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ARRANGEMENT FOR AVOIDING ERRORS IN MEASUREMENT DUE TO ONE-SIDED HEATING OF THE CASES OF OPTICAL INSTRUMENTS
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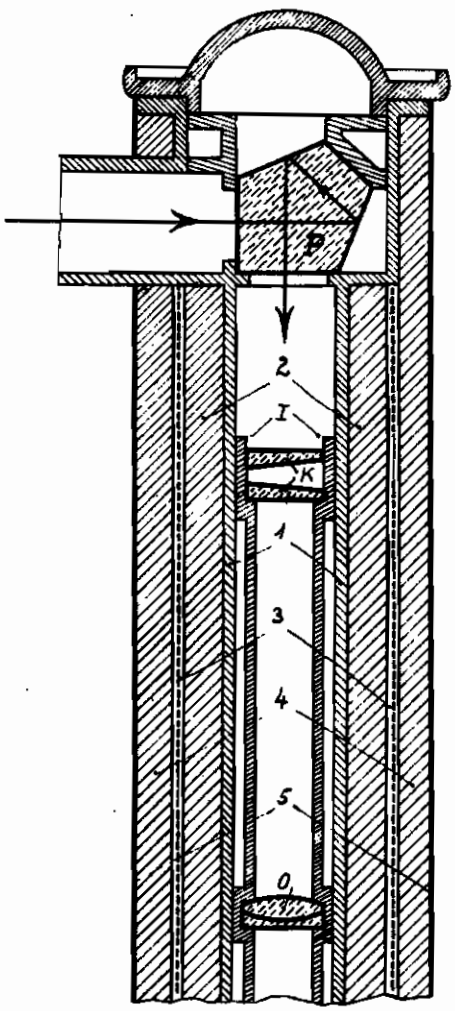

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ALIEN PROPERTY CUSTODIAN

ARRANGEMENT FOR AVOIDING ERRORS IN MEASUREMENT DUE TO ONE-SIDED HEATING OF THE CASES OF OPTICAL INSTRUMENTS

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Application filed April 15, 1941

It is known that errors which might impair the value of measurement results in an inadmissible degree, are caused by heat dilatation of the cases of long optical measuring instruments, such as rangefinders, astronomical instruments, collimators, telephoto lenses, etc., due to one-sided sun irradiation or to irregular heating caused by temperature gradients or air currents in laboratories.

According to the invention these disadvantages of one-sided heating of optical measuring instruments can be avoided by surrounding the instrument cases by heat insulating materials, such as felt wrappings, and by inserting between the insulating layers flexible layers of good heat conductors, such as copper or aluminium wire nets, wire windings, etc., the function of which is to distribute heat between the hot and the cool parts of the instruments without transmitting any heat tensions to the real instrument cases. If the very temperature elevation caused by this heat distribution should involve errors in observation or measurement, these errors could be easily eliminated in a known manner by appropriate compensation organs provided with bimetallic springs.

To protect this exterior insulating layer against moisture, it is covered by a waterproof coating (rubber or the like).

Obviously the heat leveling effect of the arrangement is increased by use of two or more of such heat conducting layers, eventually separated by felt layers, instead of one.

The invention is shown in the annexed drawing by way of example on the end part of a base rangefinder.

In the tube 1, in the end of which the prism P is located, the optical system consisting of turning wedges K, objective lens O and the other optical elements required (not shown) is arranged in a known manner in an interior tube L. The tube 1 is concentrically surrounded by a cylindrical felt layer 2, the latter is surrounded by a concentric loose copper or aluminium wire net 3 which is again wrapped in a concentric loose felt layer 4 which is finally coated by the rubber skin 5.

Instead of the wire net, a smooth or coiled copper or aluminium wire winding can be used.

By these heat insulating layers, the heat irradiated on one side which by irregular heat dilatation would cause bending of the tube and accordingly displacement of the optical image on the graticule, is considerably diminished and by the inserted wire nettings the small heat quantity still passing through the insulating layers is equally distributed over the whole circumference of the insulating layer inside the metal net. Of course, the more insulating layers alternating with conducting layers are applied, the better is the heat distribution.

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