Feb. 19, 1935. C. D. FATOR 1,991,383

PARTY LINE TELEPHONE DETECTOR

Filed Nov. 29, 1933

Fig. 3.

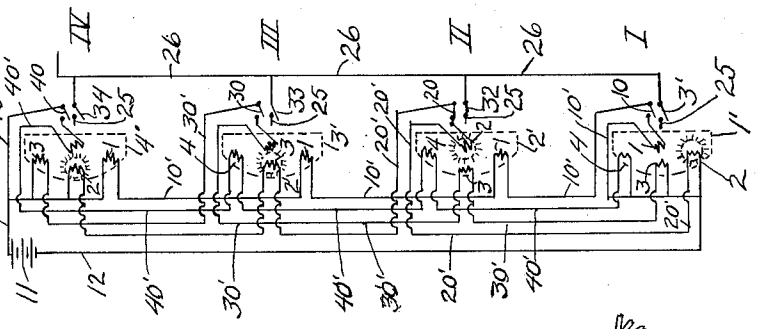


Fig. 2.

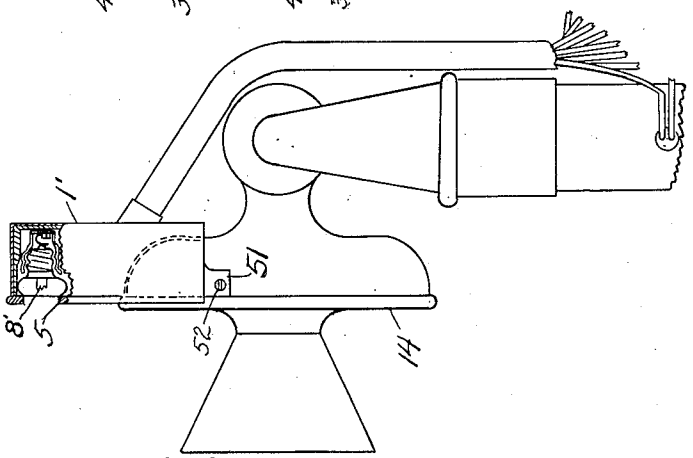
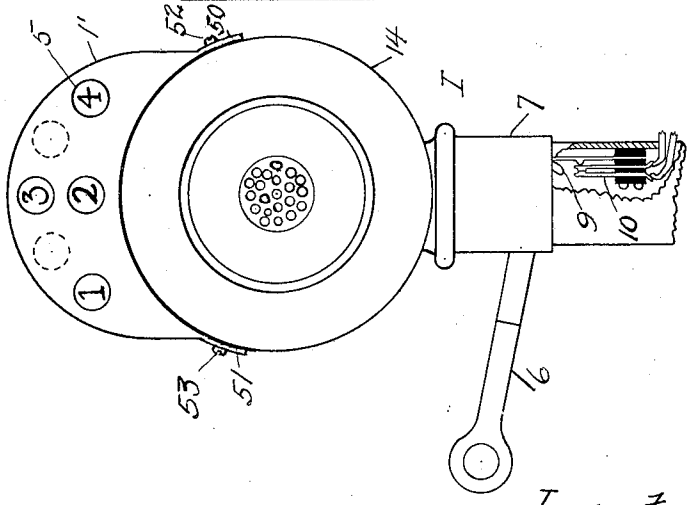


Fig. 1.



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PARTY LINE TELEPHONE DETECTOR

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3 Claims. (Cl. 179—30)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a detection apparatus for party line telephone circuits.

The principal object of the invention is to provide an apparatus which may be incorporated in party line telephone systems to insure privacy in conversation.

Another object of the invention is to provide a means for detecting any attempt at listening in, and of identifying the instrument from which the attempted eavesdropping originates.

In the present practice of telephone installations, it often happens that two, or even four, separate telephones may be connected to a single or common, telephone line. This means that a conversation carried on from one of such telephones may be "listened-in" on from any, or all of the other telephones on the common line, thus making such conversation anything but confidential or secret and causing considerable annoyance to those using the line. Heretofore, the person conversing over one of such party lines had no definite way to know whether or not anyone was listening in on his conversation from any other telephone on the line, thus being practically forced to confine his conversation to the same limitations which would ordinarily be imposed when conversing in a public gathering. Very often this listening-in begins inadvertently by a person desiring to use the telephone and having no way of knowing that one of the other telephones on the same line was being used.

With the installation of the device which forms the subject matter of this invention, listening-in is prevented, as it so operates that when the receiver hook on any of the telephones on the line is up, or lifted from its supporting hook, a little indicator lamp (or other suitable signal) lights in each and everyone of the indicator devices, one each of which is installed on, or at, each telephone, and remains lighted as long as the said receiver hook remains up. Thus if No. 2 telephone is being used the indicator lamp indexed "2" lights up on each and every telephone on the common line so that all a person has to do to find out if the telephone line is being used is to glance at the indicator device on his telephone. Likewise, when a subscriber is using one of the telephones on the line he can tell if, and when, the receiver-hook of any of the other telephones is lifted, and which telephone it is, and then govern his conversation accordingly.

Incidentally, this invention lends itself to a hook-up with the small unit switch board system as used in many large offices, so that the indicator will notify the person using any phone in the circuit, if and when the operator at the switchboard is "listening-in"; thus making the person's conversation secret insofar as any of the office force is concerned.

Thus such an invention should prove desirable in that it permits maximum secrecy in conversations over any telephone which may be connected to a telephone line to which one or more other telephones are connected, at least to the point of the main switchboard of the telephone company, giving such telephones private line advantages insofar as secrecy goes. Here it may be mentioned that such an indicator system for telephones as disclosed should prove invaluable to party-line subscribers, and not be excessive in cost to the telephone companies due to their practice of connecting to such party-lines only telephones in those homes which are located in an immediate neighborhood, as such a system would give party-line subscribers the combined advantages of private-line secrecy of conversation along with the attraction of lesser monthly rates usually charged party-line subscribers.

As a further elaboration, this "tell-tale" invention could even be hooked up to the main switch board at the telephone company exchange, thus to indicate to the subscriber if and when the operator may be "listening-in". Obviously this would not apply to mechanical or automatic exchanges, used in some cities.

Referring to the accompanying drawing in which similar parts are indicated by like reference characters:

Fig. 1 shows a front elevation of the indicating apparatus mounted as an accessory attachment to a telephone transmitter. In this view the supporting standard is cut away to show the switch connections;

Fig. 2 shows a side view of Fig. 1 partially cut away to show the indicator lamp window; and

Fig. 3 is a diagrammatic view showing the circuit of a party line, and the detector circuits.

In the illustrations the indicating device is shown as attached to the ordinary type of transmitter having an upright standard, but the device may be connected to any type of telephone.

The indicating devices which are designated by the numeral (1') in Figs. 1 and 2 and by (1'), (2'), (3') and (4') in Fig. 3 consist of an outer shell or housing detachably mounted on the transmitter (14), said housing having a number of

windows (5) formed therein, and behind which are positioned small incandescent electric lamps (8). The windows (5) may be covered with a transparent material on which are marked numerals indicating different telephones located in the party line, or these numerals may be located on the front of the bulbs of the incandescent lamps.

The receiver hook which is indicated by the numeral (6) (Fig. 1) is pivotally mounted in the standard (7) in the usual manner and is provided with a cam (9) which operates an ordinary line switch (10) as shown in Fig. 1. When the receiver (not shown) is lifted from the hook (6) the line switch (10) (Fig. 1) which is operated by the cam (9) closes a circuit in which a number of indicator lamps are arranged in series, each light located at one of the telephones in the system. The closing of the switch causes all of these lamps to become illuminated and since they are all numbered the same as the telephone which automatically controls their circuit, the subscriber at any of the other telephones on the line will know by glancing at the indicator that telephone number I is in operation.

The indicator lamp marked (1) in Fig. 3 is connected in a circuit in series with an indicating light marked (1) in each of the indicating devices in the party line. It will be noted by examining this diagram that the light (1) in Fig. 1 is in series with the lamp (1) in indicator (2') of telephone II, with the lamp (1) in the indicator (3') of telephone III, and with the lamp (1) in the indicator (4') of telephone IV. This circuit is closed by switch (10) located at telephone I.

The lamp (2) in indicator (2') is connected in series to the lamp (2) in indicator (1') of telephone I, the lamp (2) in indicator (3') of telephone III and the lamp (2) in indicator (4') of telephone IV and this circuit is closed by the switch (20) in indicator (2') at telephone II, and this circuit is controlled by switch (20) located at telephone number II.

Thus by lifting the receiver from the hook of any telephone the line switch of the indicator circuit is closed and the indicator lamp corresponding to that number telephone is illuminated along with indicating lamps bearing like numerals at the other telephones.

These indicator lamp circuits which are shown in Fig. 3 are all energized by a common source of power (11), the energy being transmitted through the bus lines (12) and (13) and the conducting wires of the particular indicator circuits as will be described later.

When the receiver hook is lifted another line switch is also operated to close the circuit through conductors (25) and (26) to the receivers and transmitters of the various telephones, but as they form no part of the invention, these switches have not been shown in Figs. 1 and 2 but are diagrammatically indicated in Fig. 3 by the numerals 31, 32, 33 and 34.

As a further example of the operation of the lights we will suppose that the receiver is lifted from the hook of telephone number I. This operation automatically connects the receiver and transmitter to the line in the usual manner and also operates the control switch (10) which closes the indicator circuit of this telephone. On closing of this latter switch a complete circuit is made through the indicating lamp number 1 of telephone number I and the indicating lamps number 1 of each of the other telephones on the party line. The same is true if the receiver of any other telephone is lifted from the hook.

For a description of the indicator circuits reference will be had to the diagrammatic outline shown in Fig. 3. In this figure it will be noted that there are four circuits, each of which is controlled by a switch corresponding to the indicator switch (10) as shown in Fig. 1. Within each of these circuits are four indicator lamps placed in series and each located within an indicator housing. It will also be noted that energy to the circuits is supplied from a common source (11), through the bus lines (12) and (13) to which the conductors from the indicator lamps are connected.

All of the four indicator lamps in any particular circuit bear the same numeral or are placed behind windows in the indicator housing bearing the same numeral, and this numeral is the same as that of the telephone instrument in which the switch of the particular circuit is located. As for example, if the operating switch is located in telephone number II, then all the signal lights in the circuit controlled by this switch will bear or illuminate the numeral 2, for the following reason. If the receiver of the telephone is lifted from the hook, the indicator switch in this instrument will immediately close the indicator circuit and notify each of the other subscribers on the line that telephone number II is in operation, since the closing of this indicator circuit causes the illumination of all the lamps which bear a similar numeral.

Thus each set of signal lamps has its separate circuit control switch which is operated by lifting the receiver-hook of its respective telephone.

In the above example cited, the party line is provided with telephones for four subscribers; but the signal device is not restricted to any particular number of telephones in the same line.

It is preferable to color the signal lights of the local telephones green and those of the distant telephones red, i. e., the signal lamp bearing the numeral 2 on telephone number II will be green and other signal lamps on this instrument will be red.

With further reference to the diagram shown in Fig. 3, it will be noted that the source of energy (11) represented as a battery, is connected to the bus lines (12) and (13) and the conductors of each group of signal lamps with its respective control switch are connected at their extremities to each of the bus lines.

When the control switch (20) of telephone number II is closed by lifting the receiver of this instrument from the hook, the green lamp (2) on this instrument and the red lamp (2) on the telephones I, III, and IV, all of which are connected in series to the bus lines (12) and (13) by the common conductor (20'), are illuminated. If the control switch (40) of telephone number IV is closed by lifting the receiver of this instrument from the hook, the green lamp (4) on the instrument and the red lamp (4) on the telephones I, II, and III, all of which are connected in series to the bus lines (12) and (13) by the conductor (40'), are illuminated, and this is likewise true of the other instruments on the party line.

If the subscriber at telephone number II is speaking to the subscriber at telephone IV the green lamp (2) and the red lamp (4) on instrument number II will be illuminated, and also the green lamp (4) and the red lamp (2) on instrument number IV. With respect to the other telephones on the line, the red lamps (2) and (4) on

instrument I, and also the red lamps 2 and 4 on instrument III will be illuminated. So if a party at instrument III starts to remove the receiver from the hook he will see the red lamps (2) and (4) illuminated to warn him that the line is busy and that the subscribers at telephones II and IV are using it. If the subscriber at III takes down the receiver the red lamps (3) on telephones I, II and IV will become illuminated as well as the green lamp (3) of his own telephone. The illumination of the red lamp (3) at telephones II and IV will warn the operators of these instruments that a party is listening in at telephone number III.

Thus the conductors (10') of the lamps bearing the numeral (1), the conductors (20') of the lamps bearing the numeral (3), and the conductors (40') of the lamps bearing the numeral (4), connect each series of lamps with the bus lines (12) and (13) which are connected to the battery (11), so that any series of lamps may be energized by closing the switch of the particular circuit.

The housings of the indicators (1'), (2'), (3') and (4') are preferably crescent shaped as shown in Fig. 1, and are provided with extensions (50) and (51) which are drilled for the reception of the small machine screws (52 and 53) so that the apparatus may be removably attached to any of the standard transmitters now in use.

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

1. A signaling attachment for party line telephones adapted to visually indicate interconnected subscriber stations and comprising a party line, a series of subscriber stations adapted to be connected to the line and including a telephone and a movable element carried by the telephone, a series of signal lamps corresponding in number to that of the subscriber stations, each lamp identifying a particular station, a plurality of energizing circuits, each of said circuits connecting in series a correspondingly identified lamp at the respective subscriber stations, a pair of normally open contacts associated with the telephone at each subscriber station and included in the energizing circuit for the lamps identifying that particular station, and coacting means between said movable element and said contacts to close the latter when said station has been connected to the party line.

2. A signaling attachment for partly line telephones adapted to visually indicate interconnected subscriber stations and comprising a party line, a series of subscriber stations adapted to be connected to the line and including a telephone and a movable element carried by the telephone, a casing detachably connected with the telephone, a series of signaling lamps mounted in the casing, said lamps corresponding in number to that of the subscriber stations, each lamp identifying a particular station, a plurality of energizing circuits, each of said circuits connecting in series a correspondingly identified lamp at the respective subscriber stations, a pair of normally open contacts associated with the telephone at each subscriber station and included in the energizing circuit for the lamps identifying that particular station, and coacting means between said movable element and said contacts to close the latter when said station has been connected to the party line.

3. A signaling attachment for party line telephones adapted to visually indicate interconnected subscriber stations and comprising a party line, a series of subscriber stations adapted to be connected to the line and including a telephone and a movable element carried by the telephone, a casing adapted to be detachably connected with the telephone, a series of signal lamps mounted in the casing, said lamps corresponding in number to that of the subscriber stations, each lamp identifying a particular station, a plurality of energizing circuits, each of said circuits connecting in series a correspondingly identified lamp at the respective subscriber stations, a pair of normally open contacts interior of the telephone at each subscriber station and included in the energizing circuit for the lamps identifying that particular station and coacting means between said movable element and said contacts to close the latter when said station has been connected to the party line.

CHARLES DIBRELL FATOR.