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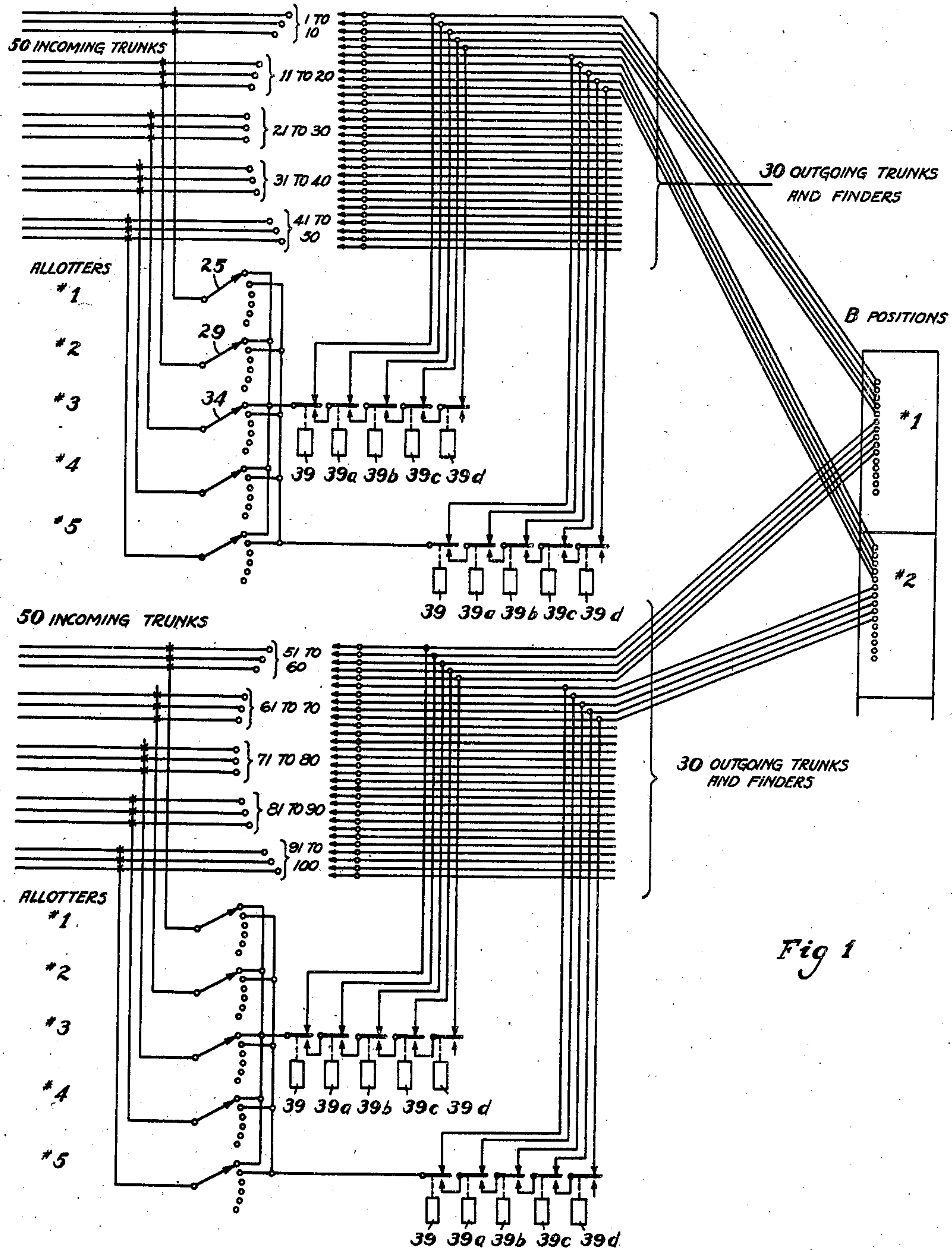
W. T. POWELL

2,187,174

TELEPHONE CALL DISTRIBUTING SYSTEM

Filed March 31, 1938

5 Sheets-Sheet 1



BY

INVENTOR.

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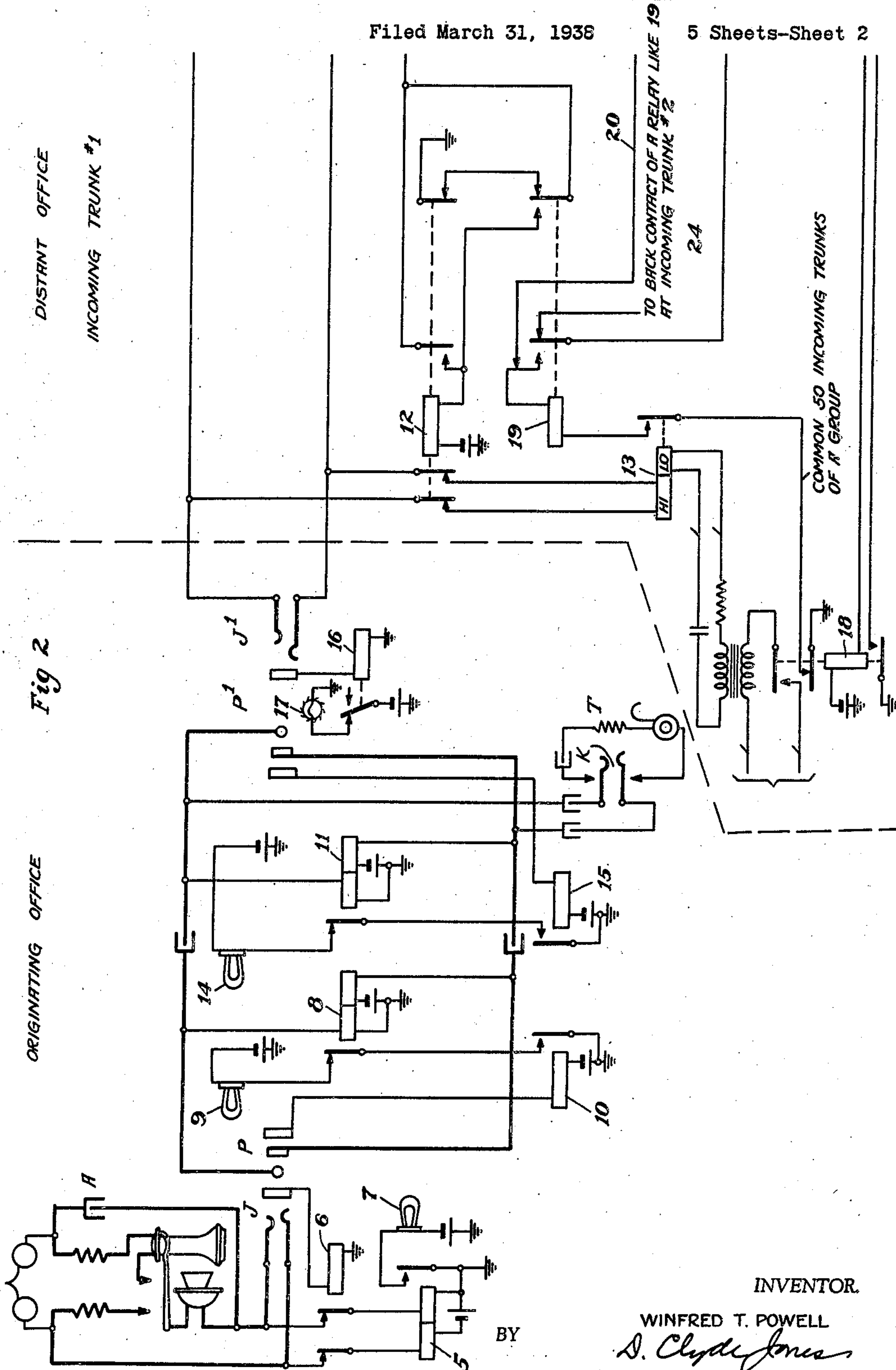
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5 Sheets-Sheet 2



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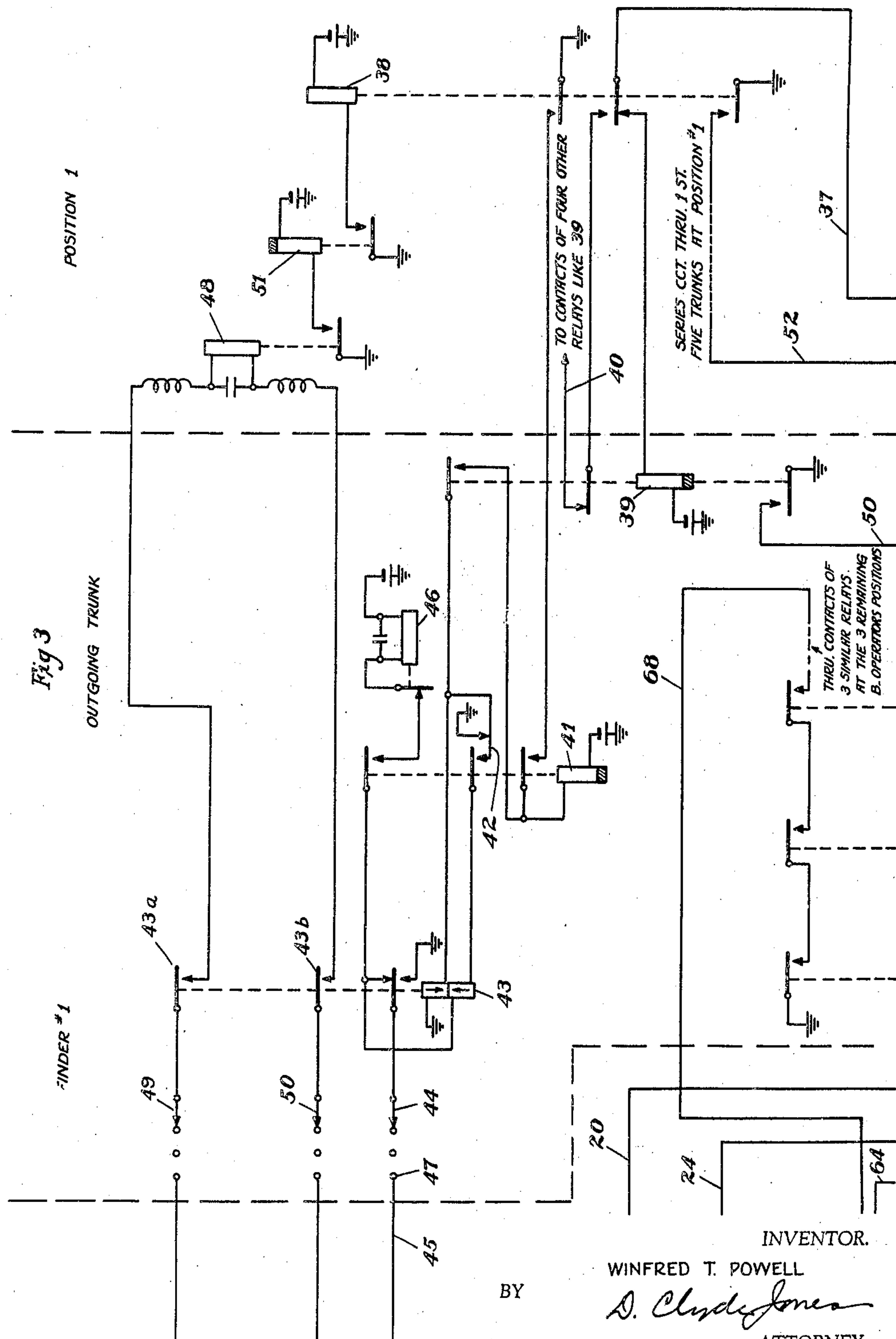
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TELEPHONE CALL DISTRIBUTING SYSTEM

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5 Sheets-Sheet 3



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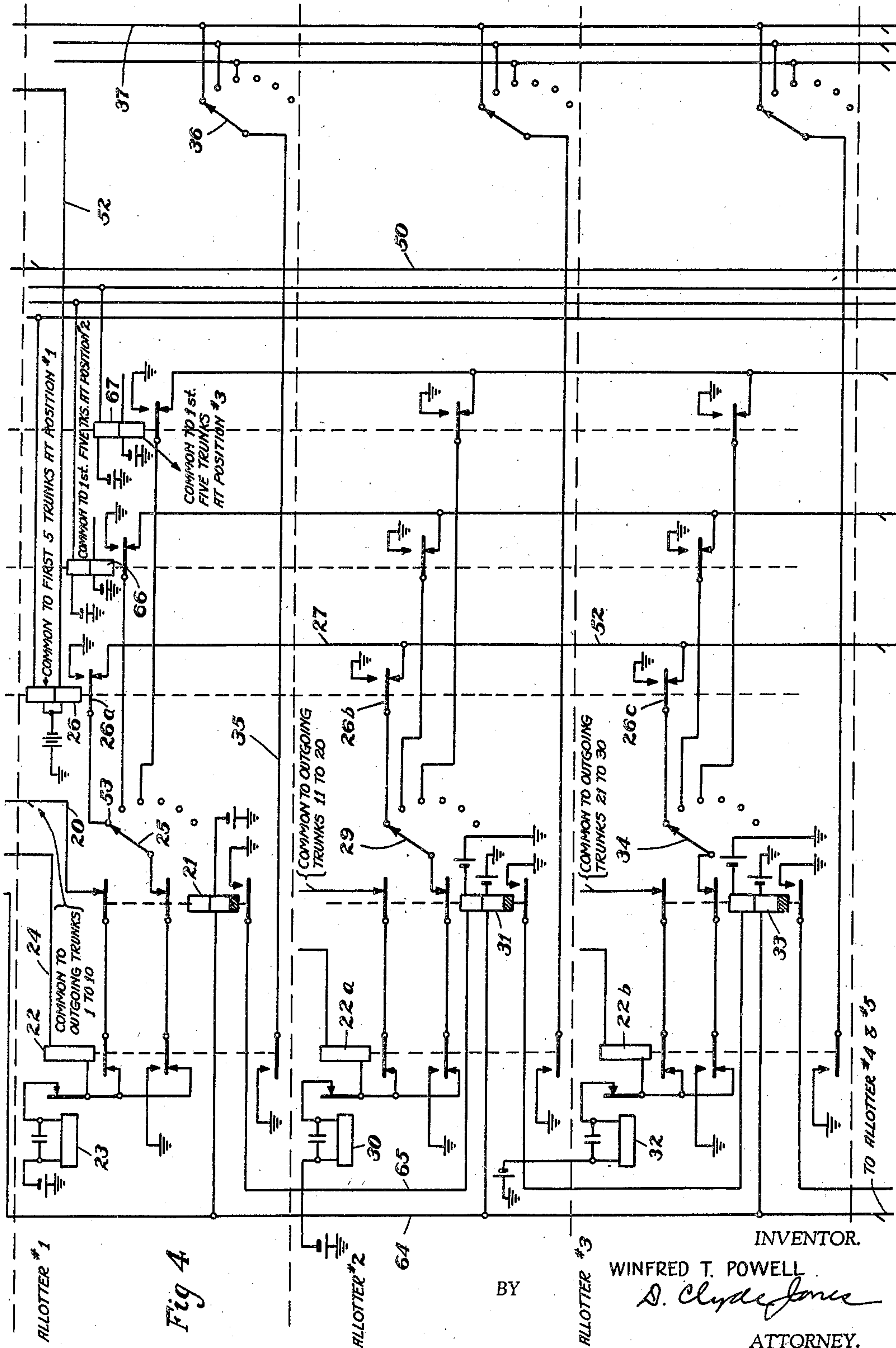
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TELEPHONE CALL DISTRIBUTING SYSTEM

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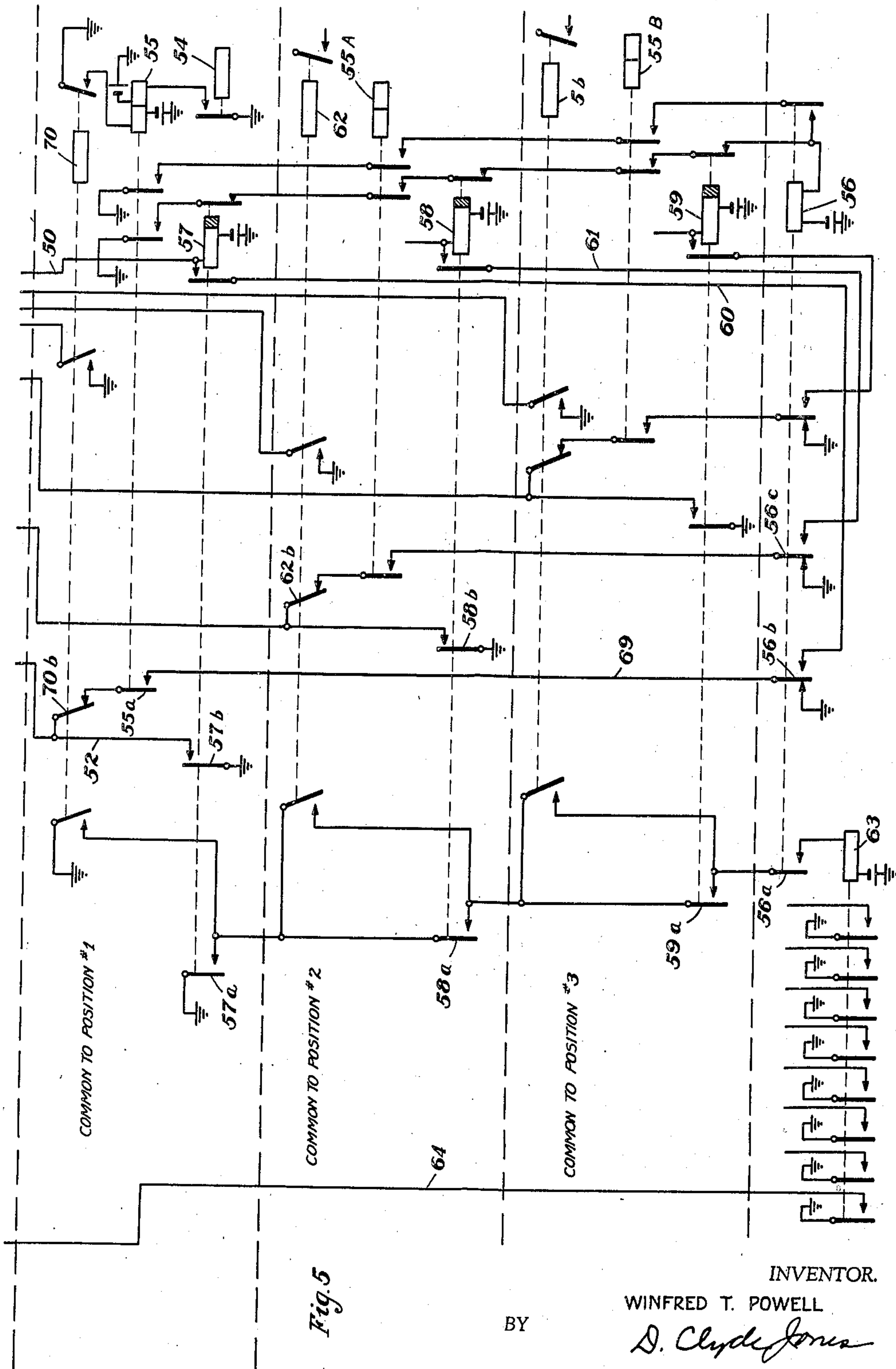
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TELEPHONE CALL DISTRIBUTING SYSTEM

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5 Sheets-Sheet 5



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2,187,174

TELEPHONE CALL DISTRIBUTING SYSTEM

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Application March 31, 1938, Serial No. 199,203

9 Claims. (Cl. 179—27)

This invention relates to telephone systems and more particularly to a telephone system in which calls are distributed to certain operators.

In applicant's copending application, Serial No. 173,796, filed November 9, 1937, there is disclosed a telephone system in which calls are distributed to B operators' positions. The present arrangement, however, has for its purpose the reduction of the number of switching devices necessary in distributing calls to different operators' positions in such a system.

The various features and advantages of the invention will appear from the detailed description and the claims when taken with the drawings in which Fig. 1 is a diagrammatic showing of the grouping of a small portion of the present system in which there is illustrated two groups of incoming trunks and a group of outgoing trunks arranged to be inter-connected by finder switches under the control of certain allotters and extended starter wire circuits, Figs. 2 and 3, when arranged in the order named, and with Figs. 4 and 5 placed below Fig. 3 in the order named, diagrammatically represent a portion of a telephone system utilizing the present arrangement.

The present invention is applicable to the distribution of calls in a telephone system of any size but for the purposes of this description, it is assumed that there are 400 A or incoming trunks similar to that shown in part in the upper right-hand corner of Fig. 2. These incoming trunks are arbitrarily divided into eight groups each comprising 50 trunks, each of which trunks terminates on a well known intermediate distributing frame (not shown). There are also provided 240 B or outgoing trunks, a portion of one of said B trunks being illustrated in the upper righthand part of Fig. 3. Each of the B trunks is provided with a finder switch of the so-called "stay-put" type, each finder switch being provided with multiple terminals in which 50 incoming trunks terminate. The 240 B trunks (with their 240 finder switches) are arbitrarily divided into six groups to terminate at six B operators' positions. For the purpose of assigning idle finder switches for use, there are provided 40 "stay-put" allotter switches, one allotter switch being individual to a group of ten incoming trunks. Each allotter is preferably provided with 24 sets of terminals, but since there are only six B operators' positions common to the allotters, only six points or sets of terminals in the allotter are necessary for effecting allotment of trunks. However, the six mentioned points can be repeated four times throughout the terminal bank of the allotter

switch, by properly connecting the sets of terminals in multiple. Since each of the 40 outgoing trunks at each of the 6 B operators' positions is equipped with a finder bank, the fifty sets of terminals of each of the finders can be connected at the intermediate distributing frame so that the first five finder switches at each of the six B operators' positions, or a total of thirty finder switches, have access to the first group of fifty incoming trunks.

In Fig. 1 there is illustrated two typical groups of fifty incoming trunks (represented by single lines), each of which groups is arbitrarily divided into subgroups of ten trunks each with an allotter for assigning trunks in each subgroup, making a total of five allotters for the group. There is also illustrated in this figure, five outgoing trunks, individual to each of the six B operators' positions, or a total of thirty outgoing trunks. For example, if any incoming trunk in the first subgroup of ten is taken for use by an A operator, a finder individual to an outgoing trunk in the first group of such trunks will be started if the #1 allotter is standing in position 1 as illustrated in Fig. 1. The particular one of these five finders of the first group is determined by the busy or idle condition of these finders. It will be understood that the allotting of the five finders in this group is determined by the extended starter wire circuit controlled by relays such as 39 (Figs. 1 and 3). The energization of a relay 39 continues during the time that its finder is in use so that this relay disconnects the starting circuit from its finder, now busy, and extends it to the next idle finder of the group. It will be seen from this arrangement that an allotter in each of its six positions allots for use a group of five outgoing trunks in each of its six possible settings and that an extended starter wire functioning in conjunction with the allotter, allots for use an idle outgoing trunk and its finder switch in this group of five outgoing trunks.

It is believed that the invention will best be understood by describing the operations involved in establishing a telephone connection from a calling subscriber's station designated A to a B operator's position at a distant office. When the subscriber at A initiates a call by removing his receiver from its switch hook, the line relay 5 is energized from ground and grounded battery, respectively, through its two windings in series, armatures and back contacts of the cut off relay 6 over the two sides of the calling line and through the substation circuits. The line relay 5 when energized completes a circuit, at its arma-

ture and front contact, for lighting the line lamp 7. An A operator at the office where the calling subscriber's line terminates, notes the lighting of this lamp and inserts the plug P of an idle cord circuit at her position, into a jack J associated with this lighted lamp. With the cord circuit thus connected to the calling line, the answering supervisory relay 8 is energized over the answering portion of this cord circuit and over the calling subscriber's line in series. The operation of the supervisory relay 8, at its armature and back contact, opens a break point in the circuit of the supervisory lamp 9. Also when this cord circuit is connected to the calling line, the cut off relay 6 of this line is energized from ground, winding of this relay, sleeve contacts of the jack J and plug P, winding of the relay 10 to grounded battery. The cut off relay 6, at its armatures and back contacts, opens the energizing circuit of the line relay 5 which deenergizes to extinguish the line lamp 7. The relay 10, when energized, closes a break point in the circuit of the supervisory lamp 9, but this lamp does not light at this time since its circuit is interrupted at the supervisory relay 8. The operator now depresses the listening key K to connect her telephone set T to the cord circuit taken for use and thereupon inquires for the designation of the wanted subscriber.

Let it be assumed that the incoming trunk, a portion of which is shown in the upper right hand corner of Fig. 2 connects to the wanted office where the wanted subscriber's line terminates. The operator then inserts the plug P' of the cord circuit that has been taken for use, into the jack J' of the mentioned trunk. Current is thereupon connected to the trunk by way of the calling supervisory relay 11, from grounded battery, its right hand winding, ring conductor of the cord circuit, ring contacts of the plug P' and jack J', inner armature and back contact of relay 12, left hand, high resistance winding of the relay 13, outer back contact and armature of relay 12, through the tip contacts of the jack J' and plug P', tip conductor of the cord circuit, left hand winding of the supervisory relay 11, to ground. The supervisory relay is not energized in this circuit because of the high resistance of the left hand winding of relay 13. Relay 13 is energized over this circuit. Also on the insertion of the plug P' into the jack J', the relay 15 is energized from grounded battery, winding of relay 15, sleeve conductor of the cord, sleeve contacts of the plug P' and jack J', winding of the relay 16 to ground. The energization of the relay 15 closes a break point in the lighting circuit of the supervisory lamp 14.

With the relay 13 operated, an allotted finder is started to extend the selected trunk to an idle trunk at an idle B operator's position at the wanted office. This operation is initiated by the closing of a circuit from ground at the inner armature and back contact of relay 13 (common to the group of fifty incoming trunks), armature and front contact of relay 13 now energized, winding of relay 19, its continuity spring and back contact, conductor 20, uppermost back contact and armature of slow releasing relay 21, armature and back contact of relay 22, armature, back contact and winding of the allotter stepping magnet 23 to grounded battery. The stepping magnet 23 is not energized in this circuit owing to the high resistance of the relay 19. The relay 19 however, is energized in this circuit and closes a locking circuit for itself from ground at the armature and back contact of the relay

18, armature and front contact of relay 13, winding of the relay 22, armature, back contact and winding of the stepping magnet 23 to grounded battery. The relay 22 is energized in this last described circuit and at its inner armature and back contact, opens the circuit including the conductor 20 so that no other relay of the other ten incoming trunks of this group can be operated at this time. However, the relay 22 at its lowermost armature and front contact closes a circuit for advancing the four other allotters of this group away from the preselected position so that these other allotters preselect other finders for the remaining incoming trunks of this group. This is effected in a circuit completed from ground, front contact and lowermost armature of relay 22, inner armature and back contact of relay 21, allotter brush 25, in its first position, armature 26a and back contact of relay 26, conductor 27, back contact and armature 25b of relay 26, allotter brush 29 of the number "2" allotter, back contact and inner armature of relay 31, middle armature and back contact of relay 22a, armature, back contact and winding of the stepping magnet 30 of the number 2 allotter to grounded battery. The stepping magnet of this number 2 allotter advances the allotter brush 29 to preselect an idle finder for other incoming trunks. Likewise, the stepping magnet 32 of the number "3" allotter is also energized from grounded battery, winding of the stepping magnet 32, its back contact and armature, back contact and middle armature of relay 22b, inner armature and back contact of slow-releasing relay 33, allotter brush 34, armature 26c and back contact of relay 26 and thence over the conductor 27 and the remainder of the circuit previously described to ground at the middle armature and front contact of relay 22. Similar stepping circuits are completed for the stepping magnets of the number "4" and of the number "5" allotters (not shown), as well as all other allotters of other groups which may be standing in position 1.

Also with the relay 22 energized, a circuit is closed from ground, lowermost front contact and armature of relay 22, conductor 35, number "1" allotter brush 36, conductor 37, middle armature and back contact of relay 28, winding of the slow-releasing relay 39 to grounded battery for starting the allotted finder to hunt for the incoming trunk to which the call has been extended by the A operator. At the inner upper armature of relay 39, the conductor 40 included in the chain or extended starter wire circuit to other B operators' positions of the group, is opened. However, at the uppermost armature of the relay 39, a circuit is closed from grounded battery, winding of the slow-releasing relay 41, uppermost front contact and armature of relay 39, continuity spring 42 and back contact of the relay 41 to ground. The slow-releasing relay 41 is energized and closes a substitute energizing circuit for itself from grounded battery, its winding, uppermost front contact and armature of relay 39, continuity spring 42 and middle armature of relay 41, lower winding of the differentially wound relay 43, innermost back contact and armature of this relay, finder test brush 44 and thence successively over conductors such as 45, armatures and back contacts of relays similar to 19, back contacts and armatures of relays similar to the cutoff relay 12, to ground. In this connection it will be understood that all trunks except the incoming trunk illustrated, will be

characterized by a ground potential on their test terminals 47. Also the relay 41 will be energized in a multiple circuit traceable from grounded battery, winding of this relay, uppermost front contact and armature of relay 39, upper winding of the relay 43 to ground. Since both windings of the differential relay 43 are energized simultaneously, it will not attract its armatures at this time. However, with the relay 41 operated, the stepping magnet 46 of the allotted finder will be intermittently operated in a circuit traceable from grounded battery, its winding, armature and back contact, uppermost front contact and armature of relay 41, innermost back contact and armature of relay 43, finder test brush 44 and thence to ground, as previously described, at the armature and back contact of relays similar to cut off relay 12. When the test brush 44 encounters the test terminal 47 of the incoming trunk taken for use, this terminal will be characterized by the absence of ground potential, since this ground potential is now removed at the outer armature and back contact of relay 19. As soon as the finder test brush 44 encounters the test terminal 47 of the mentioned incoming trunk, the circuit to ground through the lower winding of the relay 43 will be interrupted and the switching relay 43 will be energized in the circuit previously described as including its upper winding. With the relay 43 energized, the operating circuit for the stepping magnet 46 of the finder will be interrupted at the innermost back contact and armature of the switching relay 43 so that the finder brushes 49, 50 and 44 will no longer be advanced. At the innermost armature and front contact of the relay 43, ground potential is applied through the test brush 44 to the test terminal 47 of the selected trunk to render it busy. As soon as the switching relay 43 is energized, a circuit is completed for energizing the cutoff relay 12 of the selected incoming trunk. This circuit extends from grounded battery, winding of the cutoff relay 12, outer front contact and armature of relay 19, sleeve conductor 45, test terminal 47, finder brush 44, armature and front contact of switching relay 43 to ground. The cutoff relay 12, when thus energized, closes a locking circuit for itself through its inner front contact and armature and thence over the remainder of the circuit previously described as extending to ground, at the innermost armature and front contact of switching relay 43. Also as soon as the cutoff relay 12 is energized, it opens the original operating circuit of the relay 13, so that this relay releases and at its armature and front contact opens the energizing circuit of the relay 19 (Fig. 2) and 22 (Fig. 4) which it will be recalled are energized in series. Relays 19 and 22 release.

Also with the relay 43 energized, the relay 48 at the selected operator's position is energized over the two sides of the allotted trunk through the finder brushes 49 and 50 and the two sides of the selected trunk, thence through the tip and ring contacts of the jack J' and plug P', both windings in series of the supervisory relay 11, to ground and to grounded battery respectively. When the relay 48 is energized, it closes at its armature and front contact, an energizing circuit for the slow-releasing relay 51. On the operation of the relay 51, the relay 38 has its operating circuit completed. When the relay 38 operates to attract its armatures, it interrupts, at its middle armature and back contact, the ener-

gizing circuit for the relay 39 which deenergizes. With the middle armature and front contact of relay 38 closed and with the relay 39 deenergized, the chain or extended starter wire circuit including the conductor 40 is completed, which starter circuit is extended to allot the next outgoing trunk to this B position. At the lowermost armature and front contact of the relay 38, a circuit is completed from ground, conductor 52, lower winding of the relay 26 to grounded battery. Relay 26 at its armature and front contact applies ground to the test terminal of the number 1 allotter, with which test terminal the brush 25 of the number 1 allotter is in engagement, so that the remaining allotters of this group cannot preselect the B operator's position now in use. It will be appreciated that the stepping magnet 23 of the allotter with its brushes shown at 25 and 36 are now stepped away from this position because the operating circuit of the stepping magnet 23 is completed at the middle armature and back contact of the relay 22, brush 25 and front contact 26a of relay 26 to ground.

As soon as the slow releasing relay 39 (Fig. 3) is energized, it completes a circuit from ground at its lower armature and front contact, conductor 50, winding of the slow releasing relay 57 to grounded battery. This slow releasing relay is thus energized and at its armature 57b and front contact, closes a circuit from ground, conductor 52, back contact and armature 26a to the test terminal 53 of the allotter so that all of the allotters are prevented from stopping in position 1, since B position 1 is busy handling a call.

When the outgoing trunk or B operator's cord circuit shown in the upper righthand corner of Fig. 3 is seized in the manner already described, the relay 54 in the upper right hand corner of Fig. 5, is energized. It will be understood that the B cord circuit may be substantially the same as that disclosed in Figs. 6 and 7 of applicant's Patent #1,861,754, granted June 7, 1932, from which patent it will be seen that as soon as the B cord circuit is selected, the B operator will receive the wanted station designation from the A operator and will complete the connection to the wanted subscriber in the manner therein set forth. In the course of the extension of the mentioned B cord circuit to the wanted telephone line, as already indicated, the relay 54 of Fig. 5 will operate in the same manner as relay 71 of the mentioned patent. With the relay 54 operated, it closes a circuit at its armature and front contact, right hand winding of the relay 55 to energize this last-named relay. Relay 55 at its armature 55a and front contact extends a circuit from ground at the armature 56b and back contact of relay 56, conductor 69, front contact 55a, and armature of relay 55, front contact 70b and armature of relay 70, and thence over the conductor 52, to the test terminal 53 of the allotted position, whereby a busy potential is still maintained on the multiple test terminals of the mentioned position at the allotters. When the B operator has progressed with the extension of the B cord circuit to the wanted line, the relay 54 will be de-energized for releasing relay 55, so that the ground potential applied to allotter test terminal 53 over the conductor 52 is removed.

The present arrangement affects the distribution of calls one at a time to the six B operators' positions of the group in question and thereafter an additional call is "parked" in succession at each of these positions awaiting the completion of the original call thereat. The distribution

of one call to each of the six operators' positions is effected by the extended starter wire arrangement shown in the lower right hand corner of Fig. 3. The parking of a second call in addition to the original call is effected in the following manner: If all of the six B operators' positions in the group are being simultaneously used in the extension of a call, the slow releasing relays 57, 58 and 59 respectively associated with these positions, as well as three similar relays of the three other B operators' positions, not illustrated, will be energized and then de-energized in the manner already described. Also the relays 55, 55A and 55B, etc. respectively associated with these positions will be energized. This will effect the energization of the relay 56 which is common to the six B positions of the group in question. The energizing circuit for the relay 56 is traceable from grounded battery, winding of this relay, right hand armature and back contact of relay 59, middle front contact and armature of relay 55B, right hand armature and back contact of relay 58, front contact and armature of relay 55A, right hand armature and back contact of relay 57, front contact and armature of relay 55 to ground. The relay 56 when energized in this circuit, closes a locking circuit for itself through its right hand front contact and armature, front contacts and armatures of relays 55B, 55A and 55 to ground. Relay 56 when energized also removes ground potential at its back contact and armature 56b from the conductor 69 so that no allotter will be stepped away from the set of terminals including the test terminal 53 and others corresponding thereto.

Let it be assumed that an outgoing trunk or B operator's cord circuit at each of the six B operator's positions of the group is simultaneously being extended with the result that the relay 56 (Fig. 5) is energized. Let it further be assumed that six other calls have been extended to incoming trunks for extension by these same six operators. In accordance with the present arrangement a second call is "parked" at or distributed to each of the mentioned six B operators' positions. These mentioned six calls are assigned one to each B operator's position by the allotter arrangement (Fig. 4). Each of these second six calls will result in the energization of a relay 19 of the next allotted outgoing trunk of a B operator's position. This relay when energized will lock itself operated in series with the relay 22 of the #1 allotter. The operation of the relay 22 of the #1 allotter will effect the energization of the relay 39 of the allotted outgoing trunk so that its finder switch will seize the incoming trunk to which the call has been extended. The seizure of this incoming trunk will effect the energization in succession of the relays 48, 51 and 38 as previously described. When relay 39 is operated, it will complete a circuit from ground at its lowermost armature and front contact, conductor 59, winding of the slow releasing relay 57 of the first position to battery. Relay 57, when thus energized, will close a locking circuit for itself from grounded battery, its winding, inner front contact and armature, conductor 60, front contact and armature 56b of relay 56, which is energized because a call is being completed at each of the six B operator's positions of the group, conductor 69, front contact and armature 55a of relay 55, front contact and armature 70b of the induction coil relay 69 (relay 70 being energized when the operator is at her position), front contact and armature 57b

of relay 57 to ground. Thus the relay 57 will remain energized as long as a call is parked at the number 1 position.

Similarly the second call of the next succeeding six calls will be parked at the second B operator's position. This will result in the energization of relay 58, common to the second B operator's position. Relay 58 when energized likewise closes a locking for itself from grounded battery, its winding, its inner front contact and armature, conductor 61, front contact and armature 56c of relay 56, front contact and armature of relay 55A, front contact and armature 62b of the induction coil relay 62, front contact and armature 58b of relay 58 to ground.

In like manner, the relay 59, individual to the third B operator's position is operated and locked as well as similar relays of the three remaining B operator's positions (not shown in Fig. 5) of the group. With all of these relays such as 57, 58, 59 etc. locked operated, the relay 63 common to the six operator's positions of the group will be energized from grounded battery, winding of relay 63, front contact and armature 56a of relay 56, front contact and armature 59a of relay 59, front contact and armature 58a of relay 58, front contact and armature 57a of relay 57 to ground. Relay 63 is thus operated and at its armatures and front contacts it closes circuits for operating all of the allotter lock out relays, such as relays 21, 31 and 33. These lock out relays prevent unnecessary hunting by the allotters and also prevent the operation of any relay such as 19 of any trunk attempting to call under this condition of all positions locked. The circuit for the illustrated group of allotters is traceable from ground, the outermost armature and front contact of relay 63, conductor 64, lower windings of the slow releasing relays 21, 31 and 33 to grounded battery. Also the two other relays, respectively individual to the two remaining allotters of this group (not shown), are energized in multiple over the conductor 64. With these relays energized, the circuits for energizing each relay such as 19 individual to each incoming trunk is opened so that no more calls can be distributed to the B operators' positions of the group. It should be pointed out that when the relay 21 is energized it closes a circuit from ground at its lower front contact and armature, conductor 65, upper winding of the relay 31 to grounded battery. Similarly, with the relay 31 operated, a like circuit is completed for energizing the upper winding of the relay 33. By this arrangement the relays 21, 31, 33 etc. will be de-energized in succession, thereby insuring that the associated allotters will not be brought back into service at the same time, with the consequent danger of allowing two or more waiting calls to be allotted to the same trunk or position.

Similarly, when all of the first five trunks at each of the B operators' positions are in use, the relays such as 26, 66, 67, etc., respectively individual to these positions, will be energized and a circuit will be closed from ground through their uppermost armatures and contacts, conductor 68, winding of relay 13 to grounded battery. Relay 18 at its upper armature applies a busy tone to the line conductors of the incoming trunks by inductive action of relay 13, so that the A operator, taking one of these trunks, knows it has no available outlet. At the inner armature of relay 13, ground is removed from the multiple circuits including the relays 19 so that these relays

are rendered inoperative under the conditions assumed. At the lowermost armature and front contact of relay 18 ground is applied over conductor 64 for energizing the relays 21, 31 and 33 etc. which likewise disables the stepping magnets of the five allotters of this group.

What I claim is:

1. In a telephone system, a plurality of incoming lines, a plurality of outgoing lines, means including automatic switches for interconnecting said lines, said switches being arranged in groups, an allotter switch for assigning groups of automatic switches, and means including an extended starter wire arrangement for assigning for use a certain automatic switch in the assigned group.

2. In a telephone system, a plurality of incoming lines, a plurality of groups of outgoing lines, means including automatic finder switches for interconnecting said lines, said switches being arranged in groups, an allotter switch individual to each group of outgoing lines for assigning groups of automatic switches, each allotter being provided with related circuits, and means including an extended starter wire arrangement cooperating with the circuits of certain allotters for assigning for use a certain automatic switch in the assigned group.

3. In a telephone system, a plurality of groups of incoming lines, a plurality of groups of outgoing lines, an automatic switch individual to each outgoing line for connecting the same to any of said incoming lines, an allotter switch individual to each group of incoming lines for assigning a group of automatic switches for use, and an extended starter wire arrangement for each group of outgoing lines and serving to assign for use an idle automatic switch in the assigned group.

4. In a telephone system, a plurality of groups of incoming lines, a plurality of groups of outgoing lines, an automatic switch individual to each outgoing line for connecting the same to any of said incoming lines, an allotter switch individual to each group of incoming lines for assigning a group of automatic switches for use, an extended starter wire arrangement for each group of outgoing lines and serving to assign for use an idle automatic switch in the assigned group, means for rendering said allotter switches inoperative when all of said outgoing lines are in use and means for rendering said allotter switches operative in succession when any of said outgoing lines are released for use.

5. In a telephone system, a plurality of groups of incoming lines, a plurality of groups of outgoing lines, an automatic switch individual to each outgoing line for connecting the same to any of said incoming lines, an allotter switch individual to each group of incoming lines for assigning a group of automatic switches for use, each of said allotters being provided with a stepping magnet, an extended starter wire arrangement for each group of outgoing lines and serving

ing to assign for use an idle automatic switch in the assigned group, a series of relays, one of said relays being associated with each allotter switch for rendering the stepping magnet thereof inoperative, means for operating each relay when all outgoing lines are unselectable, and means for maintaining operated each relay except the first in the series, at the preceding operated relay in the series.

6. The method of distributing calls from a group of incoming lines to a group of operator's positions, which method comprises distributing a call to each position till all of said positions are engaged in extending a call, directing a second call only to each position, cutting in a second call to the position to which it has been directed as soon as the first call at said position has been extended, and rendering said groups of incoming lines busy while an assigned call is awaiting cutting-in at each position of the group.

7. In a telephone system, groups of interoffice trunks, a group of finder switches associated with each of said interoffice trunk groups, a plurality of operators' positions, a group of incoming trunks at each of said positions dividing into subgroups, the incoming trunks of separate subgroups of a position being associated with finder switches of separate groups, allotter means controlled over said interoffice trunks for allotting idle operators' positions, an idle sub-group of the idle position and an idle trunk of the idle sub-group, and means controlled by the busy condition of a plurality of said operators' positions for permitting said allotter means to allot an idle sub-group and an idle trunk therein at a busy position.

8. In a telephone system, groups of interoffice trunks, a group of finder switches associated with each of said interoffice trunk groups, a plurality of operators' positions, a group of incoming trunks at each of said positions divided into subgroups, the incoming trunks of separate subgroups of a position being associated with finder switches of separate groups, and allotter means controlled over said interoffice trunks for allotting idle operators' positions, an idle sub-group of the idle position and an idle trunk of the idle sub-group.

9. A telephone system including incoming lines, cord circuits at operators' positions, finder switches associated with said cord circuits capable of connecting said cord circuits to said incoming lines, means controlled over said incoming lines for allotting idle cord circuits at an operators' position and connecting said cord circuits to said lines, and means at said operator's positions for permitting or preventing the allotment of a cord circuit at a first position in accordance with the idle or busy condition of a second position.

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