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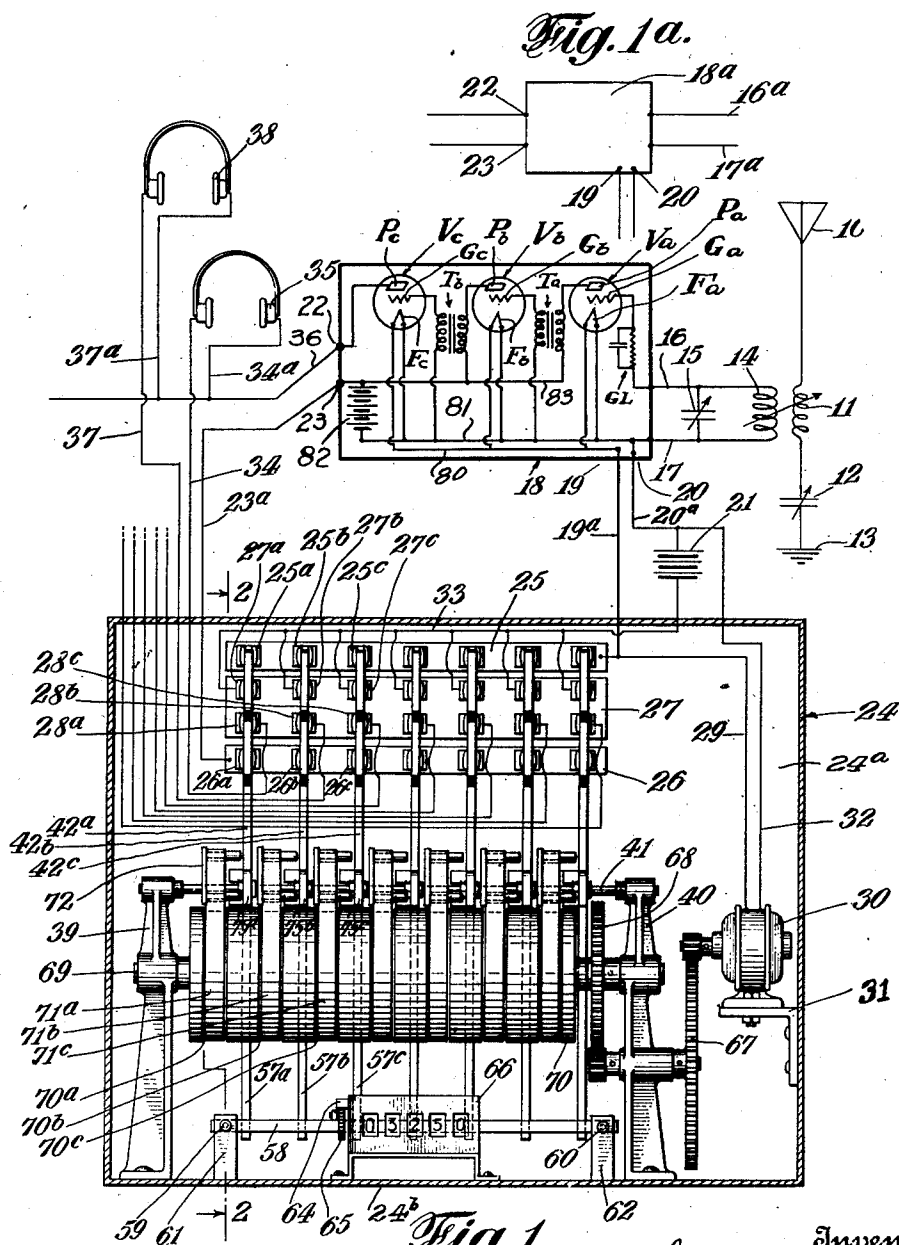
1,628,126

L. M. DIETERICH

SYSTEM OF DISTRIBUTION OF INTELLIGENCE

Filed June 3, 1922

2 Sheets-Sheet 1



Inventor
Ludwig M. Dieterich
By his Attorney
Robert S. Blair

May 10, 1927.

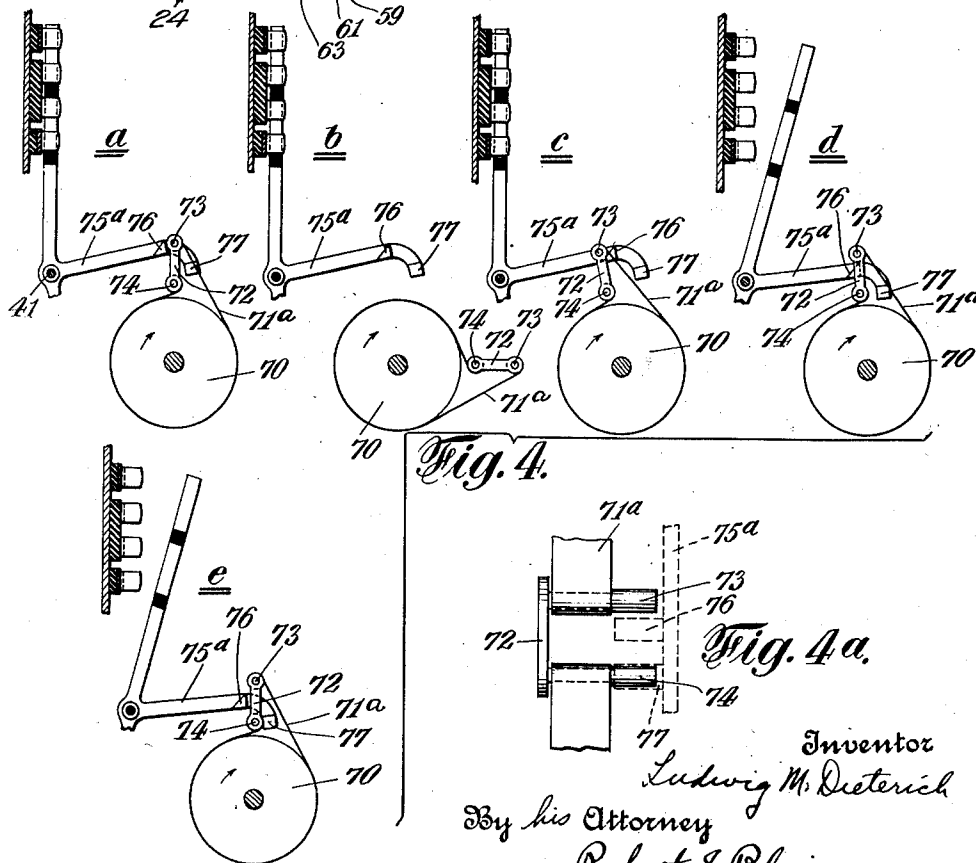
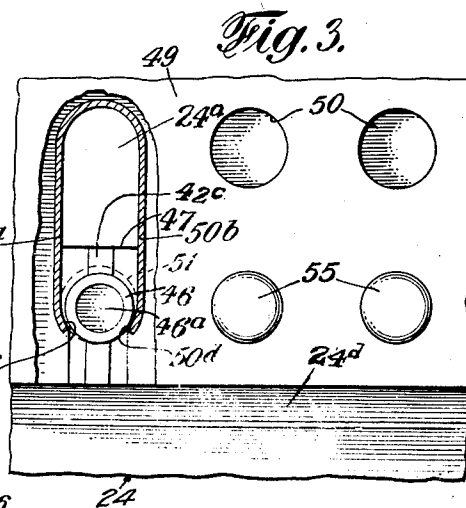
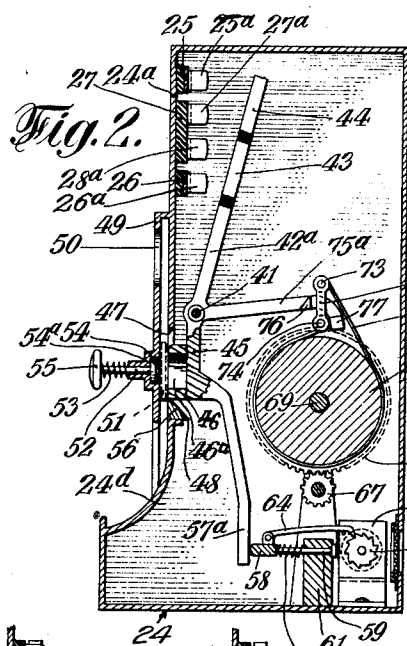
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SYSTEM OF DISTRIBUTION OF INTELLIGENCE

Filed June 3, 1922

2 Sheets-Sheet 2



Inventor
Ludwig M. Dieterich
By his Attorney
Robert J. Blair

UNITED STATES PATENT OFFICE.

LUDWIG M. DIETERICH, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR OF SIXTEEN PER CENT TO ROBERT S. BLAIR, OF STAMFORD, CONNECTICUT, AND TWENTY-FOUR PER CENT TO WILLIAM T. KNIESZNER, OF NEW YORK, N. Y.

SYSTEM OF DISTRIBUTION OF INTELLIGENCE.

Application filed June 3, 1922. Serial No. 565,641.

This invention relates to telephone apparatus and, more particularly, to a system of automatically controlled and selective telephonic distribution.

5 One of the objects of this invention is to provide a simple and practical telephone receiving system by means of which individual receiving service may be furnished from a main or common apparatus or device for
10 receiving telephonic or telegraphic communication, such as for example communications broadcasted as by means of radio telephony or telegraphy or, for example, also by existing telephone lines or connections.
15 Another object of this invention is to provide simple and practical apparatus by means of which connection to a common receiving apparatus of the above nature may be made at will without necessitating the
20 use of a separate and individual complete receiving apparatus which may include such devices as tuning circuits, detectors, amplifiers and the like, thus to avoid for each individual station the installation and maintenance of such generally expensive receiving
25 equipment. Another object is to provide a system of the above character by means of which connection to a common receiving station may be made manually and at any desired time by the individual desiring substantially individual receiving service; and
30 to provide also a system of reception for communications broadcasted by means of radio telegraphy or radio telephony or by existing telephone lines by means of which
35 the receiving service may be carried on for a predetermined length of time and for which a service charge for such period of service may be made. More specifically, it
40 might be stated that another object is to provide a receiving system for such communications automatically controlled in its operation and as to its time of operation in response to the depositing in the apparatus
45 of a predetermined fee or coin. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of
50 elements and arrangements of parts as will be exemplified in the structure to be hereinafter set forth and the scope of the applica-

tion of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of various possible embodiments of this invention,

Figure 1 is a front elevation of the assembled controlling apparatus, certain parts being broken away to show the construction
60 more clearly, and there are shown also diagrammatically the electrical connections and circuits of the various electrical devices and apparatuses associated with the system;

Figure 1^a is a diagrammatic representation of a modified form of part of the apparatus of Fig. 1;

Figure 2 is a sectional view taken on the line 2-2 of Fig. 1;

Figure 3 is a fragmentary elevation as viewed from the left of Fig. 2; and

Figure 4 is a diagrammatic representation showing the several stages of operation of certain parts of the apparatus.

Figure 4^a is a detailed fragmentary front elevation, on an enlarged scale, of certain mechanical details of the time-controlled apparatus associated with each translating circuit and device.

As conducive to a clearer understanding of this invention it might at this point be stated that daily predetermined programs of communications of various natures may be broadcasted, for example either by radio telegraphy or radio telephony or also, by way of example, by means of existing telephone lines. This invention aims in general to provide apparatus for permitting the reception of such communications to be made to take place at will in accordance with the program and to permit such reception to be carried on for a predetermined length of time and for which a predetermined charge may be made. More particularly this invention aims to provide individual receiving service from a common receiving apparatus and preferably under the above-mentioned circumstances. Thus, for example, this invention aims to provide a common or central station for receiving broadcasted communications either by radio or by wire, to which any of a plurality of individual telephones or sub-stations may be connected as desired by the individual desiring such service. For

example, a common central receiving station may be provided in such places as hotels, apartment houses, Pullman cars and the like, and in accordance with this invention individual service from the main or central receiving station may be obtained for a predetermined length of time for a predetermined fee or charge.

Turning now to the drawings, and more particularly to Fig. 1 thereof, there is shown at 10 an antenna forming part of the primary circuit including the inductance 11 and a variable capacity 12 connected serially to the ground as at 13. A secondary circuit comprising the inductance 14 and the variable condenser 15 is coupled to the primary circuit as by means of the inductances 11 and 14, which are preferably variable both as to the individual value of inductance in each and also as to the degree of coupling. Bridged across the condenser 15, as by means of the conductors 16 and 17, is a detector and amplifier set generally indicated at 18. This set preferably comprises any suitable form of detector, preferably a three-element vacuum tube, and the amplifier likewise comprises preferably a plurality of three-element vacuum tubes with associated apparatus and circuits. The detector and amplifier set generally indicated at 18, may have the above-mentioned parts thereof arranged in the following manner:—The detector includes the three-element vacuum tube V^a , the grid G^a of which is connected, through a suitable grid-leak GL , of the usual resistance condenser type, to one side of the circuit 14—15, as to the conductor 16, the filament F^a of which is connected to the other side of this circuit 14—15 as to the conductor 17. In Figure 1, are shown, by way of example, two amplifying tubes V^b and V^c , the filaments F^b and F^c , as well as the filament F^a of the detector tube V^a being bridged across the two conductors 80 and 81, which lead to the two binding posts 19 and 20 respectively. The binding posts 19 and 20 are connected to a suitable source of energy, such as the battery 21, in a manner to be hereinafter more clearly described in order that the filaments may be suitably heated.

The successive vacuum tubes may be coupled together in any suitable manner, preferably as by suitable transformers. Thus, the plate circuit of the tube V^a is completed from the plate P^a , through a primary winding of a transformer T^a , through a suitable source of potential, such as the battery 82, by way of the conductor 83, to the filament F^a , by way of the conductor 81.

The input circuit of the tube V^b is completed from the grid G^b through a secondary winding of the transformer T^a , thence to the filament F^b . The output circuit of the vacuum tube V^b is completed from the plate P^b ,

through the primary winding of a transformer T^b , through the battery 82, thence to the filament F^b by way of the conductor 81. The primary winding of the transformer T^b forms, with the secondary winding thereof, a coupling between the output circuit of the amplifying tube V^b and the input circuit of the tube V^c , the latter circuit being completed from the grid G^c , through the secondary winding of the transformer T^b , thence to the filament F^c by way of the conductor 81. The output circuit of the tube V^c includes a conductor leading from the plate P^c to a binding post 22, and may include whatever devices may be connected across the binding posts 22 and 23, the output circuit being completed through the battery 82, thence to the filament F^c by way of conductor 81. To the binding posts 22 and 23 may be made the connection of the various individual receiving telephonic stations, to include the latter in the output circuit of the amplifier in a manner to be more clearly hereinafter described. For brevity, as well as convenience, the foregoing devices, with associated apparatus and circuits, will be referred to generally by the reference character 18.

The main controlling apparatus is preferably housed in a suitable casing 24 within which the various parts are suitably mounted. Referring to Figs. 1 and 2 of the drawings, it will be seen that upon the upper portions of the rear wall 24^a of the casing 24 there are mounted two longitudinally extending bus-bars 25 and 26, the former carrying a plurality of spring contacts 25^a, 25^b, 25^c, etc., and the latter carrying a plurality of contacts 26^a, 26^b, 26^c, etc., respectively, aligned with the contacts on the bus-bar 25. Interposed between the bus-bars 25 and 26 is an insulating strip 27 carrying a plurality of pairs of individual spring contacts aligned with the contacts on the bus-bars 25 and 26. Thus, the spring contacts 27^a, 27^b, 27^c, etc., are respectively aligned with the contacts 25^a, 25^b, 25^c, etc., and the contacts 28^a, 28^b, 28^c, etc., mounted upon the insulating strip 27 are respectively aligned with the contacts 26^a, 26^b, 26^c, etc., on the bus-bar 26. The bus-bar 25 with its associated contacts 25^a, 25^b, 25^c, etc., is connected through the conductor 19^a to the binding post 19 of the amplifier 18 and to the conductor 29 to one terminal of an electric motor 30 suitably mounted as by the bracket 31 on the side wall of the casing 24. The other binding post 20 of the amplifier 18 is connected by the conductor 20^a to one pole of the battery 21, and the other terminal of the motor 30 is connected through the conductor 32 to this same pole of the battery 21, the battery 21 being indicative of a suitable source of current for operating the filaments of the

vacuum tubes of the detector and amplifier and, for the sake of simplicity of illustration, being herein shown also as indicative of a suitable source of current for operating the motor 30, the purpose of the latter of which will be more clearly hereinafter set forth. Each of the contacts 27^a, 27^b, 27^c, etc., is connected through a conductor 33 to the other pole of the battery 21, it being seen that the arrangement thus provided is such that upon any pair of aligned contacts, as 25^a and 27^a for example, being bridged electrically or interconnected, the circuit of the filaments of the detector and amplifier tubes will be closed, as well as also the circuit to the motor 30, thus placing the receiving apparatus in operative condition, the various other adjustments necessary, such as the tuning to the desired wave length, having been previously made.

The bus-bar 26 with which the various contacts 26^a, 26^b, etc., are in electrical connection, is connected through the conductor 23^a to the terminal 23 on the output side of the amplifier 18. Each contact 28^a, 28^b, 28^c, etc., mounted upon the insulating strip 27, leads to a distinct and separate telephonic receiver or to what might be termed an individual telephonic receiving or sub-station. Thus, for example, the contact 28^a is connected by the conductor 34 to one side of the head set 35, the other side of the pair of telephones being connected by the conductor 34^a to the conductor 36 leading to the binding post 22 on the output side of the amplifier 18. In like manner the contact 28^b is connected through a conductor 37 to the pair of head phones 38 forming another sub-station, the other side of the head set 38 being connected by the wire 37^a to the conductor 36 leading to the binding post 22. At this point it might be noted that the remaining contacts 28^c, etc., are similarly connected to individual receiving phones, which may be variously positioned and disposed as desired and which, as shown in Fig. 1, may conveniently be connected through a common conductor 36 to the output side of the amplifier 18. In this connection it might be noted that the conductor 36 may conveniently take the form of one of the conductors of an existing call-bell system telephone or lighting system for example, in order thus to avoid complexity and expense in the wiring installation, it being thus obvious that only one conductor need be specially strung to each sub-station. It might further be noted that only two such sub-stations 35 and 38 are shown and that any number commensurate with the number of pairs or sets of contacts hereinbefore described may be provided.

It will therefore be seen that as a given pair of contacts, as for example 26^a and 28^a, are bridged electrically, the circuit of a given sub-station, as the station 35, will be

closed across the output terminals 22 and 23 of the amplifier and the sub-station thus placed in connection with the receiving apparatus. As will be more clearly set forth hereinafter, the two pairs of contacts, as 25^a and 27^a, and 26^a and 28^a, are preferably simultaneously bridged in order that the former may place the main receiving apparatus in operative condition, as by bringing the filaments of the vacuum tubes to incandescence, and also to start the operation of the motor 30 for a purpose hereinafter made clear, and in order that the latter may connect the associated sub-station, as 35, to the receiving apparatus thus made operative.

Considering now the control of the connections or bridging of the various pairs of contacts hereinbefore described, reference may now be had to Fig. 1 and, more particularly, to Fig. 2 of the drawings which is a sectional view taken on the line 2-2 of Fig. 1. Rigidly supported in the vertically extending posts 39 and 40 suitably secured to the base 24^b of the casing 24 is a longitudinally extending bar 41 upon which is pivoted a series of levers 42^a, 42^b, 42^c, etc., positioned and spaced from one another so that the upper ends thereof are adapted to cooperate respectively with the pairs of aligned contacts hereinbefore described. Thus, as shown in Fig. 2, the lever 42^a supports at its upper end two bridging members 43 and 44 suitably insulated from one another and adapted upon swinging of the lever 42^a in a counter-clockwise direction about its pivot 41 to bridge, respectively the contacts 26^a and 28^a of one pair and the contacts 27^a and 25^a of the other pair to bring about the circuit connections hereinbefore described.

The movement of the lever 42^a into circuit-closing position is preferably brought about by means of a coin-controlled mechanism. Thus the lever 42^a has a downwardly extending portion 45 at the lower end of which there is integrally formed a ring-shaped lug 46, clearly shown in Figs. 2 and 3. The rear wall 24^a of the casing 24 hereinbefore described terminates as at 47, leaving a sufficient space between its lower end 47 and a longitudinally extending bar 48 immediately underneath the lug 46 to permit the movement of a coin to the right as viewed in Fig. 2. Extending across the rear wall 24^a and attached thereto in spaced relation therefrom is a housing 49 provided with a plurality of openings 50 commensurate in number with the number of levers 42^a, 42^b, etc., and each of sufficient size to permit the entry therein of the desired coin, as for example a twenty-five cent piece. As shown more clearly in slightly enlarged scale in Fig. 3, certain parts being broken away, there are interposed between wall 24^a and the housing wall 49 side walls 50^a and 50^b spaced apart

by a distance equivalent to the diameter of the coin and each pair in registry at their upper ends with the openings 50, respectively. The lower ends of the side walls 50^a and 50^b are curved inwardly toward each other, so that upon the insertion of a coin in an opening 50 the latter may drop downwardly, being guided by the side walls 50^a and 50^b, whence it is halted and supported by the lower inwardly bent portions 50^c and 50^d of the side walls 50^a and 50^b respectively. Coins of smaller size continue in their downward movement between the inwardly bent portions 50^a and 50^d, and are discharged through the channel formed by the outwardly bent lower portion 24^d of the rear wall, as shown in Fig. 2.

The coin, indicated at 51 in dotted lines, thus halted by the portions 50^c and 50^d, may thereupon be moved inwardly or to the right as viewed in Fig. 2 by means of a plunger 52 slidably supported in the housing 49 and provided with a spring 53 tending to urge the plunger 52 in an outward direction, it being understood that there is provided one plunger for each lever 42^a, 42^b, etc. The inner end of the plunger 52 is provided with a disk-shaped coin-engaging portion 54 which is adapted to be housed in the recess 54^a on the inside of the housing 49 due to the action of the spring 53. A handle 55 is provided to permit manual operation of the plunger.

The coin 51, having thus been positioned immediately in front of a lug 46, as for example on the lever 42^a—45, is moved toward the right upon manual operation of the plunger 52, whereupon the lever 42^a is swung in a counter-clockwise direction to bridge the contacts hereinbefore described, thus making the circuit connections to one of the sub-stations, as for example station 35. The coin 51 thereupon drops into the interior of the casing 24, the bar 48 being provided with an inclined surface 56, as clearly shown in Fig. 2, to guide the coin inwardly and downwardly into the casing 24.

Each lug 46 is recessed as at 46^a so that manual operation of a plunger 52 in the absence of a coin 51 causes the inner end 54 of the plunger to ride into the recess 46^a of the lug, thus preventing an operation of a lever to be brought about.

Each of the levers 42^a, 42^b, 42^c, etc., is provided with a downwardly extending portion 57^a, 57^b, 57^c, etc., respectively. Fig. 2 showing clearly in side elevation the portion 57^a of the lever 42^a. These portions 57^a, 57^b, etc., extend downwardly to substantially abut against a universal bar 58 extending longitudinally of the casing 24, as shown in Fig. 1, the bar 58 being slidably supported on posts 61 and 62 in slidable engagement with pins 59 and 60, respectively, secured to the ends of the universal bar 58. Springs

63 interposed between the universal bar 58 and the posts 61 and 62 normally tend to urge the bar 58 to the left as viewed in Fig. 2.

A pawl 64 pivotally mounted upon the universal bar 58 is adapted to engage with the ratchet 65 of a counting mechanism, generally indicated at 66. Thus, as any one of the levers 42^a, 42^b, etc., is operated as hereinbefore described in response to the insertion of a coin, the associated downwardly extending portion 57^a, 57^b, etc., contacts with the universal bar 58 and moves the latter to the right as viewed in Fig. 2, thus to move the ratchet 65 through the pawl 64, in order to tally or record the coin thus inserted.

As hereinbefore noted, the operation of any one of the levers 42^a, 42^b, etc., closes the circuit to the motor 30, thus to place the latter in operation to make operative certain controlling apparatus which may now be described. Referring particularly to Fig. 1, it will be seen that the motor 30 is connected through a train of reduction gears, generally indicated at 67, suitably supported in the post 40 hereinbefore described, to the gear 68 mounted upon the shaft 69 rotatably supported in the posts 39 and 40, the latter being provided with suitable bearings therefor. The reduction gearing 67—68 is so proportioned with respect to the speed of the motor 30 that the gear 68 with the shaft 69 is caused to make one revolution in a predetermined length of time, as for example in a period of one-half hour, this period being that for which the individual receiving service, as for example at the station 35, is intended to be carried on for the fee or coin deposited as hereinbefore described.

Upon the shaft 69 is mounted to be rotated therewith a drum 70, being provided with a series of circumferentially extending grooves or recesses 70^a, 70^b, 70^c, etc., equal in number to the number of levers 42^a, 42^b, etc., which, as hereinbefore noted, are of a number equal to the number of sub-stations intended to be supplied with individual service. Extending around the drum 70 and guided within the grooves 70^a, 70^b, etc., are what may be termed the clutch bands 71^a, 71^b, 71^c, etc., respectively. As is more clearly shown in Fig. 2, the clutch band 71^a comprises preferably a strip of spring metal, such as spring steel for example, formed so as normally to tend to grip the drum 70, the ends of the band 71^a being connected by means of a link 72, the ends being preferably loosely and pivotally connected thereto. In Fig. 4^a there is illustrated on an enlarged scale the connecting link 72 associated with each of the bands 71^a, 71^b, etc., and it will be seen that upon the respective ends of the link 72 are rigidly mounted the pins 73 and 74 about which the ends of the band 71^a are bent, thus to form a loose pivotal con-

nection therebetween. As will be seen in Fig. 4^a, the connecting link as a whole forms what may be termed an open-sided square for a purpose to be more clearly hereinafter described.

Referring now to Fig. 2 of the drawings, it will be seen that each of the levers 42^a, 42^b, etc., is provided with an extension 75^a, 75^b, etc., respectively, each of these extensions carrying at its outer end a transversely extending lug 76 and a second transversely extending lug 77 spaced from the lug 76 and in a plane somewhat underneath the plane of the lug 76. The lugs 76 and 77 are adapted to cooperate with the connecting link 72 of the clutch band 71^a which, as hereinbefore noted, normally tends to wrap itself around the drum and to be carried around thereby. As will be seen in Fig. 2, the lug 77 engages the lower end of the link 72 and thus prevents the drum 70 from carrying the clutch band 71^a around with it. As, however, the lever 42^a is swung in a counter-clockwise direction as hereinbefore described, the extension 75^a thereof is likewise swung about the pivot 41 thereby to raise the lug 77 out of engaging position with the lower end 74 of the link 72 and into the position shown at *a* in Fig. 4, wherein it will be noted that the lug 77 is positioned between the ends 73 and 74 of the link thus to release the band 71^a and permit it to be rotated with the drum 70, the lug 77 passing through the open square of the link 72. At *b* in Fig. 4 is shown the band 71^a released and in the course of its rotary movement with the drum 70. The rotation is completed after the lapse of the predetermined time interval hereinbefore noted, and as the link 72 approaches the lugs 76 and 77 of the extension 75^a, it being noted that the drum 70 is rotated in clockwise direction, the upper end 73 of the connecting link 72 engages the lug 76, as shown at *c* in Fig. 4. Such engagement causes the band 71^a to be more tightly drawn about the drum 70, the latter continuing its movement thereby to carry with it the lug 76 and thus to swing the lever 75^a—42^a in clockwise direction about the pivot 41 to open the circuit connections hereinbefore described, thus interrupting the individual service, cutting off the filament current of the detector and amplifier and opening the circuit of the motor 30.

Continued rotary movement of the drum 70 either because of the continued operation of the motor 30 due to the closure of its circuit at another pair of contacts or by reason of the coasting of the motor and the drum 70 carries the band 71^a from the position shown at *d* in Figure 4 to the position shown at *e* in Figure 4, in which latter position it will be seen that the lower lug 77 on the lever arm 75^a has been swung downwardly into position to engage the lower end 74 of

the connecting link. The rotation of the band 71^a is thus halted and it will be seen that the engagement of the lug 77 with the lower end 74 of the connecting link 72 holds the band 71^a in such manner that any tendency of the latter to wrap itself about the drum 70 is effectively counteracted.

It might at this point be noted that as the band 71^a causes the lever 42^a—75^a to be swung into circuit-opening position, the lug 76 as shown at *c* in Figure 4 is swung downwardly into the position clearly shown at *e*, whereby the open squared link 72 may pass the lug 76 in order that the lower end 74 thereof may engage the lug 77 simultaneously placed in its path of movement.

Should sub-station 35 for example be the only one that has been connected to the common receiving apparatus, the hereinbefore described disconnecting operation after the lapse of a predetermined time interval will take place, it being noted that the current to the filaments of the various vacuum tubes as well as also to the motor 30 is thereby interrupted at the contacts 25^a and 27^a. Should however any other sub-station have been made operative subsequent to the sub-station 35, the hereinbefore described disconnecting operation will be effective to disconnect the sub-station 35 from the main receiving apparatus as at the contacts 26^a and 28^a. The circuit to the filaments of the various vacuum tubes and also of the motor 30 will however be maintained closed at the switch contacts associated with the particular sub-station subsequently placed in operation as hereinbefore assumed. The apparatus will therefore continue in operation as to this particular subsequently operated sub-station until the lapse of the predetermined time interval as determined by the release of the clutch band associated with that station, whence the disconnection is effected by the contacts controlled by the respective clutch band.

As hereinbefore noted, the communications intended to be received at the various sub-stations may be broadcasted by radio as has been assumed in connection with the main receiving apparatus and as hereinbefore described or by means of existing telephone circuits or lines. In the latter case, the telephone currents may be of the usual voice-frequency currents or they may be currents of high frequency outside of the range of audibility suitably modulated in accordance with speech.* In Figure 1^a there is shown diagrammatically a modified form of apparatus adapted to be used in case the communications intended to be received are transmitted by a wire connection.

At 16^a and 17^a are shown two conductors representing the wire circuit over which the communications are transmitted. Assuming that the latter are transmitted by currents

of audio frequency, there is preferably connected to the conductors 16^a and 17^a an amplifier indicated diagrammatically at 18^a, the amplifier taking the form of the usual three-element vacuum tube type. There are shown the binding posts 19 and 20 leading to the filaments and adapted to be connected to the conductors 19^a and 20^a respectively of Figure 1, and the binding posts 22 and 23 on the output side of the amplifier 18^a are adapted to be connected to the conductors 36 and 23^a respectively of Figure 1. The currents of audio frequency received over the metallic circuit 16^a—17^a may thus be amplified to an extent commensurate with the number of sub-stations intended to be served as hereinbefore described, while the operativeness of the amplifier 18^a may be similarly controlled as described in connection with Figure 1. The amplifier 18^a may take the specific form of the amplifier 18 hereinbefore described in detail; but it will be understood that where the currents are of audio frequency, the first vacuum tube V^a need not function as a detector; hence, the arrangement, such as the grid-leak GL, for causing the first tube V^a to function as a detector need not be employed, and is therefore to be understood as being omitted where the currents are of audio frequency.

Should the communications received over the metallic circuit 16^a—17^a have the second above-mentioned characteristic, namely high frequency modulated currents, the device diagrammatically indicated at 18^a of Figure 1^a preferably takes the form of a detector or demodulator together with the desired degree of amplification, similarly as already described in connection with Figure 1.

It will thus be seen that there has been provided in this invention a system of telephonic distribution in which the several objects of the invention are attained and in which many advantages are achieved. It may be briefly noted that the apparatus provided is of practical construction and of simple and positive operation and that it is well adapted to meet the conditions of practical use. More particularly, it will be seen that the apparatus may be readily and conveniently manipulated without requiring a high degree of skill or knowledge and hence is well adapted for reliable and dependable operation in public use.

As many possible embodiments might be made of the above invention and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to

a channel of communication, a receiving translating device, means for connecting said translating device to said main receiving circuit, normally ineffective means for effecting a disconnection of said translating device from said main receiving circuit after the lapse of a predetermined time interval, and means effective upon the making of said connection adapted to make operative said main receiving circuit with respect to said channel of communication and to make effective said normally ineffective means.

2. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a thermionic device included in said receiving circuit adapted to determine the operativeness of said receiving circuit, a translating receiving device adapted to be connected to said receiving circuit, means operative when said device is connected to said circuit for making said thermionic device active thereby to make said receiving circuit operative and means responsive to the making active of said thermionic device for removing said translating device from said receiving circuit but operative only after the lapse of a predetermined time interval.

3. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a receiving translating device adapted to be connected to said receiving circuit, and time-controlled means including a thermionic device controlled thereby adapted after the lapse of a predetermined time interval to make said main receiving circuit inoperative.

4. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a thermionic device including a filament as a source of ions in said main receiving circuit, a source of current adapted to supply said filament with current, a translating receiving device adapted to be connected to said receiving circuit, and time-controlled means adapted after the lapse of a predetermined time interval to interrupt the flow of current from said current source to said filament, thereby to make inoperative said main receiving circuit.

5. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a thermionic device having a filament as a source of ions included in said receiving circuit, a source of current adapted to supply said filament, a translating receiving device adapted to be connected to said receiving circuit, and time-controlled means

adapted to close the circuit to said filament, thereby to make said receiving circuit operative.

6. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a thermionic device having a filament as a source of ions included in said receiving circuit, a source of current adapted to supply said filament, a translating receiving device adapted to be connected to said receiving circuit, coin-controlled means adapted to close the circuit to said filament, thereby to make said receiving circuit operative, and time-controlled means for interrupting the current to said filament, thereby to make inoperative said receiving circuit, after the lapse of a predetermined time interval.

7. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, an amplifier including at least one thermionic device having a filament for a source of electrons connected to said receiving circuit for increasing the intensity of currents received therein, a source of current for said filament, a receiving translating device adapted to be connected to the output of said amplifier, and coin-controlled mechanism for controlling the flow of current to said filament.

8. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, an amplifier including at least one thermionic device having a filament for a source of electrons connected to said receiving circuit for increasing the intensity of currents received therein, a source of current for said filament, a receiving translating device adapted to be connected to the output of said amplifier, and time-controlled mechanism for permitting the flow of current from said source to said filament for a predetermined time interval.

9. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, an amplifier including at least one thermionic device having a filament for a source of electrons connected to said receiving circuit for increasing the intensity of currents received therein, a source of current for said filament, a receiving translating device adapted to be connected to the output of said amplifier, coin-controlled mechanism adapted to close the circuit from said source of current to said filament, thereby to make said receiving circuit and amplifier operative with respect to said receiving translating

device, and means made effective upon the operation of said coin-controlled mechanism and operative after the lapse of a predetermined time interval for interrupting the flow of current to said filament, thereby to make said receiving circuit and amplifier inoperative.

10. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication and to receive a high frequency modulated current, a demodulator including a thermionic device having a filament for a source of electrons associated with said receiving circuit, a translating receiving device responsive to the currents demodulated by said demodulator, a source of current for said filament, and a coin-controlled switch for connecting said filament to said source of current, thereby to make operative said demodulator.

11. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication and to receive a high frequency modulated current, a demodulator including a thermionic device having a filament for a source of electrons associated with said receiving circuit, a translating receiving device responsive to the currents demodulated by said demodulator, a source of current for said filament, a switch for controlling the flow of current from said source to said filament, and time-controlled means adapted to open said switch after the lapse of a predetermined time interval thereby to make said demodulator inoperative.

12. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication and to receive a high frequency modulated current, a demodulator including a thermionic device having a filament for a source of electrons associated with said receiving circuit, a translating receiving device responsive to the currents demodulated by said demodulator, a source of current for said filament, a switch for controlling the flow of current from said source to said filament, means made effective upon the closure of said switch and operative after the lapse of a predetermined time interval to open said switch, thereby to make inoperative said demodulator, and coin-controlled mechanism for closing said switch.

13. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a receiving translating device associated therewith, a switch adapted upon the closure thereof to make said receiving circuit and said device operative, a normally ineffective

time-controlled mechanism associated with said switch adapted upon the lapse of a predetermined time interval to open said switch thereby to make said circuit and device inoperative, and means associated with said switch adapted upon the closure thereof to make said time-controlled mechanism effective.

14. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a receiving translating device associated therewith, a switch adapted upon the closure thereof to make said receiving circuit and said device operative, a normally ineffective time-controlled mechanism associated with said switch and adapted after the lapse of a predetermined interval of time to open said switch, electrical means including an auxiliary circuit for making said time-controlled mechanism effective, and auxiliary contacts associated with said switch adapted upon the closure of said switch to close said auxiliary circuit thereby to make effective said time-controlled mechanism.

15. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a receiving translating device associated therewith, a switch adapted upon the closure thereof to make said receiving circuit and said device operative, a normally ineffective movable member associated with said switch and adapted upon a predetermined movement thereof to open said switch, an electric motor for driving said movable member, and means for closing the circuit of said motor upon the closure of said switch.

16. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of translating receiving devices, a switch associated with each of said devices adapted to connect each device individually to said main receiving circuit, and means associated with each of said switches for rendering said receiving circuit operative upon the closure of any one thereof and inoperative when all of said switches are open.

17. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of receiving translating devices, a plurality of switches each adapted to connect one of said devices to said main receiving circuit, an auxiliary electric circuit associated with said main receiving circuit adapted when closed to render said receiving circuit operative and when open to render said receiving circuit inoperative, and a plurality of auxiliary contacts in parallel in-

cluded in said auxiliary circuit and associated with said plurality of switches adapted upon the closure of any one of said switches to close said auxiliary circuit and upon the opening of all of said switches to open said auxiliary circuit.

18. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of translating devices, a coin-controlled device allotted to each translating device and adapted upon operation thereof to connect said translating device to said main receiving circuit, whereby as many translating devices may be connected to said main receiving circuit as there are coin-controlled devices operated, and a time-controlled device allotted to each translating device and adapted to effect the disconnection of a translating device from said main receiving circuit after the lapse of a predetermined time interval from the time of completing the connection of the translating device to the receiving circuit.

19. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of receiving translating devices, an amplifier associated with said main receiving circuit for increasing the intensity of currents received therein, a plurality of switches each associated with one of said translating receiving devices for connecting said receiving devices separately to the output side of said amplifier, and a coin-controlled mechanism associated with each of said switches for separately operating said switches.

20. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of receiving translating devices, a plurality of switches each associated with one of said translating devices for connecting its associated device to said main receiving circuit, whereby as many translating devices may be connected in common to said main receiving circuit as there are switches operated, a counting mechanism, and a common means interposed between said plurality of switches and said counting mechanism adapted upon the operation of any one of said switches to operate said counting mechanism.

21. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of translating receiving devices, a plurality of switches each associated with one of said devices and adapted to connect its associated device to said main receiving circuit, whereby as many translating devices may be connected in common to said main receiving cir-

5 cuit as there are switches operated, a coin-controlled mechanism associated with each of said switches for operating said switches into circuit-closing position, a counting
10 mechanism, and means interposed between said coin-controlled mechanism and said counting mechanism adapted upon operation of any one of said coin-controlled mechanisms to operate said counting mechanism.

15 22. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of
20 switches each associated with one of said translating devices for connecting its associated device to said main receiving circuit, a normally ineffective movable member having associated therewith a plurality of normally ineffective devices arranged each to
25 be moved thereby, and means effective upon the actuation of any one switch to set said movable member in motion and to make one of said devices associated with said movable member effective, to be moved therewith,
30 said last-mentioned device being arranged after the completion of a predetermined movement of said movable member to disconnect a corresponding translating device from said main receiving circuit.

23. In apparatus of the general nature of that herein described, in combination, a main receiving circuit adapted to be connected to a channel of communication, a plurality of
35 receiving translating devices, a plurality of switches each associated with one of said translating devices for connecting its associated device to said main receiving circuit, a normally ineffective movable member having associated therewith a plurality of normally ineffective devices arranged each to
40 be moved thereby, means effective upon the actuation of any one switch to set said movable member in motion and to make one of said devices associated with said movable member effective, to be moved therewith,
45 said last-mentioned device being arranged after the completion of a predetermined movement of said movable member to disconnect a corresponding translating device from said main receiving circuit, and means
50 for halting the movement of said movable member upon the disconnection of all of said translating devices from said main receiving circuit

55 In testimony whereof, I have signed my name to this specification this 1st day of June, 1922.

LUDWIG M. DIETERICH.