calibrated to provide accurately spaced subdivisions. The beveled face 56 of the

opening, in which the barrel is fitted, is also divided into quarters and it may have impressed adjacent thereto numerical indicia marking their relation to the length and breadth of the member 10.

It will be apparent that by reason of the weight 26 on the shaft 24, a finger 30 attached thereto in a fixed relation will always be directed upwardly due to the action of gravity upon the weight. Therefore, with the shaft 24 mounted in a fixed axis in the member 10 through the instrumentality of the barrel and the end bearing in the transparent discs 32, no matter what plane the member 10 is disposed upon, the pointer finger will always be pointed upwardly. By revolving the barrel about its axis the indicia carried thereby will be shifted according to the dictates of a person using such a mechanism, and, by simple mathematical calculations, various planes can be indicated.

Having thus described our invention, we claim:

1. An inclinometer comprising a rectangular member having a bore through it transversely and a slot intersecting said bore, means in said slot forming a journal axially aligned with said bore, a cylindrical barrel mounted for rotation in said journal means, a gravity actuated pendulum indicator means mounted for rotation in said barrel, graduated indicia means associated on said barrel, a gear segment on the outer wall of the barrel, a worm associated with said gear segment on the barrel, a shaft splined to said worm for axial movement with relation thereto, and means for normally maintaining said shaft retracted within said rectangular member.

2. An inclinometer comprising a rectangular member having a bore through it transversely and a slot intersecting said bore, means in said slot forming a journal axially aligned with said bore, a cylindrical barrel mounted for rotation in said journal means, a gravity actuated pendulum indicator means mounted for rotation in said barrel, graduated indicia means associated on said barrel, a gear segment on the outer wall of the barrel, a worm associated with said gear segment on the barrel, and means accessible on the exterior of said rectangular member for revolving said worm whereby to rotate the barrel about its axis.

3. An inclinometer comprising a rectangular member having a bore through it transversely and a slot interescting said bore, means in said slot forming a journal axially aligned with said bore, a cylindrical barrel mounted for rotation in said journal means, a gravity actuated pendulum indicator means mounted for rotation in said barrel, graduated indicia means associated on said barrel, a gear segment on the outer wall of the barrel, and a toothed member associated with said gear segment on the barrel whereby when the toothed member is moved axial rotation of the barrel is effected.

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