Feb. 27, 1940. A. LANGSNER 2,192,138

ENCLOSED MECHANISM

Original Filed Jan. 31, 1938

Fig. 2.

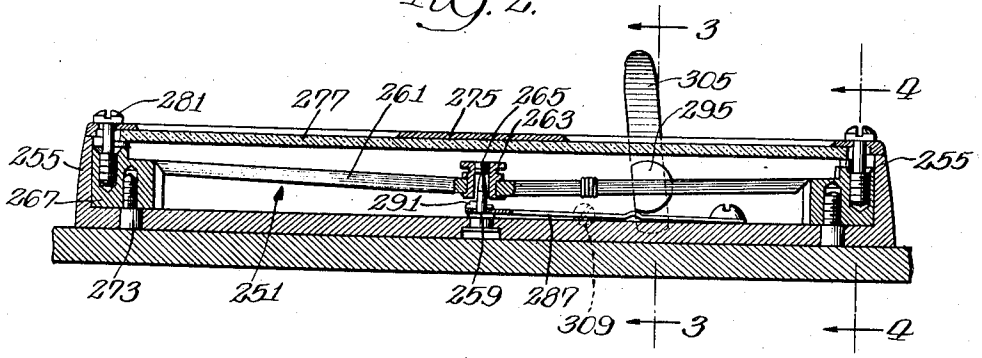


Fig. 1.

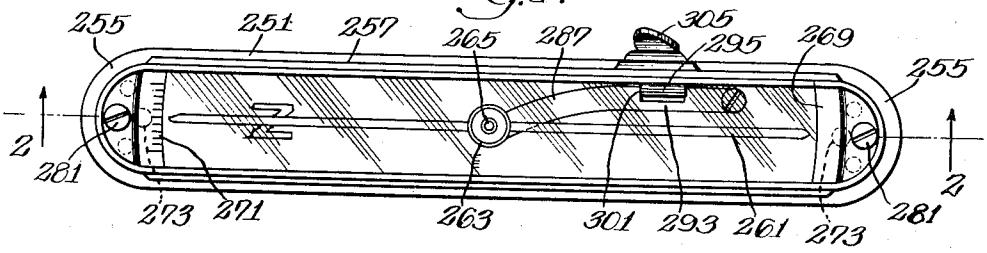


Fig. 3.

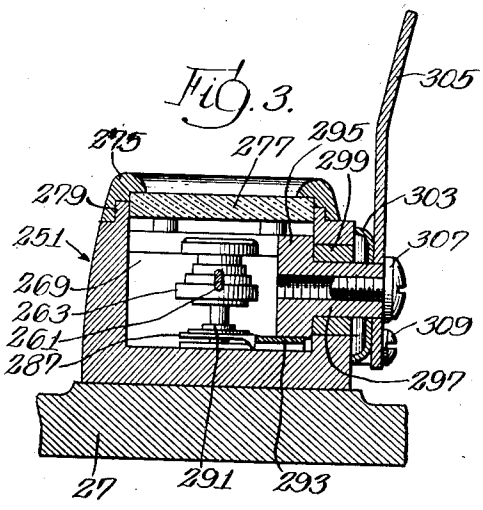
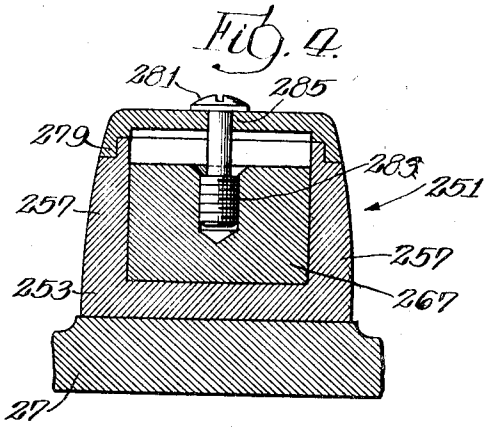


Fig. 4.



INVENTOR.

BY: Adolph Langsner,
Junius F. Cook, Jr.
ATTORNEY.

Patented Feb. 27, 1940 2,192,138

UNITED STATES PATENT OFFICE

2,192,138

ENCLOSED MECHANISM

Adolph Langsner, Chicago, Ill., assignor to Eugene Dietzgen Co., Chicago, Ill., a corporation of Delaware

Original application January 31, 1938, Serial No. 187,997. Divided and this application October 18, 1939, Serial No. 299,930

3 Claims. (Cl. 33—222)

My invention relates in general to measuring instruments and has more particular reference to alidades and similar precision instruments for use in surveying, the same comprising subject-matter divided from my copending application, Serial No. 187,997, filed January 31, 1938.

An important object is to provide instrument casing having a dust-proof cover including fasteners of novel construction normally connected to the cover and adapted for detachable engagement with the casing, on which the cover is removably secured

Another important object is to provide screw fasteners for a cover member or the like comprising a stem having a head at one end, screw threads at the other, and an intermediate restricted portion interconnecting the threaded and headed portions of the stem whereby the fastening devices may be secured on said cover by screwing the threaded portion entirely through a threaded opening in the cover whereby the fastening member is loosely secured on the cover with the restricted portion of the stem extending in the threaded opening of the cover and retained in place by the headed and threaded ends of the same.

Another important object is to provide an improved case for compasses and the like, wherein the casing has relatively narrow, elongated configuration for mounting in position where the available space is restricted as to width, the casing having integral curved ends containing scale blocks of improved form and construction.

A further object is to provide a pointer lifting mechanism of improved construction, including dust-proof means for actuating the mechanism and lifting the pointer within a casing in response to manipulation of the mechanism outwardly of the casing.

Numerous other objects and advantages of the invention will be apparent from the following description, which, taken in connection with the accompanying drawing, discloses preferred embodiments of my invention.

Referring to the drawing:

Figure 1 is a top plan view of a casing embodying my present invention;

Figure 2 is a sectional view taken substantially along the line 2—2 in Figure 1; and

Figures 3 and 4 are enlarged sectional views taken substantially along lines 3—3 and 4—4, respectively.

To illustrate my invention, I have shown in the drawing an instrument case of elongated configuration and adapted more particularly for mounting as on a base or support 27, such as the standard of an alidade where the width of the mounting is limited. At the same time, where the case is used to house a compass, it is desirable that the pointer 261 be of appreciable length in order to afford a substantial deflection for easy measurement. I wish also to provide a dust-proof enclosure to exclude dirt, moisture and other deleterious foreign matter from the instrument housed within the casing.

To this end, as shown in the illustrated embodiment, the case comprises an elongated housing 251 having a bottom 253 and preferably integral upstanding side walls, said walls having rounded or curved portions 255 at the opposed ends of the casing and parallel spacer-apart side portions 257. The compass needle support pin 259 is mounted on the bottom wall 253 in position extending upwardly thereof at the substantial mid-portion of the casing. This pin carries a compass needle 261 provided with a bearing sleeve 263 at its mid-point, said sleeve having a bearing element 265 adapted to rest on the upper end of the pin. The compass needle 261 is substantially longer than the width between the spaced side wall portions 257. In the opposed ends of the casing are arranged blocks 267 having surfaces 269 substantially concentric with respect to the pin 259, said surfaces being positioned opposite the ends of the compass pin so that the same will sweep adjacent said surfaces. The blocks 267 have scales 271 marked thereon adjacent the surfaces 269 so that the deflection of the compass needle may be measured.

The blocks 267 may be formed integral with the walls of the case, but preferably are secured in the casing 251 in any suitable fashion as by means of the holding screws 273 penetrating the bottom of said casing and taking into said blocks. The casing 251 has an open top and I have provided a removable cover for the casing formed in such a way as to prevent entrance of dust into the casing at the edges of the cover. To this end, the cover comprises a frame 275 of shape corresponding to the configuration of the side walls of the casing. The frame 275 carries a translucent window 277, preferably glass, through which the compass needle may be readily perceived when the cover is positioned and secured on the case The cover 275 and the upper edges of the walls of the casing are formed with an interfitting tongue and groove formation indicated at 279, and the cover is adapted to be removably secured in place by fastening elements 281, which extend in perforations formed in the

cover and thread into sockets 283 in the blocks 267. These fastening elements 281 are of improved construction to the end that they will remain fastened to the end of the cover even after the same is removed from the casing, and hence cannot be lost or misplaced.

To this end, the fastening members are headed at one end and threaded at the other, with an intermediate neck interconnecting the headed and threaded portions. The fastening elements 281 are applied to the cover through openings 285, which are of a diameter and threaded to permit the threaded portions of the fastening elements to be screwed therethrough in assembling the fastening members on the cover.

After the threaded portions of the fastening members have been screwed completely through the threaded openings 285, the interconnecting portions will be loosely held in said openings since neither the headed nor threaded portions of the fastening members are small enough to be drawn axially through the openings. Consequently, the fastening members will be permanently, though loosely, assembled on the cover. In order to fasten the cover on the casing 251, it is merely necessary to apply the same and turn the exposed heads of the fastening members 281 in order to engage the threaded portions thereof in the sockets 283.

I also provide dust-proof means whereby the compass needle 261 may be raised from the pin 259 when the instrument is not in use, in order to preserve the pin and the bearing element 265 from damage. To this end, I arrange a substantially flat or leaf spring 287 on the bottom of the casing. The spring is held on the bottom at one end by a fastening screw 289 and extends from said screw to the pin, the spring having a perforation adapted to receive said pin. The spring is slightly bowed so that it will normally assume a position on the pin lifting the needle from the point of the pin. When lifted, one end of the bearing 263 is supported on a seat 291 formed on the spring in position enclosing the pin.

The spring 287 is formed intermediate its ends with an upwardly bowed portion 293 and a rotatable element, having a cam portion 295 and a shaft 297, and is arranged with the shaft portion 297 journaled in a bushing 299 formed in one of the walls 287 opposite the bowed portion 293 of the spring, the cam portion 295 overlying said bowed portion. The cam portion comprises a cylindrical disk having a flattened surface 301 on one side. The end of the shaft portion 297, remote from the cam portion 295, projects from the outer surface of the wall and is fitted with a spring disk 303 and a handle 305. The handle and disk is held on the end of the shaft by a fastening screw 307 so that the disk not only serves to enclose the outer end of the bushing 299 and thus minimize the possibility of penetration of foreign matter between the shaft and the bushing, but also to urge the shaft outwardly in the bushing so that the cam portion 295 will be against the inner surface of the wall in position opposite the bowed portion 293 of the spring. The handle 305 may be arranged in the position shown in Figures 7 and 8, in which the curved surface of the cam member engages and presses upon the bowed portion 293 of the spring and thus maintains the same in depressed position permitting the compass needle to rest upon the pin in operative position. From this position, the handle may be depressed in a counter-clockwise direction, viewing Figure 7, in order to force the flat surface 201 toward the bowed portion 293 of the spring, and thus drop the compass needle 261 onto the pin 259.

It will be seen that the construction is simple and inexpensive, and at the same time provides a case having an attractive appearance. The cover fastening screws cannot become lost when the cover is removed, yet can be readily assembled on the cover. The case is substantially dust-proof, while the pointer lifting mechanism permits operation thereof from outside the case while excluding foreign matter.

It is thought that the invention and numerous of its attendant advantages will be understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction, and arrangement of the several parts of the illustrated apparatus without departing from the spirit or scope of my invention or sacrificing any of its attendant advantages, the forms herein described being merely for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A device of the character described comprising, in combination, an elongated, elliptical base, an upstanding flange surrounding the base and formed integrally therewith, a plurality of scale blocks associated with the opposite ends of the base and arranged to conform to the shape of the surrounding flange, fasteners for securing the scale blocks to the base, a plurality of shoulders formed integrally upon the scale blocks, a transparent closure member resting upon said shoulders and shaped to conform to the inside contour of the surrounding flange, a rim arranged to cooperate with the upper edge of the surrounding flange in maintaining the closure member in assembled position, fasteners extending between the rim and the shoulders of the scale blocks for securing the rim in position, and an indicator element mounted upon said base beneath said transparent closure member.

2. A device of the character described comprising, in combination, an elongated, elliptical base, an upstanding flange surrounding the base and formed integrally therewith, a plurality of scale blocks associated with the opposite ends of the base and arranged to conform to the shape of the surrounding flange, fasteners for securing the scale blocks to the base, a plurality of shoulders formed integrally upon the scale blocks, a transparent closure member resting upon said shoulders and shaped to conform to the inside contour of the surrounding flange, a rim arranged to cooperate with the upper edge of the surrounding flange in maintaining the closure member in assembled position, fasteners extending between the rim and the shoulders of the scale blocks for securing the rim in position, an indicator element mounted upon said base beneath said transparent closure member, and means for raising and lowering said indicator element between inoperative and operative positions.

3. A device of the character described comprising, in combination, an elongated, elliptical base, an upstanding flange surrounding the base and formed integrally therewith, a plurality of scale blocks associated with the opposite ends of the base and arranged to conform to the shape of the surrounding flange, fasteners for securing the scale blocks to the base, a plurality of shoulders formed integrally upon the scale blocks, a transparent closure member resting upon said shoulders and shaped to conform to the inside

contour of the surrounding flange, a rim arranged to cooperate with the upper edge of the surrounding flange in maintaining the closure member in assembled position, fasteners extending between the rim and the shoulders of the scale blocks for securing the rim in position, an indicator element mounted upon said base beneath said transparent closure member, and means for raising and lowering said indicator element between inoperative and operative positions, said means comprising a stub shaft journaled in the upstanding flange and an operating lever attached to the outer extremity of the shaft.

ADOLPH LANGSNER.