

Dec. 12, 1950

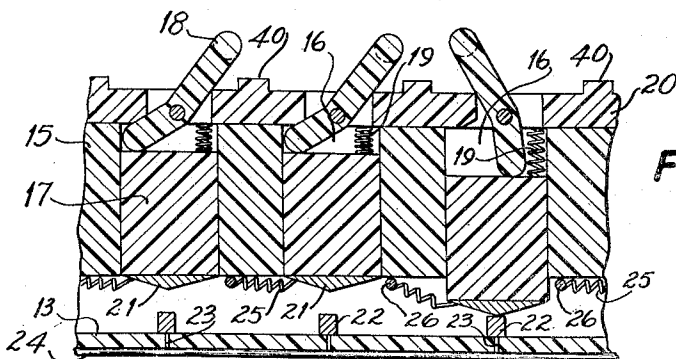
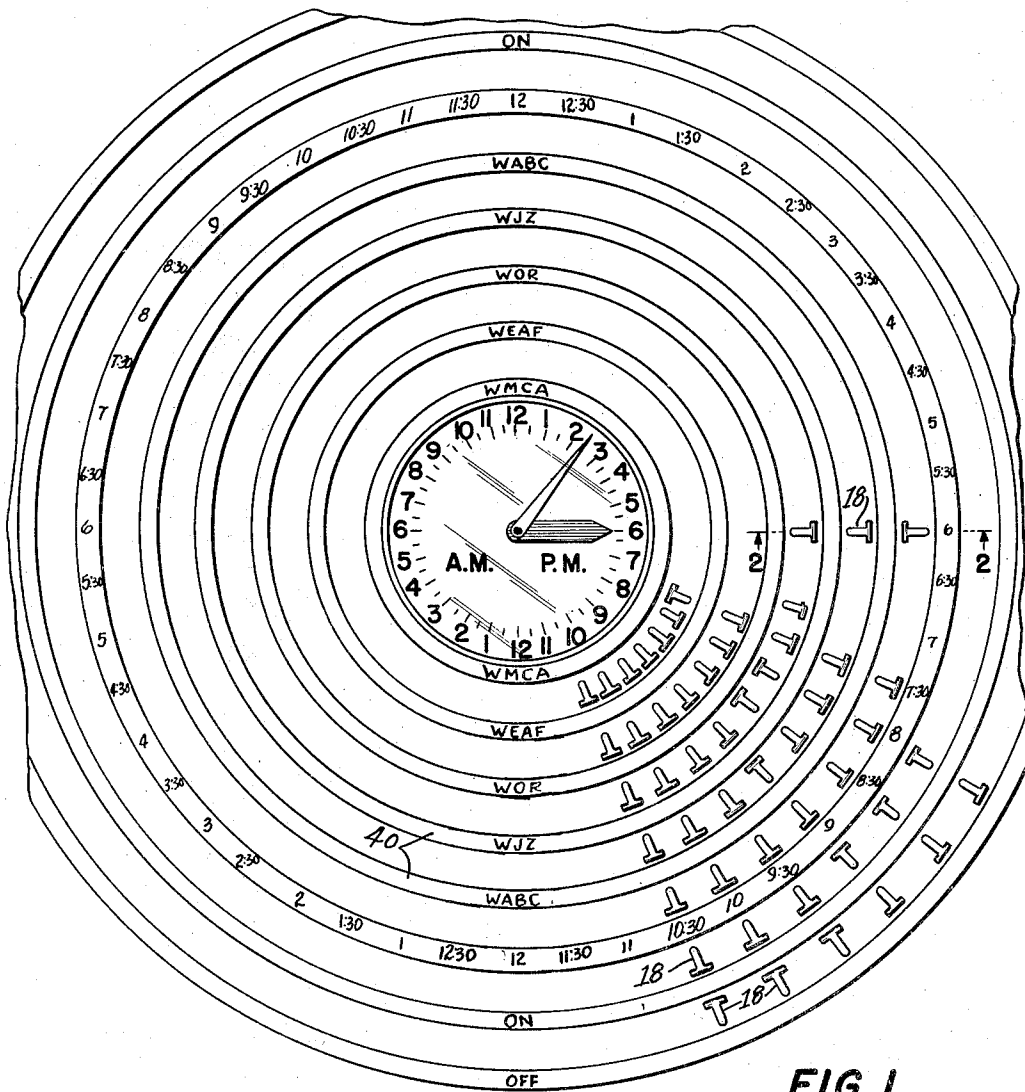
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2,533,877

RADIO TIME TUNING DEVICE

Filed April 1, 1946

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

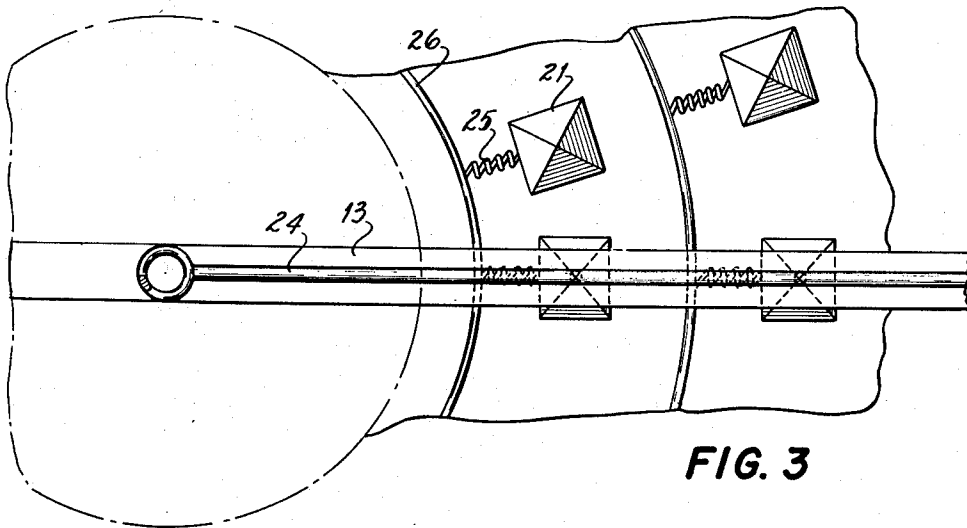


FIG. 3

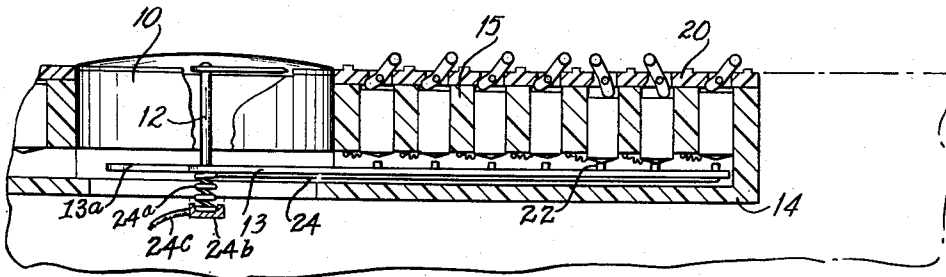


FIG. 4

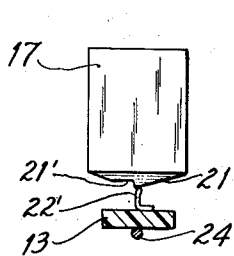


FIG. 5

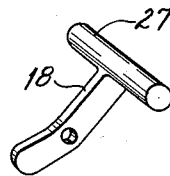


FIG. 6

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3 Sheets-Sheet 3

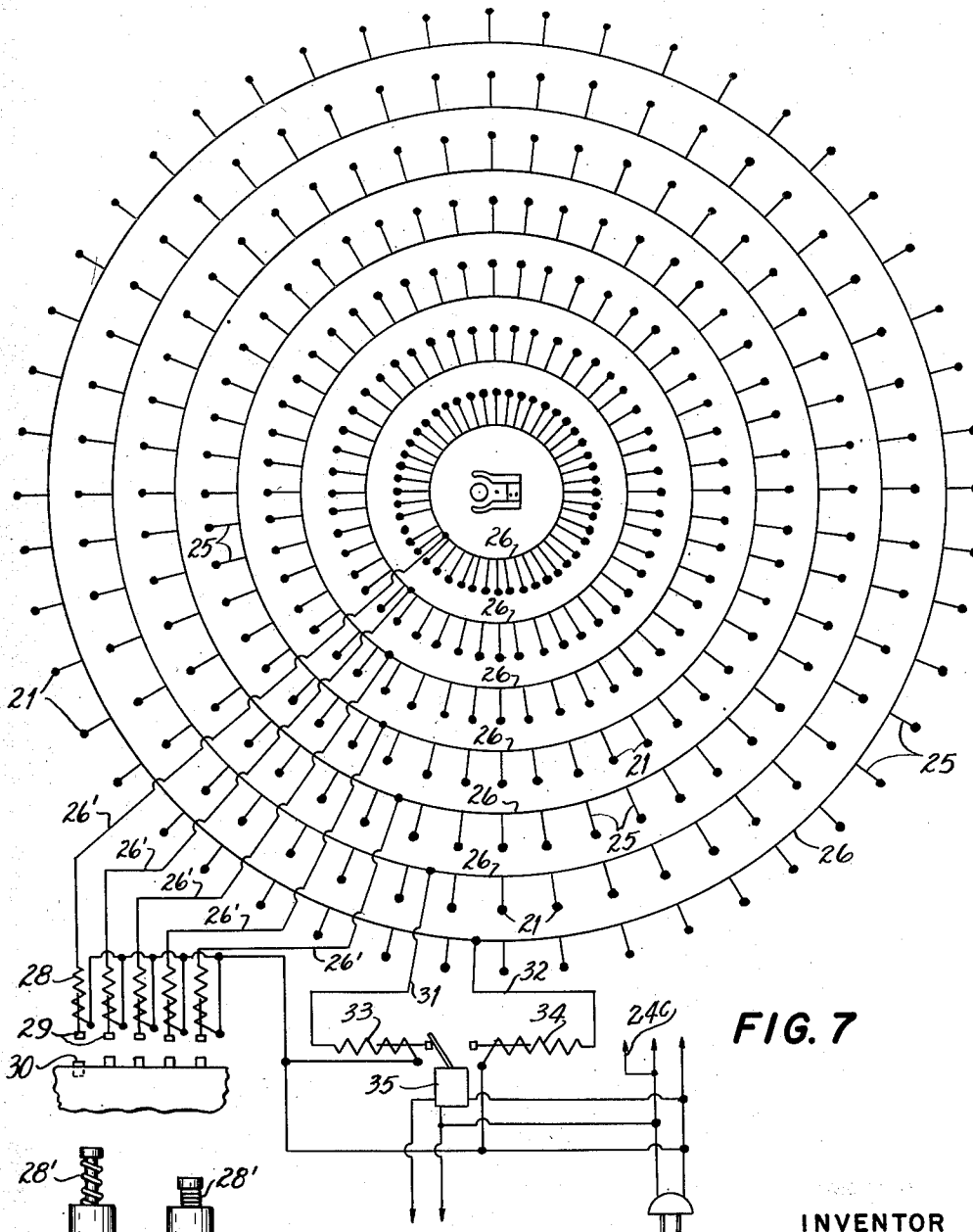


FIG. 7

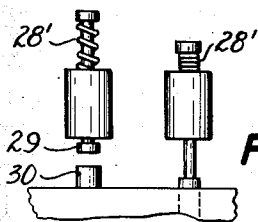


FIG. 8

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UNITED STATES PATENT OFFICE

2,533,877

RADIO TIME TUNING DEVICE

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Application April 1, 1946, Serial No. 658,613

1 Claim. (Cl. 161—1)

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This invention relates to new and useful improvements in radio devices and has particular reference to a time-controlled switching device for radio sets.

An object of the invention is to provide a simple, efficient, easily operated, economically manufactured device whereby at any suitable intervals throughout the day any one or more stations may be selected to be automatically tuned in as desired and permit the settings or selections to be made in advance for the full twenty-four hours.

A further object is to provide a device in which set switches will, when they make contact, cause the operation of solenoids to actuate tuning devices or buttons or the like on the radio sets.

A still further object is to provide a device wherein although a station switch may be set, the radio may be turned on or off regardless of the setting of the time switch.

Further and more specific objects, features, and advantages will more clearly appear from a consideration of the specification hereinafter set forth especially when taken in connection with the accompanying drawings which illustrate a present preferred form which the invention may assume and which form part of the specification.

Briefly, and in the most general terms, the invention concerns the combination with a clock mechanism having a dial, of an annular disk or plate surrounding the dial and a sweep arm actuated by the clock. The disk has for each radio station involved a ring of manually operable switch levers arranged in a circle around the dial and positioned at regular circumferential intervals therearound such as represented by every fifteen minutes. Each manually operable lever when actuated depresses a contact plunger which is adapted when thus positioned to engage with a contact on the clock-operated sweep or switch arm disposed below the disk to make contact and establish a circuit to a relay or solenoid which, thus energized, will operate an arm on the radio set or push a button to bring in the desired station at that particular time. Since each station has a ring of operable elements at every interval, they can be set to keep that station on the air all day, if desired. On the other hand, as many station rings can be provided with switch levers as the radio set has push buttons by which to bring the stations in and, therefore, any desired sequence of stations throughout the twenty-four hours may be selected.

Another feature of the invention is to provide with each radial line of switch levers an "On"

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switch lever and an "Off" lever so that when any station is picked to be tuned in at a given time, the "On" button is operated to turn on the power to the set at the same time. If the "Off" button is operated, however, no station will be tuned in even though the selector switches have been set for that time and that station.

The present preferred form which the invention may assume is shown in the drawings, of which:

Fig. 1 is a plan view of the device.

Fig. 2 is a partial vertical section through the selector disk and selector switches.

Fig. 3 is a partial inverted plan view of the device.

Fig. 4 is a partial vertical section through the clock, the selector disk and the rotating switch arm.

Fig. 5 is a detail of the contact device drawn to an enlarged scale.

Fig. 6 is a perspective view of a detail of the manually operable switch element.

Fig. 7 is a circuit diagram of the device.

Fig. 8 is an enlarged partial elevation of the operated solenoids.

The preferred present form which the invention may assume is shown in the drawings and includes a clock mechanism 10 having a clock face 11 marked in the usual manner. The hour hand shaft 12 has connected thereto at the bottom a switch or sweep arm 13 having a counterweight 13a and which rotates with the hour hand within a casing 14 and beneath a thick cover plate or disk 15 in which the clock mechanism 10 is also housed, as shown in Fig. 4.

The cover plate or disk is provided with a series of bores such as 16, in which are slidable contact blocks or plungers 17. These bores are arranged in radial rows, as shown in Fig. 1, and these rows are disposed at regular intervals radially of the clock dial, as for example, in Fig. 1, for clarity on the drawing, the interval is every half hour, though, obviously, the 15-minute interval would preferably be used. Any particular bore in any particular radial row is only one of a series of bores, therefore, disposed in a circle at a given radius from the center of the clock. Therefore, the circular rows of bores represent each a different radio station and the separate bores in each circle represent the periods of times at which said station can be tuned in if the power is on. The two outer rings of bores are for "On" and "Off" switches as will be explained later.

Pivoted on the cover plate over each bore 16 is a manually operated switch lever 18 in the

form of an arm, the upper end of which extends above the cover plate or block 15 to be manipulated by the finger, and the lower end of which bears on the top of contact block or plunger 17. The plungers are normally held up in the bores 16 by means of springs 19 disposed between the top of the plungers and the top plate 20 of the block 15. As shown in the Fig. 2, when the levers 18 are in one position, the plunger is pulled up but when they are moved to the other position, then the lever ends thereof force the plungers down. The lower faces of the plungers or contact elements are provided with metallic contact pieces 21 which are preferably formed with a cam face or slope and when depressed, will lie in the path of raised contact pieces or projections 22 disposed on the rotating switch arm 13 beneath each radial bore as the arm rotates so as to make contact between these two metallic elements and thus close a circuit in which they are disposed. It will be understood that the contact elements 21—22 are so adjusted that they remain in contact for the shortest possible time to reduce the heat generated in the solenoid. To this end, the rearward side of the contact 21 is formed with an offset 21' to allow for a quick break between the contacts 21—22'. It will be seen in Fig. 2, that each contact piece 22 on the arm 13 is connected by a wire 23 with a common conductor 24 running along beneath the arm 13. To conductor 24 may be secured coil spring 24a which rides in contact terminal 24b to which is secured lead 24c from the power source. The contact piece 21 on the bottom of each plunger is connected by a conducting pig tail 25 to a circular wire 26. In other words, each contact piece 21 in a circular row of plungers is connected by its pig tail to the common circuit wire 26 which is connected to a proper solenoid 28 to operate the proper push button on the radio set.

As shown in Fig. 5, the contact block 17 may engage the contact piece on the radial rotating arm 13 and this is shown in this figure to be a turned up lip 22' of flexible metal. As shown in Fig. 6, the manually operable switch levers 18 may be provided with a top cross piece 27 making it convenient and handy to manipulate, although obviously, a knob would suffice.

Referring now to Fig. 7, which shows the general circuit arrangement here employed, it will be seen that the wires 26 circularly arranged are respectively connected by wires 26' to the coils 28 of solenoids having armatures 29 adapted when moved to engage and operate a part of a radio set to bring in a particular station. Such a part may be the usual push button 30. The solenoid may be provided with spring means 28' to return the solenoid armatures to initial position when the solenoids are de-energized.

The two outer circular wires 26 are connected to wires 31 and 32 which lead to oppositely disposed coils 33 and 34 of plunger solenoids which in a well-known manner can respectively operate the "On" and "Off" switch 35 of the radio set. It will be obvious from an inspection of this figure that when the switch arm 13 is rotated by the clock shaft, it will move its contacts slowly around and they will respectively contact with any contact pieces on blocks 17 which may have been moved down by the manipulation of the switch levers 18. The current will travel from one side of the line through the wire 24 to a contact piece 22, thence through the contact piece 21 which may be depressed, through its wires 25 to the common wire 26, through the respective

solenoid 28 and then back to the other side of the line. At the same time, the radio set is placed in "On" or "Off" condition for any given position of the rotating arm 13 by means of the two outer switch levers 18 in each radial row of such elements. These may be operated to energize either one of the solenoids 33 and 34 to either open or close the switch 35 to the radio set. Therefore, it is apparent that no matter how many of the levers 18 are operated to depress their respective plungers 17, and although the radio set may thus be tuned to a particular station, the station will not come in unless the switch lever 18 marked "On" has been operated to place the power of the line on the set.

Thus, it can be observed that one can set the manually operated levers 18 for every interval during the entire twenty-four hours if that is the desire, and can also determine whether for any of these settings the set will come "On" by determining the position of the "On" and "Off" switches for each radial column representing each interval of time. Of course, the cover plate 20 of the block or disc 15 can be suitably marked as on the raised annuli 40 to denote the various radio stations represented by each circular series of manual devices and the number of each time interval may be marked thereon for convenience.

While the invention has been described as applying to a radio set, it will be understood that the various circles of switch levers 18 may be used for other or additional purposes. That is to say, if it be desired to set in operation and to halt the operation of any other device at regular preselected times, and for predetermined intervals, it is merely necessary to add additional circles of switch levers 18 for that purpose, and corresponding solenoids, as for example to operate a phonograph, or a perfume sprayer, or an air humidifier, etc., at different times for definite intervals.

While the invention has been described in detail and with respect to present preferred forms which it may assume, it is not to be limited to such details and forms since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language or scope of the appended claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

A radio time tuning device adapted for use in association with a radio receiver having push button tuners for a plurality of stations and comprising a time clock having a dial, a circular block disposed therearound, said block having a plurality of rows of radially disposed bores therein and disposed at suitable time intervals around the dial, a spring retracted non-metallic plunger slidably positioned in each said bore, a manually operable cam lever accessible from the top of the block and pivoted in each bore in a position to depress its corresponding plunger against the tension of its spring, and to hold the plunger in said position until manually released, an electric contact element on the lower face of each plunger, the forward side of said contact being beveled as a cam and its rearward side being sharply offset to provide for a quick electrical circuit break, an electrical conductor connected to said electric contact element and also connected to one of the solenoids corresponding to a

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particular station, an arm rotated beneath said circular block by the clock mechanism, contact pieces of flexible metal on said arm adapted to contact with the lower faces of such plungers as have been depressed by the cam levers to close a circuit, a solenoid in said circuit and armatures actuated by the solenoids to depress selected station push buttons at preselected times.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,948,672	Purdy	Feb. 27, 1934
2,346,623	Stewart et al.	Apr. 11, 1944
2,385,840	Owens	Oct. 2, 1945