April 7, 1931. E. I. HAYNES 1,799,512

AUTOMATIC SIGNAL DEVICE

Filed Feb. 15, 1929 4 Sheets-Sheet 1

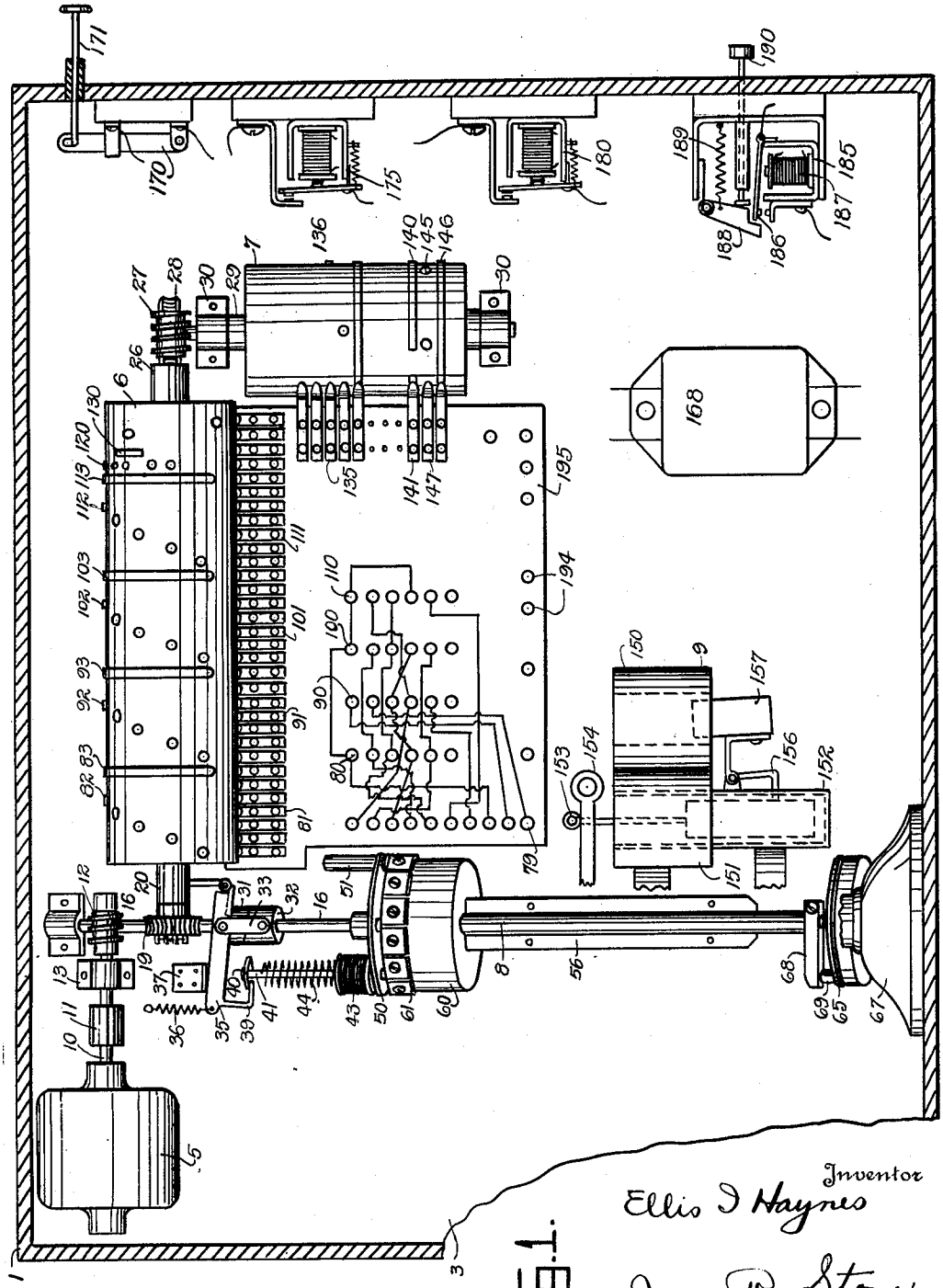


Fig. 1.

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AUTOMATIC SIGNAL DEVICE

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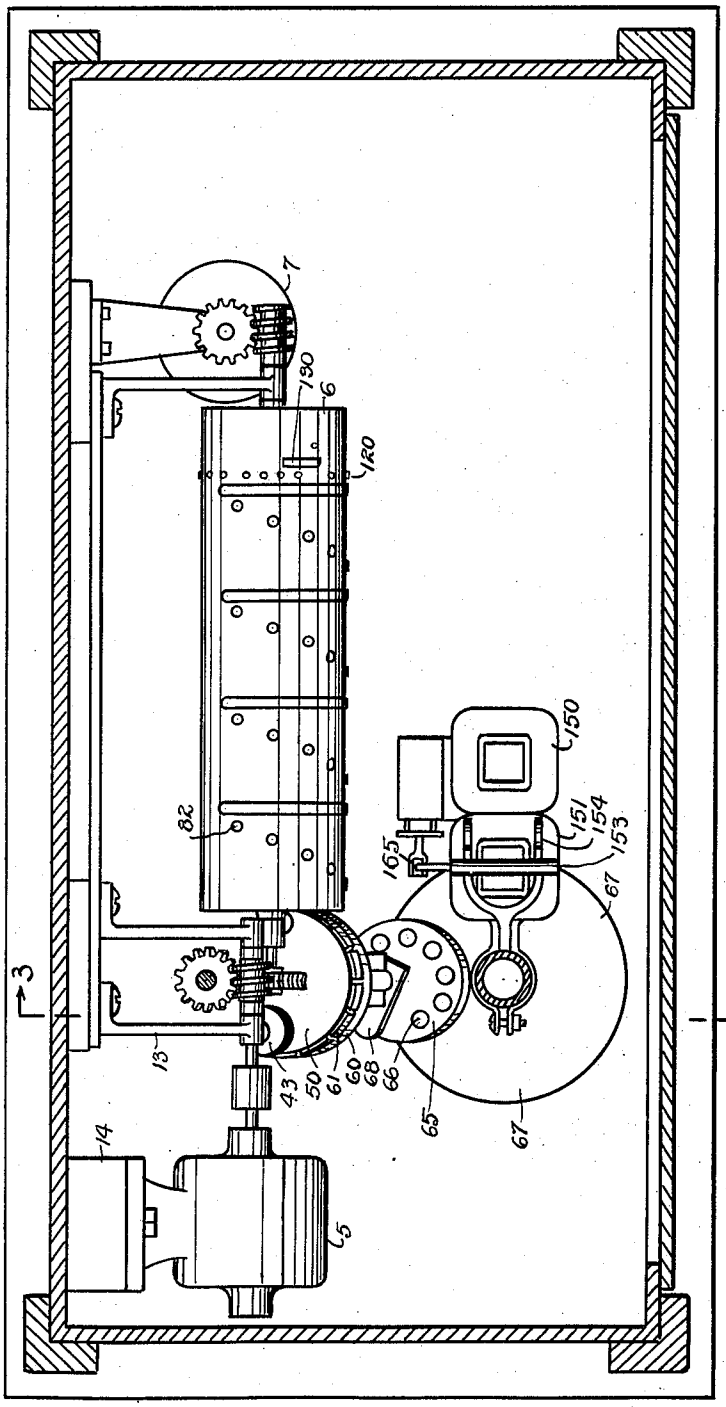


Fig. 2.

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AUTOMATIC SIGNAL DEVICE

Filed Feb. 15, 1929 4 Sheets-Sheet 3

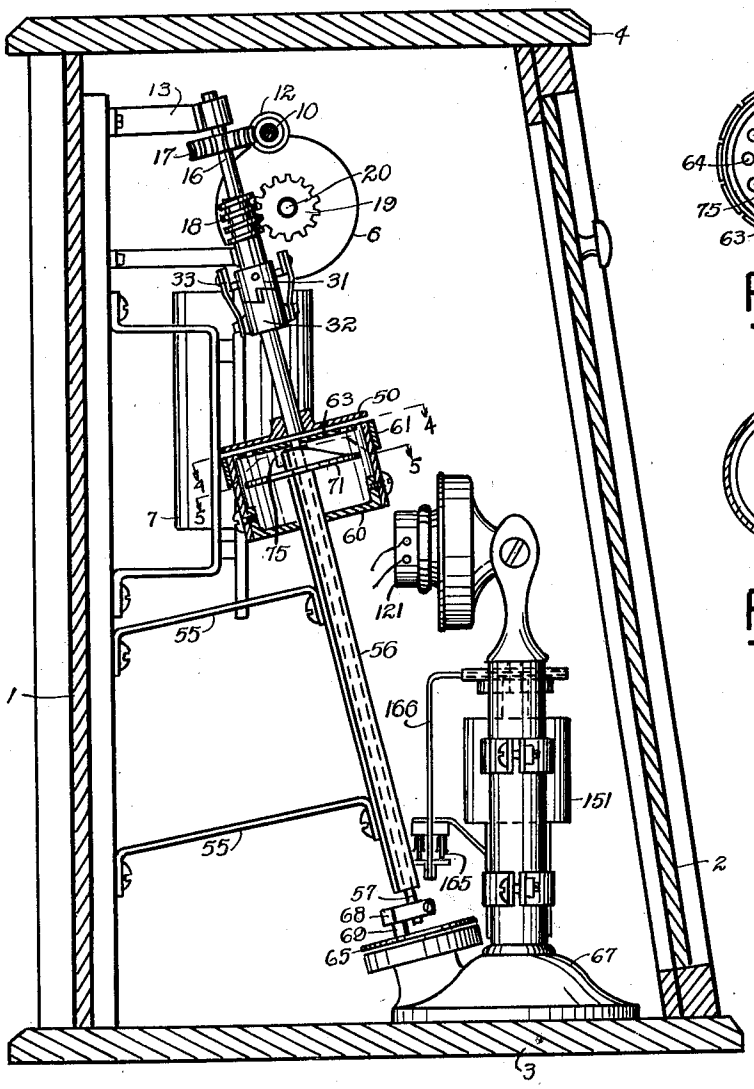


Fig. 3.

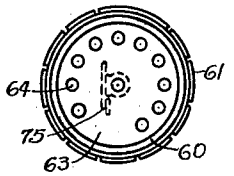


Fig. 4.

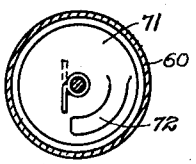


Fig. 5.

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AUTOMATIC SIGNAL DEVICE

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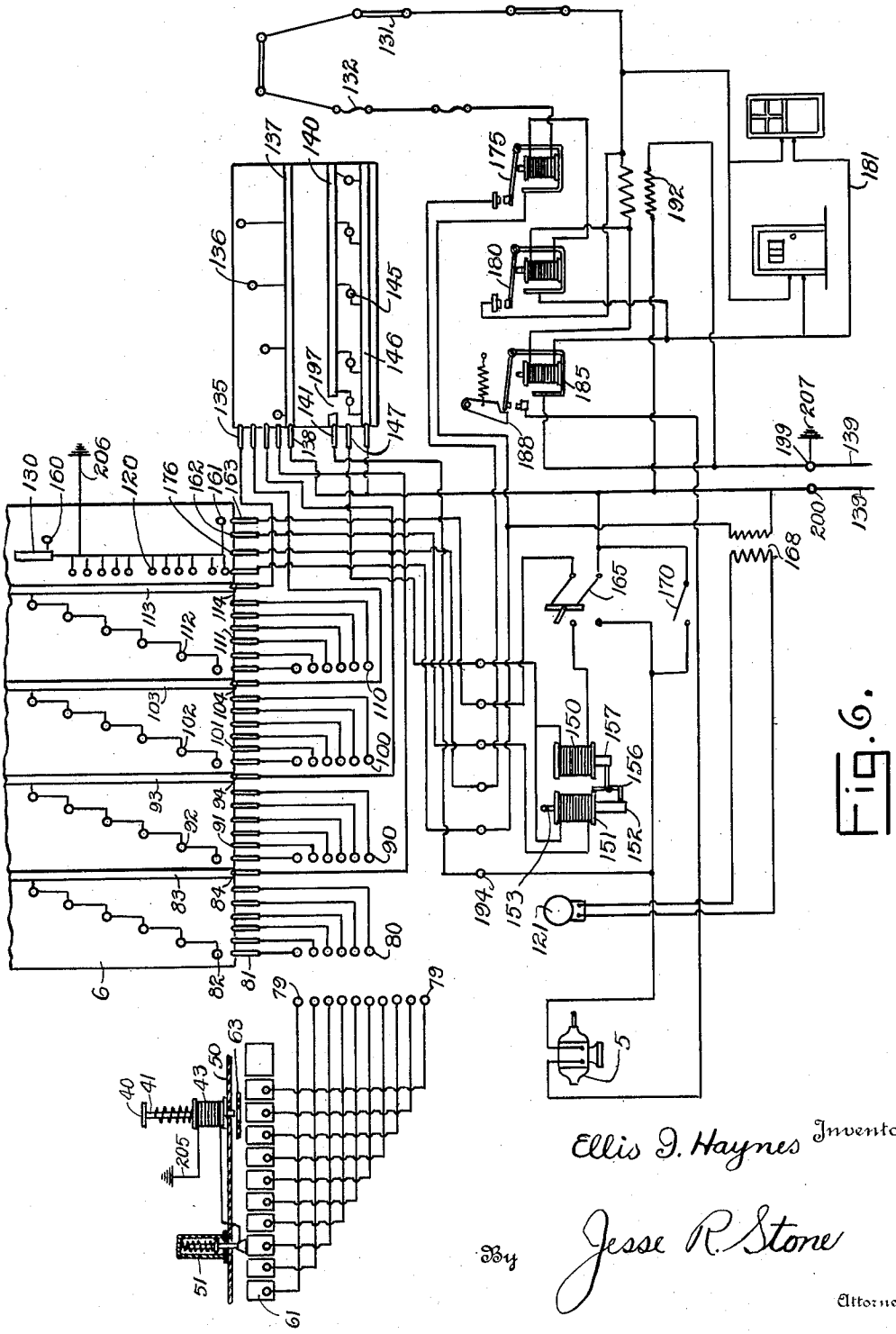


Fig. 6.

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By Jesse R. Stone

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Patented Apr. 7, 1931 1,799,512

UNITED STATES PATENT OFFICE

ELLIS I. HAYNES, OF HOUSTON, TEXAS

AUTOMATIC SIGNAL DEVICE

Application filed February 15, 1929. Serial No. 340,279.

My invention relates to an improved automatic signaling device.

The apparatus herein disclosed is particularly adapted for reporting fires, giving burglar alarms in buildings, and for use in situations where it is desired to communicate a signal upon the disturbance of a portion of the building in which the system is installed, or upon the molestation of the electrical circuits. The apparatus is adapted for use in a wide variety of instances such as notifying the police or fire departments, the owners or operators of the particular building, or otherwise giving an alarm, and also in securing evidence such as taking pictures or to operate electric door locking mechanisms.

It is one of the objects of my improved invention to provide a simple compact apparatus which will not readily become disabled and which will serve the purposes in view.

Another object of my invention is to provide a system of electrical contacts whereby a dial type of telephone may be operated.

Still another object of my invention is to arrange the device in such a manner that a plurality of different telephone numbers may be called in sequence. I aim to arrange the apparatus also in such manner that it will manipulate the receiver hook of the telephone at the proper period in the course of operation.

A still further object of my improvement is to arrange a device in which the proper alarm is selectively given in response to the disturbance of any one of several electrical circuits.

Other and further objects of my improved device will be readily apparent to those skilled in the art to which it appertains and accordingly I do not wish to be limited by the description herein, as various changes and alterations may be employed to meet the existing circumstances of the various types of signals desired in applying my inventive idea in practice. The embodiment herein disclosed is described for purposes of illustration only.

In the drawings, Fig. 1 is a vertical section of the case containing my improved apparatus and showing in elevation the various parts of my invention in one form which they may be assembled.

Fig. 2 is a top plan view of the apparatus, the case being in horizontal section.

Fig. 3 is an end elevation showing the arrangement of the various parts in the case which is in section.

Figs. 4 and 5 are sectional views taken on the lines 4—4 and 5—5 respectively, of Fig. 3.

Fig. 6 is a wiring diagram of my complete apparatus.

I have shown the device as assembled in a housing indicated generally by the reference character 1. This housing has a removable front piece 2, base 3 and top 4, which may be arranged in any suitable manner to accommodate the apparatus. It is, of course, appreciated that the device may be placed in a metallic housing or merely arranged upon the wall of the building or other structure where it is to be installed, but for purposes of illustration I have shown this housing as it forms a means of support for the several parts of the device.

By having reference to Fig. 1, the elevation shows a motor 5 which serves as a means of actuating the several parts of the mechanism.

This motor 5 is connected by suitable gearing to a pair of drums 6 and 7, the latter drum being adapted to rotate at a slower rate of speed than the drum 6. A dialing apparatus indicated generally at 8 is also operated by the motor 5 while the numeral 9 indicates generally the mechanism for manipulating the receiver hook of a dial telephone. For purposes of simplicity I have shown a conventional dial telephone transmitter and receiver, but obviously such transmitter may be built into the mechanism and the receiver elimi-

nated as it is only necessary in my device to manipulate a hook to obtain contact with the central switch board.

The apparatus in general comprises electrical circuits which may be arranged to operate other devices when the circuits are closed; or may be arranged to operate such devices when the circuits are opened. Whichever type of circuit is employed is optional and is selected in order to obtain the desired results in any particular type of installation. The disturbance of any one of these circuits, however, is adapted to send current into the motor 5 which rotates the drums 6 and 7 as well as the dialing apparatus 8. The drums 6 and 7 are so arranged with series of sets of contacts that they will send current at the proper intervals to the dialing apparatus so that the desired number is dialed upon the telephone. When the number has been called a proper signal is then transmitted to the mouth piece of the telephone by a buzzer or other signal indicating the nature of the disturbance occurring in the system.

The motor 5 is provided with a drive shaft 10, shaft coupling 11, and worm gear 12, which is supported by a bearing 13. The motor itself is attached to the housing by a bracket 14.

Mounted at right angles to the shaft 10 is a second shaft 16 which carries a gear 17 adapted to mesh with the worm gear 12. In this manner rotation is transmitted to a second worm gear 18 which meshes with a pinion 19, which communicates rotation to the shaft 20, upon which the contact drum 6 is mounted. The shaft 20 extends through the drum 6 and at its other end carries a worm 27 adapted to cooperate with another gear 28 mounted on the shaft 29 which is supported in the bearings 30. The master drum 7 is mounted on this shaft 29. I have shown the drums 6 and 7 as arranged at right angles but this is merely for purposes of illustration, as they may be disposed in any desired position.

The shaft 16 extends past the worm gear 18 and carries one portion 31 of a cam member. The cooperating portion of this cam member is shown at 32, and is carried by brackets 33. These brackets support a lever member 35 which is retained in a raised position by means of a spring 36 but is limited in its movement by a stop 37. This lever 35 carries a finger 39 which is shaped to catch under a head 40 upon a plunger 41. The plunger 41 is mounted for movement within a magnetic coil 43 but is normally raised by a spring 44. The cam member 32 does not rotate with the shaft 16 but is periodically lowered by the cam faces on the portion 31 and then allowed to move upwardly aided by the spring 36. Attached to the lower end of the shaft 16 is a plate 50. The magnetic coil 43 and a brush 51 are both mounted upon this plate 50 and adapted to rotate therewith. This structure is best seen in Fig. 6. A wire passes the current to the coil 43. The brush 51 is spring pressed and is insulated from the plate 50.

Brackets, such as 55, Fig. 3, may support a tube 56, which has a dial shaft 57 passing therethrough. This tube 56 carries a drum 60 having a plurality of contacts 61 circumferentially disposed thereon. Within the drum 60 and rigidly connected to the dial shaft 57 is a disc 63 having a plurality of openings 64 therein, see Fig. 4. These openings 64 are preferably the same in number as the openings 66 encountered in the usual dial 65 of a dial telephone 67 of ordinary and usual construction. The dial shaft 57 has attached to its lower end an arm 68, which carries a pin 69, which is seated in the zero opening 66 of the dial 65. In this manner any rotation communicated to the disc 63 is also transmitted to the dial 65. The disc 63 is adapted to be rotated by means of the plunger 41 which is drawn downwardly by means of magnetic coil 43 so that the lower end of the plunger passes into one of the openings 64. Thus the plunger 41 serves as a clutch member between the plate 50 and the disc 63. The tension due to the usual spring under the dial 65 retains the plunger 41 in the opening 64 after the brush 51 passes off of the contact 61 to which current was flowing. Thus the disc 63 is rotated in a clockwise direction by the plunger 41 and shaft 16. Below the disc 63 I have shown a cam plate 71 which carries a cam 72. This plate 71 is carried by the tube 56 or by the drum 60, and the cam 72 is so arranged that it will raise the plunger 41 at the proper point in its rotation to a point where it may be engaged by the finger 39 of the lever 35 and withdrawn from the opening 64. A stop member 75 is shown as a means of limiting the rotation of the disc 63 and is placed to correspond with a similar stop for the dial 65 in the telephone 67. The lever 35 by means of the finger 39 contacting with the head 40 tends to withdraw the plunger 41 to its raised position. The spring 44 assists the lever 35 and prevents the plunger from again dropping down into the disc 63 after it rotates out of the position with the lever 35.

By having reference to Fig. 6 the contacts 61 are shown as being connected to binding posts 79. These binding posts are here shown as being ten in number and representing the numerals from one to ten, usually encountered on the dial 65 of the telephone. Fig. 1 shows these binding posts 79 connected by various wiring arrangements to a plurality of sets of binding posts such as 80, 90, 100 and 110. Each set of these last mentioned binding posts represent a number to be called upon the telephone. I have shown here an apparatus constructed and wired to call four

numbers, but obviously the structure may be altered to call as many telephone numbers as desired.

The telephone number represented by the set of binding posts 80 indicates the first party who is to be called. These binding posts 80, as shown in the wiring diagram of Fig. 6, are connected with a set of brushes 81 which are adapted to press against the face of the rotatable drum 6. A plurality of contacts 82 are arranged upon the drum 6 in such a manner that they will come in contact with their respective brushes 81. The current will thus flow through 81, 80, 79, 61, and complete the circuit through the brush 51 to energize the coil 43 and move the plunger 41. Thus the first contact may be wired to indicate either the exchange or the first numeral of the number to be called. The second contact will represent the next succeeding number, etc. I have shown 6 of these contacts so that the apparatus will accommodate almost any telephone number now in general use, but in event a telephone number having a greater number of digits than six is to be called the apparatus may be accordingly extended. A collector ring 83 is connected with a brush 84 whereby current is furnished to the several contacts 82. The sets of binding posts 90, 100 and 110, are similarly connected with their respective sets of brushes, contact and collector rings which have been indicated by reference characters in accordance with the first arrangement just described.

The drum 6 also carries the signaling contacts 120 whereby the proper signal is transmitted into the mouth piece of the telephone. The signal as here shown is arranged to be transmitted by means of the buzzer 121, which is attached to the mouth piece of the telephone 67 and will call a series of sounds to represent the number of the particular apparatus. It is obvious that a number of these mechanisms may be installed in various business or mercantile establishments throughout any particular community and that each mechanism may be given a representative number which will be tabulated in the police and fire departments, the same as a call box or alarm systems such as now commonly employed. The number of the particular apparatus in this instance has been indicated as 2 4 5 so that two buzzes, then four, and then five are transmitted to the mouth piece of the telephone by means of contacts 120 on the drum 6, as shown in the wiring diagram of Fig. 6. The apparatus may be arranged in any desired manner but I have shown it here as merely giving the signal 245, on the closing of the electric circuit which is connected to the entrances and exits of the building. Thus, if an attempt is made to enter the building by opening a door or window, the alarm circuit is closed and the signal 245 is communicated to each one of the telephone numbers arranged on the drum 6.

The drum 6 is also constructed to carry a contact member 130 which may be used to indicate a fire or any other desired type of alarm. This contact 130 is wired into a circuit which carries a plurality of thermostats 131 or other fusible elements 132 which may be melted or otherwise affected by the heat occurring in any part of the building, it being understood that these elements are distributed about the building at various points.

After the signal 245 has been called, if the fire circuit has been disturbed, the contact 130 operates the buzzer to give a sound which indicates to the party who has been called that a fire exists. The sets of contacts 120 and 130 may be arranged continuously around the drum 6 so that the signals are called so long as the drum rotates regardless of whether a telephone call is being made.

The master drum 7 is used as a control device in order to send the current to the various sets of contacts on the drum 6 as well as to send the current which operates the motor 5 and receiver hook coils. This master drum 7, as previously stated, is rotated by means of the power from the motor 5 by rotation at a reduced speed as regards the drum 6. A plurality of the brushes 135 are adapted to engage a plurality of contacts 136 which send current to the respective collector rings 83, 93, 103 and 113. Inasmuch as the drum 7 rotates at a slower speed the period required for the drum 7 to rotate from one to the other of the contacts 136 allows the elapse of sufficient time to complete the call to the first telephone number to send the box number 245, as well as give the fire signal. If desired the contacts 82, 92, 102 and 112, in connection with those at 136, may be so arranged on the drums that the interval between the calling of the telephone numbers will be sufficient to permit repetition of the box number or fire signal or both several times. A collector ring 137 is shown as furnishing current to the several contacts 136. A brush 138 travels upon this collector ring 137 and receives its current from the lead-in wires 139 connected in turn to a source of current such as a city supply line, or a battery.

A collector ring 140 is shown as almost completely encircling the drum 7 and adapted to mesh with a brush 141. This brush transmits current to the motor 5 for the purpose of operating the entire mechanism while the telephone numbers are being called.

The drum 7 carries another set of contacts 145, one contact for each of the telephone calls to be made. These contacts receive current from a collector ring 146 and are contacted by a brush 147. The impulses from these contacts are used to furnish current for manipulating the hook of the telephone receiver. The current is accordingly passed to the

mechanism 9, best seen in Fig. 1. This mechanism comprises a pair of magnetic coils 150 and 151. The coil 151 has an armature 152 which is arranged to slide vertically within the coil. Said armature 152 carries an arm 153 or other device which is adapted to engage the receiver hook 154 of the telephone. In this manner raising and lowering of the armature 152 permits the similar movement of the telephone receiver hook 154. I have shown a latching arrangement 156 for controlling movement of the armature 152. This latch is operated by an armature 157 in the coil 150. Thus when the coil 151 is energized the armature 152 is raised and permits the hook 154 to raise and allow the telephone number to be called. The current is immediately cut off from the coil 151 and the latch 156 retains the armature in raised position. The coil 150 is energized after the telephone call and signals have been given, whereby the armature 157 is drawn therein, thus releasing the latch 156 and permitting the armature 152 to fall and by its weight draw down the hook 154.

The coils 150 and 151 are wired to contacts 160 and 161, respectively. These contacts are adapted to mesh with brushes 162 and 163. The contacts are so arranged upon the drum 6 that the coils are energized at the proper period in the sequence of operation, thus the arm 153 which controls the receiver hook 154 will be raised and lowered as the several telephone calls are made and completed.

By having reference to Figs. 3 and 6 a switch 165 will be seen which has one side thereof wired into the circuit of the coil 150 and the other side into the circuit of the motor 5. This switch 165 is operated by means of a rod 166 which is connected with the arm 153 controlling the receiver hook. In this manner, as the armature 152 of the coil 151 is operated, the switch 165 will be closed and opened, but is so constructed that it will be opened when the hook 154 is down and thus when no call is being made the motor 5 will receive no current through this circuit. The collector ring 140 through the brush 141, binding post 194, and the collector ring 146 which is connected to the lead-in wires 139, forms a circuit to the motor 5 which is interrupted only after the several telephone numbers have been made and the signals given. This interruption is accomplished before the gap 197 completely passes the brush 141. The motor circuit will be broken at this time when the brush 163 passes the contact 161 so that the switch 165 will be opened. In this manner the motor 5 will receive no current from either circuit so that it will stop each time the master drum 7 makes one complete revolution; this represents the time elapsed in sending one complete alarm.

I have shown another switch 170 which is wired around the switch 165 in motor circuit. This switch 170 may be hand-operated and serves as a master switch to reset the apparatus after an alarm has been completed but is closed to furnish current to the motor 5 when desired.

The electrical circuit which controls the fire alarm signal has placed therein suitable relays such as 175 and 180. These relays are wired into the circuit so that when one of the elements 131 or 132 are broken, the relays will be closed.

The relay 175 will send current through the brush 176 to the fire signal contact 130 and will also pass current to the transformer 168 to operate the buzzer 121. It will thus be seen that when this relay 175 is closed current will flow through the contact 130 and as it passes the brush 176 the fire signal consisting of a long and continuous buzz will be sent into the mouth piece of the telephone. The second relay 180 is shown as also having been placed in the fire circuit but is arranged so that if a disturbance of this circuit occurs it will close and throw the current which is passing therethrough across relay 185. This is the principal relay and furnishes current directly to the motor 5. The construction thereof is best seen in Fig. 1 of the drawing and consists in an armature 186, a coil 187 and latch 188. These parts are so arranged, that when the relay 185 closes due to the closing of relay 180, the latch 188 will be drawn down by the spring 189 to a position where it will hold the armature 186 in closed position; thus a continuous flow of current is furnished to the motor 5. A suitable handle 190 is shown as being arranged to remove the latch 188 from above the armature 186 when the calls have been completed to re-set the relay 185. This handle 190 may be pushed in by anyone arriving at the building in response to calls over the telephone. The relays 175 and 180 thus act as a double point relay and may be so constructed if desired. The alarm circuit is shown at 181 and consists of wiring to the various doors, windows, safes or any other devices desired. When for instance a door is opened making contact of the circuit, current passes through the master relay 185 drawing down the armature which is then retained in closed position by the latch 188. And the apparatus is started the same as when the fire alarm circuit is disturbed. The latch 188 prevents the subsequent opening of the relay 185 so that if a door is opened and immediately closed the alarm is started and continues to operate.

A series of binding posts 194 are shown as arranged upon a panel 195 which is adapted to support also the binding posts 79 and all of the brushes which contact the drums 6 and 7. These binding posts 194, as shown in the wiring diagram of Figure 6,

may be suitably inserted in the several circuits from the relays and coils to the drums. In this manner suitable connections may be made to all other circuits as desired.

It is understood that the relative speed ratios of the drums 6 and 7 may be varied at will by altering the size of the gearing which connects their respective shafts. It is upon the relative speed of these two drums that the timing of the coils and signals is dependent. The contacts 82 may be arranged to extend partly or entirely around the circumference. I prefer that the signal contacts 120 shall be placed in a continuous sequence about the drum so that a sound is being continually transmitted to the mouth piece of the telephone so long as the apparatus is in operation.

When it is desired to have the apparatus repeat all of the telephone calls to the several parties and to repeat the signals the switch 170 which is in the nature of a master switch for controlling the entire operation of the device may be left closed so that as the complete rotation of the master drum 7 has been completed a current will be furnished to the motor 5 to continue rotation of the device while the brush 141 is passing across the gap 197 in the collector ring 140; as previously described the switch 165 is open at this time. As soon as this gap has been passed the machine starts calling the telephone numbers for the second time. However, if but a single call to each party is desired after the apparatus has once been set for operation the switch 170 is opened so that when the master drum completes one rotation the apparatus will stop before the brush 141 passes the gap 197 as previously described.

The apparatus as here disclosed is built to operate from 110 volts A. C. house lighting circuit. The wiring diagram as shown is here arranged for this type of current but it is obvious that the apparatus may be arranged to operate upon a low voltage battery service. In order to make this alteration the wiring in the coils 43, 150 and 151 may be altered to provide suitable resistance for the lower voltage. Obviously the other coils, transformers, relays and motor can be altered to accommodate the low voltage as well.

The sequence of the flow of current in order to operate the device is as follows: A pair of binding posts 199 and 200 have been shown as connecting the lead-in wires 139 to the apparatus. The binding post 199 is preferably grounded at 207 to the frame of the apparatus, which is insulated from the cabinet 1. Leading from this binding post is a wire which furnishes current to one terminal of the transformer 192 and also to one contact point of the relay 185. This relay 185 furnishes current to the motor 5 as will be readily seen from the wiring diagram. The other binding post 200 furnishes current to one terminal of the switch 170, and also to complete the circuit through the transformer 192, the motor 5, transformer 168, and the switch 165. The current is taken from this binding post 200 to supply the collector rings 146 and 137. From the collector ring 146 the current flows to the collector ring 140, brush 141, and one of the binding posts 194 and thence to the motor 5.

When the switch 170 remains in open position after the machine has been set, a series of numbers will be called automatically and the current through this line is broken completely as the machine completes all of the telephone calls. This operation is effected by means of the switch 165 which is opened mechanically by the rod 166, at the same time the brush 141 arrives at the gap 197 in the collector ring 140. The current is furnished to the motor 5 by the collector ring 140 to continue operation of the device during the interval between the calling of the several parties.

Current is furnished to the fire alarm circuit by means of the transformer 192, from which current flows to both the relays 175 and 180 from whence it flows through the circuit 181 to the burglar alarm and through the elements 131 and 132 in the fire alarm circuit. This current flowing through the relay 175 retains it in open position and it will thus close when an element 131 or 132 is disturbed. The relay 180 is so wired that flowing of the current keeps it in open position and it acts as a shunt for the current through the relay 185. As previously described, when the relay 185 closes the latch 188 will retain it in closed position until it is manually moved by the handle 190.

The coil of 43 is preferably grounded as shown at 205 and also the current from the buzzer contact 120 may be grounded at 206.

From the foregoing description it will be apparent that I have devised a simple and compact apparatus which may be conveniently installed in any type of building or other location so that it will function to send an alarm to any desired number of parties and to send to each one of these parties various types of signals. My apparatus is a great improvement over alarm systems generally in use in that each alarm system requires a private and separate wiring assembly to each of the police and fire departments and also to detective agency headquarters where suitable motors and apparatus are required to be maintained for each signal system.

With my device the apparatus is all located at the building which is to be protected and a single apparatus will serve to send alarms and signals to any desired location. I am enabled to take advantage of the telephone systems and circuits which are as a general rule already installed in the building; it only becomes necessary to insert a telephone as-

sembly of usual construction in the cabinet of my apparatus and insert the finger 69 in the dial 65 of the telephone. When the apparatus is thus wired into any suitable source of electric current it is then ready for operation. As described, the signals are transmitted over the telephone so that it only becomes necessary to arrange the wiring at 80, 90, 100 and 110 so that it is connected to the binding posts 79 in such manner that it will represent telephone numbers of the fire, police or other parties who are to be called.

I have disclosed herein what I believe to be the preferred embodiment of my apparatus but I do not desire to be limited to the details thereof which may be altered to accommodate various installations in different types of buildings and to provide for the many types of alarms which may be necessary in order to give a complete protection service.

Having described my invention, what I desire to secure by Letters Patent is:

1. An automatic signal apparatus comprising in combination an electric circuit, a dial telephone transmitter, means connecting said circuit and said transmitter to dial a predetermined telephone exchange and number, and means to transmit a proper signal to the party called.

2. An electric signal device, including an electric circuit adapted to be disturbed, means operable upon disturbance of said circuit to operate the dial of a telephone to call a plurality of predetermined telephone numbers, and means also actuated by said circuit which is disturbed to convey a signal to each of the parties called.

3. An electric signal device, including an electric circuit adapted to be disturbed, means operable upon disturbance of said circuit to operate the dial of a telephone to call a plurality of predetermined telephone numbers, and means also operable by said disturbance to convey a plurality of signals to each of the parties called.

4. An automatically operable signaling apparatus including an electric circuit, a plurality of sets of signal contacts connected into said circuit, a dial telephone, means for correlating said contacts and operating said dial telephone in response to such correlation to call a plurality of telephone numbers thereon, and means to indicate the location of the apparatus over the telephone to each of the parties called.

5. In a signaling device, means to electrically operate the dial of a telephone and transmit a signal to the party who is thus called, and additional means operable in sequence with said first means to control a plurality of subsequent calls on the telephone.

6. A device of the character described including a plurality of electric circuits, a dial telephone, means connecting said circuits and said telephone whereby a plurality of predetermined telephone exchanges and numbers may be dialed on said telephone, and means to transmit a signal to said telephone at the time of each call.

7. An automatic signal apparatus comprising a plurality of electrical circuits disposed in a location which is to be protected, a signal mechanism arranged for connection to all of said circuits, a call mechanism associated with all of said circuits, a signal transmission device, a motor operable by disturbance of any one of said circuits to communicate movement to said call mechanism, a plurality of contacts arranged to connect electrically said call mechanism and said signal transmission device whereby a predetermined party may be called and a signal transmitted, and means to periodically operate said call mechanism to notify additional parties and repeat said signal.

8. An automatic signal apparatus comprising a plurality of electrical circuits disposed in a location to be protected, a signal mechanism arranged for connection to all of said circuits, a call mechanism associated with all of said circuits, a signal transmission device, a motor operable upon disturbance of any one of said circuits to communicate movement to said call mechanism, a plurality of contacts arranged to connect electrically said call mechanism and said signal transmission device whereby a predetermined party may be called and a signal transmitted, means to periodically operate said call mechanism to notify additional parties and repeat said signal, and means whereby each of the parties may be repeatedly called and signaled.

9. A signal device including a cabinet, an electrical dial telephone therein, means in said device to receive a plurality of electrical impulses each representative of a numeral to be dialed on said telephone, a call mechanism arranged to transmit electrical impulses representative of a telephone number to said means, and a signaling transmitter operable in sequence with said dialing device and said call mechanism to indicate to the party called the location of the signal device and the nature of the disturbance occurring in said device.

10. In a signal apparatus including a dial telephone, means connected to said telephone and adapted to operate the dial thereof, means operable to control the receiver hook of said telephone, and a call mechanism adapted to transmit electrical impulses to both of said means whereby a telephone exchange and number may be called and means to transmit a signal to said telephone at the time of operation of said call mechanism.

11. A signal mechanism, including an electrical circuit adapted to be disturbed, a master drum arranged to be rotated upon such

disturbance, a contact drum also rotatable, means arranged on said drums to transmit series of predetermined electric impulses, a telephone assembly including a dial and telephone receiver hook, means operable by such impulses to operate said dial and to lift said receiver hook, and means associated with said circuits, drums, and telephone, to signal to the party called the location and nature of the disturbance.

In testimony whereof I hereunto affix my signature this 8th day of February, A. D. 1929.

ELLIS I. HAYNES.