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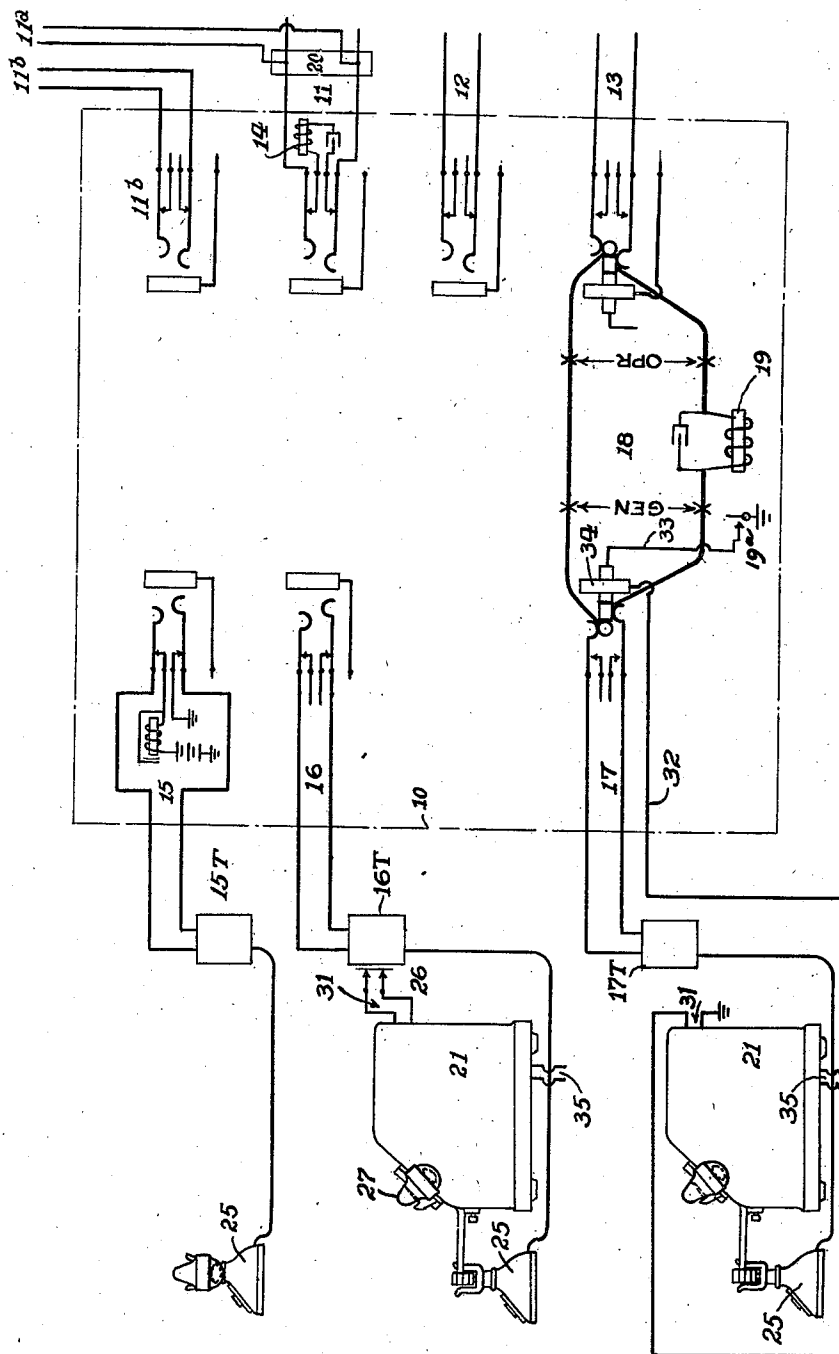
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2,283,591

TELEPHONE ANSWERING SYSTEM

Filed Dec. 14, 1940

2 Sheets-Sheet 1



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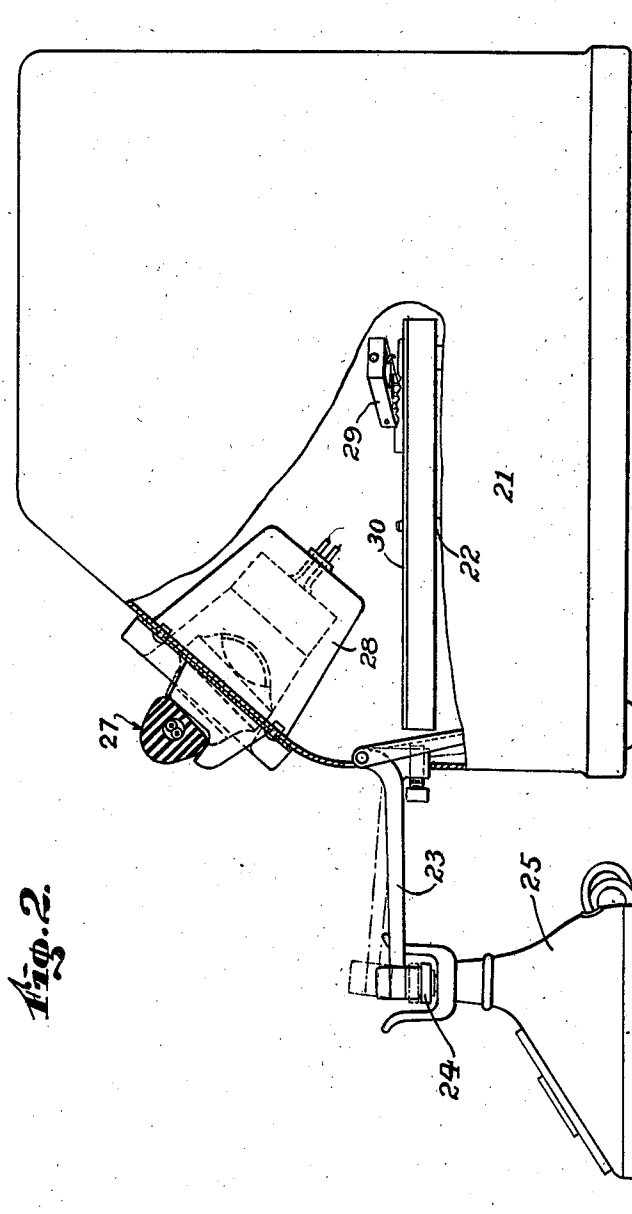
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UNITED STATES PATENT OFFICE

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TELEPHONE ANSWERING SYSTEM

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Application December 14, 1940, Serial No. 370,109

6 Claims. (Cl. 179—6)

This invention relates to a telephone answering system wherein incoming calls arriving over a plurality of trunk lines are orally referred to one of said lines without the intervention of an operator and by automatic means operated by the incoming call signals.

Another object is to provide a system of the class described wherein, there being a plurality of trunks, an incoming call on any one of said trunks will set in operation a phonograph adapted to deliver a message to the trunk to which it is connected.

Further objects will be apparent from the following specification, which together with the accompanying drawings illustrate one embodiment of the invention by way of illustration. It will be understood, however, that many changes in details of apparatus and circuits can be made without departing from the inventive concept herein described and claimed.

The invention is particularly useful in large cities where many "secretarial" or telephone "answering services" exist. While originally such services were largely confined to doctors and nurses, they have now extended to a large number of businesses and professions. The "service" consists of answering the telephone when the subscriber is away from the telephone, and taking incoming messages which the subscriber is given when he returns to the telephone.

Such services are often operated by private firms and individuals not directly controlled by the Telephone Company, but who rent facilities from the Telephone Company and work in cooperation therewith. To make this clear, the following example will suffice:

The X Y Z Message Service Company renders the public a "message service," and, upon notice from any telephone subscriber, will "service" that line for a fixed charge per hour, week or month. One method of doing this is for the X Y Z Company to have a trunk from the telephone exchange where the subscriber's line terminates, to the private exchange of the X Y Z Company, or a trunk directly from the subscriber's premises to the X Y Z Company. In either case, when the subscriber's line is to be "served," the telephone company either puts (a) all calls for that line on the X Y Z trunk, or (b) actually connects the X Y Z trunk from the telephone exchange to the subscriber's line, or (c) the subscriber (when the X Y Z trunk terminates on his premises) temporarily connects his incoming telephone line to the outgoing trunk for the "service" period.

When methods (b) and (c) first described are used, the telephone company often charges a "mileage rate" for the trunk lines from its exchange to the X Y Z Company or from the subscriber's premises to the X Y Z Company. This rate may be for sake of illustration \$7.50 per mile for the first mile and \$5.00 per mile for each additional mile.

Consider now the case of a concern having ten incoming trunks to a P. B. X board, located 15 miles from the X Y Z Company's private exchange and 20 miles from the telephone company's exchange, and desiring service. It is decided to run the service trunks directly from the X Y Z Company's exchange to the P. B. X—a distance of 15 miles:

The mileage cost for 1 trunk is \$77.50;

The mileage cost for 10 trunks is \$775.00.

Obviously the latter figure would be a burden if the service is only—for example—to be given at night, and may be prohibitive. In practice therefore it is customary to "service" only the first trunk of a group, thereby having only the mileage charge of \$77.50 to pay. This, however, gives rise to a number of difficulties:

For example: A gas company has a P. B. X with ten (10) trunks, the first one (#700) is plugged onto the "emergency" or "service" extension telephone. The other nine trunks at night are plugged up on extensions in various other offices or departments, not accessible to the "service" division, or they are not plugged up at all after the switchboard attendant leaves at night.

If #700 is busy and another call comes in over #701 or any of the other nine trunks, the calling subscriber does not get any reply. As in automatic offices the selector switch will select only the first idle trunk of a group, even if the first trunk is dialed and is busy, a second calling subscriber could never reach #700 and would not know it was busy but would hear the ring (on the trunk actually selected) and claim "service" did not answer.

The present invention eliminates the foregoing condition without the necessity of any change in existing equipment at the central office, as well as providing a method of "servicing" a plurality of trunks over a single trunk of connection.

In the accompanying drawings—

Figure 1 is a wiring diagram of a telephone system embodying the invention; and

Figure 2 is a side view partly in section of the automatic answering device used at the extension telephones 16T, 17T, in Figure 1.

Referring to Figure 1, the broken line 10 encloses a P. B. X board which may be of any known type, magneto, common battery, manual, automatic or any combination thereof. The circuits and arrangement of apparatus is immaterial except as hereinafter pointed out, and therefore the showing in Figure 1 is purely illustrative and diagrammatic.

This board is provided with a plurality of incoming trunk lines 11, 12, 13, each having the usual signal such as the drop 14. Only one drop is shown for the sake of simplicity, it being understood that any number of trunks may be employed and that all trunks are equipped with suitable signals such as 14. While cut-off jacks are shown, it will be understood that these may be keys as commonly used in "cordless" boards; or the terminal equipment may be that commonly used in small lamp signal boards or automatic P. B. X equipment of any type.

The local lines or extensions may be of any number and are shown at 15, 16, 17, each metallic line having a suitable signal and jack equipment as shown in connection with line 15.

Means for connecting the trunks and extensions may comprise the usual cord circuits, one of which is shown at 18, having therein the visual disconnect signal 19 operating in the usual manner. As the operating and ringing circuits are of the usual type and do not enter into the present illustration, they are not shown or described. Any suitable cord battery feed may be used, or the extensions can be operated directly from the central office battery over the incoming trunks.

Extension 15 terminates at 15T in the usual telephone instrument. At night, trunk line 11, hereafter termed the master trunk, is connected via cord circuit 18 with extension 15. All calls now coming in over trunk 11 will go directly to 15T and may be answered in the usual way by the telephone instrument 25 connected thereto, as shown.

However, calls coming in over trunks 12, 13, etc., hereafter called the secondary trunks, will go to extensions 16T, 17T, etc., if the extensions are connected to the trunks as described in connection with trunk 11 and extensions 15T. These extensions may be far removed from 15T so that these bells will not be heard and the calls will remain unanswered.

Should the attendant at 15T fail to answer, or be engaged in other duties, and the trunk 11 be "serviced," the Service Company will get the call via the trunk 11^a which is connected to trunk 11 at the main frame 20 of the telephone company switchboard at the originating exchange. If desired, the wires extending from the main frame 20 inwards to the drop 14 can be temporarily disconnected. Or the attendant can plug the trunk 11 via a cord circuit 18 on to the "service" trunk 11^b so that the Service Company can, at their own switchboard to which trunk 11^b extends, answer all incoming calls from the central office.

It will be at once be apparent that, without duplicating the service trunk 11^a or 11^b on each of the trunks 12, 13, etc., both the service man at 15T and the Service Company on the outer ends of trunk 11^a or 11^b (whichever is used) will fail to receive all calls on all trunks not serviced. This is prevented by the present invention by placing at each one of the extensions plugged to a trunk such as 12, 13, a device as shown and described in the co-pending application Serial

Number 333,268, filed May 4, 1940, entitled "Telephone answering and recording apparatus."

Such a device is shown in Figure 2 and comprises a Peatrophone including a phonograph and other mechanism contained in the cabinet 21. The phonograph is adapted for cyclic operation by shaft 22. A movable arm 23 extends over and manually holds down the switch 24 of the associated telephone instrument 25.

Any telephone bell box may be equipped with a signal pick-up 26 which, when actuated by the ringing of the bell, will actuate the mechanism 21 to lift the arm 23, thereby connecting the receiver and transmitter of the telephone handset 27 to a microphone and loud-speaker respectively, located within the casings 28. At the same time the reproducer 29 is placed in contact with the record 30 on which has previously been recorded any desired message such as: "This is the gas company—The 'Peatrophone', a mechanical device, answering—If you are calling our service department, please call again Main 700 (trunk 11), and if that line does not answer promptly, our night-man may be out on a job; if so, call Main 800 (trunk 11^a or 11^b—whichever is in use) and he will immediately be notified and attend to your call. If you do not understand this message, hang up, repeat your call and listen carefully to this message, which will be repeated."

The arm 29 is now disengaged from the record 30, arm 23 drops on the telephone switch 24, thereby automatically disconnecting same, and the device is ready for the next call.

In the aforesaid co-pending patent application a description is given of means to record a message on a disc (not shown) in the cabinet 21, if the calling subscriber desires to leave said message. While such a message recorder can be used in connection with the incoming call just described, it is of no particular importance in so far as the main purpose of the instant invention is concerned, which is to automatically advise calls on all trunks of a group, but the one herein designated as the master trunk, to call in again over the master trunk, or to call a certain other number instead of one of the trunk group.

This is attained by the combination of the master trunk 11 with the extension telephone 15T, the record 30 referring to trunk 11 and the several devices 21 each connected to the other extensions 16, 17, etc., which in turn connect to the secondary trunks 12, 13, etc., to form a complete cooperative system requiring no operator and yet in which verbal instructions are issued to calling subscribers over all incoming secondary trunks.

If desired, instead of actuating the normally closed circuit signal pick-up device 26 by the vibrations of one of the bell boxes,—16T for illustration—it can be eliminated and the starting circuit 31 to the Peatrophone operated by opening or closing contacts 19^a on the cord circuit relay or signal 19. These contacts are commonly used to operate the usual "night bell" circuit, but can via conductor 32, be used to start the operation of the Peatrophones. In this event, conductor 32 may connect to the third conductor 33 of the cord circuit 18; a third contact 34 on each jack 16, 17, etc., being provided and connected to conductor 32 extending to the individual Peatrophone connected to that line.

A detailed description of the Peatrophone and its circuits will be found in the aforesaid co-pending application. It does not affect the nor-

mal operation of the telephone set in any manner.

The outer ends of trunks 11, 12, 13, terminate in the usual main exchange, or central office, to which other subscribers of the city telephone system are connected. Service trunks 11^a and 11^b (whichever is used) terminate at the service exchange switchboard of the service company.

The ringing current for telephones 15T, 16T, 17T, etc., when plugged up at night, as shown, emanates from the main exchange, or if a local source is used, it is actuated via a local ringing relay in the usual manner. All the Peatrophones are connected via conductors 35 to a common source of operating current which may be the usual 110 volt A. C. lighting circuit.

What is claimed is:

1. In a telephone system, a master trunk, a secondary trunk, an extension line, a telephone connected to said extension line, means connecting said extension line to said master trunk, a second telephone connected to said secondary trunk, a phonograph connected to said second telephone and having a record thereon adapted when said phonograph is actuated to deliver a message over said second telephone to the party connected to the outer end of said secondary trunk, means for actuating said phonograph operated by impulses received via said secondary trunk, and means for interconnecting at will any of said trunks and lines for two-way conversation.

2. In a telephone system, a master trunk, a secondary trunk, a telephone connected to said master trunk, a second telephone connected to said secondary trunk, a phonograph connected to said second telephone, a record on said phonograph containing a message referring to said master trunk, means for operating said phonograph via impulses of current controlled by said secondary trunk whereby the calling party on said secondary trunk is automatically told to call said master trunk, and means for interchangeably connecting said telephone instruments to either trunk and each other.

3. In a telephone system, a switchboard having a plurality of trunk lines connected thereto and to a main exchange, a plurality of extension lines terminating on said board, switching mechanism whereby any trunk may be connected to any extension line, a service trunk connected to one of said trunks and terminating in a service exchange, a phonograph connected to one of said extension lines for connection via said switching mechanism to any of said trunks except that connected to said service trunk, a record on said phonograph, and means emanating from said main exchange for initiating the operation of said phonograph to cause same to repeat said rec-

ord to a calling subscriber over any of said trunks except that connected to the service trunk to refer the caller to the latter.

4. In a telephone system, a switchboard having a plurality of trunk lines connected thereto and to a main exchange, a plurality of extension lines terminating on said board, switching mechanism whereby any trunk may be connected to any extension line, a service trunk connected to one of said trunks and terminating in a service exchange, a phonograph connected to one of said extension lines for connection via said switching mechanism to any of said trunks except that connected to said service trunk, a record on said phonograph, and means emanating from said main exchange for initiating the operation of said phonograph to cause same to repeat said record to a calling subscriber over any of said trunks except that connected to the service trunk to refer the caller to the latter, said means including contacts controlled by electromagnetic means forming part of said switching means.

5. In a telephone system, a switchboard having a plurality of trunk lines connected thereto and to a main exchange, a plurality of extension lines terminating on said board, switching mechanism comprising three conductor connecting elements, whereby any trunk may be connected to any extension line, a service trunk connected to one of said trunks and terminating in a service exchange, a phonograph connected to one of said extension lines for connection via said switching mechanism to any of said trunks except that connected to said service trunk, a record on said phonograph, and means emanating from said main exchange for initiating the operation of said phonograph to cause same to repeat said record to a calling subscriber over any of said trunks except that connected to the service trunk to refer the caller to the latter, said means including one of said three conductor connecting elements in said switching mechanism.

6. In a telephone system, a switchboard having a plurality of trunk lines terminating thereon and coming from a telephone exchange, a service trunk adapted to service one of said trunks to form a master trunk, a plurality of local telephone lines terminating on said switchboard, switching means for connecting said local lines and trunks, a phonograph connected to one of said local lines and adapted through said switching means to be connected to any of said trunks, and means for starting said phonograph to deliver a message by current delivered thereto over one of said trunks while said master trunk is busy.

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