Sept. 6, 1932. N. S. GILBERT ET AL 1,876,287

RADIO APPARATUS

Filed April 28, 1930 2 Sheets-Sheet 1

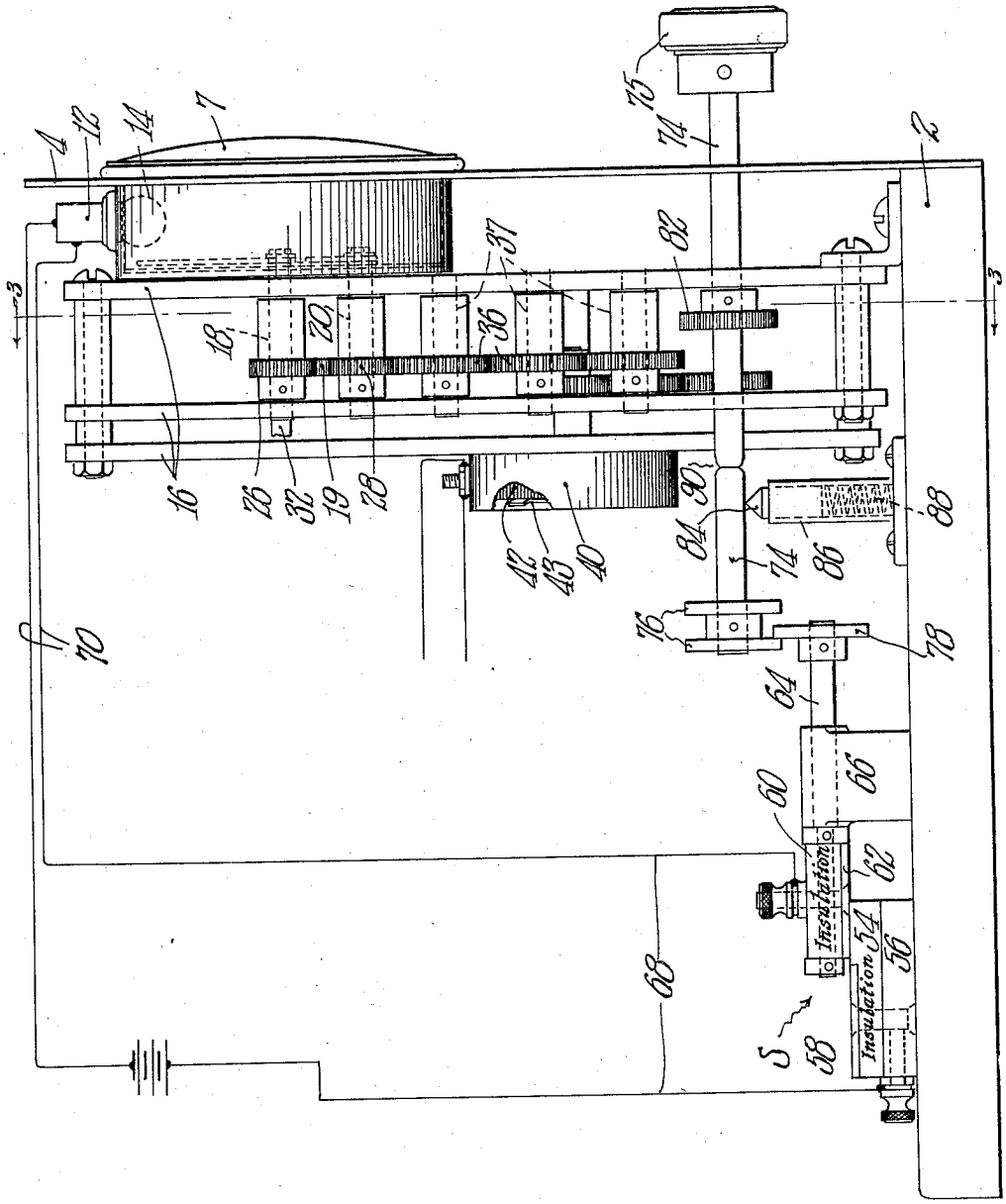


Fig. 1.

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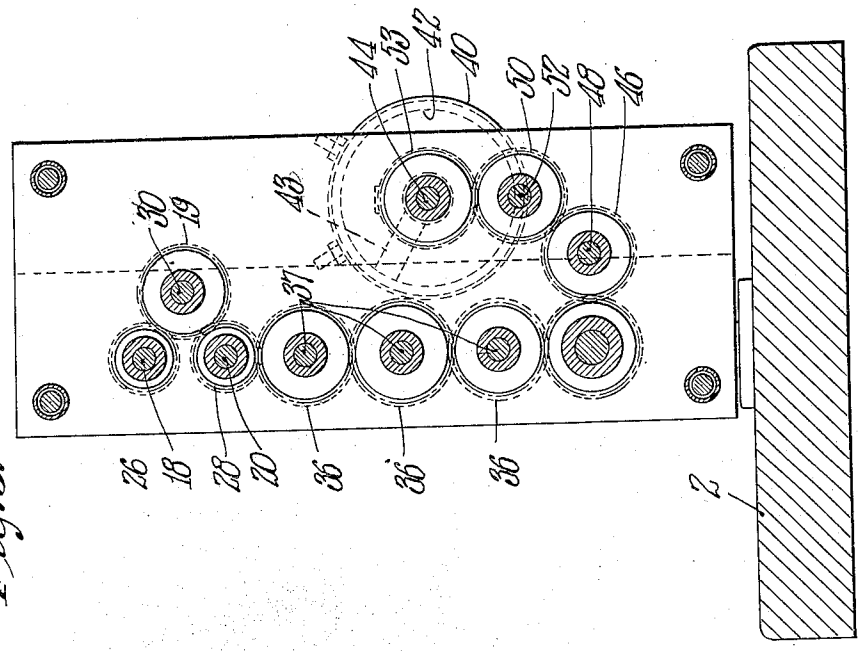


Fig. 3.

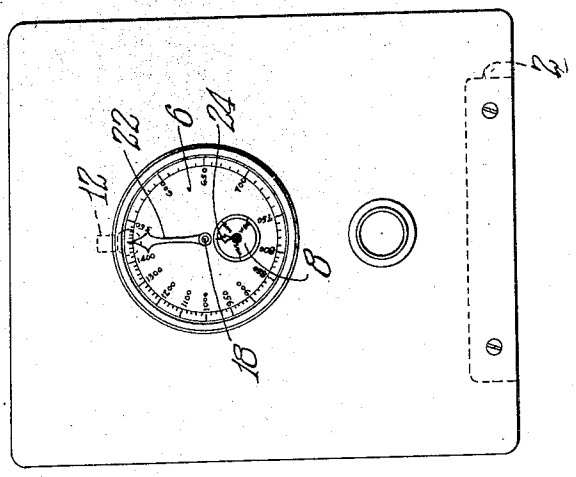


Fig. 2.

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Patented Sept. 6, 1932 1,876,287

UNITED STATES PATENT OFFICE

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RADIO APPARATUS

Application filed April 28, 1930. Serial No. 447,968.

This invention relates to improvements in radio apparatus and is directed more particularly to improvements in control apparatus therefor.

In connection with the usual radio receiver it is customary to employ separate operating elements for tuning condensers, the current supply switch and the resistance unit for controlling current flow to vary the output of the receiver. These separate elements are each manipulated independently for their own special purpose and not only do they altogether provide a more or less complicated structure but they present a rather unsightly appearance.

According to this invention we provide a structure which includes a current supply switch, volume control, means for operating a tuning device and indicating device, all of which are operable by and under the control of a single operating member whereby we not only provide a unitary structure which is simple in construction, but efficient in its operation.

The objects of the invention are accomplished by a novel combination and arrangement of parts hereinafter more fully described in connection with the accompanying drawings, in which

Fig. 1 is a side elevational view of an apparatus embodying the novel features of the invention.

Fig. 2 is a front elevational view of the same at a smaller scale, and

Fig. 3 is a sectional elevational view on the line 3—3 of Fig. 1.

Referring to the drawings in detail, the invention will now be described.

A support is represented at 2 which may correspond to a supporting member of a radio receiver, while 4 may represent a panel thereof.

A dial is shown at 6 which is at the outer or forward face of the panel and which carries graduations as shown. These may represent wave lengths or frequencies commonly used in connection with radio apparatus. A smaller dial 8 may be disposed within dial 6 on which may be marked station designations as indicated. A glass cover member 7 is removably carried by the panel which may be removed to facilitate marking on the dials 6 or 8 when required. A socket 12 for an electric bulb 14 is located so that the dials may be suitably illuminated.

A frame 16 is located behind the panel as shown. Shafts 18 and 20 are rotatable in the frame and have their forward ends extending through dials 6 and 8. These carry pointers 22 and 24 for overlying the dials as shown.

Gears 26 and 28 are carried by shafts 18 and 20 which mesh with an idler gear 19 rotatable on a stud 30. In this way the pointer shafts are rotated simultaneously and in the same direction so that the pointers may be registered, with a designation on dial 6 which may correspond to indicia to be marked on dial 8.

The shaft 18 extends through the frame to provide a portion 32 which may be operatively connected to an operating shaft (not shown) of a tuning device such as a condenser or a common rotor shaft for a plurality of condensers.

The upper one of a plurality of intermeshing gears 36 which are mounted for rotation on pins 37 of the frame meshes with the gear 28 of shaft 20, while the lowermost gear 36 acts as a driver for the group.

A resistance unit 40 in the form of a rheostat is mounted on the frame and is provided with a resistance coil 42 and a contact arm 43 in sliding contact therewith which is rotated by a rotatable shaft 44. This unit may be included in a circuit and employed to control volume.

A driver gear 46 for this unit is rotatable on a stud 48 of the frame and meshes with a gear 50 on a stud 52. This latter gear meshes with a gear 53 on shaft 44.

A switch device S is provided at the rear of the frame. This comprises an insulating plate 54 suitably supported by member 56 and carries a contact 58 and an insulating member 60 carrying a contact member 62 which is slidable on the former. A rod 64 guided in a suitable guideway 66 provides an operating means for the switch. A pair of conductors 68 may be connected to the contacts so that

as they are brought into and out of contacting engagement an electrical circuit including the leads is open or closed. Wires 70 may be connected between leads 68 and socket for the bulb 14 so that as the circuit is closed or opened the bulb is supplied with current. The electrical circuit referred to refers to the circuit supplying the radio receiver with which the apparatus is used.

A main operating shaft 74 is rotatable and slidable in the frame and carries a knob 75 at the outer end thereof to facilitate rotative or sliding movements. It may be reciprocated between an inner or rear position and a forward or outer position and has on its inner end a pair of flange members 76 which loosely embrace a dog 78 on rod 64. With this arrangement the shaft may be rotated without moving the rod 64 while when it is reciprocated the rod is actuated thereby.

A driving gear 82 fixed to shaft 74 is provided for meshing with either the lower gear 36 or gear 46, so that according to the longitudinal position of the shaft either the gears 36 or shaft 44 of the resistance unit may be rotated. In this way the shaft 74 may be rotated for actuating the resistance unit or for operating shafts 18 and 20 of the indicating devices.

The parts are arranged so that when the shaft is in its forward or outer position the switch contacts 58 and 62 are separated to break the circuit in which they are included. When the shaft is in its rear or inner position the contact points are engaged for closing the supply circuit while the gear 82 of the operating shaft engages gear 46 associated with the resistance unit. In this position the shaft 74 may be rotated to rotate arm 43 of the resistance unit. Between the outer and inner positions of the shaft it may be located in what may be termed a neutral position wherein the gear 82 engages with lower gear 36. By rotation of the shaft in this position the shaft for actuating the tuning element is rotated and the pointers moved relative to the dials while the contacts of the switch device are engaged.

In order to frictionally hold the shaft in its so-called neutral position a friction member 84 is slidably mounted in a socket 86 which is spring pressed by a spring 88 against the shaft. The outer end of the member is suitably formed to coact with a circumferential groove 90 on said shaft. The parts are so arranged that the member 84 is depressed as the shaft 74 is reciprocated back and forth while when the member is in register with the groove the shaft is frictionally held against accidental displacement.

As will be observed the operating shaft is shiftable back and forth for engaging with either the pointer actuating or resistance unit mechanisms and is rotatable for operating them. Also the shaft when shifted to its outer position will disconnect the switch mechanism.

Having described the invention what we desire to claim and secure by Letters Patent of the United States is:

1. An apparatus of the class described comprising in combination, shafts for a tuning unit and a resistance unit each connected to a drive gear, a frame, a rotatable shaft in said frame slidable between rear, neutral and forward positions, a switch including contacts and a slidable member for opening and closing said contacts, an operating gear on said shaft arranged for engaging the drive gear of said resistance unit when said shaft is in a rear position and to disengage the same when in neutral and forward positions, connections associated with said shaft and slidable member arranged whereby the latter is operated by the former and the drive gear of said tuning unit shaft disposed to be engaged by said operating gear when the shaft is in neutral position.

2. An apparatus of the class described comprising in combination, shafts for a tuning unit and a resistance unit each connected to a drive gear, a frame, a rotatable shaft in said frame slidable between rear, neutral and forward positions, a switch including contacts and a slidable member for opening and closing said contacts, an operating gear on said shaft arranged for engaging the drive gear of said resistance unit when said shaft is in a rear position and to disengage the same when in neutral and forward positions, connections associated with said shaft and slidable member arranged whereby the latter is operated by the former, the drive gear of said tuning unit shaft disposed to be engaged by said operating gear when the shaft is in neutral position and disengaged when in rear and forward positions, the said connections including a part on said slidable member extending between spaced parts on said shaft.

3. An apparatus of the class described comprising in combination, shafts for a tuning unit and a resistance unit each including a drive gear, a frame, a rotatable shaft in said frame slidable between rear, neutral and forward positions, a switch including contacts and a slidable member for opening and closing said contacts, an operating gear on said shaft arranged for engaging the drive gear of said resistance unit when said shaft is in a rear position and to disengage the same when in neutral and forward positions, connections associated with said shaft and slidable member arranged whereby the latter is operated by the former, the drive gear of said tuning unit shaft disposed to be engaged by said operating gear when the shaft is in neutral position and disengaged when in rear and forward positions, the said connections including a part on said slidable member extending between spaced parts on said shaft

and means to yieldingly hold said shaft in its neutral position, including a spring pressed member in said frame co-operating with a groove provided in said shaft.

In testimony whereof we affix our signatures.

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