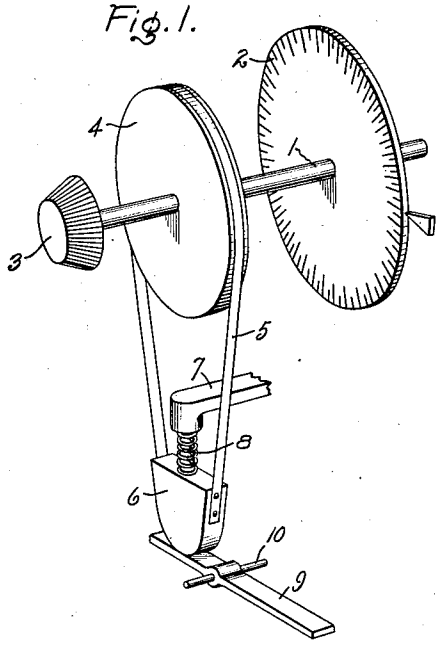
Aug. 7, 1934. P. SCHWARZHAUPT 1,969,528

RADIO CONTROL DEVICE

Filed April 25, 1933

Fig. 1.



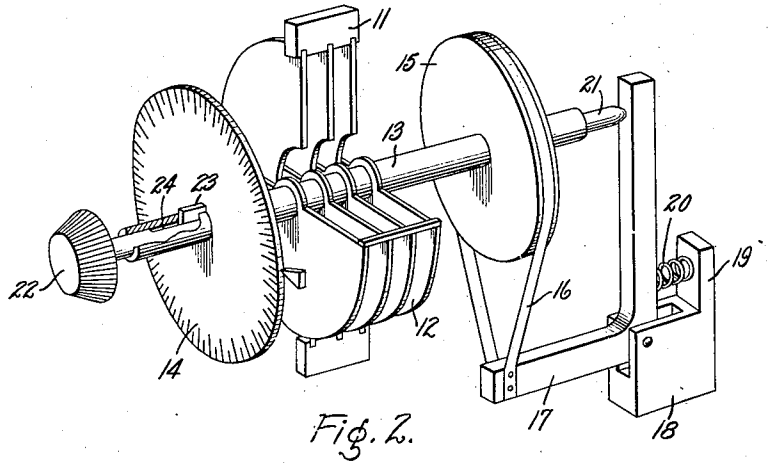


Fig. 2.

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RADIO CONTROL DEVICE

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Application April 25, 1933, Serial No. 667,851

4 Claims. (Cl. 192—4)

My invention relates to radio control devices and more particularly to an arrangement for locking the movable element of a radio control device sequentially to the adjustment thereof.

In radio apparatus, including receivers and transmitters, as used on aircraft and in other applications where the apparatus is subject to vibration, a tendency exists for the apparatus to work out of adjustment. This is particularly true of variable capacitors and variometers used for tuning radio receivers and transmitters. It is desirable to have a means which not only will lock such apparatus in position, but which is simple to operate so that the apparatus may be quickly adjusted and locked into position.

It is, therefore, an object of my invention to provide a simple, economical and readily operable arrangement in connection with the radio control device which, after adjustment of the control device, will sequentially lock it into position.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, will be understood best by reference to the following description taken in connection with the accompanying drawing in which Fig. 1 shows a simple embodiment of my invention, and Fig. 2 shows a preferred embodiment of my invention.

Referring to Fig. 1 of the drawing, I have illustrated therein a shaft 1 of a radio control device which may be a variable capacitor, a variometer or some other device such as a variable resistor. A dial 2 is mounted upon the shaft 1 to provide an indication of the angular adjustment of the movable element of the radio control device. A knob 3 at one extremity of the shaft 1 serves as a convenient means for adjusting the angular position of the shaft. For the sake of clearness, I have shown a brake drum 4 mounted on the shaft 1 between the indicating dial 2 and the knob 3, although it is to be understood that it may be mounted at any point on the shaft 1 and that it is generally preferable to mount it behind the indicating dial 2. The brake drum 4 is provided with a brake strap 5, the extremities of which are fastened to the member 6. The member 7 may be a portion of the framework of the variable radio control device or a portion of the chassis of the radio receiver. A spring 8 is located between the members 6 and 7 so as normally to exert a tension upon the extremities of the brake strap 5. A lever 9 pivoted at 10 is arranged so that one extremity of the lever is beneath the member 6 and the other extremity of the lever extends to the front of the radio apparatus so as to be in proximity to the knob 3.

In the operation of radio apparatus in places where there is considerable mechanical vibration, as for instance in aircraft, it is desirable quickly to adjust the control devices of the equipment and to lock them sequentially in position so as to maintain the adjustment. In the arrangement shown in Fig. 1, the action of the spring 8 is such as constantly to apply a brake to the shaft 1 to prevent rotation thereof. In order to adjust the radio control device, the operator presses upon the lever 9, thereby relieving the tension upon the extremities of the brake band 5 and then adjusts the radio control device by means of the knob 3. Upon completion of the adjustment, the operator releases the lever 9 which immediately and sequentially to the adjustment locks the control shaft 1 in position so as to maintain the adjustment of the radio control device.

Referring to Fig. 2, I have shown therein a preferred embodiment of my invention as applied, for example, to a variable capacitor comprising the stator 11 and a rotor 12. The rotor 12 is provided with a hollow shaft 13 upon which are mounted the indicating dial 14 and the brake drum 15. The brake drum 15 is provided with a brake strap or band 16 which is fastened to one arm of the bell crank 17. The bell crank 17 is pivoted in the member 18 which may be fastened to the chassis of the radio apparatus. The member 18 is provided with a projecting member 19 which serves as an abutment member for the spring 20 located between the other arm of the bell crank 17 and the abutment 19. The expansion spring 20 normally applies the brake 16 to the drum 15 so as to lock the rotor 12 of the variable capacitor. A rod 21 provided with a knob 22 at one extremity is mounted within the hollow shaft 13 so that one extremity of the rod 21 abuts against one arm of the bell crank 17. The hollow shaft 13 is provided with a key 23 which extends into a slot 24 in the rod 21. The slot 24 is of sufficient length to permit longitudinal motion of the rod 21.

The longitudinal motion of the rod 21 actuates the bell crank 17 in a direction to oppose the action of the expansion spring 21 thereby releasing the brake 16. Upon release of the

brake 16, the operator of the radio control device may rotate the movable member of a device which in the present example, is the rotor 12 of the variable capacitor. Upon adjustment of the rotor 12 the operator releases the knob 22 and the expansion spring 20 operates against the bell crank 17 to restore the rod 21 to its original position and at the same time to apply the brake 16 to the drum 15, thereby locking the rotor 12 in position. It is to be understood, however, that the braking means 15 and 16 may comprise any other suitable form of brake and that the use of a brake strap is merely exemplary of the method of solving the problem of preventing rotation of the variable member of a radio control device after adjustment has taken place.

Fig. 1 therefore shows a simple and economical means for preventing the rotation of the movable member of a radio control device due to the action of external mechanical vibrations. The arrangement disclosed in Fig. 2 is preferable in that a single control member such as the shaft 21 and the knob 22 may be used to perform the operation of adjusting the movable member of the control device and preventing the normal braking action.

While I have shown and described my invention in connection with certain specific embodiments, it will, of course, be understood that I do not wish to be limited thereto, since it is apparent that the principles herein disclosed are susceptible of numerous other applications and that modifications may be made in the instrumentalities employed without departing from the spirit and scope of my invention as set forth in the appended claims.

What I claim as new and desire to secure by Letters Patent in the United States is:

1. The combination of a radio tuning device having a rotatable shaft, means for adjusting said tuning device, a brake for said shaft, means for preventing the application of said brake during adjustment of said tuning device, and means for applying said brake sequentially to said adjustment, said latter means including a biasing member normally actuating said brake to prevent rotation of said shaft thereby maintaining the adjustment of said tuning device, and means comprising a mechanical connection between said first two means whereby the second means is operated in response to an operation of said first means distinctive from a tuning adjustment operation.

2. The combination of a radio tuning device having a rotatable member mounted upon a shaft, means for adjusting the position of said rotatable member, a brake drum attached to said shaft, a brake band for said drum, means whereby the application of said brake band during adjustment of said tuning device is prevented by manipulation of said rotatable member, and means for sequentially locking the rotatable member in position after adjustment thereof, said means including a biasing member normally acting upon said brake band.

3. The combination of a radio control device having a rotatable shaft, means for adjusting said radio control device, means for sequentially locking said shaft against rotation after adjustment, said means including a brake drum fastened to said shaft, a brake strap mounted upon said drum, biasing means normally applying tension to the extremities of said brake strap, and means including a lever for opposing the action of said biasing means during the adjustment of said radio control device.

4. The combination of a radio control device having a rotatable shaft, means for locking said shaft against rotation after adjustment thereof, a unitary means for rotating said shaft and for maintaining said locking means inoperative during adjustment of said radio control device, said locking means including a brake drum attached to said shaft, a brake for said drum, and biasing means normally applying said brake to said brake drum.

PAUL SCHWARZHAUPT.