July 7, 1942. M. L. BROWNSHIELD 2,288,783

TIME AND PROGRAM SELECTOR FOR RADIO SETS

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Fig. 1.

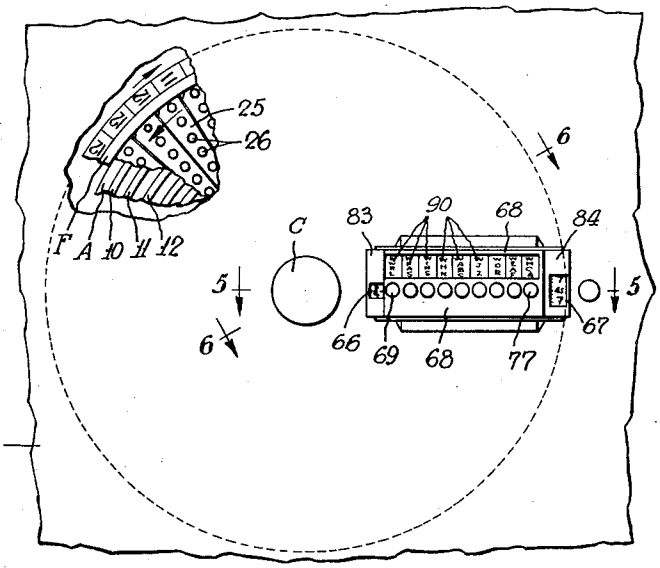


Fig. 2.

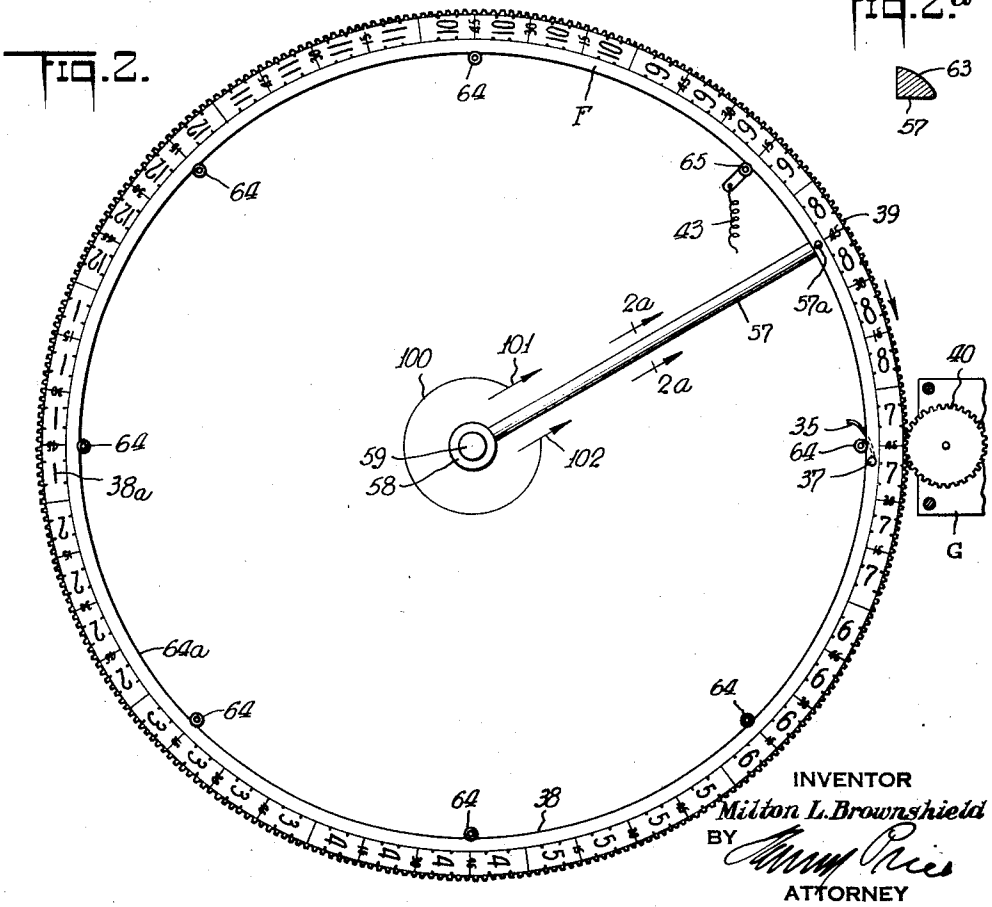


Fig. 2a.

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Fig. 3.

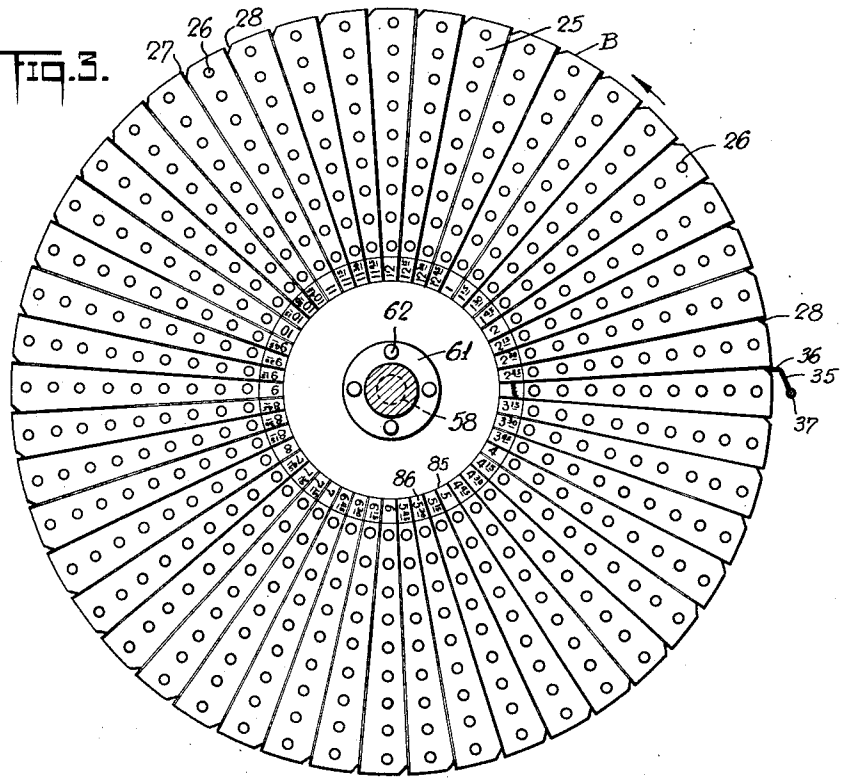
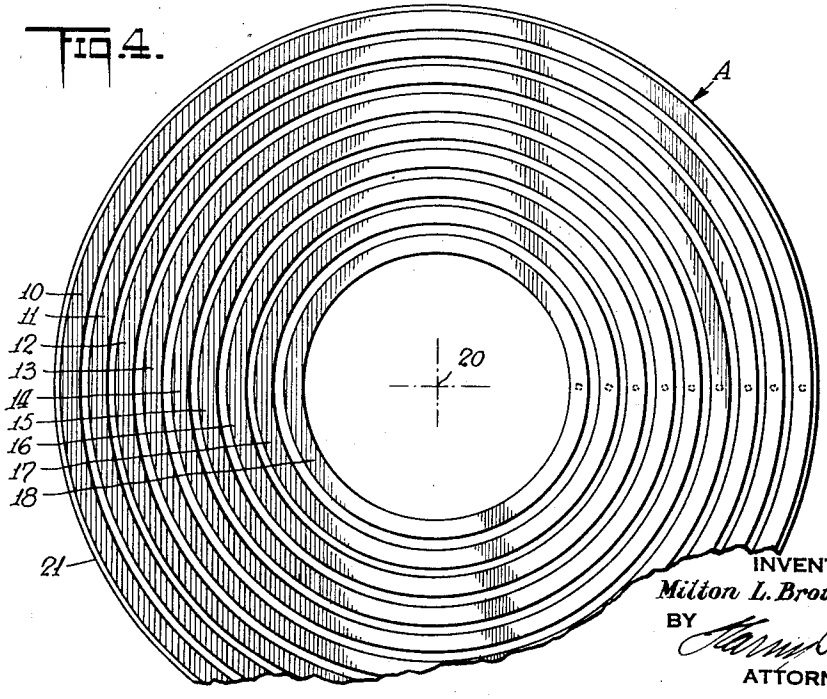


Fig. 4.



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FIG. 5.

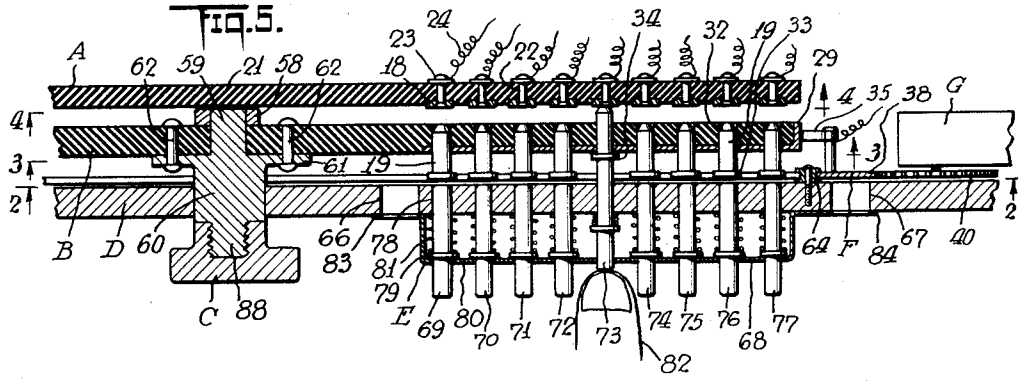


FIG. 6.

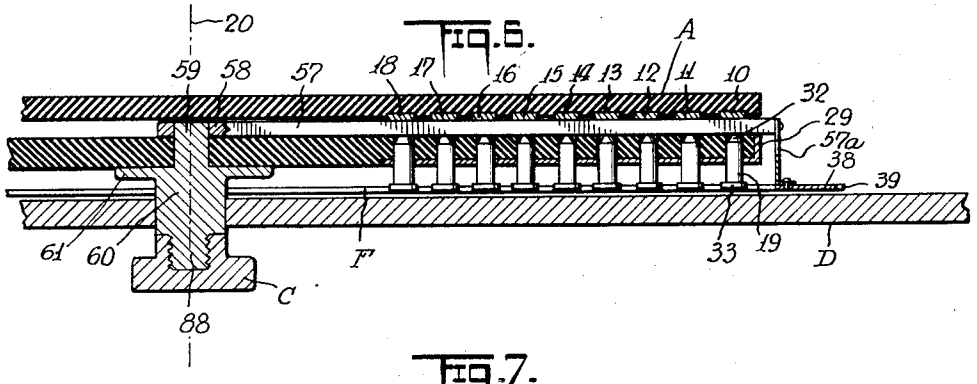
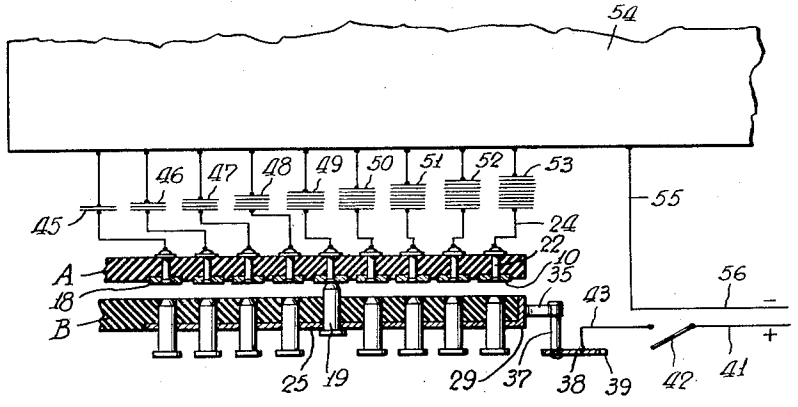


FIG. 7.



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K-58.

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UNITED STATES PATENT OFFICE

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TIME AND PROGRAM SELECTOR FOR RADIO SETS

Milton L. Brownshield, New York, N. Y.

Application August 3, 1940, Serial No. 350,617

7 Claims. (Cl. 200—37)

The present invention relates to an automatic program selector for radio sets and it particularly relates to a dial construction which may be used in conjunction with receiving sets to cause a series of programs for different periods to be received without the necessity of adjusting or regulating the set.

Although the present invention will be illustratively described in connection with its application to a home radio receiving set, it is by no means restricted to such application.

It is among the primary objects of the present invention to provide a tuning dial or a setting dial for home radio sets, which will cause the radio set to automatically tune in different stations over a period of hours, having different programs without making it necessary for the householder or owner of the set manually to control the set or to tune the set, incidental to each change in program.

It is among the further objects of the present invention to provide a simple, durable, inexpensive and automatic selector system for a home radio receiving station, which will automatically tune on and off the set at predetermined intervals and which will automatically tune in desired programs for periods of hours in accordance with the desires of the owner of the set, all without the necessity of using complicated and intricate control mechanisms and circuits readily subject to derangement.

Still further objects and advantages will appear from the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the invention.

According to one preferred embodiment of the present invention, a plurality of dials are provided which may be positioned upon a common axis. One of the dials may be clock driven and preferably takes the form of an annulus with time markings. Two additional dials may be provided, one rotatable by a knob and the other being fixed, the former carrying a plurality of contact segments and the latter a plurality of conductor rings. Each segment carries a radial row of contact pins to be pressed into contact with said rings by actuator elements or press buttons.

According to one embodiment of the present invention, the clock ring may be continuously driven by a clock mechanism, which may have a friction clutch or gearing connection thereto at the periphery of the ring.

A panel carrying said turning knob for the rotatable dial and said actuator contact elements or press buttons may be placed in front of said dials.

The radial rows of contact pins arranged in different segments and in electrical contact therewith may be insulated from each other. Each segment may occupy a space corresponding to a quarter hour and any pin pressed down will establish contact with a ring, which in turn through tuning circuits or with a special motor arrangement may be utilized to switch in a desired station with desired volume for said quarter hour period.

The same time the number of pins in each radial row and the number of contact rings correspond to the number of stations to be played and the ordinary dial according to the present application may have a number of rings corresponding to between 4 to 10 stations to be tuned in.

It is also provided that as the clock rotates, a restorer arm will be inserted which will replace the pins in their original position so that they may again be set.

In the preferred embodiment of the present invention, the desired pins will all be set for quarter hour intervals for a period of 12 hours and after each 12 hour period is played, the pins may again be reset for the next 12 hour period or a shorter period.

Referring to the drawings which show several of the many possible embodiments of the present invention by way of illustration and not by way of limitation, since many changes and modifications may readily be made, all within the scope of the present invention,

Fig. 1 is a diagrammatic view illustrating the application of the tuning dial arrangement of the present application to a panel of a radio set, with part of the panel broken away to show a detail of the disk or dial construction,

Fig. 2 is a plan view, upon an enlarged scale as compared to Fig. 1, of the clock ring upon the line 2—2 of Fig. 5,

Fig. 2*a* is a transverse sectional view, upon an enlarged scale, of the pin replacement arm taken on the line 2*a*—2*a* of Fig. 2.

Figs. 3 and 4 are respectively sectional views upon the lines 3—3 and 4—4 of Fig. 5, showing the arrangement of pins and rings upon the dials,

Figs. 5 and 6 are respectively transverse sec-

tional views upon the lines 5—5 and 6—6 of Fig. 1, showing the details of the construction,

Fig. 7 is a diagrammatic side sectional view illustrating the tuning circuit arrangement which may be used to tune in each station at said quarter hour intervals.

Referring to Figs. 1 to 7, the arrangement as shown consists of a fixed dial member A, which may carry the concentric contact strips 10, 11, 12, 13, 14, 15, 16, 17 and 18, one for each station to be tuned in automatically by the set, a dial B carrying the segments 25 and the rows of contact pins 19 rotatable by a turn knob device C, a front element panel D carrying the setting device with the press buttons E, a clock ring F and a clock mechanism G.

The members A and D, which may be placed in horizontal or in vertical position may be fixed, while the clock ring F will be driven by the clock G, and the intermediate dial or panel B may be turned to enable setting of the various plugs 19 to bring in the different stations for the different time intervals.

Referring particularly to Fig. 4, the dial or panel A has its center 20 mounted upon the axis of the turning knob C within the radio set and is provided with a series of conductor rings 10 to 18 corresponding to the number of stations to be brought in, which conductor rings may be molded or placed upon an insulating support 21 (e. g. a molded plastic).

As shown best in Fig. 5, these rings 10 to 18 are each provided with a pin connection 22 which may be molded in the panel 21. Each pin has a rear element 23 conencted by a wire 24 to a suitable source of electrical energy or a circuit.

The next panel B, which is rotatable, is provided with a plurality of metallic segments 25 molded or otherwise mounted in the insulated material, which segments are provided with openings 26. The strips 25 are separated by insulation 27.

One outer corner of each strip 25 is cut off, as indicated at 28, and the ends of the strips are bent down over the outside of the dial B, as indicated best at 29 in Fig. 5.

Each of the strips 25 have a series of openings 26 receiving the pins or buttons 19 having the conical points 32 and the enlarged heads 33. The heads 33, as indicated at 34, limit the movement of the reciprocatory members or pins 19 when they are pressed downwardly into contact with the rings 10 to 18.

The notches 28 are designed to cooperate with the spring finger 35 having an inturned portion 36 which is carried by the rod 37 (see also Fig. 7).

The rod 37, as best shown in Fig. 7, is carried by the annulus 38 forming part of the ring structure F. The outer end of the annulus 38 is provided with the teeth 39 to mesh with the pinion 40 driven by the clock mechanism G.

The circuits which may be established through the spring finger 35, the ring 38, the pins 19 and the annulus 10 to 18, are best indicated in Fig. 7.

It will be noted that the circuit extends from positive at 41 through the switch 42, through the conductor 43 to the rod 37 and the spring finger 35. Then it passes through the bar 25, the pin 19 to one of the rings 10 to 18, which may be in contact with said pin 19. The switch 42 may be omitted if desired.

The conductors 24 form part of the circuits having the tuning elements 45, 46, 47, 48, 49, 50, 51, 52 and 53. These elements 45 to 53 are connected to the set structure 54 and the circuit is completed through the conduit 55 to the negative at 56.

It is thus apparent that through each circuit as established by the pins 19 and a segment 25, that a definite station will be brought in during the interval that the pin 19 in one of the segments 25 is in contact with one of the rings 10 to 18.

Carried by the annular clock ring 38 is also the replacement or restorer bar 57, which is provided with a pivot mount at 58 upon the reduced shank 59 of the turn element 60, which has a flange 61 riveted or bolted at 62 to the panel element B.

This arm 57, which is of triangular cross section as best shown in Fig. 2a, has an oblique face portion 63 which contacts the bottom beveled portions 32 of the pins 19 to press them back into initial or out of contact position, as shown in Fig. 6.

The arm 57, which extends radially across the face of the dial A and in back of the dial B, will be rotated with the clock ring F by the connection 57a and gradually move the pins back into off position where they may be subsequently again actuated to bring in desired stations.

The ring 38 is guided, as indicated best in Fig. 2, by the bearing members 64 positioned at suitable spaced intervals around the inside periphery 64a and one of these bearings 65 may make the connection with the conduit 43, as best indicated in Fig. 2.

The top panel D carries a box 68. This box 68 is elongated and carries the pins 69 to 77 which fit in the openings 78 in the panel D and have the collars 79 against which are biased against the top 80 of the box when in withdrawn position by the coil springs 81 after they are pressed by the finger 82, as indicated at 73, to move a pin 19 down into contact with one of the rings 10 to 18.

It will be noted that although the pins 69 to 77 are moved back immediately into initial position by the springs 81 after being pressed by a finger 82, the pins 19 will remain in contact position with the rings to establish the desired circuit until restored by the restorer arm 57.

The openings 67 and 66 in the side flanges 84 and 83 of the box 68 respectively permit observation of the time graduations 38a on the ring 38 of the clock structure F and observation of the quarter hour markings on the circle 85 at the inner ends 86 of the segments 25.

The knob C, which may be threaded onto the extension 88 of the stud 60, may be utilized to turn the intermediate dial B with each row of pins 19 beneath the box 68. Then the press buttons 69 to 77 may be manipulated and set the proper pin 19 in position for the proper time period, as indicated in the window 66.

At the same time on the box 83 there may be placed a series of indications 90 showing the stations corresponding to the rings 10 to 18 which may be tuned in by actuation of the different pins 19.

In initial position, the intermediate dial B will be in phase with the time ring member F with the time indications as indicated at 86 and observable through the window 66 corresponding to the time markings upon the ring F and observable through the window 67. The member B is then rotated by the knob C to set the various pins 19, each row of pins being rotated below the setting device E and a desired pin being pressed down into position, as for example in-

dicated at 19 in Fig. 7. Then, when all of the pins have been set to bring in the desired stations for the desired intervals, the rotatable member B is turned back to its initial position where its time intervals will be in phase with the time intervals of the ring F.

When the entire device has been set, it will then automatically play for the 12 hour period or 24 hour period, as may be desired, and the bar 57 as it moves around will automatically set the pins 19 back in initial position after they have caused the set 54 to bring in a desired station for a quarter hour period.

It will be noted that the pins 19 may be set for substantially 360° without interference with the arm 57 by starting the setting at 101 or 102 in Fig. 2 and then turning along the circle to 102 or 101 respectively while making or setting for each quarter hour period represented by each segment 25.

Many other changes could be effected in the particular features of time and program selector for radio sets, and in specific details thereof, without substantially departing from the invention intended to be defined in the claims, the specific description herein merely serving to illustrate certain elements by which, in one embodiment, the spirit of the invention may be effectuated.

What I claim is:

1. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each carrying a row of reciprocable contact elements, one for each ring, each corresponding to a certain time interval and means to establish an electrical connection to each of said segments during said time interval and gear ring and bar means automatically to restore said reciprocable contact elements after actuation thereof to establish a contact.

2. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each carrying a row of reciprocable contact elements, one for each ring, each corresponding to a certain time interval and means to establish an electrical connection to each of said segments during said time interval including an annulus carrying time marking and a clock to drive the same.

3. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each carrying a row of reciprocable contact elements, one for each ring, each corresponding to a certain time interval and means to establish an electrical connection to each of said segments during said time interval, said rings and segments being mounted on insulating carrier plates, the plate carrying the contact elements being rotatable.

4. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each carrying a row of reciprocable contact elements, one for each ring, each corresponding to a certain time interval and means to establish an electrical connection to each of said segments during said time interval, said rings and segments being mounted on insulating carrier plates, the plate carrying the contact elements being rotatable and said dial being provided with a cover panel carrying a row of press buttons, one for each ring, to set the contact elements as said last mentioned plate is rotated.

5. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each carrying a row of reciprocable contact elements, one for each ring, each corresponding to a certain time interval and means to establish an electrical connection to each of said segments during said time interval and means for manually setting said contact elements and automatically restoring them, said means for automatically restoring said contact elements consisting of a gear ring and a rotatable radial bar with a cam surface.

6. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each carrying a row of reciprocable contact elements, one for each ring, each corresponding to a certain time interval and means to establish an electrical connection to each of said segments during said time interval and means for manually setting said contact elements and automatically restoring them, said last mentioned means including a rotatable dial carrying said conductor segments and a fixed box member to actuate said reciprocable contact elements, a fixed face plate being provided to carry said box member.

7. A setting dial for radio sets comprising a plurality of conductor rings insulated from each other, one for each station, a plurality of radially arranged conductor segments, each corresponding to a predetermined time interval, each provided with a row of cooperating reciprocable contact elements, one element being provided in each row for each ring, each row corresponding to said time interval, selector means to select the contact element to be actuated, clock-driven means to establish an electrical connection to one of said segments during said time interval, said rings and segments being mounted on insulated carriers, and said selector means being mounted upon a front panel board and said clock driven means including a clock mechanism, a ring gear driven by the mechanism and a spring contactor carried by said ring gear.

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