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KEYBOARD OPERATED RADIO APPARATUS

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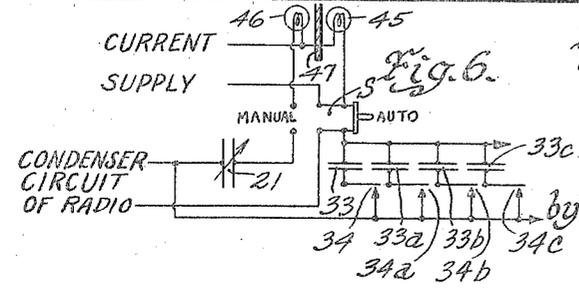
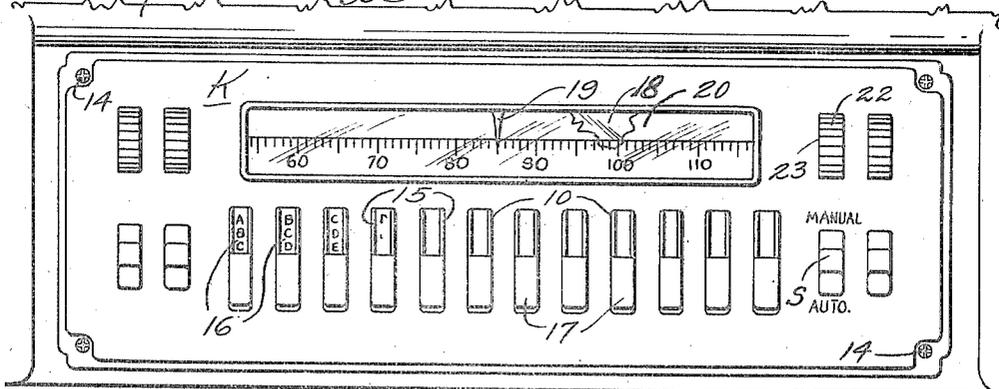
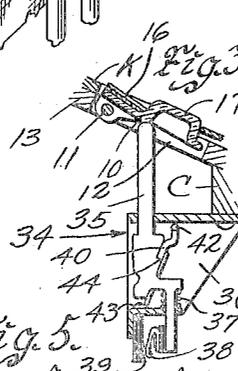
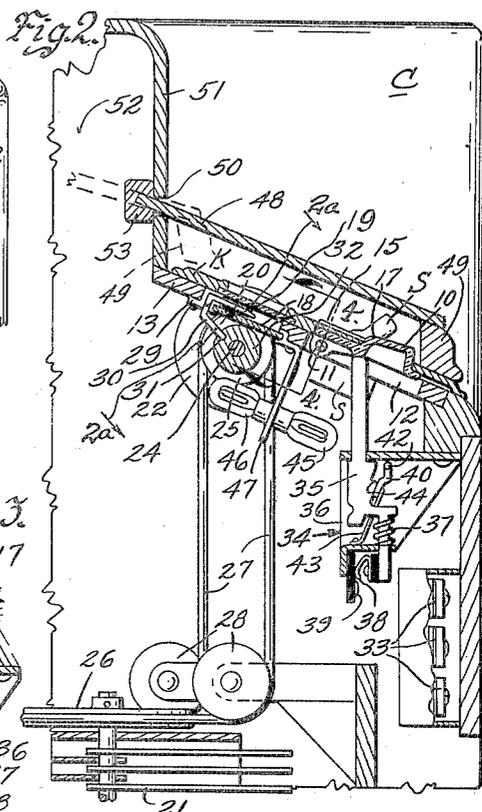
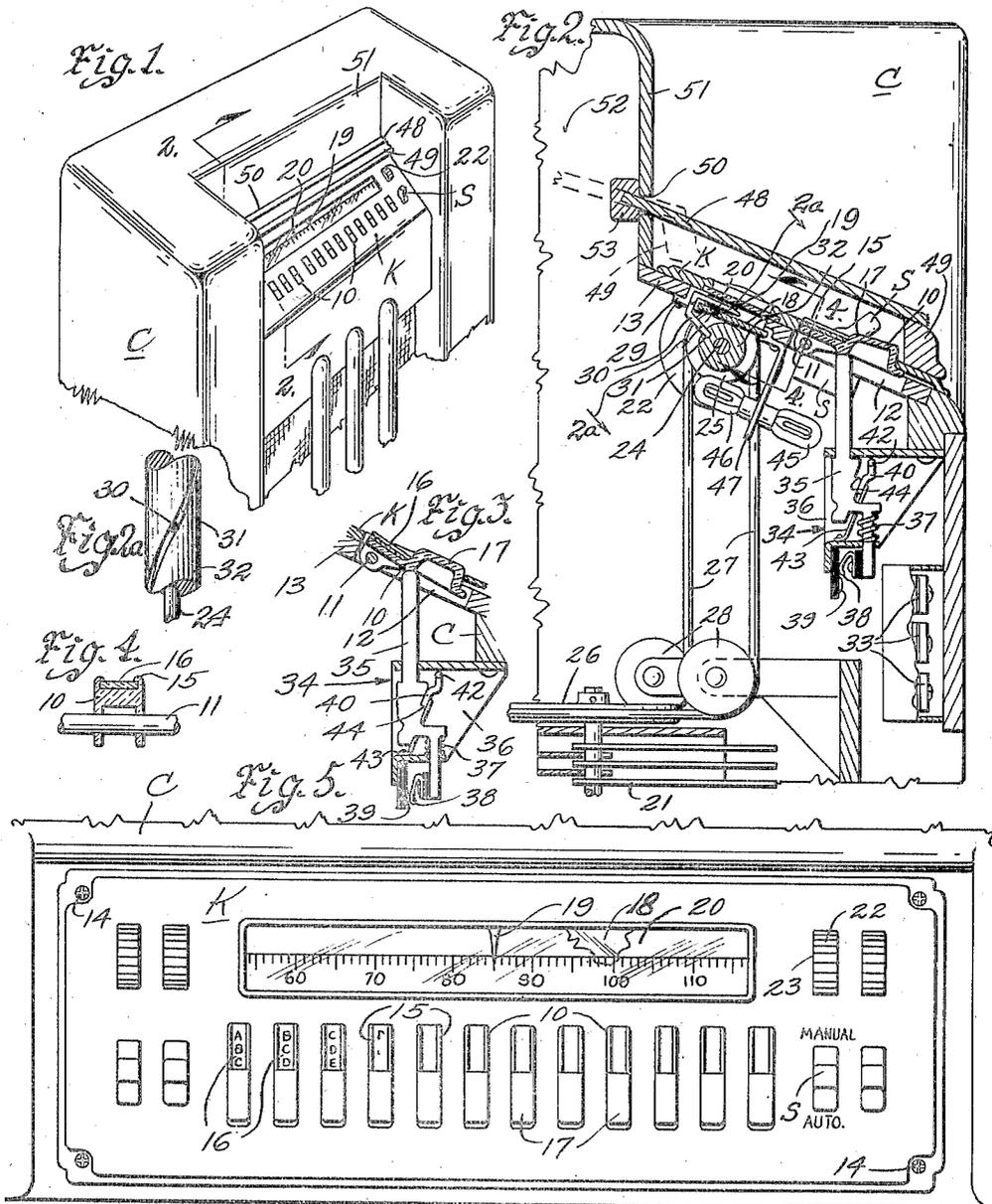


Fig. 7
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UNITED STATES PATENT OFFICE

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KEYBOARD OPERATED RADIO APPARATUS

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2 Claims. (Cl. 250-40)

An object of my invention is to provide a radio apparatus having a cabinet including a keyboard with a plurality of keys mounted thereon for automatically selecting different radio stations, the control board of the radio thus differing substantially from the usual type having rotatable knobs which are rotatable on an axis at substantially right angles to the control board.

A further object is to provide a radio apparatus in which a control board is provided and arranged at an angle between the vertical and horizontal planes, preferably closer to the horizontal.

A further object is to provide a radio cabinet having a control board arranged substantially horizontal so that the user, when operating the radio, can stand comfortably in front of it and readily observe the various stations designators without having to stoop in order to operate the radio in a convenient manner and with a comfortable posture.

Another object is to provide a control board for the operation of the apparatus in a radio cabinet having keys or similar operating elements thereon, the cabinet being so arranged that a pull board can be provided to extend over the control board, thus covering it from view, or extend into the cabinet, thus exposing the control board to view and making it accessible for operation of the radio apparatus.

Still another object is to provide radio apparatus in which keys or the like are provided for automatically switching from one frequency setting of the radio circuit to another in addition to a manually operable means for selecting stations over the range of the radio circuit, a switch being provided for changing from one type of operation to the other.

Still a further object is to provide two separate illuminating means, one for the selecting keys and the other for the dial which indicates the position of the manual station selector, the respective illuminating means being controlled by the switch which transfers from one type of operation to the other, thus indicating which type of operation the radio apparatus is set for and illuminating the station designator for that operation only.

With these and other objects in view, my radio apparatus consists in the construction, arrangement and combination of the various parts thereof, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of a keyboard operated radio embodying my invention.

Figure 2 is an enlarged sectional view on the line 2-2 of Figure 1 illustrating internal details of construction and the relation of the keyboard to the cabinet of the radio.

Figure 2a is a sectional view on the line 2a-2a of Figure 2.

Figure 3 is a view similar to a portion of Figure 2 showing one of the control keys depressed.

Figure 4 is a detail sectional view on the line 4-4 of Figure 2 showing the construction and mounting of one of the control keys.

Figure 5 is a plan view of the control board and the various controlling elements and the station designating dial appearing thereon.

Figure 6 is an electro diagrammatic view showing the essential features of the radio circuit as affected by my invention; and

Figure 7 is a sectional view showing a key of modified construction as compared to the one shown in Figure 2.

On the accompanying drawing I have used the reference character C to indicate generally a radio cabinet. The cabinet C includes a keyboard K, which, it will be noted by referring to Figure 1, is countersunk in the forward upper corner of the radio cabinet C. The keyboard K is preferably arranged at an angle between the horizontal and vertical planes but closer to the horizontal. Accordingly, the control elements on the keyboard can readily be seen and operated by an operator standing in front of the radio cabinet without the necessity of stooping over to read the station designating means, as on a vertical control board as provided in the usual type of radio now on the market.

The keyboard K has spaced thereon a plurality of keys 10. The keys 10 are preferably of translucent material and pivotally mounted as on a rod 11. The rod 11 extends longitudinally of the keyboard K and is suitably supported in a horizontal slot 12 of the supporting board 13 for the keyboard K. The keyboard K itself may be molded of Bakelite or the like and secured to the supporting board 13 by screws 14.

Each key 10, as shown in Figure 4, has adjacent the pivot rod 11 a pair of intumed flanges 15. A station designating element 16 may be inserted slidably under the flanges 15 and normally rests against an upwardly depressed portion 17 of the key. The station designating element 16 is accordingly removable and replaceable with another one, depending on what station the particular tuning element is tuned to. The ele-

ment 16 is preferably of translucent or transparent material having the call letters of the station printed thereon in opaque paint or the like.

5 Above the keys 10 I provide a dial plate 18 with which a pointer 19 coacts for designating selected stations in the ordinary manner. The pointer 19 may be protected by a transparent cover 20.

10 The usual tuning condenser of variable type for the condenser circuit of the radio is indicated at 21. The condenser 21 may be controlled from a position on the keyboard K in any suitable manner. By way of illustration I show a control disc 22 projecting through a slot 23 in the keyboard K. The disc 22 has a knurled periphery and is mounted for rotation on a shaft 24. By means of a drive pulley 25, driven pulley 26 and belt 27, the shaft of the condenser 21 may be rotated by rotation of the disc 22. Idler pulleys 28 are provided for the belt 27 so as to properly direct the stretches of the belt toward the pulleys 25 and 26.

The pointer 19 is illustrated as being slidable in a horizontally arranged guideway 29. A finger 30 extends from the pointer and enters a helical slot 21 in a drum 32 which rotates with the pulley 25. In this manner an operative connection between the condenser 21 and the pointer 19 is provided so that the pointer at all times indicates the frequency to which the condenser 21 is tuned due to the different adjusted positions thereof.

Each key 10 is adapted to control a tuning element such as preset condensers 33, 33a, 33b, etc. These may be set for different wave channels such as 550, 560, 570 kilocycles, and so on. Any circuit arrangement may be provided for controlling the respective condensers by the respective keys 10. By way of illustration I show in Figure 6, switches 34, 34a, 34b, etc. for this purpose.

40 Each switch (see Figure 3) has an actuator 35 slidably mounted in a bracket 36. The actuator 35 is normally retained in raised position by a spring 37. The actuator 35 carries a switch blade 38 adapted to coact with a contact 39. Each of the switches referred to as 34, 34a, etc. in Figure 6, have the elements 38 and 39 as a part thereof.

A retainer plate 40 has trunnions 42 for pivotally mounting the plate relative to the bracket 36. A leaf spring 43 normally retains the retainer plate 40 engaged with the actuators 35. When any one of the actuators 35 is slid downwardly by depressing its respective key 10, the retainer plate 40 is swung against the bias of the spring 43 by a latch lug 44 of the actuator until the plate snaps in behind the latch lug and thereby retains the depressed actuator in such position as shown in Figure 3. Subsequently another key depressed will release the plate 40 and thereby the key previously depressed, and the second depressed key will then be locked by the plate 40 in depressed position for rendering its respective tuning element or condenser 33 operable.

The condensers 33, 33a, etc. are shown as single condensers in Figure 6, although, as illustrated in Figure 2 there is usually a bank of three condensers for each wave channel of a superheterodyne radio circuit. Likewise only one variable condenser 21 is illustrated in Figure 6, whereas there are usually three. For the purpose of disclosing mechanism for selecting automatic operation by depression of the keys 10 or manual operation by rotation of the disc 22, however, single condensers have been shown merely by way of illustration and to conserve space on the drawing.

75 For selecting either manual or automatic op-

eration I provide a switch S. The switch S selectively controls the condenser circuit of the radio so that either the variable condenser 21 or the fixed condensers 33, 33a, etc., are in the circuit. The switch S also controls an illuminating means of selective variety for the dial 18 and the keys 10.

The illuminating means is shown as a pair of electric bulbs 45 and 46. They are supported on a divider plate 47 so that when the bulb 45 is energized only the keys 10 will be illuminated, while energization of the bulb 46 will cause illumination of only the dial 18. The dial 18 of course is preferably translucent so that the indicia thereon will be readily illuminated.

As shown in Figure 6, the switch S controls the current supply to the bulbs 45 and 46 so that when the switch is set for automatic control by the keys 10, the bulb 45 is energized. When the switch is set for manual operation only the bulb 46 is energized. Thus I provide an automatic means for illuminating only the station designating means in operation as selected by the switch S.

In an effort to depart from the usual radio design wherein control knobs extend from the control board and are, to some extent, unsightly, I have provided the neat arrangement of a keyboard as illustrated in my drawing. Aside from the disc 22 and the switch S, other controls as illustrated may be mounted on the board in a similar manner. (Some of these are omitted from Figure 1 wherein the scale is considerably smaller than in the other figures.) As a further means to provide a neat appearing instrument, I provide a pull board 48 adapted to cover the keyboard K. The pull board 48 has a front molding 49 adapted to rest on the keyboard and give to the front edge thereof a neater closed appearance when the pull board is in position covering the keyboard.

The pull board 48 extends through a slot 50 in the front wall 51 of the upper part of the cabinet C. Inside the cabinet, a recess 52 is adapted to receive the pull board 48 when the front end thereof is raised and the board is pushed back into the recess 52. The retracted position of the pull board is shown by dotted lines in Figure 2. An enlargement 53 is formed along the inner edge of the pull board to limit its outward movement relative to the wall 51.

Although I have illustrated keys 10 for the purpose of depressing the actuators 35, it is obvious that knobs 54 or the like may be mounted on the upper ends of the actuators. As shown in Figure 7, thus eliminating the necessity of providing separate keys and mountings therefor, as shown in Figure 2. I find that the knobs or buttons 54 are also readily adaptable for use in connection with the keyboard of the slanting type illustrated. A change of the character shown in Figure 7 and others as well may be made without departing from the real spirit of my invention and it is, therefore, my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a radio apparatus, a cabinet including a keyboard, a series of keys and a manual tuning element mounted thereon for automatic and manual tuning respectively of the radio apparatus, a station indicating means for said keys, a second station indicating means for said manual tuning element, illuminating means for each of said indicating means, and a change-over means for changing from key to manual or from manual 75

to key tuning operation and simultaneously there-
with selectively operating the illuminating means
of the series of keys or of the manual tuning ele-
ment, depending on which is rendered operable by
said change-over means.

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2. In a radio apparatus, a cabinet including a
keyboard, a series of keys and a manual tuning
element mounted thereon for automatic and man-
ual tuning respectively of the radio apparatus, a
10 station indicating means for said keys, a second

station indicating means for said manual tuning
element, illuminating means for each of said in-
dicating means, and a switch for changing from
key to manual or from manual to key tuning
operation and simultaneously therewith selective- 5
ly operating the illuminating means of the series
of keys or of the manual tuning element, depend-
ing on which is rendered operable by said switch.

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