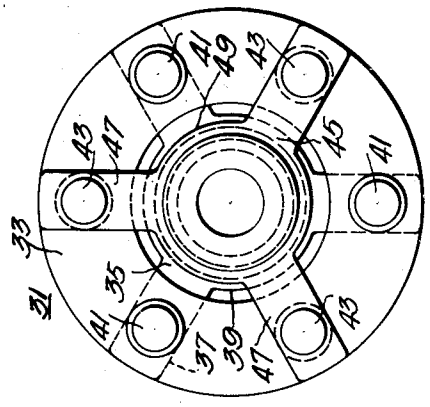
Sept. 19, 1939. A. BLAIN 2,173,226

TUNING DEVICE

Filed April 27, 1937

Fig. 2.



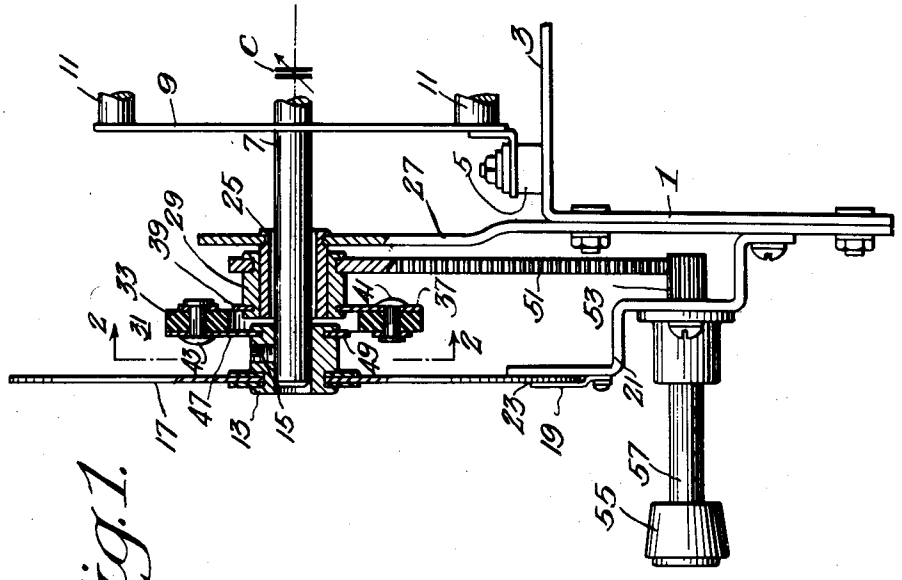


Fig. 1.

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TUNING DEVICE

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Application April 27, 1937, Serial No. 139,138

7 Claims. (Cl. 74—10)

This invention relates to improvements in tuning devices for radio receivers.

The principal object of the invention is to provide a tuning device embodying a tuning element, such as a gang condenser, wherein the tuning element is thoroughly shock-insulated from the chassis and from the driving mechanism whereby such tremors as are incident to the operation of the driving mechanism are prevented from affecting the tuning element and its associated apparatus.

Another object of the invention is to provide a shock-insulated tuning mechanism wherein the dial, pointer, or other indicator is mounted directly upon the main shaft of the tuning element, whereby an accurate indication of incremental movements of the gang condenser or other tuning element is ensured.

Still another object of the invention is to provide an extremely simple, compact, trouble-free, shock-proof tuning mechanism which lends itself readily to mass production methods.

Other objects and advantages will be apparent and the invention itself will be best understood by reference to the following specification and to the accompanying drawing, wherein:

Figure 1 is a vertical sectional view of a tuning mechanism constructed and operated in accordance with the invention, and

Figure 2 is a detailed front elevational view taken on the line 2—2 of Fig. 1.

In the drawing, 1 designates the front panel and 3 a base or shelf of the chassis of a radio receiver. Mounted above base 3 and supported as on shock-insulating rubber grommets 5, is a variable condenser, indicated diagrammatically at C by the usual symbols. Condenser C may comprise a main tuning shaft 7, a front plate 9 in which shaft 7 is journaled, and a number of frame members 11 which, in addition to supporting the stator plates (not shown), lend rigidity to the device. The main tuning shaft 7, which is preferably rotatable through a given range of 180° extends forwardly beyond the front plate 9 and has a hub 13 fixed thereon adjacent its outer end as by screw 15.

Hub 13 has an indicating device 17 secured thereto in a plane normal to the axis of rotation of the tuning shaft. Indicator 17 may, as shown, comprise a dial the indicia of which may be read by reference to a fixed pointer 19 which is supported on a bracket 21 secured to the front panel 1 of the chassis. Preferably pointer 19 is bent outwardly from bracket 21 to form a channel 23 within which the periphery of dial 17 is guided. Channel 23 further serves to maintain the dial against such displacement as may occur due to warping or curling of the light weight material of which it may be constituted.

Instead of a dial, hub 13 may carry a pointer, in which case the scale bearing surface with which the pointer is associated may be mounted in any suitable manner, as on bracket 21 or upon the front panel of the cabinet (not shown).

The extension of shaft 7, to which the hub 13 bearing the indicator 17 is affixed, extends through, without touching, a stationary, coaxial, cylindrical member 25 which is supported on a bracket 27 secured to the front panel 1 of the chassis. The clearance between shaft 7 and cylinder 25 is preferably sufficient to permit of a limited range of displacement or misalignment between these members. Member 25 serves as an axle for a sleeve 29 which is rotatably mounted on its outer surface.

A vibration damping member, indicated generally at 31 in both Figs. 1 and 2, serves to connect sleeve 29 and hub 13 in torque transfer relation. Member 31 may be constituted of an annulus 33 formed of soft rubber or the like and supported between two metal spiders 35, 45, which are fixed, respectively, on sleeve 29 and hub 13. Each spider may comprise a plurality of spaced arms 37, 47 which extend radially outward from a central hub 39, 49, respectively. The arms 37 on spider 35 preferably do not register with the arms 47 on spider 45, but are arranged to lie intermediate adjacent of the arms 47. Studs 41 secure the rubber annulus 33 to arms 37, and studs 43 secure it to arms 47. With the arms and studs so arranged, the only driving connection between sleeve 29 and hub 13 is through the vibration damping rubber annulus 33.

Any suitable or convenient drive mechanism may be employed for imparting movement to sleeve 29. Thus, as shown in Fig. 1, sleeve 29 may carry a gear segment 51 which meshes with a smaller gear 53, driven by a knob 55 on a drive shaft 57 which is supported on bracket 21. Alternatively, a driving mechanism including a disc affixed to sleeve 29 and ball drive therefor, similar to that shown in U. S. Patent 2,076,625 to Donald R. De Tar, may be employed.

Other modifications will suggest themselves to those skilled in the art. It is to be understood, therefore, that the invention is not to be limited except as required by the prior art and the spirit of the appended claims.

What is claimed is:

1. A tuning device comprising a rotatable tun-

ing shaft, driving means concentric with said shaft and spaced radially therefrom, means for mounting an indicator on said shaft and a resilient coupling interposed between said driving means and said mounting means.

2. A tuning device comprising a rotatable shaft, driving means comprising a sleeve surrounding and spaced from said shaft intermediate the ends thereof, means for mounting an indicator adjacent an end of said shaft, a resilient coupling interposed between said driving means and said mounting means, and means for actuating said driving means.

3. A tuning device comprising a rotatable shaft having a given range of movement, a hub fixed to said shaft and supporting a device for indicating the angular position of said shaft, means intermediate the ends of said shaft and comprising a sleeve surrounding said shaft and spaced therefrom for driving said hub and hence said shaft and indicating device, and vibration damping means interposed between said driving means and hub for transmitting torque therebetween.

4. A tuning device comprising a rotatable shaft having a given range of movement, a hub fixed to said shaft and supporting a device for indicating the angular position of said shaft, a fixed hollow member coaxial with said shaft and spaced therefrom a distance sufficient to permit of a limited range of displacement therebetween, a rotatable sleeve on said member, a vibration damping element connected in torque transfer relation between said sleeve and said hub, and means for rotating said sleeve.

5. The combination with radio apparatus having a chassis base, of a tuning element having a rotatable shaft, vibration damping support on said base and upon which said tuning element is mounted, a driving element supported on said base out of contact with said shaft, a driven element secured to said shaft, and a vibration damping coupling member connected between said driving and driven elements.

6. In combination, a tuning element comprising a rotatable shaft having a given range of movement, a vibration damping support upon which said tuning element is mounted, a hub fixed to said shaft and supporting a device for indicating the angular position of said shaft, a stationary hollow member coaxial with said shaft and spaced therefrom, a rotatable sleeve on said hollow member, a vibration damping member connected in torque transfer relation between said sleeve and hub, and means for rotating said sleeve.

7. A tuning device comprising a tuning shaft having an indicator mounted adjacent an end section thereof, driving means for said shaft comprising a surrounding sleeve mounted for independent movement out of contact with said shaft intermediate the ends thereof, a resilient coupling interposed between said sleeve and that end section of the shaft upon which the indicator is mounted, and means for moving said sleeve.

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