

Sept. 8, 1931.

A. TRADUP

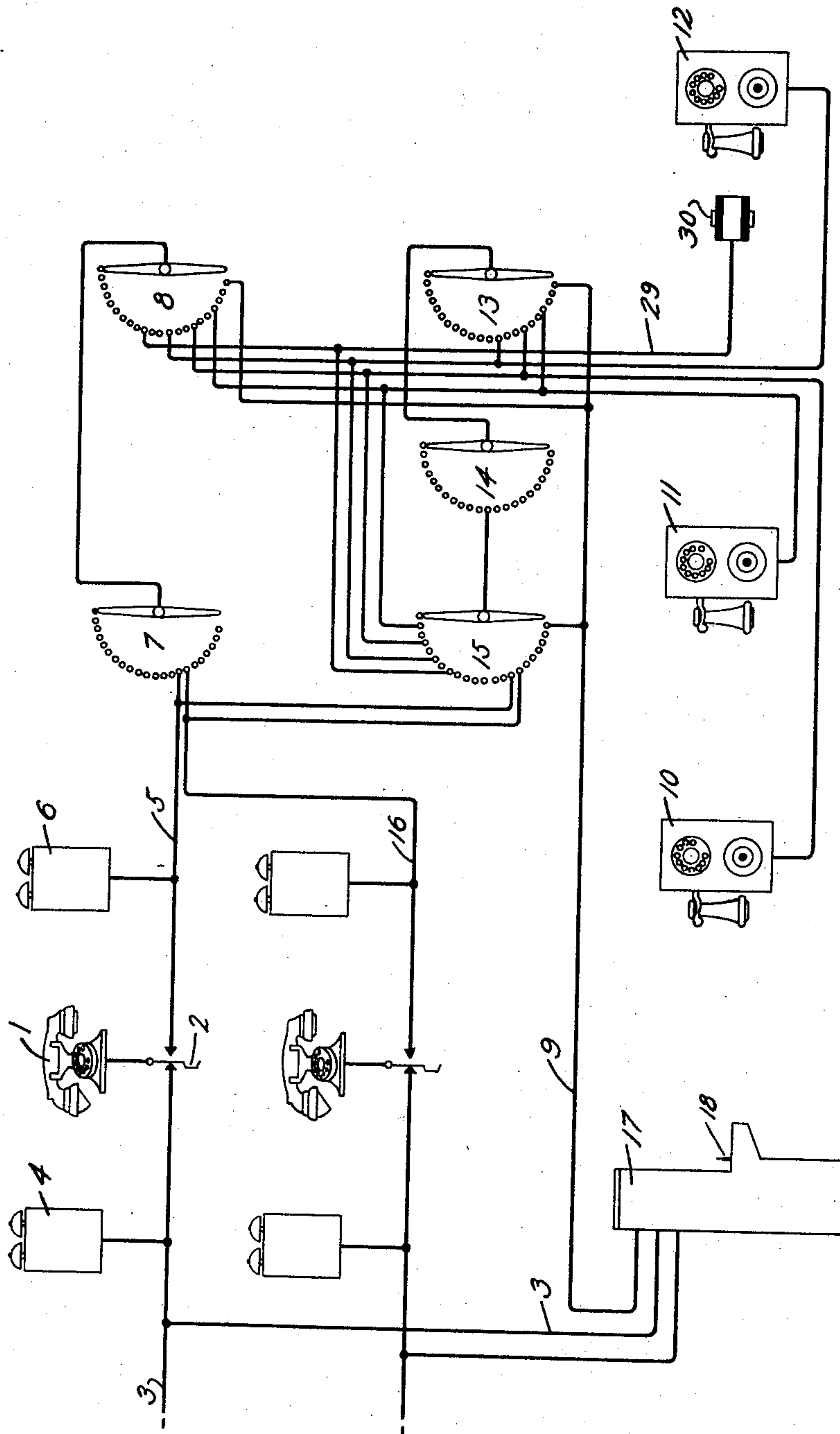
1,821,993

TELEPHONE SYSTEM

Filed Nov. 21, 1929

2 Sheets-Sheet 1

FIG. 1



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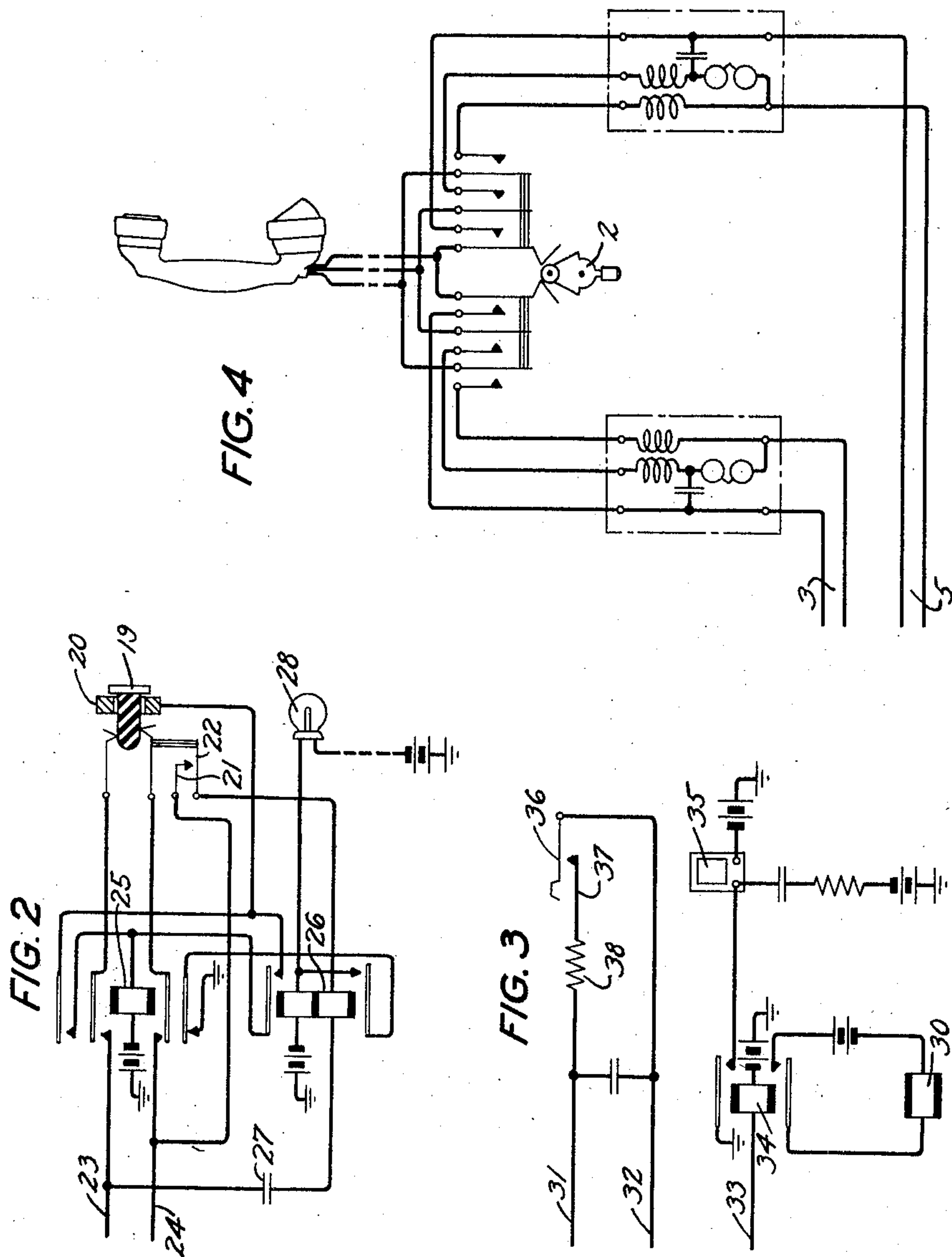
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## UNITED STATES PATENT OFFICE

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## TELEPHONE SYSTEM

Application filed November 21, 1929. Serial No. 408,780.

This invention relates to telephone systems and particularly to arrangements for subscribers' service in apartment houses.

In its general aspects the invention consists of an arrangement whereby each apartment is served by a direct central office line and a house line with a switching arrangement whereby the subscriber may at will connect his instrument to either line. Each house line extends to a bank of switches for outgoing service to a number of service lines such as those to the superintendent, to the janitor, to the secretarial desk and to the service entrances. There is also provided a separate bank of switches through which the house lines may be reached from the service lines. With this arrangement a caller may establish a connection from a service entrance to a given apartment and the occupant of the apartment may thereupon establish a new connection which will result in the operation of a door lock controlling magnet and a contiguous signal to give notice to the caller that the door may be opened. Upon the opening of the door a signal will be transmitted back to the occupant of the called apartment to let such occupant know that the caller has entered. There is further provided a secretarial desk in which each central office line has an appearance. Each such line terminates thereat in a circuit so arranged that the secretary may gain access thereto only in answering an incoming call and then only when the circuit has been so conditioned upon the express orders of an occupant of an apartment.

A feature of the invention is the combination of the direct central office line to an apartment and its branch appearing in the secretarial desk in such a circuit arrangement that the secretary thereat may gain access to it only in response to incoming calls and the switching arrangement whereby the occupant of the apartment may establish a connection through local means to the said secretarial desk to deliver orders for the performance of absentee service.

Another feature of the invention resides in the means for performing door opening service over the local telephone switching

arrangements, together with the means for returning a signal to the party who has established a door opening connection upon the opening of the door.

The drawings consist of two sheets, the first containing Fig. 1 which is a schematic representation of the apartment house telephone system containing the present invention, and the second containing Figs. 2, 3 and 4. Fig. 2 is a circuit diagram showing the manner in which a central office line terminates in the secretarial desk. Fig. 3 is a circuit diagram illustrating the door opening circuit, and Fig. 4 is a circuit diagram representing the apartment sub-station switching arrangement.

Each apartment is provided with a telephone instrument 1 and a switching arrangement 2. A central office line 3 entering the apartment terminates in the switching arrangement 2 and a signaling device 4. A house line 5 also terminates in the switching arrangement 2 and a signaling arrangement 6. The house line at its other end terminates in the bank of a line finder switch 7 by means of which the line may be extended to a connector 8 and from thence to the secretarial desk over trunk 9 or to any one of the service telephones 10, 11 or 12. Thus line finder switch 7 and connector 8 form one switching arrangement whereby outgoing service from the apartment may be had.

From the service telephones 10, 11 and 12, connection may be extended through the line finder switch 13 and thence through the selector switch 14 and the connector switch 15 to the various apartment lines such as 5 and 16 and also to the service lines including the trunk 9 to the secretarial desk 17.

The secretarial desk is provided with single ended cord circuits indicated at 18 so that while the secretary may attend to all incoming calls, she may do no switching.

Each central office line such as 3 terminates in the secretarial desk in a circuit such as shown in Fig. 2. In this case a dummy plug 19 of insulating material is shown as inserted in the jack 20 whereby connection



between the contacts 21 and 22 of the jack 20 is opened. If, while the dummy plug 19 is so inserted in the jack 20, ringing current should be applied to the two conductors 23 and 24 of this central office line, it will find no circuit, since the path through the lower winding of relay 26 is open.

Should the operator remove the dummy plug 19 and insert a cord circuit plug into jack 20, she would be unable to get a connection to the central office because both the tip and the ring conductors from the jack are opened at the contacts of relay 25.

It is therefore only when the dummy plug 19 is removed and when ringing current is applied to conductors 23 and 24 that the operator will be able to get in on the connection. At such a time ringing current applied to conductor 24 will flow through contacts 21 and 22, lower winding of relay 26, condenser 27, and thence over ring conductor 24. Relay 26 will become operated and will lock through its upper winding to ground supplied over the lower outer armature and back contact of relay 25. When the operator inserts the plug in jack 20, ground will be connected through the sleeve of jack 20 to operate relay 25 through the upper armature and front contact of relay 26. Thereupon relay 25 locks over its upper outer armature and front contact and relay 26 is deenergized through the opening of the lower outer armature and back contact of relay 26. During the energization of relay 26, the calling signal 28 is operated.

In the operation of this system, a caller will manipulate the dial on the telephone 12 at the service entrance to actuate line finder switch 13, selector 14 and connector 15 to establish a connection to a desired apartment. The occupant there answering the telephone and learning that a caller is at the service entrance, will first hang up and then establish a new connection over line finder switch 7 and connector 8 to line 29 terminating in a door lock magnet 30.

In accordance with the well known operation of standard apparatus (referring now to Fig. 3) the conductors 31, 32 and 33 respectively represent the tip, ring and sleeve conductors of the line 29 coming from connector switch 8. Upon the establishment of the said connection to line 29, a ground will be placed on conductor 33 which will operate relay 34. Relay 34 through its lower armature, closes a local circuit for operating a door lock magnet 30. Through its upper armature, relay 34 closes another local circuit to operate a signal 35 such as a buzzer placed contiguous to the door lock magnet 30. Thus, the caller, hearing the signal, will know that the door may be opened.

During the existence of this connection, ringing current will be applied to conductors 31 and 32 and in accordance with the

usual practice, a ringing tone will be transmitted to the telephone of the calling party. When the door is opened by the caller, contacts 36 and 37 will be closed, whereupon a bridge including a resistance 38 sufficiently low in value to trip the machine ringing in the connector will be established across the tip and ring conductors 31 and 32. When the machine ringing in the connector is thus tripped, the ringing tone to the calling subscriber will cease and thus give a signal that the caller has opened the door.

Should a subscriber wish to have the secretary take care of incoming calls during his absence, he may, by the proper manipulation of the key 2 and the dial on his telephone, establish a connection over line finder switch 7 and connector 8 to trunk 9, terminating in any usual manner in the secretarial desk. The secretary thereat will answer the call and upon instructions will remove the dummy plug 19 from the corresponding jack associated with the central office line 3. Therefore, during the absence of the subscriber at substation 1, the secretary may answer incoming calls and record the information gathered in this way for the future benefit of the subscriber. The secretary may at a later period establish a connection over trunk 9 through line finder switch 13, selector 14 and connector 15 to an apartment to impart such information as she has gathered during the absence of the subscriber.

What is claimed is:

1. In an apartment house telephone system, an apartment substation, a central office line extending directly to said apartment substation, a house telephone line extending from said apartment substation, means for switching said apartment substation from one to the other of said lines, house switching means for extending said house telephone line, service lines accessible to said house telephone line via said house switching means, a secretarial desk, a line from said house switching means to said secretarial desk included in said service lines, a branch of said central office line terminating at said secretarial desk in a circuit arrangement whereby said central office line is accessible thereat only in response to incoming calls, and means under control of a secretary upon instructions delivered over said house telephone line for rendering said central office line inaccessible thereat even in response to incoming calls.

2. In an apartment house telephone system, an apartment substation, a central office line extending directly to said apartment substation, a house telephone line extending from said apartment substation, means for switching said apartment substation from one to the other of said lines, house service lines, house switching means for extending



said house telephone line to said house service line, a separate house switching means for extending said house service lines to said house telephone line, a secretarial desk, a line from said house switching means to said secretarial desk included in said house service lines, a branch of said central office line terminating at said secretarial desk in a circuit arrangement whereby said central office line is accessible thereat only in response to incoming calls, and means under control of a secretary upon instructions delivered over said house telephone line for rendering said central office line inaccessible thereat even in response to incoming calls.

3. In an apartment house telephone system, apartment lines, service lines, a switching means for extending said apartment lines to said service lines, a separate switching means for extending said service lines to said apartment lines, a door, a door lock controlling magnet, said magnet being operable over one of said service lines upon the establishment of a connection from an apartment line thereto over said switching means, means included in said switching means responsive to the establishment of such connection for transmitting a signal back over said established connection, and means controlled by said door for stopping the operation of said signaling means.

4. In an apartment house telephone system, apartment lines, service lines, automatic switches for extending said apartment lines to said service lines, other automatic switches for extending said service lines to said apartment lines, a door, a door lock controlling magnet, said magnet being operable over one of said service lines upon the establishment of a connection from an apartment line thereto over said automatic switches, means included in said switching means responsive to the establishment of such connection for transmitting a signal back over said established connection, and means controlled by said door for stopping the operation of said signaling means.

5. In an electrical service system, a telephone system, a door, a door lock controlling magnet, means for establishing a connection to and for operating said magnet for said telephone system, means included in said first means responsive to the establishment of such connection for transmitting a signal back over said established connection, and means controlled by said door for stopping the operation of said signaling means.

6. In an electrical service system, a telephone system, a door, a door lock controlling magnet, a signal contiguous to said door, means for establishing a connection to and for simultaneously operating said magnet and said signal, means included in said first means responsive to the establishment of such connection for transmitting a signal

back over said established connection, and means controlled by said door for stopping the operation of said last signaling means.

7. In an electrical service system, a dial telephone system, a door, a door lock controlling magnet, means responsive to coded dial impulses for establishing a connection to and for operating said magnet, means included in said first means responsive to the establishment of such connection for transmitting a signal back over said established connection, and means controlled by said door for stopping the operation of said signaling means.

8. In an electrical service system, a telephone system including a plurality of telephone substations, a door lock controlling magnet common to said substations, a signal contiguous to said magnet, and means for establishing a connection from any one of said substations to and for simultaneously operating said magnet and said signal over said telephone system.

In testimony whereof, I have signed my name to this specification this 19th day of November, 1929.

ALBERT TRADUP.

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