July 9, 1940. H. H. BEIZER 2,206,998

SYSTEM OF ADVERTISING

Filed Aug. 22, 1934 2 Sheets-Sheet 1

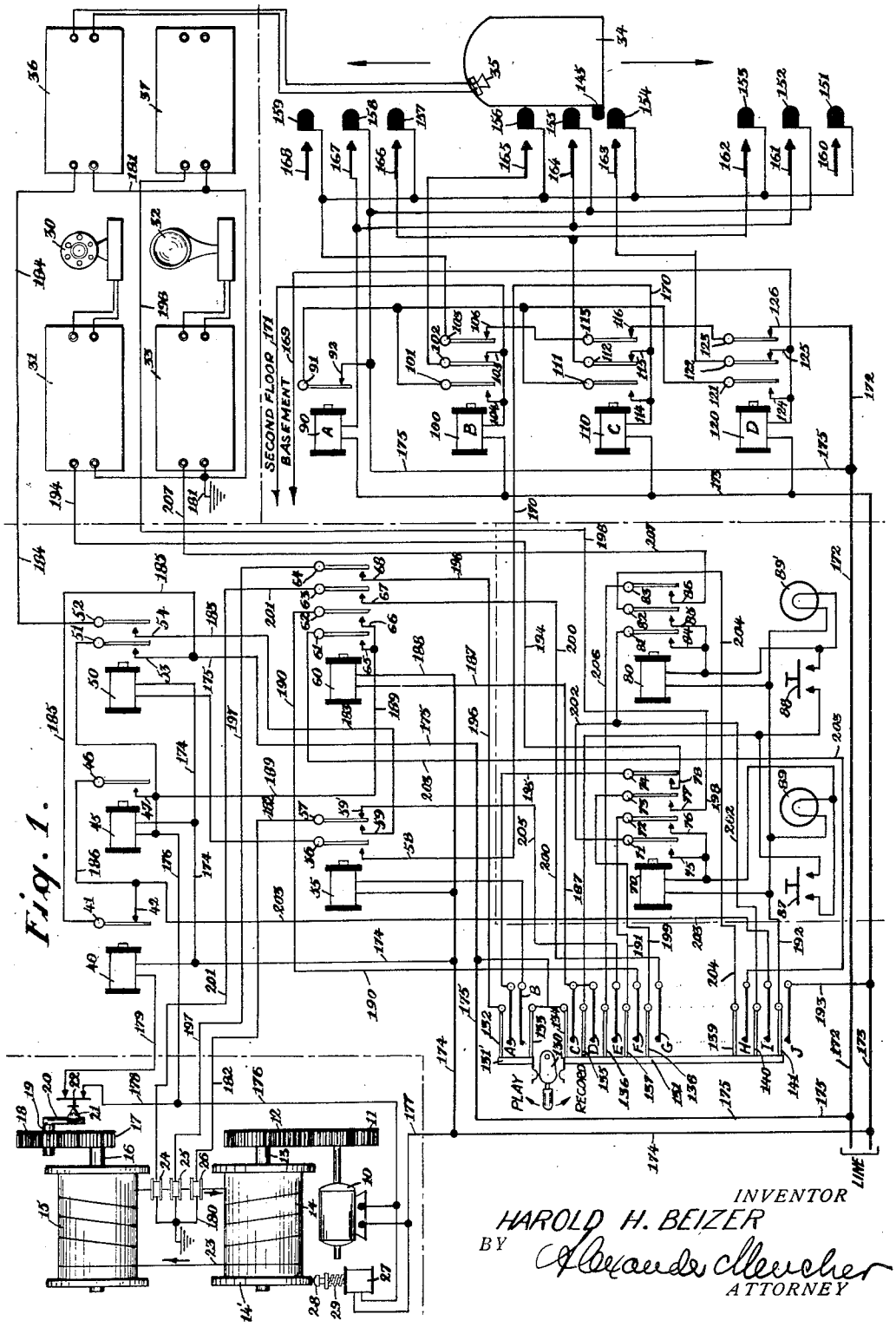


Fig. 1.

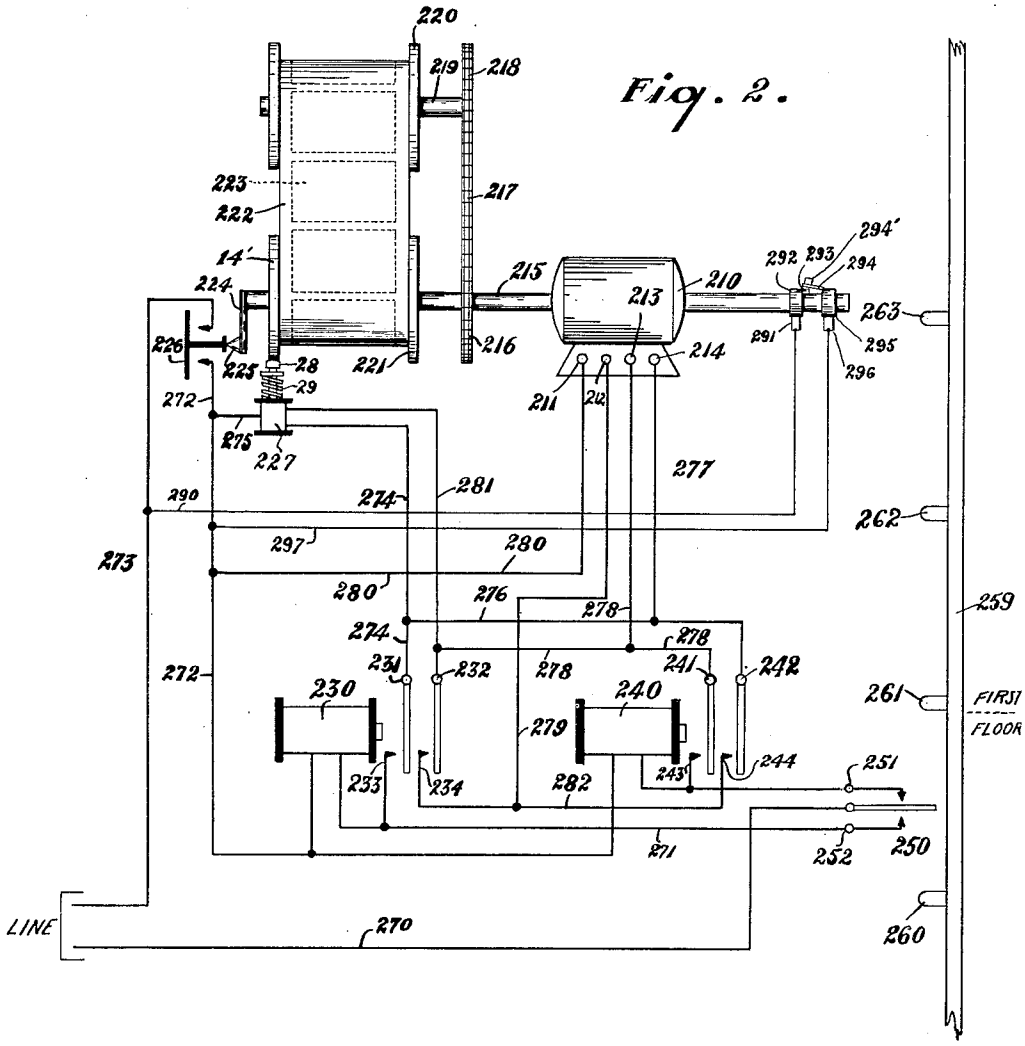
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Fig. 2.



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SYSTEM OF ADVERTISING

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3 Claims. (Cl. 177—336)

This invention relates generally to systems for the communication of intelligence and more particularly to the communication of advertising material in moving carriers.

The main object of the invention is the dissemination in an efficient and economical manner of advertising in moving carriers and to the correlation of the subject matter of said advertising with the relative position of the carrier.

Another object of the invention is the provision of a system of advertising whereby the safety of the passengers in the moving carrier is increased because the operator of the vehicle is able to concentrate upon the maneuvering thereof without being disconcerted in conveying information to passengers.

Another object of the invention is the taking advantage of the lack of mental preoccupation on the part of the passenger and the conveying to him of advertising material at a time when his mind is in a high state of psychological receptivity.

Another object of the invention is the elimination of the human factor so that information is conveyed to the passengers in a constant manner, unblemished by fatigue or vocal difficulties of the operator or announcer.

Another advantage of the system is its universal adaptability so that the subject matter of the advertising conveyed to the passengers of the carrier may be changed within a very short space of time whenever change becomes advisable and may be examined by the person controlling this system and edited before it is sent out to the passengers in the carrier.

These objects and other incidental ends and advantages of the invention will more fully appear in the following description and in the appended claims.

The word advertising as used in this specification and the appended claims is to be given a broad interpretation, meaning not only to call attention to things to purchase, but also to inform, to give notice, advice or intelligence.

I attain these objects by two preferred embodiments of the system of advertising, the subject of this invention, as illustrated in the accompanying drawings, in which Figure 1 is a schematic diagram of the advertising system as applied to the dissemination of auditory intelligence, while Figure 2 is a similar diagram of this system as applied to the dissemination of visual material.

Numeral 10 designates an electric motor having affixed to one end of its driving shaft a spur gear 11 which is in mesh with another spur gear 12, the latter gear being affixed to one end of a shaft 13 upon which is mounted a drum member 14. Numeral 15 indicates a drum member mounted upon a shaft 16 having affixed thereto at one end a pinion 17 which is in mesh with a spur gear 18, the said gear being mounted upon a short shaft 19 which has affixed to an end thereof a radial arm 20. Said arm 20 has affixed to the outer end thereof a short projecting cone member 21 adapted to actuate a push button "two point make" switch 22. Continually encircling drum 14 in one direction and drum 15 in another direction is a hard steel wire 23. Said wire is adapted by passage through the axes of solenoids 24 and 25 to have its molecular structure so rearranged by the changes in magnetic flux caused by energization of the said solenoids 24 and 25 that, when the wire 23 passes through the axis of a solenoid 26, the moving lines of force which surround the said wire 23 induce a fluctuating current in the windings of the solenoid 26. Numeral 27 designates a magnetic solenoid while 28 indicates an armature adapted to be drawn within the said solenoid 27 when it is energized. Armature 28 has its outer end expanded to form a braking shoe which in operative position is in frictional engagement with a brake drum member 14', the latter being a flange portion of the drum 14. The braking shoe portion of armature 28 is held in contact with brake drum 14' by means of the expansive spring 29.

Numberal 30 indicates a microphone while numeral 31 is an audio frequency amplifier connected therewith. A loud speaker 32 is connected to the output of an audio frequency amplifier 33. Numeral 34 is an elevator car having suitably positioned on its ceiling a loud speaker 35 which is connected to the output of an audio frequency amplifier 36. Numeral 37 represents an electrical oscillator operating at any suitable super-sonic frequency.

All of the relays shown in the drawings are ordinary instantaneous acting relays and the armatures therefor are shown in their nonactuated position. Numeral 40 indicates a relay having an armature 41 and a contact therefor 42. Numeral 45 designates a relay having an armature 46 and a contact therefor 47. Numeral 50 indicates a relay having armatures 51 and 52 and contacts therefor 53 and 54. Numeral 55 indicates a relay having armatures 56 and 57 and contacts therefor 58, 59 and 59'. Numeral 60 indicates a relay having armatures 61, 62, 63 and 64 and contacts therefor 65, 66, 67 and 68. Numeral 70 indicates a relay having armatures 71, 72, 73 and 74 and

contacts therefor 75, 76, 77 and 78. Numeral 80 indicates a relay having armatures 81, 82 and 83 and contacts therefor 84, 85, and 86. Numerals 87 and 88 are push button "two point make" switches. Numerals 89 and 89' are incandescent lamps colored red and green respectively. Numeral 90 is a relay having an armature 91 and a contact therefor 92, while numeral 100 is a relay having armatures 101, 102 and 103 and contacts therefor 104, 105 and 106. Numeral 110 is a relay having armatures 111, 112, and 113 and contacts therefor 114, 115 and 116. Numeral 120 is a relay having armatures 121, 122 and 123 and contacts therefor 124, 125 and 126. Numeral 130 is a toggle switch adapted to be thrown in either of two positions as indicated by the arrows adjacent thereto on the drawings or in a neutral position as it is shown in the drawings.

Numerals 131 and 131' indicate insulating tie bars mechanically connecting the switch blades 132, 133, 134, 135, 136, 137, 138, 139, 140 and 141, while letters A, B, C, D, E, F, G, H, I and J represent fixed contact points on the said toggle switch 130.

Numerals 151, 152, 153, 154, 155, 156, 157, 158 and 159 indicate switch contact buttons which are adapted to contact with contact points 160, 161, 162, 163, 164, 165, 166, 167 and 168 respectively, as the said contact buttons are depressed by a projection 145 extending from the portion of the elevator car 34 opposite the row of contact buttons 151 to 159 inclusive. The switching units formed by the pairs of contact buttons and their adjacent contact points are disposed along the elevator shaft so that the various circuits appertaining thereto will be closed in proper relation to the vertical position of car 34 within the shaft, as will be more particularly described below.

Now will be described the operation of the embodiment of the subject of this invention as shown in Figure 1.

Assuming that, due to previous operation, the wire 23 now carries a recording thereon in the form of a displacement of its molecules, and also assuming that car 34 is at such a level in the shaft that its projection 145 is situated between contact buttons 152 and 153, switch 130 is raised to the position marked "play." This brings switch blade 133 in contact with switch point B and allows current to flow from the power supply indicated by the word "line" into solenoid of relay 55. Relay 55 now energized displaces armatures 56 and 57 so that they now contact contact points 58 and 59. Armature 56 thus closes the circuit connected with the solenoid of relay 50 so that it is in readiness for energization when current is permitted to flow from the line through relay 110 by means of a conductor 170. It is to be noted at this point that the button contacts 151, 153, 154, 156, 157 and 159 are all connected to the power supply through a chain connection formed by armature 103, contact 106, armature 113, contact 116, armature 123 and contact 126 by means of a conductor 172, so that when car 34 starts to move upwardly within the shaft, projection 145 strikes against contact button 153 and depresses it, thereby causing contact button 153 to touch contact point 162. Current then flows from contact point 162 to armature 112 through contact point 115 and thence through relay 110 and a conductor 173. Current also flows from contact point 115 along the conductor 170 to contact point 58. Relay 55 having been previously energized by the movement of toggle switch 130 as above set forth, current flows from contact point 58 through armature 56 to the solenoid of relay 50, the return circuit therefrom being completed by means of a conductor 174. With the energization of relay 110, armature 113 is displaced so that it no longer contacts contact point 116 and armature 112 no longer contacts contact point 115. This latter disruption would de-energize relay 110 but for the fact that armature 111 is displaced so that it contacts contact point 114. Relay 110 thus continues in an energized state by means of the circuit formed by conductor 173, contact point 114, armature 111, armature 91, contact point 92, a conductor 175 and conductor 172.

Relay 50 having been energized as above described, current is enabled to flow from the line through a conductor 175 to contact point 53 thence to armature 51, thereby energizing relay 45, the return of this circuit is completed through conductor 174. The contact point 53 and armature 51 also allow current to flow along a conductor to the motor 10 and the braking mechanism solenoid 27 and thence through a return circuit formed by a conductor 177 and conductor 174. Current which has been flowing along conductor 176 also branches off to flow in a conductor 178 to the switch 22. It is to be noted at this point that switch 22 is so constructed that it remains normally in an open circuited position although shown closed on the drawings. With switch 22 open, the brake shoe 28 is released and motor 10 starts to revolve. This causes wire 23 to travel and induce an alternating current in solenoid 26, the circuit comprising a ground conductor 180, solenoid 26, a conductor 182, armature 57, contact 59, a conductor 183, contact 54, armature 52, a conductor 184, the input of amplifier 36, and its ground return 181. Solenoid 26 acting as a pickup coil, the audible frequencies induced therein are converted to sound in the speaker 35.

Relay 45 having been energized as set forth above, an auxiliary circuit is completed through its solenoid, comprising conductors 175, 185, armature 41, contact 42, conductor 186, armature 46, contact 47, solenoid of relay 45, and conductor 174. From this same auxiliary circuit, current will flow along conductors 176 and 178, thus assuring the motor 10 of a continuous supply of power even after current ceases to flow along conductor 170 thus de-energizing relay 50.

The motor 10 continues to revolve until all of wire 23 has passed through the pick up coil 26, at which time, a complete cycle having been completed, cone member 21 will strike switch 22 thus completing the circuit via conductors 178, 179, to relay 40, with a return through conductor 174. Relay 40 now energized displaces armature 41 so that it no longer contacts contact 42, thus breaking the auxiliary circuit so that current no longer flows along conductors 186. Assuming that relay 50 is now de-energized as will be described below, motor 10 and braking solenoid 27 cease operating, thus allowing spring 29 to force shoe 28 in contact with brake drum member 14'. This brings all the related mechanism to a stop, but not before inertia has carried cone member 21 beyond switch 22 so that it returns to its normal open position ready for the next complete cycle.

De-energization of relay 50 is accomplished as follows. Car 34 having depressed button 153 with the results set forth above, continues in its upward movement and projection 145 strikes

button 154. This would tend to energize relay 120 but for the fact that the circuit formed by conductor 172, contact 126, armature 123, contact 116, armature 113, contact 106, armature 103, button 154, contact 163, armature 122, contact 125, relay 120 and conductor 173 is broken between contact 116 and armature 113, since relay 110 is still energized. Car 34 continues upward and depresses button 153, which contacts contact 164, and completes the circuit energizing relay 90, so that armature 91 is displaced out of contact with contact 92. This displacement of armature 91 opens the circuit to relay 110, and stops current from flowing along conductor 170. With the cessation of current in conductor 170, relay 50 becomes de-energized, allowing armature 52 to recede from contact 54, thus cutting out the signal input to amplifier 36, and also allowing armature 51 to recede from contact 53 which would stop motor 10 but for the circuit maintained by relays 40 and 45 as set forth above.

As car 34 continues upward, projection 145 will next strike button 156 which upon contacting contact 165 will initiate a sequence of relay actions similar to that which occurred when button 153 was depressed, except that this time relay 100 will be energized and current will flow along the conductor 171, to a group of relays associated with the next floor, said group not being shown on the drawings.

It is to be noted at this point that this embodiment of the invention is capable of being used with any number of elevator cars using speakers, serving any number of floors. One drum and wire assembly, including drums 14 and 15, wire 23 and related mechanism will be required for each car and floor. One group of relays similar to relays 40, 45, 50, 55 and 60 will be required for each car and floor. One group of relays similar to relays 90, 100, 110, and 120, and one group of contacts similar to contacts and buttons 151—160, 152—161, 153—162, 154—163, 155—165, 157—166, 158—165, 159—168 will be required for each shaft, assuming that there are three floors on each shaft. Where there are more than three floors on a shaft, additional sets of three contact buttons are added as well as additional relays similar to relay 100. One amplifier like amplifier 36 is used for each car, while only one each of microphone 30, amplifier 31, speaker 32, amplifier 33, oscillator 37, relays 70 and 80, switches 87 and 88, lights 89 and 89' is used for entire installation regardless of the number of shafts, floors or cars. One switch like switch 130 is used for every car and every floor, all switch blades corresponding to switch blades 135, 136, 137, 138, 139, 140 and 141 and contact points corresponding to contact point A, being connected in parallel.

The contact buttons 151 to 159 inclusive are spaced along the shaft in groups of three adjacent each floor landing, as indicated on the drawings, and the above described sequence of contact and relay operations exists universally between all floors whether the car 34 is ascending or descending. The center button in the group of three releases the relays directly associated with the contact buttons, while the next outer button in the group of three, actuates the relay associated with the sound mechanism for the floor which the car 34 approaches. By properly positioning the contact buttons such as 153, going up, or 154 going down, the advertising material concerning the following floor may be made audible in the car 34 either while it is loading up and discharging at the prior floor or after it actually begins to move toward the next floor.

Now will be described the mechanism for recording the advertising material on the wire 23. Switch 130 is moved to the position marked "Record" on the drawings, so that in addition to lowering tie bar 131, it also lets tie bar 131' drop thus completing the contact between contact A and blade 132. Blade 134 contacts contact C which completes the circuit from conductor 175 to conductor 187, thus energizing relay 60, the return being effected through conductors 188 and 174. The circuit is also completed to switches 87 and 88 through contact D and blade 135. Relay 60 now energized displaces armature 62 which connects the motor 10 and brake solenoid 27 to armature 72 via conductors 176 and 189, contact 66, armature 62, conductor 190, contact F, blade 137, and conductor 191. If now push button switch 87 is depressed relay 70 will be energized, and incandescent bulb 89 will become illuminated, the return of this circuit being completed through conductor 192, blade 141, contact J, and conductors 193 and 173. The motor 10 will now revolve and will run a complete cycle, being again controlled by switch 22 and relays 40 and 45 as heretofore described. As soon as bulb 89 lights up, the operator may begin to talk into microphone 30, the voice currents of which, after passing through amplifier 31, go via a conductor 194, contact 78, armature 74, conductor 195, contact A, blade 132, conductor 196, contact 68, armature 64, conductor 197, to the solenoid 25, which records them on wire 23 by magnetic induction. Energization of relay 70 also completes a circuit from oscillator 37, via conductor 198, contact 77, armature 73, conductor 199, blade 138, contact G, conductor 200, contact 67, armature 63, and conductor 201 to the solenoid 24, which by recording a supersonic frequency on the wire 23, before it passes through solenoid 25, serves to clear the wire of any previous recordings. Energization of relay 70 by depressing switch 87 also closes an auxiliary circuit which keeps relay 70 energized with only a momentary depression of switch 87. This circuit is comprised by conductors 173 and 193, contact J, blade 141, conductor 192, relay 70, contact 75, armature 71, conductor 202, blade 140, contact I, conductor 203, contact 42, armature 41, conductor 185, and conductor 175. It will thus be seen that relay 70 will remain energized until motor 10 has run wire 23 a complete cycle, at which time, relay 70 becomes de-energized and the red light 89 goes out.

After recording the sound which has been recorded on wire 23 may be played back so that the operator may check on its accuracy or quality. In order to do this, switch 130 is kept in its record position, and switch 88 is depressed. This lights green light 89' and energizes relay 80, while relay 60 remains energized owing to the position of switch 130. Armature 81 acts identical with respect to relay 80 as does armature 71 with respect to relay 70, that is armature 81 serves to keep relay 80 energized, after pressure is released from switch 88, until motor 10 has completed a full cycle of the wire 23. Energization of relay 80 also serves to complete the circuit to the motor 10 and brake solenoid 27 via conductors 176 and 189, contact 65, armature 61, conductor 203, contact H, blade 139, conductor 204, armature 82 and contact 85. Voice currents induced in solenoid 26 instead of being fed to amplifier 36 are fed to amplifier 33 via the circuit comprising

conductor 183, armature 57, contact 59', conductor 205, contact E, blade 136, conductor 206, armature 83, contact 86, conductor 207; return being completed through ground circuits 180 and 181. After wire 23 has completed one full cycle, sound in speaker 32 ceases, and light 89' goes out. If this audition of the recorded material is satisfactory to the operator, switch 130 is raised to the position marked "Play" when the recording on wire 23 will be made audible in the car 34 at the proper position, or if the recording is unsatisfactory, it may be re-recorded as was done originally, following the procedure outlined above.

In the embodiment shown in Figure 1, if buttons 152, 155, and 158 are situated at the basement, first floor, and second floor respectively, then motor 10, drums 14 and 15, together with associated apparatus, and relays 40, 45, 50, 55, and 60 constitute equipment for the first floor, while conductors 169 and 171 would be connected to equipment for the basement, and second floor respectively. Conductors 169 and 171, would then feed into apparatus identical with that into which conductor 170 feeds.

In Figure 2, in which an embodiment of the invention is shown, wherein the advertising material is visually disseminated, numeral 210 represents a reversible electric motor having binding posts 211 and 212 to the rotor winding thereof, and binding posts 213 and 214 to the stator winding thereof. A motor shaft 215 has mounted thereon a sprocket 216 which is connected by means of a chain 217 to another sprocket 218. Sprocket 218 is mounted upon one end of a shaft 219, said shaft having mounted thereon, a drum 220. Shaft 215 has mounted thereon a drum 221 which carries in conjunction with drum 220, a continuous belt 222, having advertising material thereon as indicated by the dotted portions 223. The outer end of shaft 215 has affixed thereto a radial arm 224 having at its end a conical member 225 adapted to depress the push button of a two point break switch 226, said switch being normally in a closed circuit position. Numeral 227 designates a magnetic solenoid the winding of which is provided with a center trap, armature 28, spring 29 and brake drum 14' are identical with the structure represented by the same numerals on Figure 1. Numerals 230 and 240 represent ordinary instantaneous acting relays shown in their nonactuated position. A single pole, double throw switch 250 is adapted to be thrown to contact 251 or 252 by meeting with projections 260, 261, 262, 263, which are affixed to the wall of the elevator shaft 259. All of the apparatus shown in Figure 2 with the exception of the shaft wall 259 and the projections thereon is situated in the elevator car.

Assuming the car to be so positioned in the shaft that switch 250 is situated between projections 260 and 261, the car moving upward will cause projection 261 to force switch 250 in contact with contact 252. Current will now flow along conductor 270, switch blade 250, conductor 271, through relay 230, conductor 272, switch 226 (normally closed though shown open in the drawings), and conductor 273. This energizes relay 230 so that current flows via contact 233, armature 231, and conductor 274 to solenoid 227, the return of which is completed through center tap 275, switch 226 and conductor 273, which releases the brake 28 from drum 14'. Energization of relay 230 also allows current to flow to the motor via conductors 274, 276, 277, post 214, post 213, conductor 278, armature 232, contact 234, conductor 279, post 212, post 211, and conductor 280. Assuming that projection 261 is positioned at the first floor landing as indicated on the drawings, the motor 210 with its associated drums will wind into place, where it may be viewed by passengers in the elevator car, advertising material pertaining to the second floor. As soon as the advertising material on belt 222 is aligned opposite an orifice in the casing therefor not shown in the drawings, cone members 225 will strike switch 226, thus breaking the circuit, de-energizing relay 230, cutting off current to the motor 210 and the solenoid 227. Motor 210 will stop and the brake will be applied, but only after cone member 225 has passed switch 226 leaving it in readiness for the next impulse from switch 250.

When the elevator moves down in the shaft the same procedure is repeated except that since switch blade 250 strikes contact 251, relay 240 is energized, this energizes solenoid 227 through the circuit comprised by conductor 270, blade 250, contact 251, contact 243, armature 241, conductor 278, and conductor 281. The reversible motor 210 is now caused to rotate in a direction opposite to that which it took when relay 230 was energized, the circuit being comprised by conductor 270, blade 250, contact 251, contact 243, armature 241, conductor 278, post 213, post 214, conductor 277, armature 242, contact 244, conductors 282 and 279, post 212, post 211, conductor 280, switch 226 and conductor 273.

The apportionment of the time allotted to the "going up" or "going down" advertising material is made by adjusting the vertical position of projections 260 to 263 inclusive with relation to the adjacent floors.

At the moment before reversal of motor 210, the conical member 225 is just adjacent the switch 226. To avoid a cessation of current to the motor 210 as it opens switch 226 upon the starting of the mechanism in the reverse direction, an auxiliary circuit by-passing the said switch 226 is provided. This by-passing circuit comprises a conductor 290, a brush 291, a slip ring 292, a contact 293, a springably mounted switch blade 294, a slip ring 295, a brush 296 and a conductor 297. Slip rings 292 and 295 are mounted upon but insulated from shaft 215. Blade 294 is normally closed but centrifugal force causes a weight 294' mounted thereon to draw the blade 294 to its open position, this occurs, however, only after cone member 225 has passed switch 226.

While speaker 35 on Figure 1 and belt 222 in Figure 2 are shown or stated to be positioned in the moving elevator car, it would not be a departure from the scope of this invention to mount such speaker or belt at or adjacent the landings of the elevator cars to convey advertising material to awaiting passengers-to-be, said advertising material being in any way correlated to the relative positioning of the cars within the shafts.

As described, belt 222 carries the advertising material, but it may readily be seen that slides or film, both moving and stationary are capable of being projected on a surface equivalent to belt 222 and thereby effectuate the purposes heretofore mentioned. The displacement of the slides or moving of the film could be accomplished by mechanism similar to the actuation of belt 222.

This invention is not to be limited to the particular details of construction described above as many equivalents will suggest themselves to those skilled in the art. It is accordingly desired that

the appended claims be given a broad interpretation commensurate with the scope of the invention within the art.

I claim:

1. The combination with an elevator car serving a plurality of floors and arranged to travel in either of two directions, of an annuciator system therefor comprising a sound reproducing device carried by said car, a plurality of sound records and driving means therefor remote from said car, one associated with each of said floors, electrical translating means associated with each of said sound records for producing electrical variations in accordance with said sound records, means adapted to complete the circuit of said translating means to said reproducing device, and also to operate said driving means, correlating means associated with each floor for rendering said last named means operable to cause to be reproduced, in the elevator car, the sound record associated only with the particular floor being approached, said correlating means including contacts in groups of three associated with each floor, and means associated with said car for closing said contacts in succession as said car traverses its path whereby correlation is obtained by the succession in which said contacts are closed.

2. The invention set forth in claim 1 characterized in that each of said circuit completing means includes a three position switch, and characterized further by the addition of an electrical sound re-recording system including a plurality of sound removal and recording elements, one of each associated with a particular one of said sound records, said three position switches being so arranged in their respective circuits that in one position thereof the associated circuit completing means is rendered inoperative to connect either said sound reproducing device or said sound removal and re-recording system to the sound record, in another position thereof the associated circuit completing means is rendered operable to connect the sound reproducing device to the associated sound record, and in the third position thereof the associated circuit completing means is rendered operable to connect the sound removal and re-recording means to the associated record.

3. The invention set forth in claim 1 characterized in that each of said circuit completing means includes a three position switch, and characterized further by the addition of an electrical sound re-recording system including a plurality of sound removal and recording elements, one of each associated with a particular one of said sound records, said three position switches being so arranged in their respective circuits that in one position thereof the associated circuit completing means is rendered inoperative to connect either said sound reproducing device or said sound removal and re-recording system to the sound record, in another position thereof the associated circuit completing means is rendered operable to connect the sound reproducing device to the associated sound record, and in the third position thereof the associated circuit completing means is rendered operable to connect the sound removal and re-recording means to the associated record, and characterized still further by the addition of monitoring means for effecting the reproduction of the subject matter recorded upon any particular record at a point remote from said car.

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