Oct. 9, 1934. H. W. RESNICK 1,976,296

TELEPHONE ALARM DEVICE

Filed Dec. 21, 1931 3 Sheets-Sheet 1

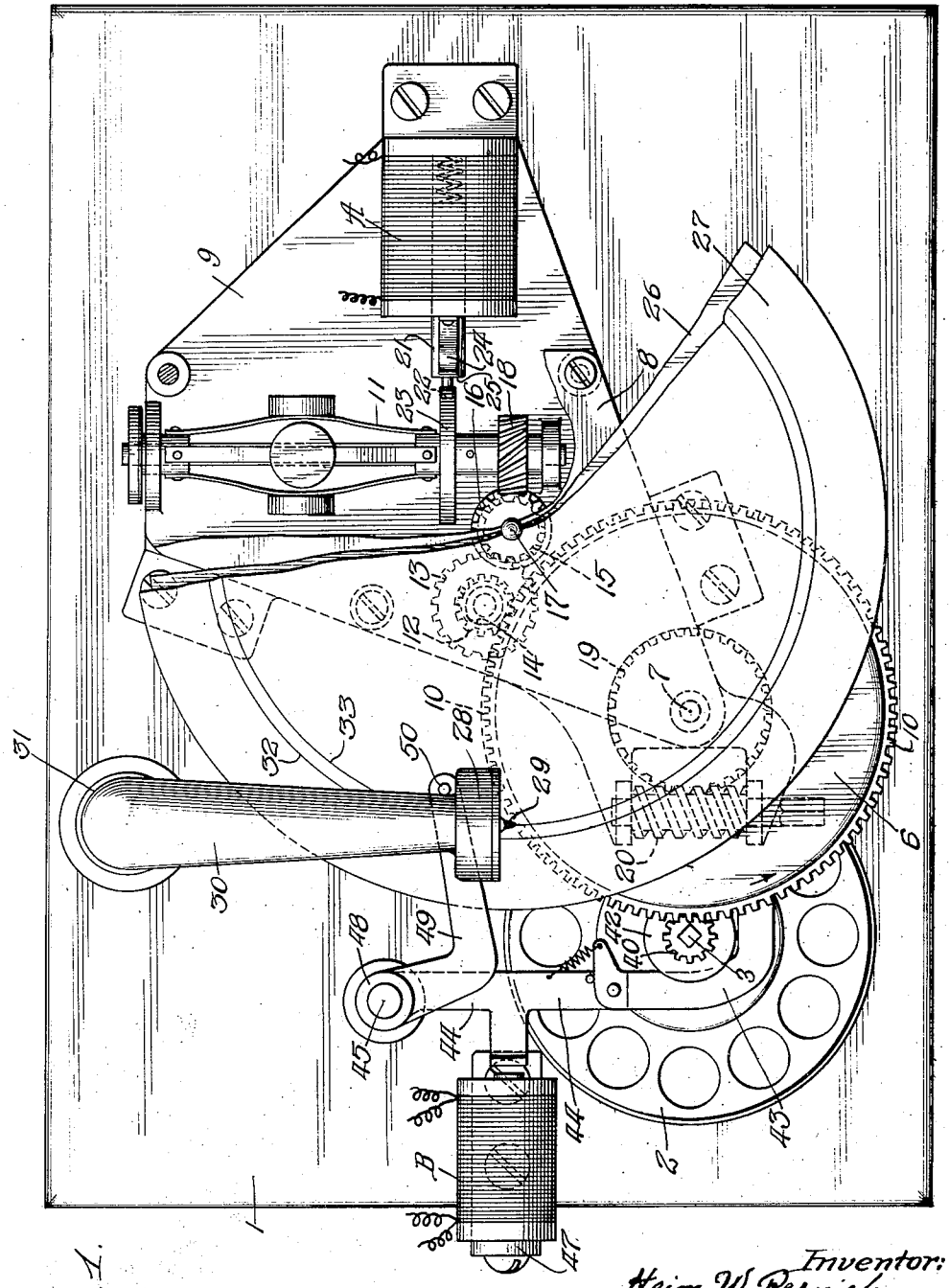


Fig. 1.

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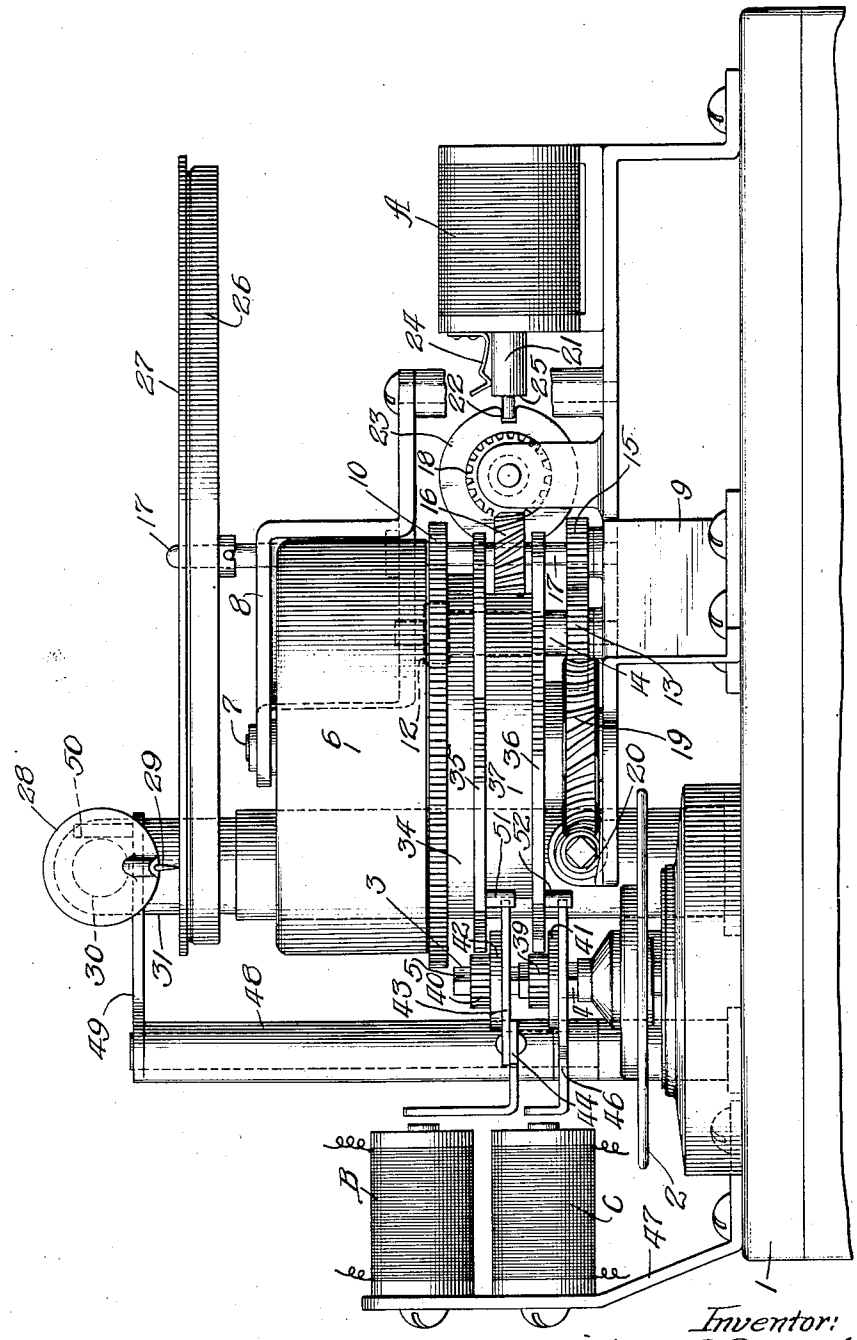
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Filed Dec. 21, 1931 3 Sheets-Sheet 2

Fig. 2.



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Filed Dec. 21, 1931 3 Sheets-Sheet 3

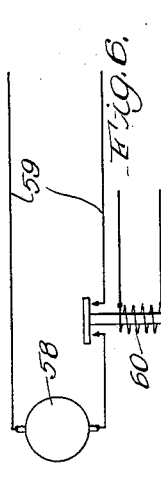


Fig. 6.

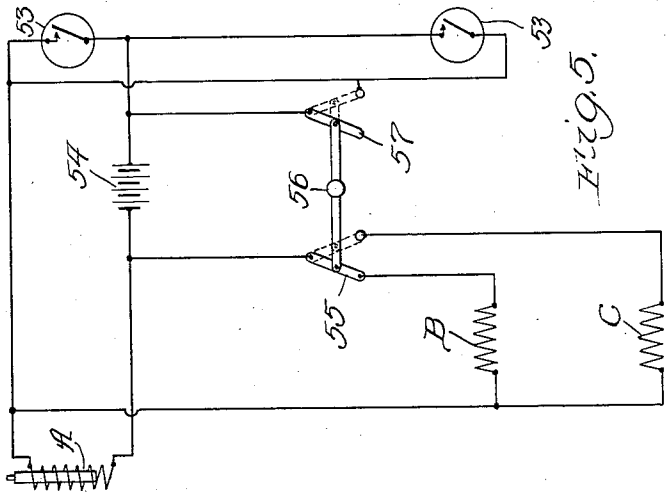


Fig. 5.

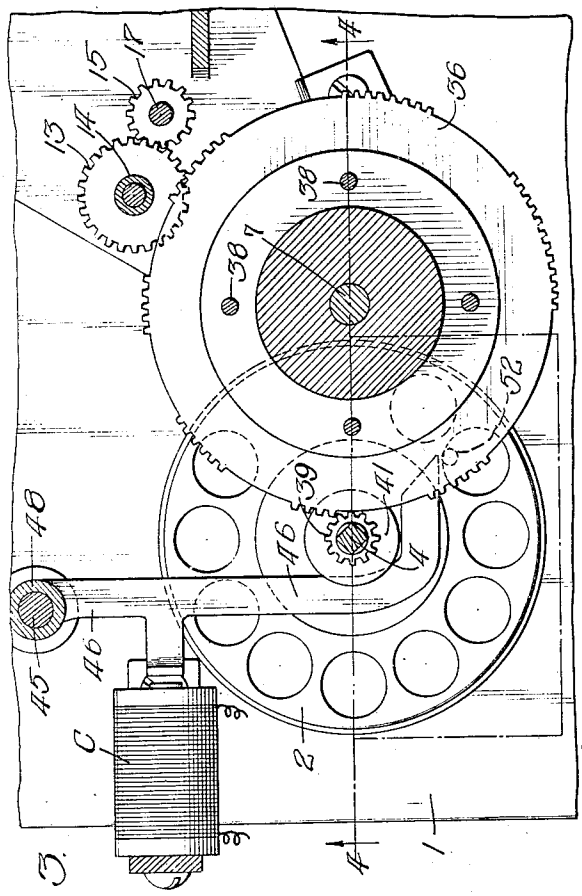


Fig. 3.

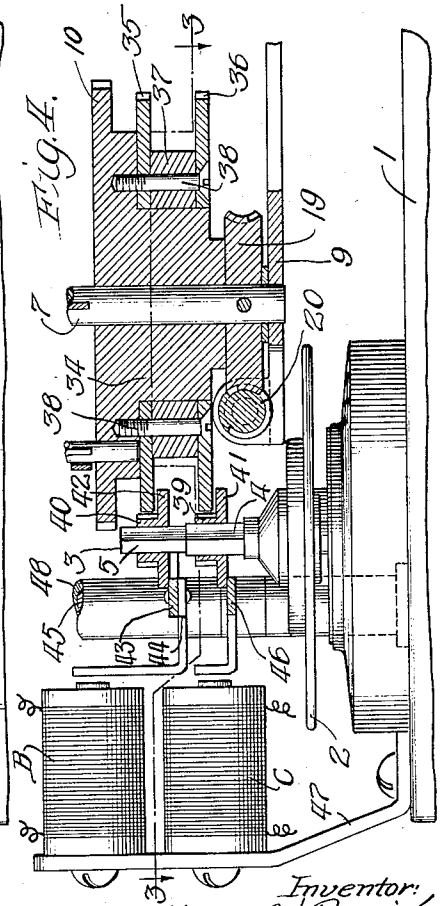


Fig. 4.

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UNITED STATES PATENT OFFICE

1,976,296

TELEPHONE ALARM DEVICE

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Application December 21, 1931, Serial No. 582,290

12 Claims. (Cl. 179—5)

My invention relates to an alarm device, and more particularly to a telephone alarm device arranged for use with any suitable automatic telephone system.

In the various types of automatic telephone systems, a transmitter is provided together with a telephone box containing the operating mechanism for completing a call to a central station, the call being transmitted by the manipulation of the usual dial whereby impulses in any selected sequence within the limits of the system may be transmitted to suitable selectors also forming a part of the system for completing a connection to a desired station. The transmitter, telephone box, and dialing mechanism, together with the selectors, form a part of substantially all automatic telephone systems.

This invention provides an efficient means for automatically controlling the operation of the dialing mechanism to cause a predetermined sequence of impulses to be transmitted to the selectors of the automatic telephone system and to cause any desired predetermined call to be transmitted to the selected station as soon as the connection thereto has been completed.

In this invention the operation of an automatic dialing and transmitting mechanism is arranged to be controlled by suitable automatic or manually operable means or both. This control may be accomplished by means of one or more remotely positioned thermostats operating at desired temperatures to control a suitable mechanical or electrical device for causing the dialing mechanism to be operated to transmit the necessary sequence of impulses to complete a corresponding station connection.

It will be understood that suitable fusible link switches may be used in place of the thermostat, or a combination of temperature and manually controlled means may be used if desired.

It should also be understood that the term "dialing mechanism" as used in this application is intended to refer to any suitable impulse sending means similar to that usually controlled by the manually operable dial of an automatic telephone system. In practicing the present invention the dial may be omitted if desired.

It is, therefore, an object of the present invention to provide an automatic means cooperating with the dialing mechanism and the transmitter of an automatic telephone system whereby a desired station connection may be completed and a predetermined call automatically transmitted and wherein the operation of the automatic mechanism may be controlled by the operation of a temperature control device or by manually controlled means, or a combination of both. Also a plurality of either temperature controlled or manually operated devices may be used if desired whereby the automatic dialing mechanism may be controlled from various remote points.

This invention also contemplates a simple and efficient device whereby any one of a plurality of predetermined signals may be transmitted to any one of a plurality of selected stations, and whereby the device may be automatically or manually controlled from a plurality of remote points.

The device is also adapted to be successfully operated from any suitable electrical or mechanical burglar or fire-alarm system in common use at the present time.

A further desirable feature is the provision of interchangeable means whereby any desired predetermined call may be transmitted to any predetermined station, and the further provision of interchangeable means whereby any desired predetermined station connection may be made within the limits of the telephone system, and wherein the device may be adapted for making a single predetermined station selection and call, or for selecting any one predetermined selection from a plurality of station connections and simultaneously selecting a predetermined call for the particular station connection.

A further object of the present invention is to provide a simple and efficient automatic alarm system for the operation of the dialing mechanism and the transmission of selected calls to selected stations which will be efficient in use, simple in operation and which will not easily get out of order.

Further objects will be apparent from the specification and the appended claims.

In the drawings:

Figure 1 is a top plan view of one embodiment of my invention with a portion of the record table and frame broken away for purposes of illustration;

Fig. 2 is a front elevation of the embodiment illustrated in Fig. 1;

Fig. 3 is a detailed horizontal sectional view taken on a line corresponding to line 3—3 of Fig. 4 and illustrates a portion of the transmission for operating the dialing mechanism;

Fig. 4 is a detailed vertical section taken on the line corresponding to line 4—4 of Fig. 3;

Fig. 5 is a wiring diagram illustrating one form of thermostatically and manually controlled circuit for controlling the operation of the device; and

Fig. 6 is a diagrammatic view illustrating one form of circuit arranged for controlling an electric motor driven mechanism.

Referring to the drawings in detail, the embodiment illustrated comprises a telephone box 1 which contains the usual equipment and mechanism for control and operation of the usual automatic dial telephone.

A dial 2 is rotatably mounted on the box 1 and is of a type similar to that used in substantially all automatic telephone systems, and may be manually operated if desired to obtain a desired station selection. However, this dial is unnecessary for the successful operation of the present invention.

A post 3 is secured to the dial 2 or may be secured to or form a part of any suitable element of the dialing mechanism whereby it may be rotated for operation in the well known manner of dial telephones. This post in the present instance is square in cross section and comprises an enlarged portion 4 and a reduced portion 5.

The device for automatically controlling the operation of the dial mechanism includes a mechanism somewhat similar to the usual phonograph motor and comprises a spring drum 6 having the usual spring or other driving means therein, and mounted on a driven shaft 7 which is, in turn, rotatably supported between upper and lower frame members 8 and 9, respectively, the lower frame member 9 being supported on the box 1.

The motor is provided with the usual governor mechanism which is driven from a gear 10 secured to the shaft 7 and connected in driving relation with a governor 11 by means of a train of gears comprising a pinion 12 and a gear 13 on a vertical shaft 14, a pinion 15 and a spiral gear 16 on a vertical shaft 17, the pinion 15 being in mesh with the gear 13 and the spiral gear 16 being in mesh with a corresponding spiral gear 18 on the governor 11.

The usual winding arrangement is provided for the motor spring and comprises a worm gear 19 on the shaft 7 and a worm 20, which latter is arranged to be operated by means of the usual removable winding crank.

A solenoid A is mounted on the lower frame member 9 and is provided with a movable core 21. This core is arranged to be engaged in a notch 22 in a disk 23, which latter is secured to and rotates with the governor 11. The disk 23 may be the usual governor brake disk if desired or a separate disk may be mounted on the governor shaft. The engagement of the solenoid armature 21 in notch 22 normally prevents the operation of the motor but it will be obvious that if the solenoid A is energized the armature 21 will be withdrawn from the notch 22 and the governor 11 will be allowed to rotate and thereby allow the continuous operation of the motor, until the armature 21 is manually readjusted in the notch 22 of the governor disk. It will be understood that it is only necessary to momentarily energize the solenoid A.

A spring 24 is arranged to normally rest on the armature 21 and to engage the shoulder 25 thereof when the armature is drawn out of the notch 22, thereby preventing the re-engagement of the armature with the disk.

The shaft 17 on which are secured the pinion 15 and spiral gear 16 of the governor transmission, extends upwardly above the spring drum 6 and is provided with a table 26 which is rotatable therewith and which is similar to the usual rotating phonograph-record table.

A record 27 is supported on the table and suitable calls are recorded thereon for transmission through the telephone system by means of a transmitter 28, which latter is provided with the usual phonograph needle 29, the needle may be secured to the diaphragm of the transmitter in the usual well-known manner of phonograph reproducers. This transmitter is mounted on a swinging arm 30 which forms a part of a tubular post 31 mounted on the telephone box 1. Suitable conductors may be arranged within the arm 30 and the post 31 and connected to the transmitter of the telephone system in the usual manner.

In the present instance, the record 27 is provided with two grooves 32 and 33 which may have recorded therein certain predetermined calls, for instance, a fire-call and a police-call, respectively. These specific calls are intended as illustrative only and it will be understood that any suitable calls may be recorded in the respective grooves.

It will be understood from the previous description that when the starting solenoid A is energized the motor will operate to rotate the table 26 and the record thereon, and if the dial 2 has previously or may be simultaneously operated to complete the necessary connections in the automatic telephone system to certain predetermined stations, the rotation of the record will cause a call to be continuously transmitted through the transmitter 7, the call corresponding to the recorded call in the groove in which the needle 29 is located at the time of the operation of the device.

The gear 10 of the motor is secured to the motor spring and rotatably mounted on the shaft 7 and provided with an enlarged hub 34 on which interrupted gears 35 and 36 are removably and interchangeably mounted. These interrupted gears are held in spaced relation by means of a spacing ring 36 and are secured to the gear 10 by means of screws 38. The interrupted gears 35 and 36 comprise rings which are interchangeable and any desired arrangement of spaced sets of teeth may be provided thereon, the arrangement of teeth on each gear corresponding to a predetermined call which is to be made by a partial rotation of the dialing mechanism by each set of teeth on the particular interrupted gear.

In order to operate the dialing mechanism from these interrupted gears, pinions 39 and 40 are slidably mounted on the enlarged and reduced square portions 4 and 5, respectively, of the post 3. These pinions 39 and 40 are provided with flanges 41 and 42, respectively.

When the device is at rest, a flange 42 of the pinion 40 normally rests upon a pawl 43 of an arm 44 which latter is pivoted on a post 45 on the telephone box, thereby supporting the pinion in alignment with the interrupted gear 35 and in a position to be engaged by the teeth thereof when the motor is operated. In a similar manner, pinion 39 is held in a raised position to be engaged by the teeth on the interrupted gear 36, by means of an arm 46 which latter engages underneath the flange 41 of the pinion 39. The lever 46 is also pivoted on the post 45. Magnets B and C are mounted on a bracket 47 in a position to move the arms 44 and 46, respectively, that is, when the magnet B is energized, the arm 44 will be moved outwardly to release the pinion 40 which will then drop downwardly out of alignment with the gear 35 and the dial may

then be operated by the motor through the interrupted gear 36 and the pinion 39; or, if the magnet C is energized, the arm 46 will be moved outwardly to release the pinion 35 which will drop downwardly on the post 3 and out of alignment with the interrupted gear 36 and the dial may then be operated through the interrupted gear 35 and its related pinion 40 on the post 3. By this means, either of the interrupted gears may be used to operate the dial to transmit a call which is predetermined by the energizing of either the magnet B or C as desired.

The pinion retaining arm 44 is pivoted on the post 45 by means of an upwardly extending sleeve 48 which is provided at its upper end with an inwardly extending arm 49 which latter extends under the tubular arm 30 of the transmitter and is provided with a pin 50 arranged to engage the arm and move the transmitter and thereby the needle 29 from the inner groove 33 to the outer groove 32. This movement of the transmitter occurs when the magnet B is energized to release pinion 40 in order that the rotation of the record may transmit a call corresponding to the station selected through operation of pinion 39.

The interrupted gears 35 and 36 are provided with downwardly extending pins 51 and 52, respectively, and as soon as the dialing mechanism has been operated to send the desired sequence of impulses to the selectors of the automatic telephone system to make the desired station connection, which is accomplished during a single revolution of the interrupted gear, the pin 52 on the interrupted gear 36 will engage the inwardly extending end of the arm 46 and the arm will be forced outwardly, thereby releasing the pinion 39 which latter will drop downwardly out of alignment with its corresponding interrupted gear. The selected station connection having been made, the record 27 will continue to be rotated and the call from the record groove 32 will be continuously transmitted until the device is reset. If, instead of energizing the magnet B, the magnet C is energized with the parts in the set position shown, the arm 46 will be moved outwardly thereby releasing the pinion 39 which will drop downwardly out of alignment with its corresponding interrupted gear and the dialing mechanism will then be operated through the interrupted gear 35 and the pinion 40. The transmitter will not be moved and the needle will remain in the groove 33, as in Figure 1, and will transmit the call therefrom. After one revolution of the interrupted gear 35, the pin 51 thereon will engage the inwardly extending end of the spring retained pawl 43 on the arm 44, the pawl will therefore be moved outwardly without moving the arm 44 and the pinion 40 will be released to prevent further operation of the dialing mechanism and the transmitter 28 will then continue to transmit the call from the record groove 33 during the further continuous movement of the record 27.

It will be understood that the motor controlling solenoid A may be energized simultaneously with either one or the other of the magnets B or C in order that the motor may start simultaneously with the dropping of one or the other of the pinions 39 or 40 out of alignment with its corresponding interrupted gear.

Any suitable means may be used for energizing the solenoid A and the magnets B and C, a suitable wiring diagram being illustrated in Fig. 5 in which means is provided for either automatic or manual control of the device. This circuit includes a plurality of remotely positioned thermostatically operated switches 53 which are, in the present instance, wired in parallel with each other and in series with the solenoid A and a suitable source of power 54. The power for energizing the solenoid may be taken from the telephone line if desired.

The pinion control magnet B is in series with each of the thermostat switches through an arm 55 of a double pole switch 56 so that when a thermostat switch 53 is closed at a predetermined temperature, the solenoid A will be energized simultaneously with the magnet B and by means of the construction previously described the automatic call will be sent through the transmitter 28. The operation of the double pole switch will disconnect the magnet B and the magnet C will then be connected in parallel with the solenoid A as shown by dotted lines, and the opposite switch arm 57 of the double pole switch will short-circuit the thermostat switches 53. By this means the magnet B will be disconnected and the magnet C will be energized simultaneously with the solenoid A and the manual call may be transmitted by the continuous rotation of the record 27.

The motor mechanism illustrated is similar to the conventional spring driven phonograph motor. However, an electric motor may be substituted if desired and may be controlled in a substantially similar manner.

Figure 6 illustrates an electrical circuit diagram for the control of an electrically driven motor and comprises a motor 58 in a circuit 59 which may be connected to any suitable source of power. A circuit similar to that illustrated in Fig. 5 may be used for controlling the motor, the only change necessary being that the solenoid A is removed from the circuit shown in Fig. 5 and a relay 60 is substituted and arranged to close the motor circuit 59 when one of the thermostats 53 closes the relay circuit or when the manual switch is operated.

It will be understood that either a closed or open circuit may be used for controlling either the mechanical or the electric motor, the only change necessary being the reversal of the operating elements of the circuit in the well-known manner.

While I have illustrated but one embodiment of my invention, it will be understood that modifications may be made therein without departing from the spirit of the invention and I desire therefore to be limited only by the prior art and the scope of the appended claims.

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

1. In a telephone alarm device the combination with the impulse transmitting mechanism of an automatic telephone system, of automatic means for operating said transmitting mechanism to cause a predetermined station selection comprising a motor, a plurality of driving trains between said motor and said impulse mechanism, and other automatically operable electrical means operable under predetermined conditions for controlling said motor and selectively controlling said trains.

2. In a telephone alarm device, the combination with the impulse transmitting mechanism of an automatic telephone system, of a motor, a plurality of operating trains between said motor and said impulse mechanism, automatically controlled electrical means for causing the operation of said motor under predetermined conditions and simultaneously causing only a selected train to be effective to operate said impulse mechanism,

means operated by said motor for transmitting one of a plurality of calls over said system, said electrical means being arranged to cause the selection of a call corresponding to the station selection.

3. In a telephone alarm device, the combination with the impulse transmitting mechanism of an automatic telephone system, of a motor, a plurality of operating trains between said motor and said impulse mechanism, automatically controlled electrical means for causing the operation of said motor under predetermined conditions and simultaneously causing only a selected train to be effective to operate said impulse mechanism, means operated by said motor for continuously transmitting one of a plurality of calls over said system, said electrical means being arranged to cause the selection of a call corresponding to the station selection.

4. The combination with an automatic telephone system including a transmitter and a station selector, of means for operating said selector to select a predetermined station and simultaneously transmitting a predetermined call through said transmitter, said operating means comprising a motor, a plurality of selective driving transmissions between said motor and said station selector, means controlled by said motor for transmitting a plurality of calls through said transmitter, and temperature-controlled means for controlling the operation of said motor and simultaneously selecting a transmission corresponding to a predetermined station and causing a predetermined call to be transmitted.

5. The combination with an automatic telephone system including a transmitter and a station selector, of means for operating said selector to select a predetermined station and simultaneously transmitting a predetermined call through said transmitter, said operating means comprising a motor, a plurality of selective driving transmissions between said motor and said station selector, means controlled by said motor for transmitting a plurality of calls through said transmitter, temperature-controlled means for controlling the operation of said motor and simultaneously selecting a transmission corresponding to a predetermined station and causing a predetermined call to be transmitted, and manually operable means alternatively operable to control the operation of said first means.

6. The combination with an automatic-telephone dialing mechanism, of a rotatable shaft for operating said mechanism, a plurality of pinions on said shaft, a motor for rotating said shaft, interrupted gears on said motor, each of said gears corresponding to a predetermined station selection and arranged to operate a corresponding pinion, automatic means for controlling the operation of said motor and for simultaneously selecting a pinion to be operated, and automatic means for preventing the further operation of said pinion when the station selection has been completed.

7. A device of the character described including the dialing mechanism of an automatic telephone for station selection, a motor, a plurality of transmissions between said motor and said dialing mechanism, electrical means for selecting a transmission for operation by said motor, and automatic means for making said transmission ineffective after the selection of a predetermined station.

8. A device of the character described including the dialing mechanism of an automatic telephone for station selection, a motor, a plurality of transmissions between said motor and said dialing mechanism, electrical means for selecting a transmission for operation by said motor, automatic means for making said transmission ineffective after the selection of a predetermined station, and automatically operable remote-control means for controlling the operation of said motor and selecting means.

9. A device of the character described including the dialing mechanism of an automatic telephone for station selection, a motor, a plurality of transmissions between said motor and said dialing mechanism, electrical means for selecting a transmission for operation by said motor, automatic means for making said transmission ineffective after the selection of a predetermined station, and automatically operable temperature-controlled means for controlling the operation of said motor and selecting means.

10. In a device of the character described including a transmitter and a dialing mechanism, a shaft on said dialing mechanism, a pinion slidable on said shaft, a motor, means controlled by said motor for oscillating said pinion in accordance with a predetermined station selection, and automatically controlled means for removing said pinion from the path of said oscillating means when a station call has been completed.

11. In a device of the character described including a transmitter and a dialing mechanism, a motor, selective dial driving transmissions between said motor and said dialing mechanism, each of said transmissions including an interrupted gear and a pinion, and magnetically controlled means for starting said motor and selecting a transmission corresponding to a predetermined station call.

12. A station-selecting and selective message-sending apparatus comprising station-selecting impulse-sending apparatus, means for selectively controlling said impulse-sending apparatus to select any one of a number of stations, and automatically selective means for sending a selected message to a selected station.

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