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MARKING DEVICE FOR NAVIGATING INSTRUMENTS

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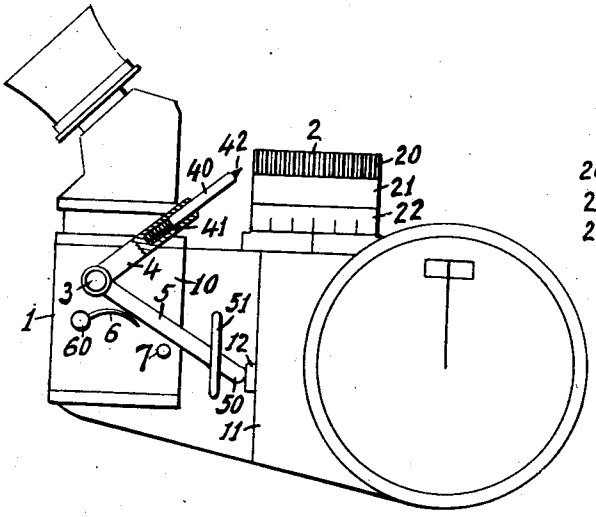


Fig. 1

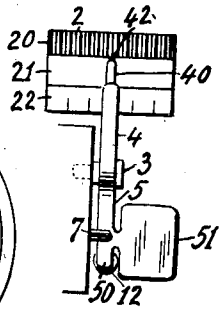


Fig. 2

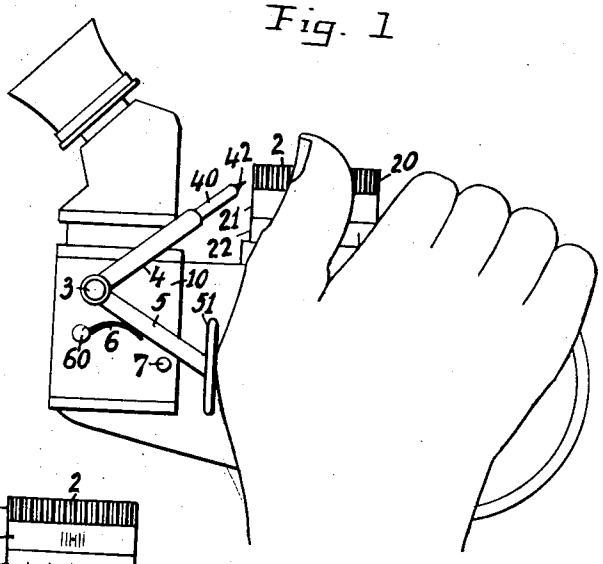


Fig. 4

Fig. 3

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MARKING DEVICE FOR NAVIGATING INSTRUMENTS

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Application February 24, 1941, Serial No. 380,190

4 Claims. (Cl. 234—1)

This invention relates to navigating instruments and particularly to those of the type of sextants and octants.

It is specially adapted for attachment to the instrument patented in the United States under No. 1,970,543 dated August 21, 1934.

Its object is to provide simple and rapid means for graphically recording a series of observations whereby an average reading may be obtained.

These observations are recorded without changing the grip of the instrument and by a slight sideways movement of the thumb.

They are marked on the instrument on the surface of the knurled thumb cylinder by a pencil on the end of a bell crank lever pivoted on the side of the instrument, adapted to make a vertical mark when actuated by a slight sideways pressure of the thumb. When a series of observations have been so marked, a central point is noted and marked and brought under the pencil point, and a reading of the scale is made.

This simple and rapid method replaces the present cumbersome and slow method of copying down the reading of each observation and then calculating the average of them.

This latter method required the grip of the hand to be released after each observation and the writing down the figures of each reading.

In the piloting of aeroplanes the element of time may be very important in making observations and rapidity of action is most desirable owing to variable conditions such as clouds.

In describing the device reference is made to the accompanying drawing in which:

Figure 1 is a side view of an octant with the device mounted thereon and in normal position.

Figure 2 shows an end view of the device apart from the octant.

Figure 3 shows a knurled cylinder with a series of markings thereon.

Figure 4 shows the operation of the device.

In Figure 1 is shown a side view of the instrument described in United States Patent No. 1,970,543 and illustrated in Figure 2, of that patent.

The only change in the construction required besides the addition of a marker and actuating means therefor is that the thumb wheel 2 has the knurling 20 narrowed to provide a cylindrical smooth surface 21 between the scale 22 and the knurling 20.

This surface 21 should be suitably treated and prepared to receive pencil marks which are clearly visible and can be readily removed or erased. A process known as "anodizing" may be used to treat the surface 21 in order to render it smooth so that visible pencil marks may be made thereon, said process being a process similar to electric-plating and used to render aluminum surfaces non-corrosive. The process, which is well known, is carried out by immersing the aluminum parts in an electrolytic solution of chromic acid or sulphuric acid with the parts connected to the anode of the electroplating apparatus, and passing an electric current through the electrolyte, whereby nascent oxygen is liberated at the anode and combines with the aluminum to form a smooth surface of aluminum oxide on the aluminum parts being treated, aluminum oxide being more resistant to corrosion and forming a smoother surface than aluminum itself.

Mounted on the side 10 of the lower front portion of the instrument, is a pivot pin 3 on which is pivoted a bell crank lever, having legs 4 and 5. The leg 4 is hollowed to receive a pencil bearing tube 40 and a spring 41 to permit the tube 40 to retire into the leg 4 when the pencil point 42 is pressed against the surface 21.

The leg 5 extends to its end 50 which normally meets a stop 12 on the wall 11 of the instrument 1. A spring 6 mounted on a screw 60 bears upwardly on the leg 5 to hold the end 50 on the stop 12 and at the same time hold the pencil point 42 free from contact with the surface 21.

Projecting outwardly from the leg 5 is a vertical plate 51, which provides the means of operating the bell crank lever and causing the pencil point 42 to produce a vertical marking on the surface 21.

A stop pin 7 limits the action of the leg 5 and prevents the pencil point 42 reaching the scale 22 in its descent.

When the observer has adjusted the instrument to a star by his thumb rotating the thumb wheel 2 he then moves the side of his thumb outwards and presses the plate 51. This operates the lever and causes the pencil to mark the surface 21 with a vertical marking. By repeating this operation a series of observations can be recorded on the surface 21 and he can readily select a mean of the markings, the average reading of the series. When that point has been obtained the operator sets his instrument to that point and reads the scale on the instrument as the average or mean observation.

By means of this device the mean or average of a series of observations is obtained by a simple reading of the scale and without changing the grip of the hand holding the instrument. The

observer is thereby able to complete his observation in a very short period of time.

The device can be readily applied to instruments in use with very slight alterations to them.

The detail construction of the device may be changed without affecting the scope of the invention.

What I claim is:

1. In combination, a navigating instrument of the class described having a thumb wheel the peripheral portion of which is provided with a marking surface, means for marking said surface, and operating means for said marking means extending within reach of the thumb of the hand holding and adjusting said instrument.

2. In combination, a navigating instrument of the class described having a thumb wheel the peripheral portion of which is provided with a marking surface, marking means including a bell crank lever pivoted to the side of said instrument and having a stylus adapted to mark said surface, and operating means for said marking means extending within reach of the thumb of the hand holding and adjusting said instrument.

3. In combination, a navigating instrument of the class described having a thumb wheel the peripheral portion of which is provided with a marking surface, marking means including a bell crank pivoted to the side of said instrument and having a spring mounted pencil point on one leg for marking said surface, and means extending outwardly from the other leg of said bell crank within reach of and adapted to be operated by the thumb of the hand adjusting said thumb wheel.

4. In combination, a navigating instrument of the class described having a thumb wheel the peripheral portion of which is provided with a marking surface, marking means including a bell crank lever pivoted to the side of said instrument and having a spring mounted pencil point on one leg for marking said surface, means extending outwardly from the other leg of said bell crank within reach of and adapted to be operated by the thumb of the hand adjusting said thumb wheel, said other leg having a spring tending to normally hold said pencil point away from said marking surface, and a stop to limit the stroke of said pencil point.

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