April 17, 1951 E. C. DUNN ET AL 2,549,676

COMMUNICATION SYSTEM FOR DRIVE-IN ESTABLISHMENTS

Filed Sept. 16, 1949 2 Sheets-Sheet 1

Fig. 1.

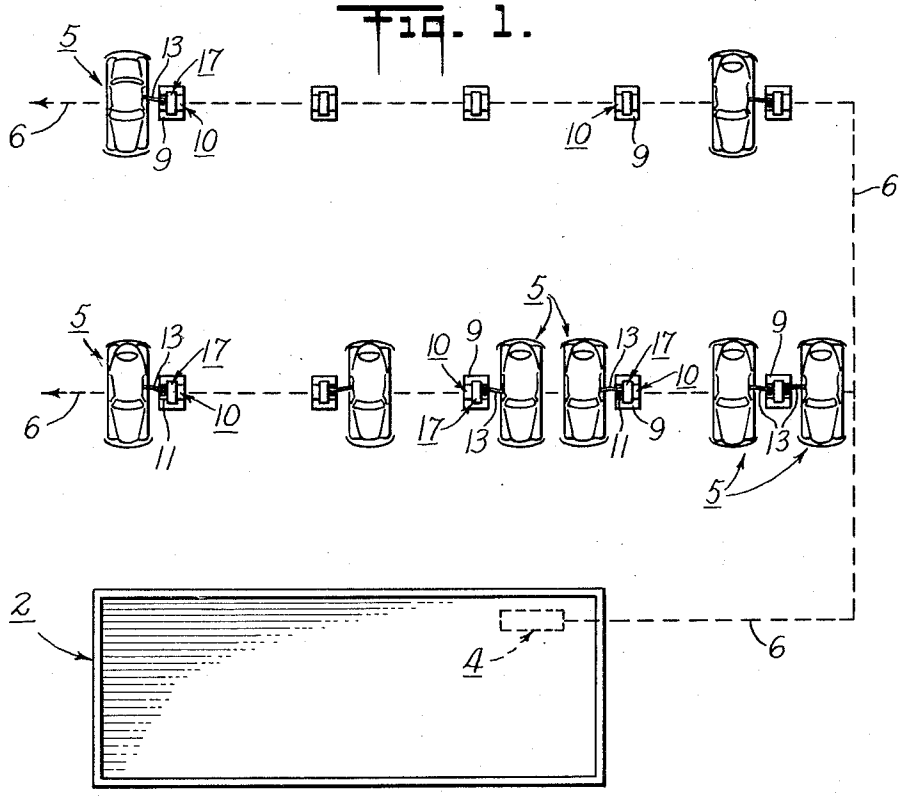
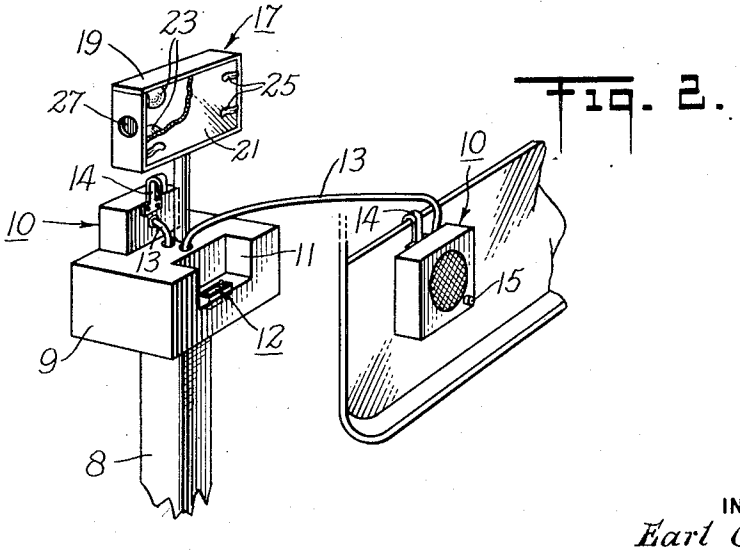


Fig. 2.



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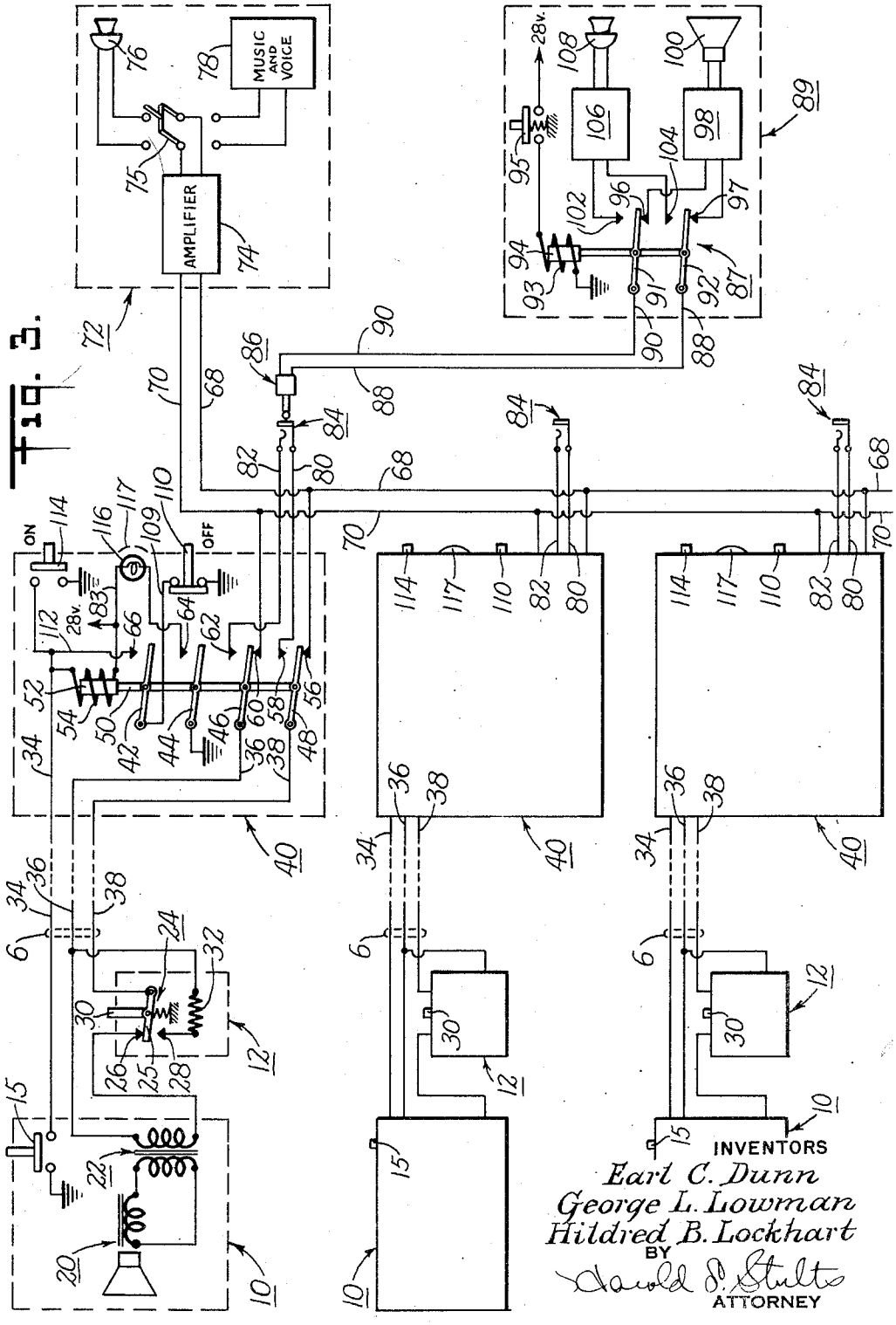


Fig. 3.

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COMMUNICATION SYSTEM FOR DRIVE-IN ESTABLISHMENTS

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12 Claims. (Cl. 179—1)

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This invention relates to improvements in drive-in stands or systems, which terms are applied to places of business where cars (i. e., automobiles) are driven to car parking stations and the occupants receive service from attendants. The invention relates particularly to such systems which provide entertainment and service facilities for the occupants of cars at various car parking stations; the service facilities including an arrangement for the delivery of food or other refreshments from a central control or serving station to the patrons in the parked cars.

Drive-in stands of the above-mentioned character have been provided wherein cars may park at stations and the occupants or patrons may order food and other refreshments. With such systems entertainment may be provided by amplifiers appropriately positioned with respect to the parking stations. The present invention relates to systems of the general type referred to above, and incorporates certain improvements wherein more and improved services are provided in a dependable and efficient manner. At the same time, systems incorporating the present invention avoid certain difficulties which have been encountered with similar systems in the past.

It is an object, therefore, of the present invention to provide a system wherein improved entertainment and service facilities are made available to the patrons or occupants of cars at drive-in systems and the like. A further object is to accomplish the above with an arrangement which requires a minimum amount of supervisory control. A still further object is to provide an improved system for servicing patrons and at the same time providing entertainment for them. These and other objects will be in part obvious and in part pointed out below.

In the drawing:

Figure 1 is a somewhat diagrammatic representation of a system representing one embodiment of the invention;

Figure 2 is an enlarged perspective view of the equipment at a car parking station in the system of Figure 1; and

Figure 3 is a simplified schematic wiring diagram of one complete operating unit of the communication and control system of Figure 1.

As indicated above, service stands have been provided of the drive-in type wherein patrons may drive to car parking stations and wait in their cars while they receive service from waiters or attendants. Such systems may also provide

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entertainment, for example, by loud speakers positioned at appropriate places. The present invention relates to systems of this general type, and in the illustrative embodiment the service provided includes the delivery of food or other refreshments to the patrons. The service also includes entertainment transmitted to each car by a speaker microphone unit, and this speaker microphone unit is also utilized as part of a communication system between the car and the central control or serving station. The arrangement is such that when not in use the speaker microphone units rest on posts adjacent the respective car parking stations within reach of the occupants of the cars when they are parked at the stations. Each post has two car parking stations adjacent it and, therefore, a pair of speaker microphone units are mounted on each post. The post is so positioned that when a car is parked properly within either of its car parking stations, the car occupants may easily reach the speaker microphone unit; this tends to insure proper parking of the cars.

As indicated above, the communications system provides entertainment programs at the car parking stations and at the same time, an occupant of any car may set up the talking circuits between his car parking stations and the central station. The setting up of the talking circuit to the central station is accomplished by pushing a button on the speaker microphone unit; this energizes a talking circuit relay which disconnects that speaker microphone unit from the entertainment program circuit, and connects the speaker microphone unit to a plug-in panel at the central station. Simultaneously, a signal light is turned on which indicates to the operator that that particular car parking station has requested service, and the operator then connects his speaking and receiving set through the panel to the car parking station which has requested service. The operator then takes the order from the patron and turns it over to the appropriate people for preparation and for delivery by an attendant. The operator then pushes a button which deenergizes the talking circuit relay so as to connect the speaker microphone unit again to the entertainment program circuit.

It should be noted that the patron has no control over the returning of his speaker microphone unit to the entertainment program circuit; that is, when once a patron has decided to place an order, the operator assumes control and disconnects the talking circuit only when

he has obtained complete information regarding the order. The operator is also provided with switching arrangements whereby he may interrupt the entertainment program and set up a talking circuit with any one of the speaker microphone units. Thus, if he has taken an order and finds that he needs additional information or instructions from the patron, he may obtain it. Another important feature is that the system includes facilities for making a general announcement to all of the speaker microphone units. In this way, the general supervisory control of the entire system is in the operator, but the system operates automatically, except to the extent that this supervisory control is exercised. Furhermore, any patron may place an order at any time, and under normal circumstances the entertainment program is interrupted only for a short period of time. The entertainment program may be music or vocal, originating, for example, from a studio or from a radio receiver.

Referring particularly to Figure 1 of the drawings, a central control station 2 has a control panel 4, where an operator is stationed, and restaurant and bar facilities, where food and other refreshments are prepared in response to orders received. Adjacent the control station 2 is a parking space wherein a large number of car parking stations 5 are located. The car parking stations are in pairs along lines of underground cable indicated in broken lines at 6, and between the stations of each pair there is a post 8 (see also Figure 2) upon the top of which there is a frame 9 which provides a mounting for two speaker microphone units 10. Frame 9 has two recesses or pockets 11 which snugly receive the speaker microphone units, and mounted flush with the bottom wall of each of these pockets is a cut-out unit 12 which is described in detail below and which renders the speaker microphone unit inoperative when it is positioned in its pocket.

Each speaker microphone unit is connected to the remainder of the communications system through an extension cable 13 which may be drawn from frame 9 to pull the speaker microphone unit into a car, and each of the speaker microphone units has at its top a supporting hook 14 which is hooked over the top of the car window or onto any other convenient means of support. When the speaker microphone unit is being returned to its pocket 11, cable 13 is drawn into the frame by a reel (not shown). The front wall of the speaker microphone unit carries a push button 15 which is depressed by the patron or occupant of the car when he wishes to place an order, and, as indicated above, this disconnects the speaker microphone unit from the entertainment program circuit and signals the operator at the central station. Thus, when a car is driven into the parking area, the driver selects a vacant car parking station and parks his car in it; he then reaches from the window of the car and lifts the speaker microphone unit from its pocket and pulls the unit into the car. This operation causes the unit to start operating as an amplifier on the entertainment program circuit; thereafter, the car occupant depresses button 15 at any time that he decides to place an order.

Mounted on the top of frame 9 by a post or bracket is a light box 17 which is formed by, a metal frame with sheet metal bottom and end walls, a hinged sheet metal lid 19, and side walls formed by panes of glass 21. Mounted on the end

walls within the box there are four electric lights 23, and at the side edges of each of the panes 21 there are clips 25 which form releasable mounting means for transparent or translucent cards or signs, such as bills of fare or announcement cards. With cards thus mounted on the opposite sides of the box, the light from the inside of the box illuminates them so that they may be read by the car occupants. In each end wall there is a window 27 having red glass bull's eye therein which is also illuminated and acts as a marker for the post.

The communications system is shown in Figure 3 in somewhat schematic and fragmentary form, it being understood that it is unnecessary to duplicate identical circuit units where there are a number. Thus, the circuit for only one speaker microphone unit is shown, although two others are indicated schematically, and the system includes a large number, that is, one for each of the car parking stations. Referring to the upper left-hand portion of Figure 3, a speaker microphone unit 10 includes a speaker unit 20, which is adapted to operate also as a microphone, a transformer 22, and the signal switch 15 referred to above. Adjacent this unit 10 is the cut-out unit 12 formed by a switch 24 which has its armature 25 spring-urged up so that it engages a contact 26, but the armature may be lowered into engagement with a contact 28 by engaging a button 30, and a resistor 32.

Three lines 34, 36 and 38 extend through a cable to the speaker microphone unit from a relay 40 which is the talking circuit relay referred to above, the energization of which sets up the talking circuit. Line 36 is connected to one side of the input to the speaker microphone unit and also to one side of resistor 32, and line 38 is connected to the armature 25 of switch 24. Thus, with the armature raised as shown, lines 36 and 38 are connected to the input terminals of the speaker microphone unit, and the unit is therefore adapted to operate either as a speaker microphone in the talking circuit or as a speaker to transmit the entertainment program. When the button 30 is depressed so that the armature of the switch engages contact 28, lines 36 and 38 are connected across resistor 32, the impedance of which matches that of the speaker microphone unit. Thus, with the armature in its lower position, the speaker microphone unit is inoperative, but the overall impedance of the circuit of lines 36 and 38 is unchanged. Line 34 is connected to one side of switch 15, the other side of which is grounded so that the closing of this switch connects line 34 to ground and, as will be explained below, this is effective to energize relay 40.

Relay 40 has four switch armatures 42, 44 and 46 and 48, all of which are connected by an insulated armature rod 50 to an operating armature 52, which has a surrounding solenoid 54. Armature 52 is shown in lower position and when the solenoid is energized it lifts the armature. Armature 48 has a lower contact 56 and an upper contact 58, while armature 46 has a lower contact 60 and an upper contact 62; armature 44 has only an upper contact 64, and armature 42 has only an upper contact 66. Contacts 56 and 60 are connected to two lines 68 and 70 which extend to the amplifier 74 of the entertainment program unit 72 referred to above. Amplifier 74 is connected through a double-pole, double-throw switch 75 to either a transmitter 76 or a program source 78, indicated as music and voice.

Lines 36 and 38 are connected respectively to armatures 46 and 48 and, therefore, when relay 40 is deenergized and the armatures are positioned as shown, the speaker microphone unit 10 is connected through lines 36 and 38, armatures 46 and 48, contacts 56 and 60, and lines 68 and 70, to the entertainment program unit. Solenoid 52 of relay 40 has one side connected to line 34, and it has its other side connected through a line 83 to one side of a source of direct current of 28 volts, the other side of which is grounded. Thus, when switch 15 is closed, solenoid 52 is energized and the energizing of this solenoid raises the armatures so that armatures 46 and 48 are lifted from their lower contacts into engagement with their upper contacts 62 and 58. Contacts 58 and 62 are connected respectively to a pair of lines 80 and 82 which extend to a plug jack 84 on the operator's panel referred to above. This plug jack is adapted to receive a plug 86 which is the plug on the operator's speaking and listening set 89 and is connected thereto by a pair of lines 88 and 90.

Lines 88 and 90 extend from plug 86 to a pair of armatures 91 and 92 of a relay 87 having a solenoid 93 and an armature 94 mechanically connected to lift the armatures from the lowered position shown to the raised position when solenoid 93 is energized. One side of solenoid 93 is connected to ground and the other side is connected to one side of a normally-open manual switch 95, the other side of which is connected to a source of direct current of 28 volts which has one side grounded. Relay 87 has bottom contacts 96 and 97 which are connected through a pair of lines to an amplifier 98 which has its output side connected to a speaker 100; and, the relay has a pair of upper contacts 102 and 104 which are connected to the amplifier 106 for a microphone 108. Thus, when the relay 87 is deenergized, lines 88 and 90 are connected to the speaker 100, but when switch 95 is closed, solenoid 93 is energized and the armatures of the relay are lifted so as to connect lines 88 and 90 to the amplifier 106 of the microphone 108. In this way the closing of manual switch 95 converts the speaking and listening set 89 from operation as a speaker, to operation as a microphone.

Assuming that relay 40 is energized and the plug 86 is inserted in jack 84, set 89 is connected through lines 88 and 90, plug 86, jack 84 and lines 80 and 82 to contacts 58 and 62 of relay 40; and, thence through armatures 48 and 46 and lines 38 and 36 to the speaker microphone unit 10. With this circuit completed, any signals originating at this speaker microphone unit are transmitted to speaker 100 which is positioned in front of the operator. Then, when the operator wishes to speak, he closes switch 95 which connects the microphone 108 to this circuit, and his voice signals are transmitted to the speaker microphone unit 10.

Relay 40 has a lock-in circuit so that when once energized it remains in that condition until the operator deenergizes it. Accordingly, armature 42 is connected through a line 109 and an "off" switch 110 to ground, and when this armature is raised it engages contact 66 which is connected through a line 112 to line 34 and thence to solenoid 52. Switch 110 is normally closed and, therefore, when relay 40 is energized initially, a circuit is set up from ground to switch 110, line 109, armature 42, contact 66 and lines 112 and 34 to solenoid 52 and this holds the solenoid energized even though switch 15 is reopened. The operator then may deenergize the relay and restore the circuit to the condition shown by opening the "off" switch 110 which breaks this lock-in circuit.

It has been indicated above that the operator may set up the talking circuit to any speaker microphone unit at any time. Accordingly, the operator may energize relay 40 at any time by closing a normally open "on" switch 114 which has one side grounded and has its other side connected to line 34. This switch 114 is in parallel with switch 15, and its closing energizes the relay 40 in the same way. Positioned adjacent the "off" and "on" switch 110 and 114 on the operator's panel is an indicating light 116 which is connected at one side to the source of power at line 83, and at the other side to contact 64, which is engaged by armature 44 when the armature is raised; armature 44 is grounded and, therefore, when it is raised it connects the indicating light 116 across the source of potential and energizes the light. This light is positioned behind a number in a transparent window 117 and indicates to the operator the location of the speaker microphone unit which has signalled for service.

As indicated above, each of the speaker microphone units has a relay 40, and two additional of these relays being indicated on the drawing without repeating the circuit connections. In the actual physical structure, the jack 84, switches 110 and 114, and the window 117 and light 116 for each car parking station, are in alignment on the panel in front of the operator. Thus, when a patron at any one of the car parking stations wishes service, he presses a button 15 and the appropriate light 116 goes on. The operator immediately inserts his plug into the proper jack, presses his button to close his switch 95, and asks the patron what he wishes; the operator then writes the order and identifies it by the correct parking station number on the lighted window 117. The order is then prepared and dispatched by an attendant to the designated car parking station. Under some circumstances, two or more operators may answer calls simultaneously, although a patron is not materially inconvenienced if he must wait for a brief period after he has pressed his button 15 before he is given an opportunity to place his order.

The speaker microphone units 10 include speakers 20 which are adapted to operate in reverse as microphones. This term "speaker microphone unit" as used, applies also to units wherein a microphone is provided which will act in reverse as a speaker; and, also, to an assembly which includes a speaker and a separate microphone. The illustrative embodiment of the invention is adapted to provide refreshments such as are available from a restaurant and a bar. Certain aspects of the invention are applicable to other systems wherein other types of service and goods such as groceries or other merchandise may be sold.

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

We claim:

1. In a drive-in system, the combination of, means constituting a plurality of car parking sta-

tions, means constituting a central station, and a communication system which includes means forming an entertainment program circuit to each of the car parking stations and having means associated therewith to disconnect the entertainment program circuit to any particular car parking station and to set up a talking circuit between that car parking station and the central station, said communication system also including means at the central station to disconnect the talking circuit and re-connect the entertainment program circuit.

2. In a drive-in system, a communication system which includes, a plurality of microphone and speaker arrangements comprising one at each of a plurality of car parking stations, means forming an entertainment program circuit normally connected to said microphone and speaker arrangements, means adapted to establish a talking circuit with any one of said microphone and speaker arrangements, and control means including a switch associated with each of said microphone and speaker arrangements whereby a patron may disconnect the entertainment program circuit and establish a talking circuit, said control means also including means at the control station to disconnect said talking circuit and reestablish the circuit of the entertainment program.

3. In a drive-in system, the combination of, a plurality of speaker microphone units positioned respectively at different car parking stations, a program circuit at a central station, a talking and receiving unit at said central station, a plurality of relays respectively connecting said speaker microphone units to said program unit or selectively to said talking and receiving unit, and control means for said relays including switches located at said speaker microphone units which are adapted to operate the respective relays so as to disconnect that speaker microphone unit from the program unit and connect it to the talking and receiving unit, said control means also including switching means available to the operator to operate said relays and restore the circuits between the program unit and the respective speaker microphone units.

4. A system as described in claim 3 wherein, said speaker microphone units are in pairs, and each pair is positioned on a post between two car parking stations.

5. A system as described in claim 4 which includes, a cut-out unit associated with each of said speaker microphone units which is effective to deenergize each speaker microphone unit when it is positioned on its post.

6. A system as described in claim 3 wherein each of said relays includes, a light positioned within view of the operator, and means to energize said light when the relay is in a predetermined position.

7. A system as described in claim 3 wherein each of said relays includes a lock-in circuit which is completed to hold the relay energized

simultaneously with the setting up of a talking circuit through the relay, said lock-in circuit including a normally closed switch which may be opened by the operator to break said lock-in circuit.

8. A system as described in claim 7 which includes, switch means accessible to the operator to energize said relays selectively.

9. A system as described in claim 3 wherein said entertainment program unit includes, means constituting a source of an entertainment program and a microphone connectable for alternative use.

10. A system as described in claim 3 wherein said talking and receiving unit includes, a speaker and a microphone and a relay to energize them alternatively.

11. In a drive-in system, a communication system which includes a program circuit by which an entertainment program is transmitted from a central station to each of a plurality of car parking stations, said communication system including, means to set up a talking circuit between each of said car parking stations and the central station, control means operable from the respective car parking stations to disconnect the program circuit at that car parking station and establish the talking circuit between that car parking station and the central station, and control means at the central station to disconnect any one of said talking circuits and to reestablish the respective program circuit connections.

12. In a system of the character described, the combination of, means constituting a plurality of patron stations at each of which one or more patrons may be located for purposes of being entertained and being served refreshments or the like, means constituting a central station, and a communication system which includes means forming an entertainment program circuit to each of the patron stations and having means associated therewith to disconnect the entertainment circuit to any particular patron station and to set up a talking circuit between the central station and that patron station, said communication system also including means at the central station to disconnect the talking circuit and reconnect the entertainment program circuit, each of said car parking stations including a speaker microphone unit which forms parts of the respective circuits.

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