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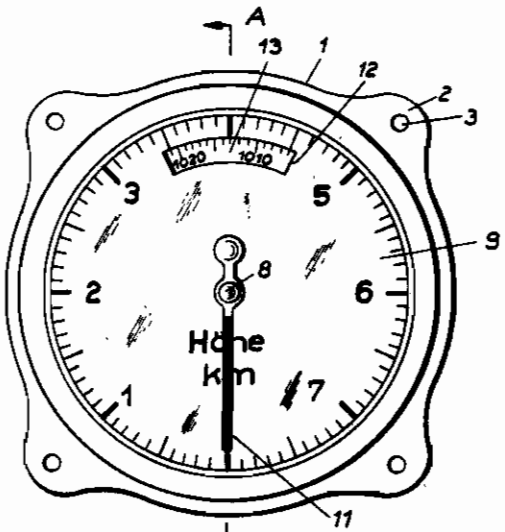

Fig. 1

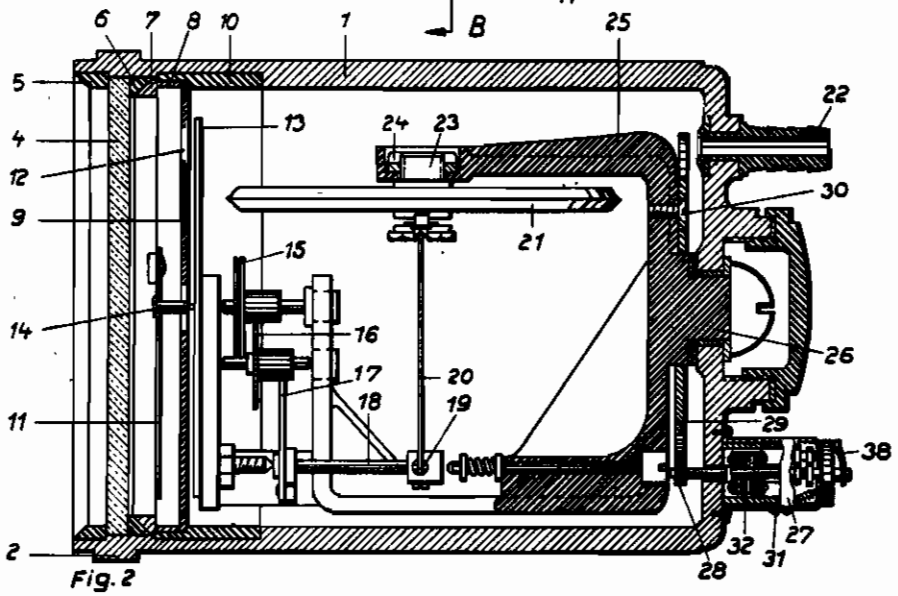

Fig. 2

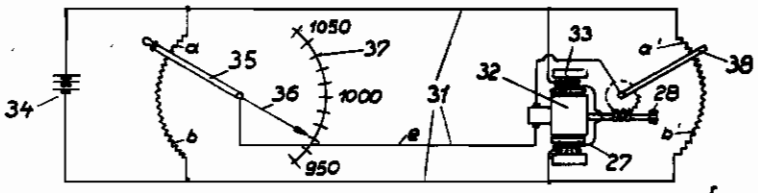

Fig. 3

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ALTIMETER

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The present invention relates to barometric altimeters being provided with an arrangement for zero adjustment of the height indicator in dependence on the air pressure existing on the ground level.

This zero adjustment has hitherto been principally effected in such a manner that the entire altitude measuring instrument together with the indicator may be revolved around its axis by hand by means of an adjusting knob. The extent of the revolution may be read off against a pointer on a scale graduated in millibars, said scale revolving with the apparatus. The air pressure to be set is transmitted from the ground level station by radio, and the board radio operator has to pass these communications on to the pilot. Through the noise of the motors, however an essential element of uncertainty exists in regard to verbal or even telephonic communications. This refers more particularly to cases where several separately adjustable altimeters have to be used in different locations.

According to the present invention, such disadvantages are removed in that electrically influenced means, such as a magnet or a motor, act upon the measuring instruments, the zero position being changed in accordance with their movements. These means are connected with a current source via a rheostat, the movable member of which co-operates with a scale graduated directly in millibars, so that the zero or the millibar adjustment respectively of the measuring instrument may be effected by the radio operator over any distance by actuating the rheostat. Several instruments may be set in perfect uniformity by a parallel or successive switching of the adjusting means.

In the following an embodiment of the invention is explained in greater detail with reference to the drawings.

Fig. 1 shows a front aspect of the altimeter.

Fig. 2 shows a section through same along the line A—B of Fig. 1.

In Fig. 3 the switching arrangement for actuating the adjusting device is diagrammatically represented.

In all figures the same reference numerals stand for the identical parts.

The numeral 1 represents the front aspect of an altimeter housing having on its front part—facing the spectator—flanges 2. In the flanges there are bores 3 designed to receive the fastening screws. The housing 1 is in front closed by a glass plate 4, said plate being kept in position by a ring 5. Behind the glass plate 4 there are two further rings 6 and 7 which over an intermediate piece 8 keep the scale 9 fixed in a fitting 10 of the casing 1. The scale 9 is graduated so as to indicate the altitude in kilometers. Above the scale 9 an indicator 11 is rotatably arranged, said indicator being actuated from the measuring instrument of the altimeter, as described below. In the scale 9 there is in addition a window 12 through which a scale 13 is visible, said scale 13 being graduated in millibar values. The indicator 11 is fixed on an axle 14 and is put into a revolving motion upon a deflection of the diaphragm capsule 21 via the gear wheels 15, 16, a toothed segment 17 as well as the shaft 18 and the levers 19 and 20. The capsule 21 is of the known aneroid type; the interior of the housing 1 is connected with the outer air through a tubular connecting piece 22, it being thus achieved that the deflection of the indicator 11 corresponds to the altitude reached at the time.

The capsule 21 is secured by means of a connecting piece 23 and a nut 24 screwed on to the latter at a frame 25 serving at the same time as bearing for the above mentioned gear wheels 15, 16, the toothed segment 17, the shaft 18 and the levers 19 and 20. This frame is rotatable at 26 in a bearing lodged in the back wall of the casing 1, so that consequently the capsule 21 together with the indicator 11 may be adjusted in relation to the scale 9, in which manner it becomes possible to consider the factor of the existing ground level pressure. Simultaneously with this adjustment the corresponding millibar value becomes visible in the window 12.

According to the invention, the adjustment is effected by electrically actuated means, as for instance by a motor 27 being likewise fixed at the back wall of the casing 1 and the rotor 32 of which transmits its movement via a pinion 28 to a gear wheel 29, which is fixed on the frame 25 by means of screws 30. The current supply of this motor is derived in the usual way via the clamping screw 31.

The switching arrangement of the motor 27 shifting the frame 25 as well as the indicator 11 is shown in Fig. 3. This arrangement is one of the known kind usually employed for distant adjustment of any species of signals or machine parts based on the principle of the Wheatstone bridge. The rotor 32 of the motor 27 used for the adjustment is located in the compensating branch e of the bridge formed by the resistances a, b, a', b', the field winding 33 of the motor 27 being excited from the current source 34. The ratio of the resistances a and b is changed

by actuation of the handle 35, the free end of which is provided with an indicator 36 moving over a scale 37 graduated in millibars. The motor 27 is actuated by the compensating current generated in the branch *e*, said motor shifting about the lever 36 on the resistances *a'* and *b'* until the balance has been re-established, moving at the same time the frame 25 and the indicator 11 of the altimeter via the gear wheel 28. The scale 9 having been graduated to correspond with the respective millibar values of the scale 37, it follows that the indicator 11 may be brought into a relative position to the scale 9 indicative of the existing ground level pressure.

Without any essential deviation from the invention, naturally other electrically actuated means for the adjustment of the indicator corresponding to the millibar values may be employed. Thus the adjustment might for instance be effected by an electromagnet being within the circuit of a rheostat graduated in millibars, the armature of said magnet transmitting in suitable manner to the indicating member its position corresponding to the varying degrees of current intensity.

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