

Aug. 20, 1935.

W. W. BAIRD

2,011,670

RADIO PROGRAM INDICATOR AND ANNOUNCER

Filed May 3, 1934

2 Sheets-Sheet 1

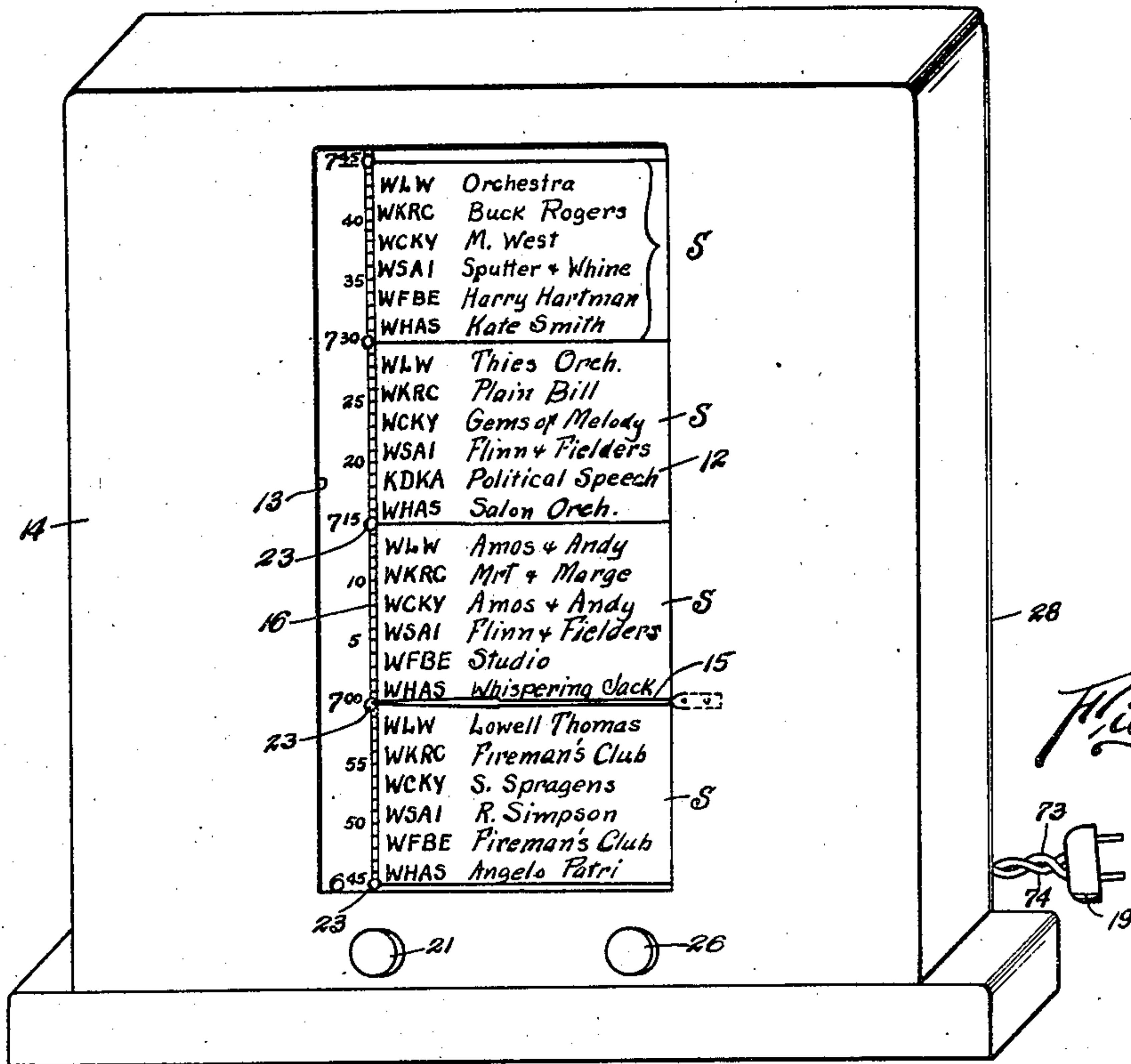


Fig. 1.

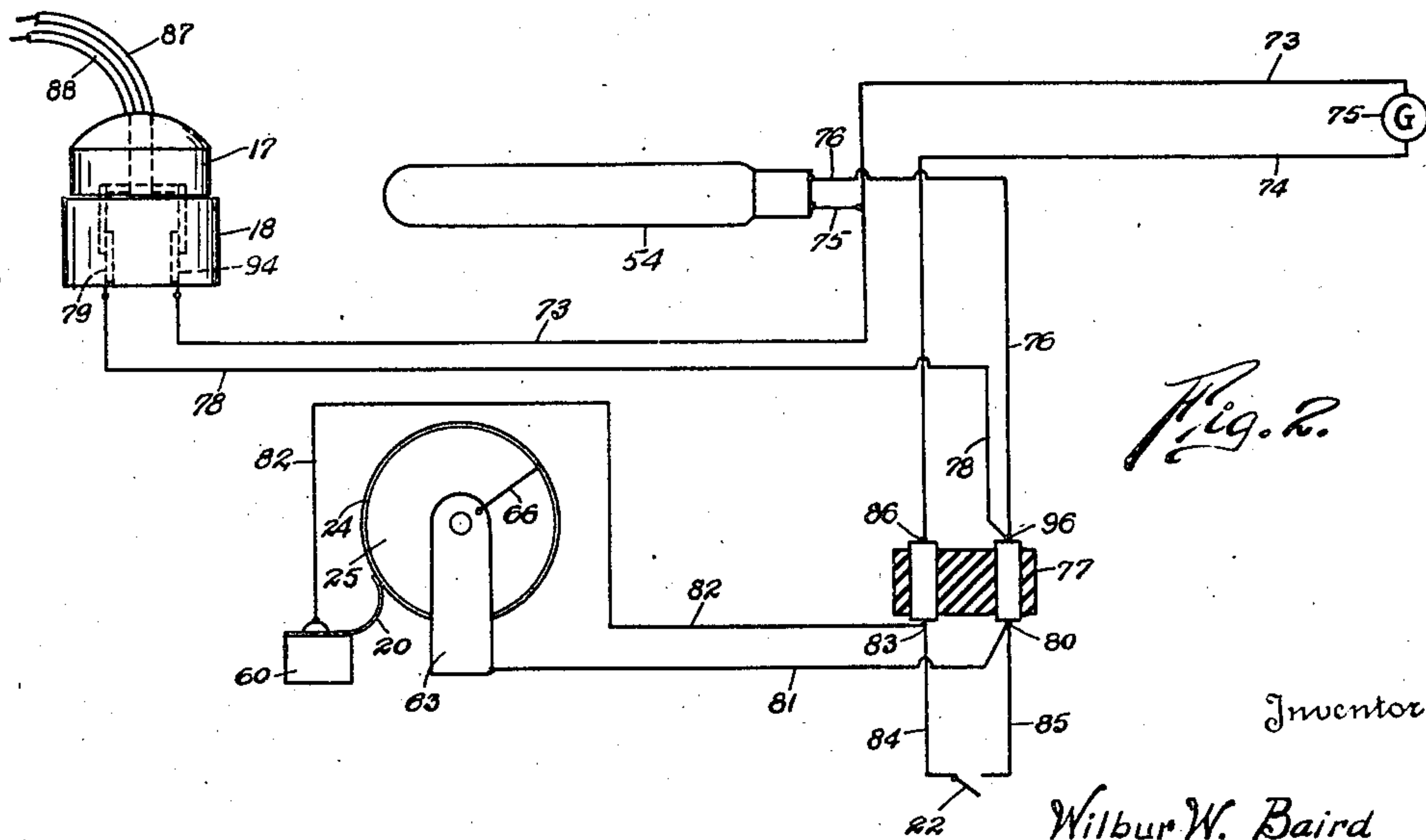


Fig. 2.

Inventor

Wilbur W. Baird

By

Murray & Zugelter
Attorneys

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2 Sheets-Sheet 2

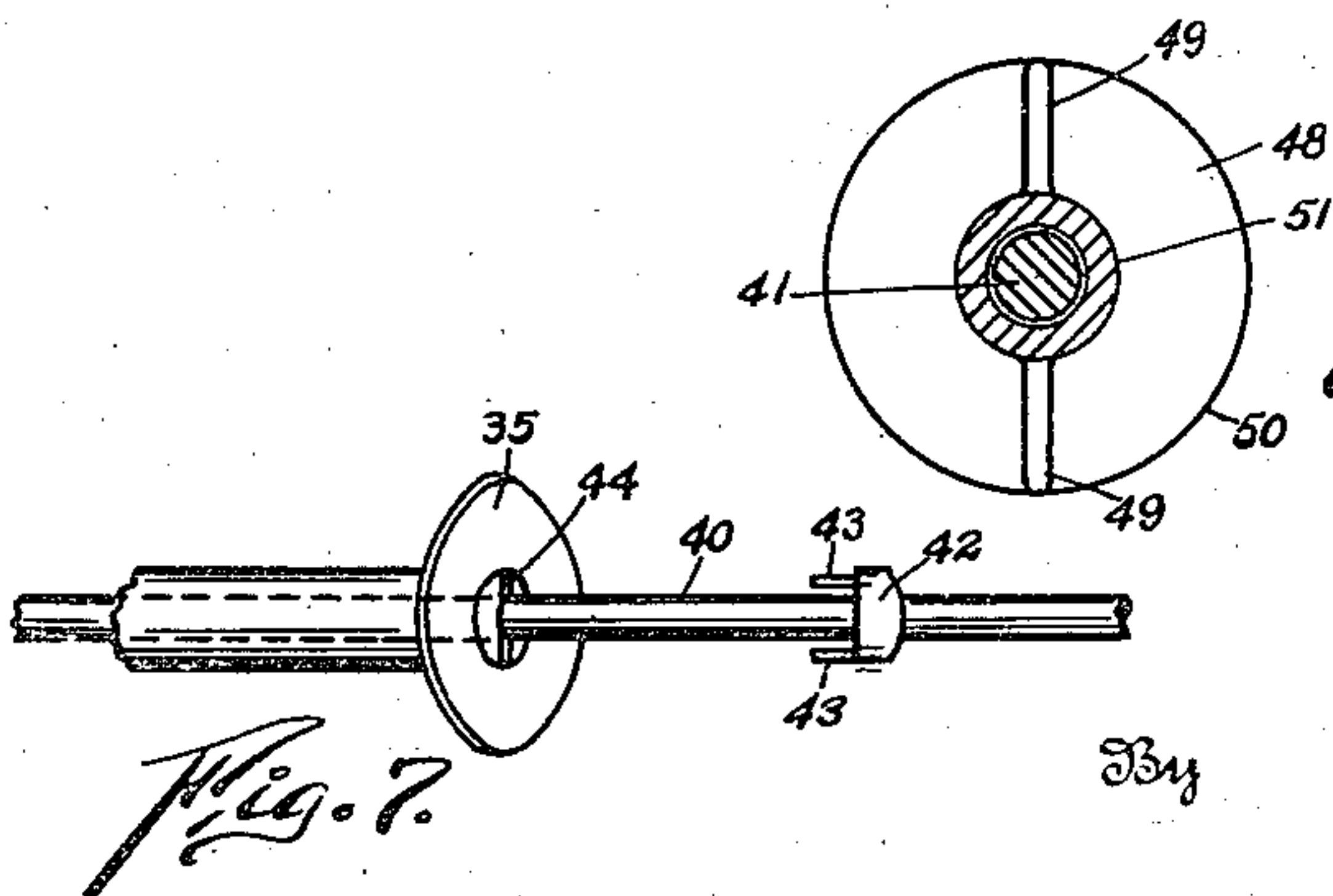
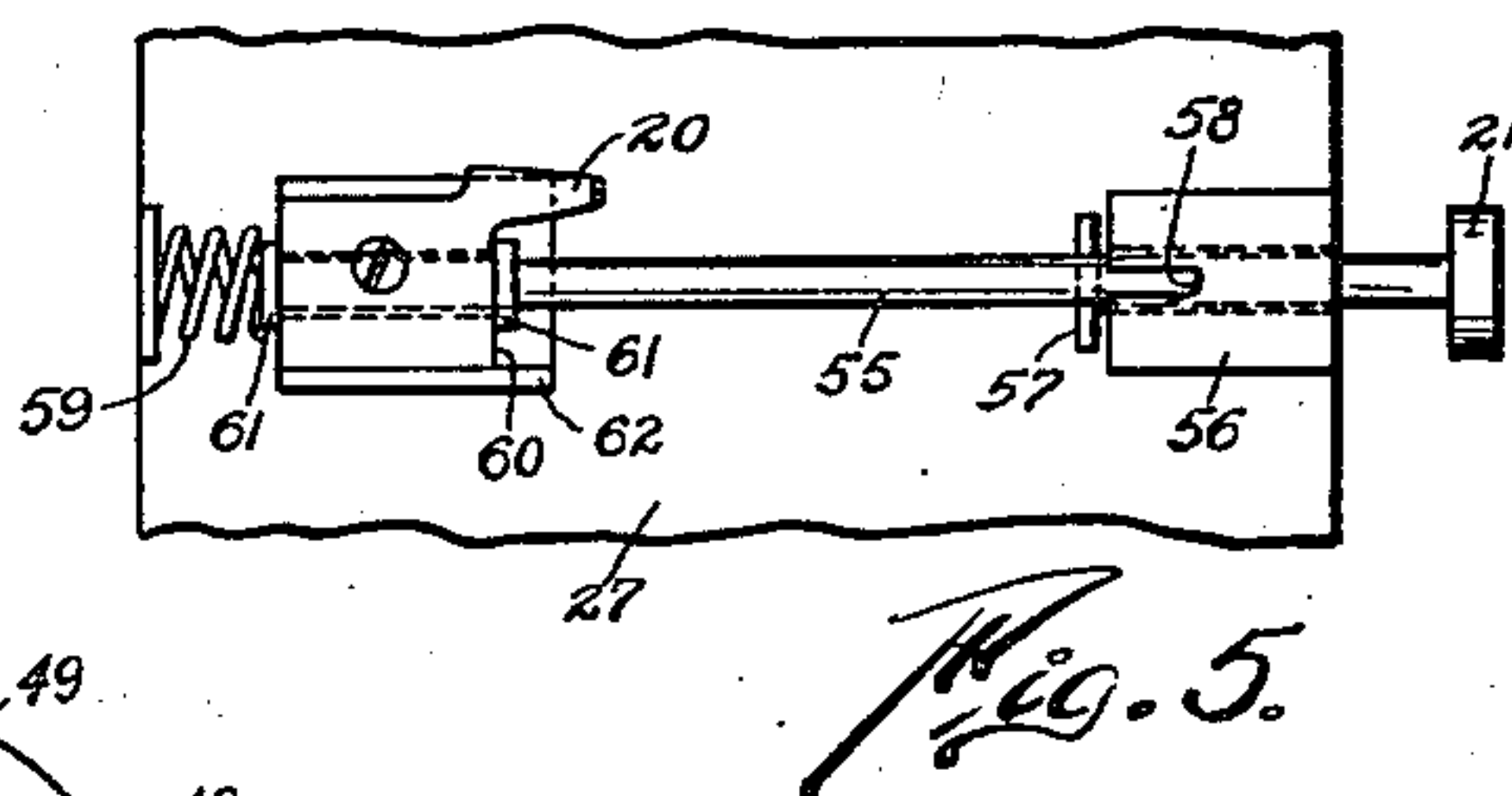
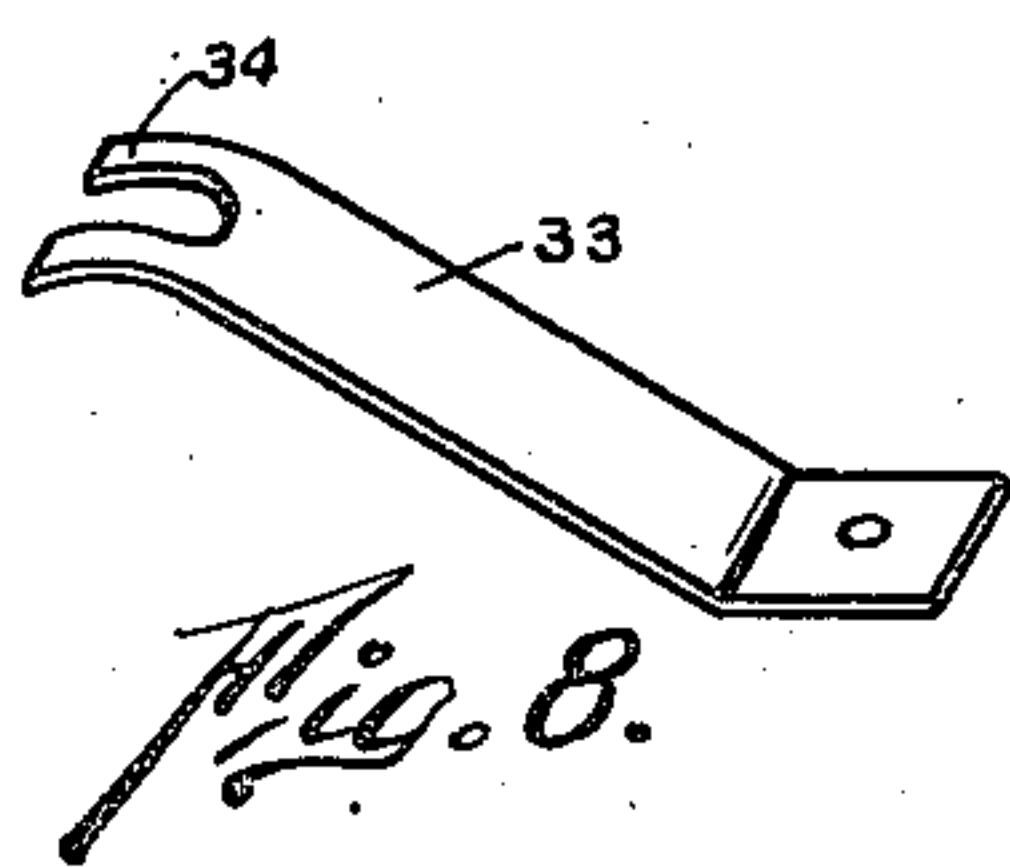
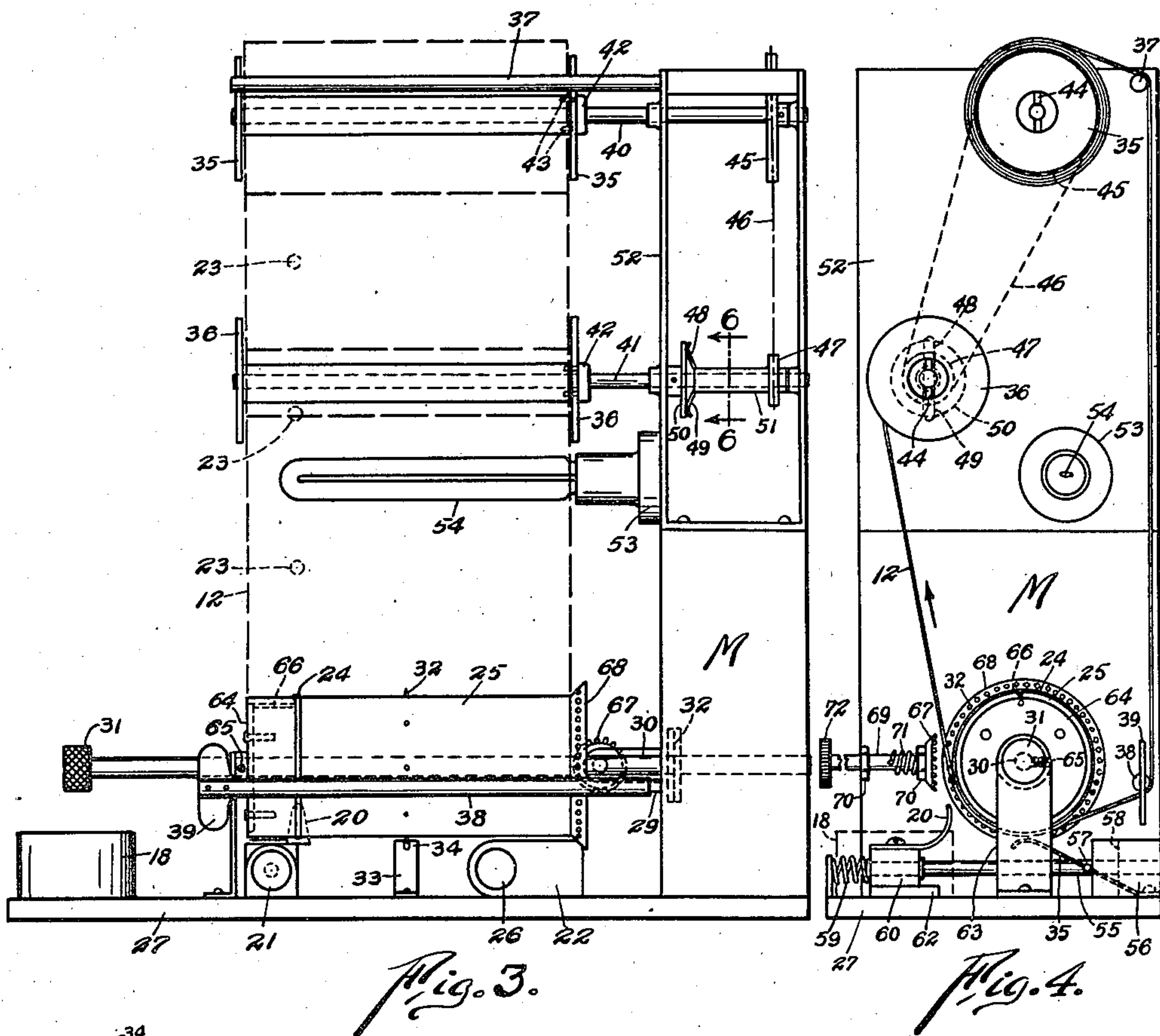


Fig. 6.

Fig. 7.

Inventor

Wilbur W. Baird

Murray & Zugelster
Attorneys

UNITED STATES PATENT OFFICE

2,011,670

RADIO PROGRAM INDICATOR AND
ANNOUNCERWilbur W. Baird, Cincinnati, Ohio, assignor of
three-eighths to Harry R. Schlueter, Marie-
mont, Ohio

Application May 3, 1934, Serial No. 723,803

9 Claims. (Cl. 40—31)

This invention relates to an indicator and announcer for radio programs, whereby a person may have a predetermined program audibly brought to his attention while he is occupied in other matters.

One of the important objects of the invention is to provide a device for the purpose stated, which is so simple and inexpensive that everyone owning a radio receiver can afford to apply the device of this invention.

Another object of the invention is to provide a device of the character stated, which will perform the function of a time-piece or clock.

A further object of the invention is to provide a device of the character stated, which is small and portable, and which does not require mechanical connection with a radio receiver.

The foregoing and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a perspective front view of the device of the instant invention.

Fig. 2 is a wiring diagram for the various electrical elements of the device.

Fig. 3 is a front elevational view of the device with the casing of Fig. 1 removed.

Fig. 4 is a side elevational view looking from left to right on Fig. 3.

Fig. 5 is a detail view showing, in plan, an intermittently operative electrical switch included in the device.

Fig. 6 is a cross-sectional view taken on line 6—6 of Fig. 3.

Fig. 7 is a fragmental perspective view of a reel or roller mounting means forming a detail of the invention.

Fig. 8 is a detail view showing, in perspective, a resilient tape or ribbon support which may be employed in the combination.

Briefly stated, the device comprises a tape or ribbon 12 of paper or other suitable material, which is suitably supported for uniform slow movement past a window 13 in the case 14. The tape or ribbon has printed or otherwise represented thereon a series of divisions or equal sections S, each of which sections is of a proper length so that a section will pass an indicator or stationary hand 15 every quarter hour. Each section has printed or written, within its confines, the names or letters of a series of radio broadcasting stations all of which are scheduled to broadcast during a given quarter hour; for example, Fig. 1 indicates that during the time period between 7 o'clock and 7:15 o'clock, broadcasts will be receivable from any one of the stations

WHAS, WFBE, WSAI, WCKY, WKRC, and WLW, and the name of the program from each station is indicated opposite the station name or call letters. During the period of time from 7:15 to 7:30 o'clock, these same stations, or perhaps others, are indicated as offering other programs or continuations of the preceding programs. Any reasonable number of selected stations and their anticipated programs may be indicated within the sections S. It is intended that purchasers of the devices will procure the tapes or ribbons daily, weekly, or at other intervals, from a person who will select the best programs and have them printed upon the tapes or ribbons. As the tape or ribbon moves at a uniform rate of speed past the indicator 15, as determined by a clock motor M, the device performs the function of a time-piece, and to enhance this function the tape preferably is graduated as indicated at 16 to indicate minutes adjacent to the series of sections S.

To use the device of this invention, it is necessary only to interpose the device in the electrical current supply line which feeds the radio, and this is most conveniently accomplished by inserting the plug 17 of the radio receiver electrical supply line into the socket 18 of the present device, after which the plug 19 of the said device is connected with the electricity supply or household current. The operator may then tune his radio receiver to the station he desires to hear from, and places the intermittently operative electrical switch 20 in the operative position by means of the knob or handle 21 which extends from the front of the casing 14. The shunt switch 22 would be permitted to remain in open contact condition. Thereafter, as the ribbon or tape moves downwardly past the indicator 15 under the motive power of the clock motor, one of the perforations 23 of the tape will eventually move into registration with the switch element 20 whereby to close the electricity supply circuit to the radio receiver. During the interval that the switch member 20 remains in registry with the perforation of the tape for closing said electrical circuit, the radio receiver will be energized a sufficient length of time to inform the listener that the station selected by him previously is beginning to broadcast the program. If the program thus announced by the selected station is not the one which the listener desires to hear, he simply ignores the program announced, and said program would shortly thereafter be terminated by reason of movement of the perforation 23 from registration with the switch element 20. The switch element 20, therefore, may be said to close

the radio circuit through a metallic band 24 on the tape supporting drum 25 whenever a perforation such as 23 moves into registration with the switch element 20. As soon as such perforation leaves the switch element, due to the advancing movement of the tape, the circuit to the radio receiver is broken or opened until a succeeding perforation moves into the circuit closing position. As will be understood, the operator, upon hearing the station announcement resulting from the intermittent closing of the radio receiver supply circuit, may close the shunt switch 22 by means of knob or handle 26 which extends from the casing, whereby to receive the entire program just as it would be received in the absence of the device of this invention. The switch 22 performs all the functions of the switch with which all radios are equipped.

The general brief description of the device having been given, I shall now proceed to describe the device in detail.

A base for the mechanism is indicated by the character 27, and said base is adapted to be slid into the casing from the rear upon removal of a suitable rear cover plate 28. The base carries the clock motor M, which may be either an electrical or a spring motor, the latter type of motor being illustrated in the present instance. The motor has a winding arbor 29 extending from the face thereof, and also a minute hand arbor 30 in substantial parallelism with arbor 29. The minute hand arbor is extended lengthwise of the base and has fixedly mounted thereon the roller or driving drum 25 which preferably is of electricity insulating material. At the free end of the arbor or shaft 30 is fixed an adjusting knob or handle 31 whereby the drum 25 may be rotated manually when the mechanism is removed from the casing for application or removal of the tape or ribbon 12. The usual clutch means found in association with the minute hand of a clock motor, which would permit relative rotation of the shaft 30 and the clock gearing, is conventionally indicated by the character 32.

As is most clearly shown in Fig. 4, the tape or ribbon extends about the drum, and a more or less positive driving means is effected by equipping the drum with a series of pin points 32 which may enter the material of the tape. A resilient guide or support 33 having a bifurcated end 34 may be provided for maintaining the tape always in engagement with the sharpened pins. During operation of the device, the tape unwinds from an upper reel or spool 35, passes under the drum 25, and is wound onto a second wheel or spool 36. The tape may be guided past the window of the casing by the use of laterally extending supports or rods 37 and 38 near the top and bottom of the mechanism, respectively. The support 38 may be the winding key for the clock motor, and as such would preferably be provided with a handle means 39.

Each of the reels or spools 35 and 36 is adapted to be easily removed from their respective shafts 40 and 41. Accordingly, each of said shafts may carry a fixed collar or flange 42 from which extends a plurality of pins or clutch elements 43 which are receivable in a slotted end 44 of the spool or reel. Fig. 7 clearly indicates the manner of associating the spool with its supporting shaft so as to provide for unitary rotational movement thereof. From the Fig. 4 disclosure, it is at once evident that the driving drum, rotating in clockwise direction, progressively pulls the tape or ribbon from the spool 35 so as to rotate said spool

and its supporting shaft 40. The shaft 40 carries a suitable power transmission element, which may be a sprocket 45, and over this sprocket a chain 46 may pass for driving a second sprocket 47 which has driving relationship with the shaft 41 of spool 36. Thus, the rotational movement imparted to the spool 35 and its shaft, by reason of the moving tape 12, effects rotation of spool 36 and its supporting shaft 41. As is clearly indicated in Fig. 4, the sprocket 47 is made smaller than sprocket 45, so that spool 35 will be driven at a speed slightly in excess of the speed of spool 36. In order to maintain the tape or ribbon in a taut or tightened condition without breaking it, a friction clutch 48 is associated with the means for driving the take up spool 36. The clutch may be of any desired construction, there being shown a simple form of clutch comprising one or more resilient arms 49 which yieldingly bear upon a face of a disc 50 which is fixed relative to the shaft 41. The arm or arms 49 are supported upon a sleeve 51 which loosely encircles the shaft 41, said sleeve providing a mounting means for the sprocket 47. The sprocket 47 may be fixed to the sleeve by the use of any known means.

Attached to the upper frame structure 52, or to any other stationary part, is a socket 53 for an electrical bulb or lamp 54 that may project its rays through the tape and toward the window 13, whereby to illuminate the tape for distinctly displaying the printed or written matter carried thereby. The manner of connecting this lamp in the electrical circuit will be set forth hereinafter.

The intermittently operative switch which is controlled by the knob or handle 21 may be of any practical construction, there being shown, however, a simple form of switch which will function in accordance with the requirements of the device of the invention. The said switch is shown in detail in Fig. 5, and it may comprise an operating rod or shaft 55 which is slidably and rotatably mounted relative to a supporting block 56. The shaft may carry a transverse pin or extension 57 which is adapted to enter a slot or recess 58 in the block when the knob 21 is actuated to place the pin in registration with said recess. When the knob is rotated to the proper extent, a compression spring 59 acts to project the rod or shaft 55 outwardly, at which position the pin is received in the recess 58. As the shaft thus moves to the right, with reference to Fig. 5, it carries with it a block of insulating material 60 upon which is mounted the resilient contact member 20 hereinbefore referred to. The shaft may be provided with suitable shoulders or flanges 61 at each end of block 60, so as to insure movement of the block with the shaft. The block may be supported upon a suitable guide 62 which is fixed to the base plate. From the foregoing it will readily be understood that manipulation of the knob or handle 21 may dispose the resilient contact member 20 either remote from or in intimate contact with the tape or ribbon, and that registration of one of the perforations 23 of the tape with said contact member will afford an electrical connection of member 20 with the metallic contact ring 24 on drum 25. The bracket 63 which supports the drum preferably is of metal and is electrically connected with the band 24 in any suitable manner, such as by providing a metallic plate 64 on the end of the drum and securing the plate and its hub to the shaft by means of a set screw or the like 65. Electrical connection between the plate and the band may be effected by means of a conductor 66 which is imbedded in the non-conductive drum 25.

Switch 22, which is controlled by the knob or handle 26, may be any well known type of switch, preferably one having a snap action.

Means are provided for conveniently adjusting the graduations of the tape to the pointer or indicator 15 in the event that the clock motor fails to keep accurate time. Said means may comprise a small gear 67 which is normally out of engagement with a cooperative ring gear 68 carried by the driving drum. It is immaterial whether the elements 67 and 68 be bevel gears or any other type of gears or power transmission elements, so long as they may be disengaged during normal operation of the device. As is clearly indicated in Fig. 4, gear 67 is fixed upon a shaft 69 which is supported in bearing brackets 70, there being provided suitable resilient means such as a spring 71 for yieldingly maintaining gear 67 disengaged relative to gear 68. By pressing inwardly upon and rotating a knob or handle 72 on the free end of shaft 69, gear 67 may be caused to engage and transmit rotational movement to the ring gear 68 and the drum 25 to which the ring gear is secured. The knob or handle 72 is adapted to extend exteriorly of the rear cover member of casing 14. While it is not absolutely necessary to provide for disengagement between the gears 67 and 68, such disengagement is considered preferable and helpful in preserving the accuracy of the time keeping mechanism.

The manner of electrically associating the various electrical parts of the device is illustrated in Fig. 2, wherein 73 and 74 indicate the feed wires for electricity which may be supplied to the residence from a remote generator or the like 75. Conductor 73 extends to one terminal 94 of the plug 18 which receives the cooperative plug 17 of the radio receiver supply wires. A conductor 75 leads from conductor 73 into the bulb or lamp 54, and a conductor 76 leaving the lamp may be connected to the terminal 96 of a terminal block 77. From said point 96, a conductor 78 leads to the other terminal 79 of plug 18. A terminal 80, which is in electrical communication with the terminal 96, has a conductor 81 leading to the metallic bearing bracket 63 of the driving drum, and, as above stated, a conductor means 86 provides electrical connection between the bracket and the metallic band 24 of said drum. The switch element 20 has a conductor 82 leading to a terminal 83 of block 77. The snap switch or shunt switch 22 is wired across the terminals 80 and 83 by means of the conductors 84 and 85. Lead wire 74 extends directly to a terminal 86 of the block, which terminal is in electrical communication with the terminal 83.

From the foregoing it will be understood that, with the switch 20 closed, as shown in Fig. 2, electrical current may pass from the source of supply 75 and through conductor 73 to one of the conductors 87 which leads to the radio receiver, the current continuing through the receiver and back through the conductor 88 to terminal 79, whence it continues through conductors 78, 96, 80, 81, 63, 86, 24, 25, 82, 83, 86, and 74 to the source 75. Electrical current will also pass through the conductors 75 and 76 of the lamp 54. With the intermittent circuit closed, as just described, the radio receiver will be energized so long as contact 20 is permitted, by the apertured tape, to maintain electrical connection with the band 24. However, as soon as an unperforated part of the tape is interposed between the contacts 20 and 24, the radio receiver will be de-energized. To render the intermittent circuit closing function in-

effective, the operator may close the shunt switch 22 whereby to afford continuous energization of the radio receiver. Under such circumstances, the path of electricity is from source 75 through conductors 73, 94, 87, through the radio receiver, back through conductors 88, 79, 78, 96, 80, 85, 22, 84, 83, 86, 74, and return to the source of electricity 75. It will be noted that electricity is thus supplied also to the lamp 54.

From the foregoing it should be evident that I have provided an indicator and announcer for radio programs whereby a person may have a predetermined program audibly brought to his attention while he is occupied in other matters, the device serving also as a clock which may be set with the accurate time broadcast of the radio system, and the device serves, further, as an informative and progressive record of radio broadcast programs. The device has the further advantage that it is simple and inexpensive, thereby enabling usage by a large majority of radio owners. Installation or attachment of the device does not require a more or less permanent mechanical connection with the radio receiver, wherefore it may readily be associated and dissociated relative to any radio receiver.

It is to be understood that various modifications and changes in the structural details of the device may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim is:

1. In a radio program indicator, the combination of a case having a window therein, a longitudinal tape divided into successive fractional-hour time period sections, each section carrying the call letters of a plurality of selected radio broadcasting stations and the names of the programs to be broadcast by each of such stations during said fractional-hour time period, means including a clock motor for progressively advancing the tape past the window at clock speed, and means associating the radio program indicator with a radio receiving set to energize said receiving set momentarily as the time period sections pass a predetermined portion of the window.

2. In a combination clock and radio program indicator, the combination of a case having a window therein, a longitudinal tape divided into successive fractional-hour time period sections each of which are in turn graduated in minute markings, said sections each carrying the call letters of a plurality of selected radio broadcasting stations and the names of the programs to be broadcast by each of such stations during said fractional-hour time period, a time indicator normally fixed relative to the case and pointing to the minute markings on the tape, means including a clock motor for progressively advancing the tape past the window and the time indicator at clock speed, a radio receiving set having selector means capable of tuning the set to one of the stations indicated upon the tape, and means associating the receiving set with the radio program indicator to energize said receiving set momentarily as the time period sections move successively into a predetermined position with respect to the stationary time indicator.

3. In a combination clock and radio program indicator, the combination of a case having a window therein, a longitudinal tape divided into successive fractional-hour time period sections each of which are in turn graduated in minute markings, said sections each carrying the call letters of a plurality of selected radio broadcasting

stations and the names of the programs to be broadcast by each of such stations during said fractional-hour time period, a time indicator normally fixed relative to the case and pointing to the minute markings on the tape, means including a clock motor for progressively advancing the tape past the window and the time indicator at clock speed, a radio receiving set having selector means capable of tuning the set to one of the stations indicated upon the tape, and means associating the receiving set with the radio program indicator to energize said receiving set momentarily as the time period sections move successively into a predetermined position with respect to the stationary time indicator, and manually operable means for maintaining the radio receiver set in the energized condition.

4. In a combination clock and radio program indicator, the combination of a case having a window therein, a longitudinal tape divided into successive fractional-hour time period sections each of which are in turn graduated in minute markings, said sections each carrying the call letters of a plurality of selected radio broadcasting stations and the names of the programs to be broadcast by each of such stations during said fractional-hour time period, a time indicator normally fixed relative to the case and pointing to the minute markings on the tape, means including a clock motor for progressively advancing the tape past the window and the time indicator at clock speed, a radio receiving set having selector means capable of tuning the set to one of the stations indicated upon the tape, and means associating the receiving set with the radio program indicator to energize said receiving set momentarily as the time period sections move successively into a predetermined position with respect to the stationary time indicator, and means for coordinating the minute markings of the tape with the fixed time indicator in accordance with time signals broadcast by the broadcasting stations.

5. In a device of the class described, the combination of a case having a window aperture therein, a visible indicator normally fixed relative to the case, a base removably received by the case, and mechanism supported upon the base including a clock motor having a minute-hand arbor, a tape-driving drum rotated continuously at minute-hand speed by said arbor, an apertured longitudinal tape adapted to contact the drum and to be advanced thereby past the window and the indicator, a pay-out means supporting one end of the tape in spiral formation, a take-up spool supporting the other end of the tape, a shaft for the spool and means for detachably fixing the spool to said shaft, means including a friction clutch for driving the take-up spool, electrical circuit means including a source of electricity, a radio receiving set, and electrical switch means interposed between said source and said receiving set, said last mentioned means comprising a contact band on the tape-driving drum, a tape-controlled resilient contact member separated from the contact band by the tape except when the apertures of the tape move into registry with said contact member, a shunt switch for manually connecting the receiving set directly with the source of electricity regardless of the open or closed circuit condition of the tape-controlled switch.

6. In a device of the class described, the combination of a case having a window aperture therein, a visible indicator normally fixed relative to the case, a base removably received by

the case, and mechanism supported upon the base including a clock motor having a minute-hand arbor, a tape-driving drum rotated continuously at minute-hand speed by said arbor, an apertured longitudinal tape adapted to contact the drum and to be advanced thereby past the window and the indicator, a pay-out means supporting one end of the tape in spiral formation, a take-up spool supporting the other end of the tape, a shaft for the spool and means for detachably fixing the spool to said shaft, means including a friction clutch for driving the take-up spool, electrical circuit means including a source of electricity, a radio receiving set, and electrical switch means interposed between said source and said receiving set, said last mentioned means comprising a contact band on the tape-driving drum, a tape-controlled resilient contact member separated from the contact band by the tape except when the apertures of the tape move into registry with said contact member, a shunt switch for manually connecting the receiving set directly with the source of electricity regardless of the open or closed circuit condition of the tape-controlled switch, and means for manually displacing and maintaining the resilient contact member out of contact with the tape and the contact band.

7. In a device of the class described, the combination of a case having a window aperture therein, a base removably received by the case, and mechanism supported upon the base including a clock motor having a minute-hand arbor, a tape-driving drum rotated continuously at minute-hand speed by said arbor, an apertured longitudinal tape adapted to contact the drum and to be advanced thereby past the indicator, a pay-out means supporting one end of the tape, a take-up spool supporting the other end of the tape, a shaft for the spool and means for detachably fixing the spool to said shaft, electrical circuit means including a source of electricity, a radio receiving set, and electrical switch means interposed between said source and said receiving set, said last mentioned means comprising a contact band on the tape-driving drum, a tape-controlled yielding contact member separated from the contact band by the tape except when the apertures of the tape move into registry with said contact member, a shunt switch for shunting out the contact band and the yielding member and for connecting the receiving set directly with the source of electricity regardless of the open or closed circuit condition of the tape-controlled switch means, and means for selectively maintaining the entire electrical circuit in open circuit condition for de-energizing the radio receiver.

8. In combination, a radio receiver including an electricity supply circuit, a source of electricity, and a device interposed between the source of electricity and the supply circuit of the radio receiver for controlling said receiver, said device including a time-keeping mechanism, an intermittently operating circuit closer under the control of the time-keeping mechanism for momentarily closing the electricity supply circuit of the radio receiver at predetermined intervals of time, and manually operative means for maintaining the closed-circuit condition of the supply circuit independently of the action of the intermittently operating circuit closer.

9. In combination, a radio receiver including an electricity supply circuit, a source of elec-

5 tricity, and a device interposed in the circuit between the source of electricity and the radio receiver, said device including a motor, an intermittently operating circuit closer under the control of the motor for momentarily closing the electricity supply circuit of the radio receiver

at predetermined intervals of time, and manually operative means for maintaining the closed-circuit condition of the supply circuit regardless of the intermittent action of the motor controlled circuit closer.

5 WILBUR W. BAIRD.