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AUTOMATIC DEVICE FOR EFFECTING TELEPHONE CALLS AND TRANSMITTING SIGNALS

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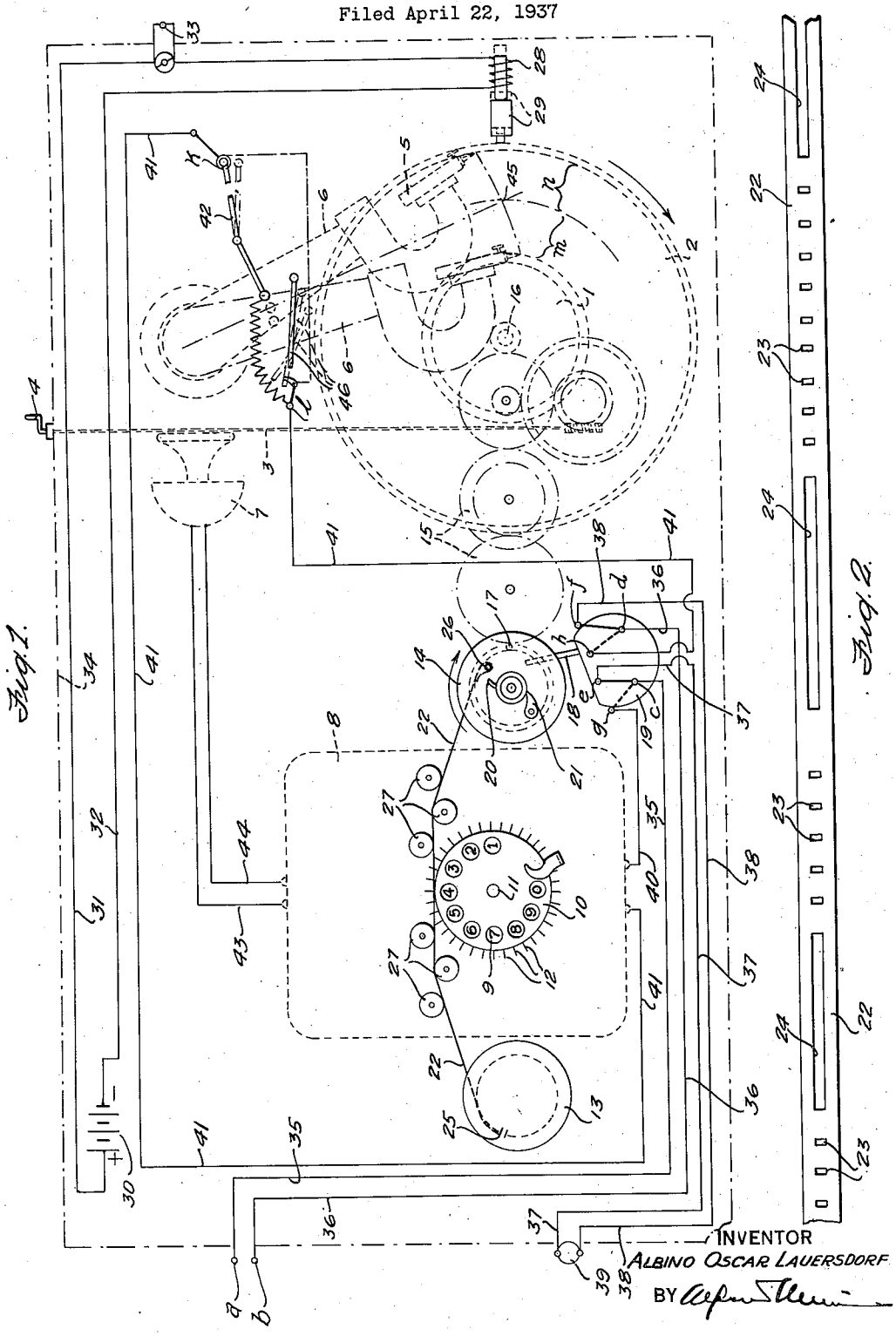


Fig. 1.

Fig. 2.

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AUTOMATIC DEVICE FOR EFFECTING TELEPHONE CALLS AND TRANSMITTING SIGNALS

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This invention relates to a new device for automatically effecting telephone calls and transmitting signals of any kind, and has for its main object a simple device intended to automatically produce a call to a predetermined subscriber or a telephone exchange, and transmit thereto one or more conventional phonographic signals.

Apart from its excellent constructional and operative features, the new type of apparatus being the subject of the present invention offers evident advantages over all other types of apparatus which have been proposed and used heretofore for the same purpose.

In fact, several devices have been proposed for automatically establishing a call to a predetermined subscriber or a telephone exchange, for the transmission of characteristic signals or warnings, but all such apparatus generally operates purely by electrical means, requiring the use of relays, transformers and other auxiliary elements, thereby constituting, as a unit, an apparatus of expensive construction, complicated handling and subject to frequent damages.

In order to obviate these drawbacks, the new type of apparatus embodying the present invention has been devised, which also contemplates other objects which will become apparent from the following description and will be particularly set forth in the appended claims.

In order that the invention may be clearly understood and readily carried into practice, it has been illustrated by way of example in a preferred embodiment in the accompanying drawing, wherein:—

Figure 1 shows a detail of the new type of apparatus as well as the connection between the elements constituting the same, while

Figure 2 is a detail of the ribbon designed to produce the automatic call to the subscriber or telephone exchange.

The same reference characters indicate like or corresponding parts.

In the embodiment illustrated, the new apparatus is mainly constituted by a usual phonographic device, comprising a rotating plate 1 having placed thereon a phonographic record 2, the rotating motion of which is preferably effected by means of a spring device actuated by an axle 3 manually controlled by a crank 4, or the like. A phonograph diaphragm 5 acts on said record 2 and is suitably supported at the end of a swinging arm 6, the opposite end of which is shaped as a horn, in front of the telephone transmitter 7.

In combination with said elements there is provided an automatic telephone calling apparatus of the type usually constituted by a control box 8 in front of which is provided a stationary number disc 9 and a perforated disc 10 which latter is rotatably mounted on a fixed axle 11. The drawing also shows that in combination with the rotatable disc 10, a further disc or crown has been provided, suitably secured to the former and carrying on its periphery a plurality of small studs 12, arranged in a radial direction over the entire periphery of said crown.

At the sides of box 8, two small rotatable drums 13 and 14 are provided, the drum 13 being freely mounted, while the drum 14 is rotated in the direction of the arrow by means of a series of reduction gears and pinions 15, which receive their rotation from the main axle 16 of the record-carrying plate 1.

On the drum 14 is also provided a small stop 17, capable of engaging at a given moment the arm 18 of a rotatable commutator 19, and a second stop 20, capable of striking against a small pawl 21 or the like, to produce the clutching of said drum.

The drawing also shows that over the drums 13 and 14 passes a ribbon 22, which, as may be seen from Figure 2, is provided with a series of perforations and grooves 23 and 24, respectively, of varying lengths, according to the station and number of the called station. One end of said ribbon is simply secured, without being fastened, in a small slot 25 formed in the free drum 13, while the opposite end thereof, having the shape of a hook, is suitably secured to a pin 26 fixed to the driving drum 14. The intermediate portion of ribbon 22 is arranged in such a manner that the radial studs 12 mesh with the perforations and grooves 23 and 24 thereof, being retained in this position by means of the small idling rollers 27.

The general control for this apparatus is obtained by means of an electro-magnetic device 28, the core 29 of which, coupled to an automatic brake, is capable of acting against the record-carrying plate 1, said electro-magnet 28 being supplied with current from a battery 30 from which lead the conductors 31 and 32, in the circuit of which is provided with a switch 33 adapted to be operated by hand.

All these elements, with the exception of the switch 33 and crank 4, are arranged within a closed casing 34, of any shape and material, which may or may not be internally or externally lined with sound-proof material.

This type of apparatus may operate in parallel, over the feed circuit of a usual telephone installation, or independently therefrom.

For this purpose, the binding posts *a* and *b* of the telephone circuit are respectively connected, through conductors **35** and **36**, with the input contacts *c* and *d* of the rotatable commutator **19**, while two of the output contacts *e* and *f* of said commutator are connected to the usual telephone **39**, through conductors **37** and **38**. Finally, the remaining two contacts *g* and *h* of said commutator are connected to the input and output binding posts of the call box **8**, by means of the conductors **40** and **41**, the latter having interpolated a rotary switch **42**, controlled by the arm **6** of the phonographic diaphragm, and which upon rotating in one direction or the other, opens or closes the circuit between two fixed contacts *k* and *l*. The call box **8** is connected with the corresponding telephone transmitter **7**, by means of conductors **43** and **44**.

When the device is in the position shown in Figure 1, it remains entirely independent from the main telephone circuit, as the current flowing for example through the binding post *a*, passes through the conductor **35**, the contacts *c* and *e* of the commutator **19**, and conductor **37**, and the telephone **39**, from where it returns through the conductor **38**, the contacts *f* and *d*, the conductor **36** and the output binding post *b*.

Should at a given moment the subscriber desire to effect an emergency call or a call of any other nature to a definite station, it will be sufficient for him to actuate the switch **33**, thereby closing the circuit of the electro-magnet **28**, the core **29** of which will be withdrawn thereby releasing the record-carrying plate **1** which will start rotating in the direction of the arrow.

At the same time, the pinions **15** will be set in motion, causing the rotation of the drum **14**, which will move the ribbon **22**, and the orifices **23** thereof, upon engaging the studs **12**, will cause the call disc **10** to rotate in such a manner as to call the station and number of a predetermined telephone, thereby establishing a communication with same.

It is evident that the number marked by the rotating disc **10** will vary with the different location of the orifices **23**. Also, it should be noted that the length of the grooves **24** must correspond to the time necessary for said disc to return to its initial position, after each partial rotation, in order to be in position to mark the next number.

Upon starting this operation, the stop **17** on disk **14** will actuate the commutator **19**, by means of the arm **18**, whereby the connection between the pairs of contacts *c*—*e* and *f*—*d* will be interrupted and the telephone **39** will remain out of circuit, while on the other hand connection is established between the pairs of contacts *c*—*g* and *d*—*h*. Now, the current flowing through the binding post *a* will pass through the conductor **35**, contact *c* and conductor **40** and box **8**, leaving through the conductor **43** to the transmitter **7**, to return by the conductor **44**, box **8** and conductor **41**, the switch of which will be in closed position, and after passing through the contacts *d* and *h*, will pass through the conductor **36** to the output binding post *b*.

Under these conditions, the phonographic diaphragm **5** will transmit to the telephone transmitter **7** the conventional signals or calls recorded on the record **2**, which will be clearly received by the receiving station.

Upon continuing the rotation of the record **2**, the diaphragm **5** will be displaced towards the center thereof, thereby causing at a given moment the rotation of the switch **42**, which will disconnect the contacts *k* and *l*, thus stopping the operation of the device.

Apart from the simplicity of its operation, this type of apparatus offers the advantage that it may be used for the automatic transmission of any emergency or other call.

It may also be installed at any distant part of a building, so that its location may be ignored by outside persons who might otherwise tamper with it, and due to the fact that the elements thereof may be inclosed in a sound-proof box, its operation will pass unnoticed.

A further important advantage of this type of apparatus resides in the fact that it may be installed in combination with drawers, doors, windows, etc. in any number of them for a single device, in such a manner that upon attempting to open same, the control switch will be pressed; said switch may be located, if desired, at a great distance from the apparatus, and the pressing thereof will cause the automatic operation of the device.

This type of apparatus may also be equipped with two or more ribbons, similar to the ribbon **22**, in order to successively call two or more different stations, for example police headquarters, fire department, etc., or also in the case that the first number is busy or does not answer the call. In this case, the record **2** will have as many zones *m*, *n*, etc. as stations it is desired to call, so that when the diaphragm **5** reaches the limit **45** of the first call and the opening of the switch **42** has been caused, the same arm **6** will cause the closing of its second switch **46**, thereby re-establishing the contact between the binding posts *k* and *l* and initiating the transmission of the second call to the new station which will have been marked on the disc **10** by means of the second ribbon **22**.

It should also be noted that the ribbon shown in Figure 2 may be replaced with great advantage by a chain having jointed links, provided with suitably spaced crosspieces, according to the station and number to be marked by the rotary disc **10**.

As described above, the invention is quite clear and requires no further explanation to those skilled in the art.

It is obvious that several modifications in construction and detail may be introduced without departing from the scope of the present invention, as clearly set forth in the appended claims.

What I claim is:—

1. In combination an electric circuit including a battery, an automatic call telephone apparatus, comprising a transmitter, a number disk carrying the numbers of the stations to be called, a ribbon having perforations or openings therein corresponding to the numbers on said number disk and in operative engagement with said number disk for actuating the same, rotatable drums provided for said ribbon for moving the same in either direction, a stop carried by one of said drums, a rotatable commutator in said electric circuit adapted to be operated by said stop for connecting or disconnecting said apparatus, a phonograph comprising a movable tone arm, in opposite relationship to said transmitter, a spring-operated record carrying plate and a rotatable shaft therefor, a train of gear wheels for transmitting the rotation of said shaft to one of said drums,

electro-magnetically operated means included in said circuit for controlling the rotation of said shaft, and a manual switch for opening and closing the circuit of said electro-magnetically operated means.

2. The combination as specified in claim 1, including a second electric circuit for said commutator, and a rotatable switch therein for automatically closing and opening said second circuit, said rotatable switch being operated by said tone-arm.

3. The combination as specified in claim 1, in which said record is provided with various successive zones each having specific signals to be transmitted, including a corresponding number of switches independently controlled by the various zones of said record.

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