Nov. 23, 1954 L. M. LE PERA 2,694,865

CLINOMETER

Filed March 30, 1953

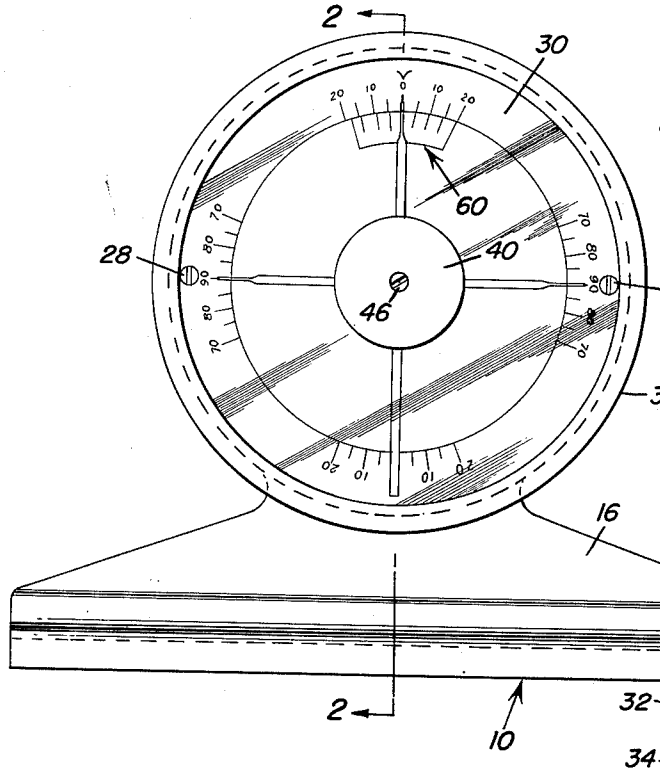


Fig. 1

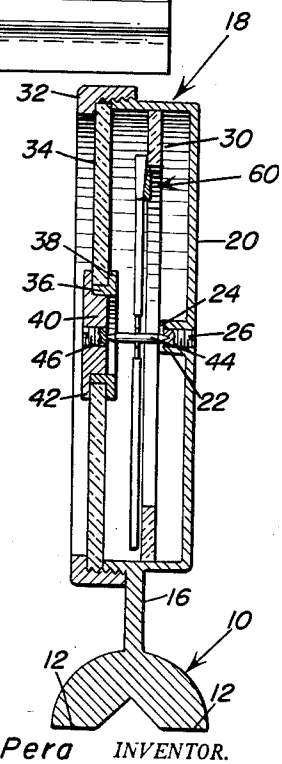


Fig. 2

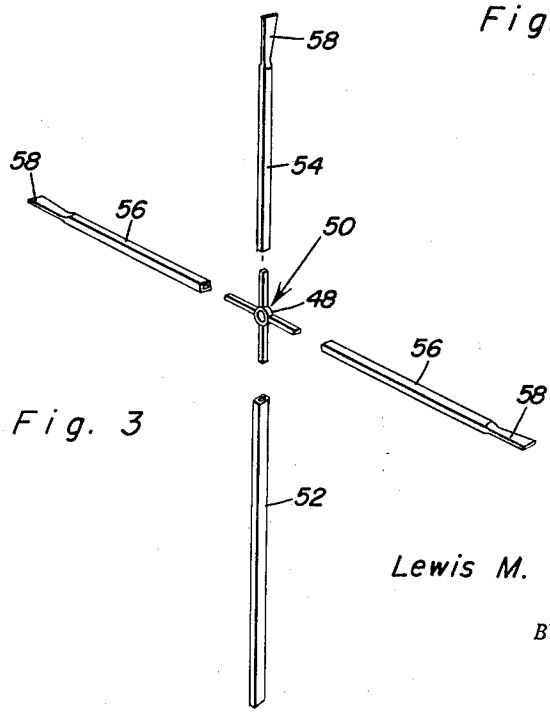


Fig. 3

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CLINOMETER

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2 Claims. (Cl. 33—215)

This invention relates in general to indicating instruments and relates more particularly to an improved form of clinometer.

A primary object of this invention is to provide a clinometer with improved indicating means which includes a movably carried vernier scale for determining minute variations in inclination.

Another object of this invention is to provide a clinometer with an improved type of pointer assembly which, in conjunction with a specific form of indicating dial, will indicate simultaneously inclinations with respect to the horizontal as well as the vertical.

Another object of this invention is to provide pivot means for the pointer of a clinometer which incorporates an overload release mechanism preventing distortion of the pivot *s* of the pointer assembly.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a vertical elevation of the clinometer;

Figure 2 is a vertical section taken substantially along the plane of section line 2—2 of Figure 1 and showing details of the internal construction of the clinometer; and

Figure 3 is a perspective view showing the component parts of the pointer in exploded relation.

Referring more particularly to the drawings, reference numeral **10** indicates generally the base of the instrument provided on its lower face with a pair of coplanar surfaces **12** and intermediate angularly disposed surfaces **14**. This construction enables the instrument to be positioned either on flat surfaces or apiculated surfaces, as desired. Rising upwardly from the base is a web **16** formed integrally with both the base and with a substantially cylindrical housing **18** whose back wall **20** is provided with a centrally disposed boss **22** as well as radially disposed bosses **24**, one of which is shown in Figure 2, the former threadedly receiving an adjustable pivot seat member **26** and the latter receiving securing means **28** for mounting the graduated dial **30** at an intermediate portion of the housing.

Threadedly engaged on the front peripheral surface of the case or housing is an attaching rim **32** which clampingly secures a transparent face **34** between the rim and the housing, this face being centrally apertured to receive an inner collar **36** of generally annular configuration whose main portion is received within the aperture and whose circumferential flange **38** bears against the rear surface thereof. The central cylindrical portion **40** of the outer collar is frictionally interfitted within the inner collar and its peripheral flange portion **42** bears against the outer surface of the face to cooperate with the flange of the inner collar in securing the assembly to the face. In this respect, it might be well to note that the engagement between the inner and outer collar is a light sectional fit so that the danger of distorting or applying too much pressure against the pivot pin **44** by adjusting either the previously described seat **26** or the seat **46** carried by the outer collar will be prevented,

inasmuch as such overload would force the outer collar outwardly with respect to the inner collar and relieve such overload.

The pivot pin is received within the central boss **48** of the cross assembly **50**, the free end of which telescopically and frictionally receive the inner ends of the lower weight member **52**, the vertically extending pointer **54** and the horizontally extending pointer **56**, each of which, with the exception of the lower assembly is provided with a tapered end portion **58** for the purpose of obtaining accurate reading. The vertical pointer registers with an upper set of graduations on the dial and it will be noted that the graduations are such that this pointer indicates the degree of variation with respect to the horizontal of the surface upon which the base **10** is placed. The horizontally extending pointer **56** cooperates with graduations at corresponding portions of the dial, these graduations being so indexed as to permit reading of information with respect to the vertical on these scales.

The vertical pointer **54** is provided with an arcuate vernier scale **60** corresponding in outer curvature to the inner surface of the annular dial and spaced closely adjacent thereto so that its vernier graduations may be easily read with respect to the graduations on the dial, this particular construction or vernier scale being carried by the vertical pointer so as to enable the operator to accurately determine even minute variations of inclination.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A clinometer comprising a base, a housing secured to said base provided with a rear wall and an intermediate graduated dial, a transparent face secured to said housing, a pointer assembly pivotally secured between said face and said back wall in register with the dial for indicating the degree of inclination of the base, said face being provided with a centrally disposed aperture, a pair of interfitting collars engaging opposite sides of said face, a pivot seat adjustably carried by one of said collars, a pivot seat carried by said back wall, said pointer assembly having a pivot pin received at its opposite ends in said seats.

2. A clinometer comprising a base, a housing secured to said base provided with a rear wall and an intermediate graduated dial, a transparent face secured to said housing, a pointer assembly pivotally secured between said face and said back wall in register with the dial for indicating the degree of inclination of the base, said face being provided with a centrally disposed aperture, a pair of interfitting collars engaging opposite sides of said face, a pivot seat adjustably carried by one of said collars, a pivot seat carried by said back wall, said pointer assembly having a pivot pin received at its opposite ends in said seats, said collars being slidably interfitted and the outer collar carrying said seat.

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