March 22, 1938. H. SCHRÖDER 2,111,694

REMOTE CONTROL MECHANISM

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Fig. 1

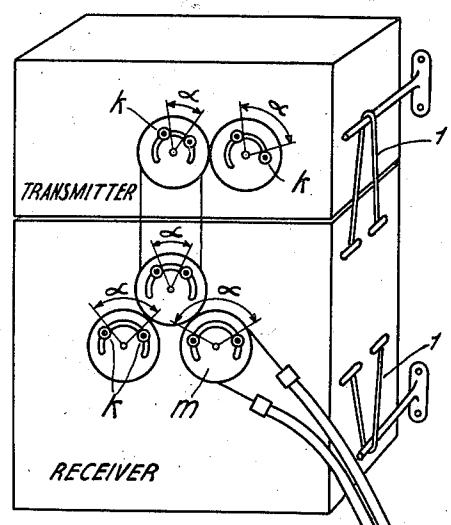


Fig. 3

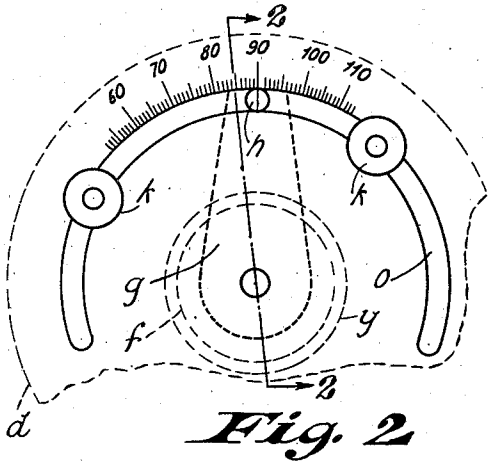
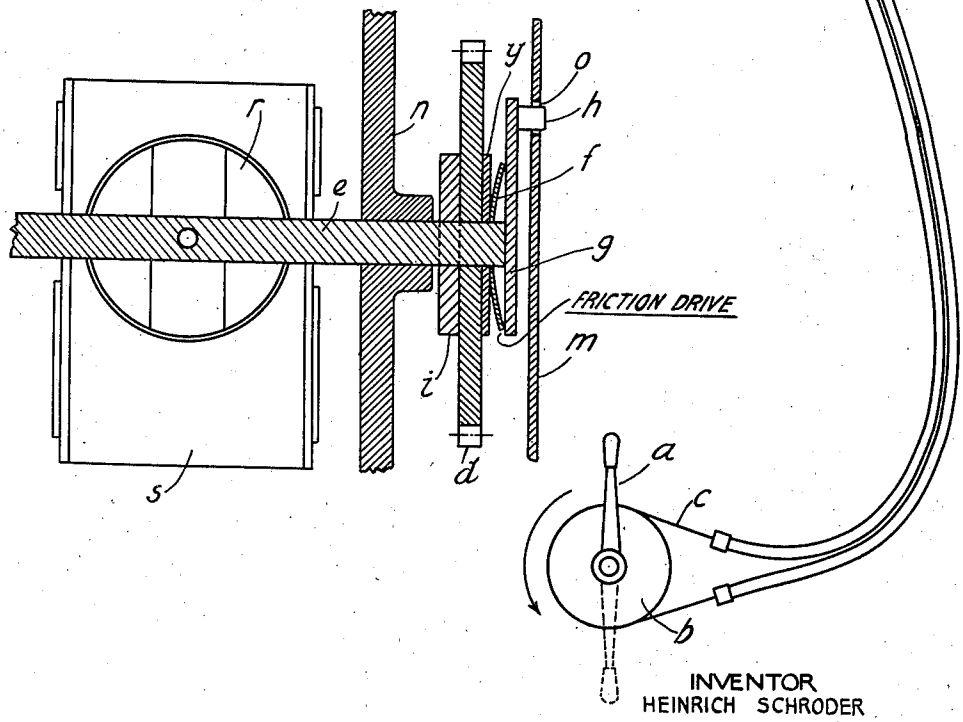


Fig. 2



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REMOTE CONTROL MECHANISM

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3 Claims. (Cl. 250—40)

The present invention relates to a control device for a signaling system, and especially to a remote control mechanism for radio apparatus.

If a part of an apparatus, say the tuning means of a radio set, is to be capable of being adjusted to two exactly defined positions, it is often found that, especially where remote control is concerned, difficulties will arise. Whenever, these two positions of the element to be controlled shall be adjusted in a different way, either the control handle or knob must be actuated between different limits or else the gear ratio must be altered. Still more difficult is the problem of joint control of several elements which are in need of adjustments of dissimilar size or amount.

Now, these difficulties are obviated, according to the present invention, by having the operating handle directly, or by the intermediary of a suitable positively acting coupling or clutch, adjust a friction surface in both directions which will entrain or drive the controlled element (say, the spindle of a variometer, condenser, feedback element, or the like) in both or either direction only as far as a pre-set stop, and as far as feasible in the absence of backlash or slip. The fixing or adjusting of the element to be controlled in the two terminal positions in case of rotary motion is preferably insured by furnishing the spindle of the said element with a crank which, or whose crank pins, rock or move between two adjustable stops.

For a better understanding of the invention reference is made to the accompanying drawing in which—

Fig. 1 is a perspective view of an embodiment of the invention as applied to a combined radio receiver and transmitter;

Fig. 2 is a partial sectional view along line 2—2 of Figure 3 through one of the tuning devices of Fig. 1 and

Fig. 3 is a front view of the control device of Fig. 2.

One embodiment of the basic idea of the invention is shown by way of example in the three figures of the attached drawing in schematic form, as adapted to the remote control of a combination transmitter and receiver equipment whose sending outfit and whose receiving outfit either in a joint or else in two assembled housings, say, on board an airplane, are attached to rubber supports *i*, *i*, and which are capable of remote control from a control or actuating lever *a*, say, by way of a Bowden rope or wire drive *c*. The chief point is, in this instance, by rocking the control lever *a* say, through an angle of 180 degrees so that it will occupy a position as indicated by the dotted line, or through some other suitable angle, and returning of the said lever, is to set or adjust various parts of the equipment (for instance, the circuits of the pilot stage of the transmitter, the master stage of the same, the antenna and the coupler means thereof, furthermore the tuning circuits of the receiver and its feedback means) so that they will occupy two definite terminal positions corresponding to two distinct wavelengths. However, the setting angles α between the two end or terminal positions may be different for different elements to be subjected to control. Details of the drive can be seen from Figs. 2 and 3.

Fig. 2 illustrates the control of a variometer whose rotor *r* seated upon the spindle *e* inside the stator S is adapted to be entrained by the disk *d*. The said spindle *e* is journaled either in a fixed wall or in a rigid frame *n*. The pressure required for the drive of the disk *d*, loosely seated upon the spindle *e* against the collar *i* of the said spindle, is effected by the agency of a saddle spring *f* which is inserted between a crank *g* secured to the shaft and a washer *y* bearing against disk *d*. The disk *d* is subject to positive control from the remote-control lever *a*, and its maximum setting angle is larger than the prescribed adjustment angle α of the variometer between the two terminal positions of the same.

For fixing the two terminal positions of the controlled element there is used a crank *g* secured on the spindle *e* and whose pin *h* is movable in the slot, or keyway, *o* of a fixed wall *m* (which, if the crank is of suitable direction could also be identical with *n*). To limit this movement in both directions according to the desired size of the angle α there are used adjustable stops *k*, *k* (Fig. 3). When the crank pin abuts against one of these stops the spindle can no longer be entrained by the disk *d* which continues moving.

All of the clutch disks *d* pertaining to the different spindles to be controlled may be inter-connected by means of tooth-wheels or pulley drives so that upon one of the disks *d* being moved by virtue of remote control action, also the others will partake of this motion.

What is claimed is:—

1. A drive mechanism for a rotor element of a radio set comprising an adjusting handle located at a position remote from said radio set, a spindle for supporting the rotor element, a pulley loosely mounted on and directly engaging said spindle, a spring arranged to hold said pulley in frictional

engagement with a portion of said spindle, a flexible coupling means between the handle and said pulley, a panel provided with an arcuate slot, a pair of limiting stops disposed in said slot and separated by a desired angular distance, a pin rigidly coupled to the end of said spindle and lying parallel therewith, said pin being disposed within said slot for movement between said stops and the angle traversed by said pin being substantially less than that through which said handle is adjusted.

2. A drive mechanism for a rotor element of a radio device comprising the combination of an adjusting handle located at a remote distance from said radio device, a pulley connected to said handle, a spindle for supporting the rotor element, an arm secured to the end of said spindle, a pin projecting from said arm, a second pulley loosely mounted on said spindle between said arm and rotor element, a flexible belt engaging the peripheries of said pulleys, a compression spring engaging said arm and second pulley and arranged to hold said pulley in frictional engagement with said spindle, and two spaced apart stops adapted to be engaged by said pin, the angle between said stops being less than the angle through which said handle is adjusted to secure a predetermined adjustment of said rotor element.

3. In combination, a radio device having a plurality of tunable elements each adjustable through a different angle, a shaft secured to each of said tunable elements, pulleys loosely mounted on said shafts and having their peripheries in engagement, a friction clutch connecting each of said shafts and pulleys, a crank arm secured to the end of each of said shafts, a pin secured to each of said crank arms at right angles thereto, a pair of stops engaged by each of said pins to limit the angular motion thereof, one of said pins being adjustable through a greater angle than the other and a flexible driving means connected to one of said pulleys.

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