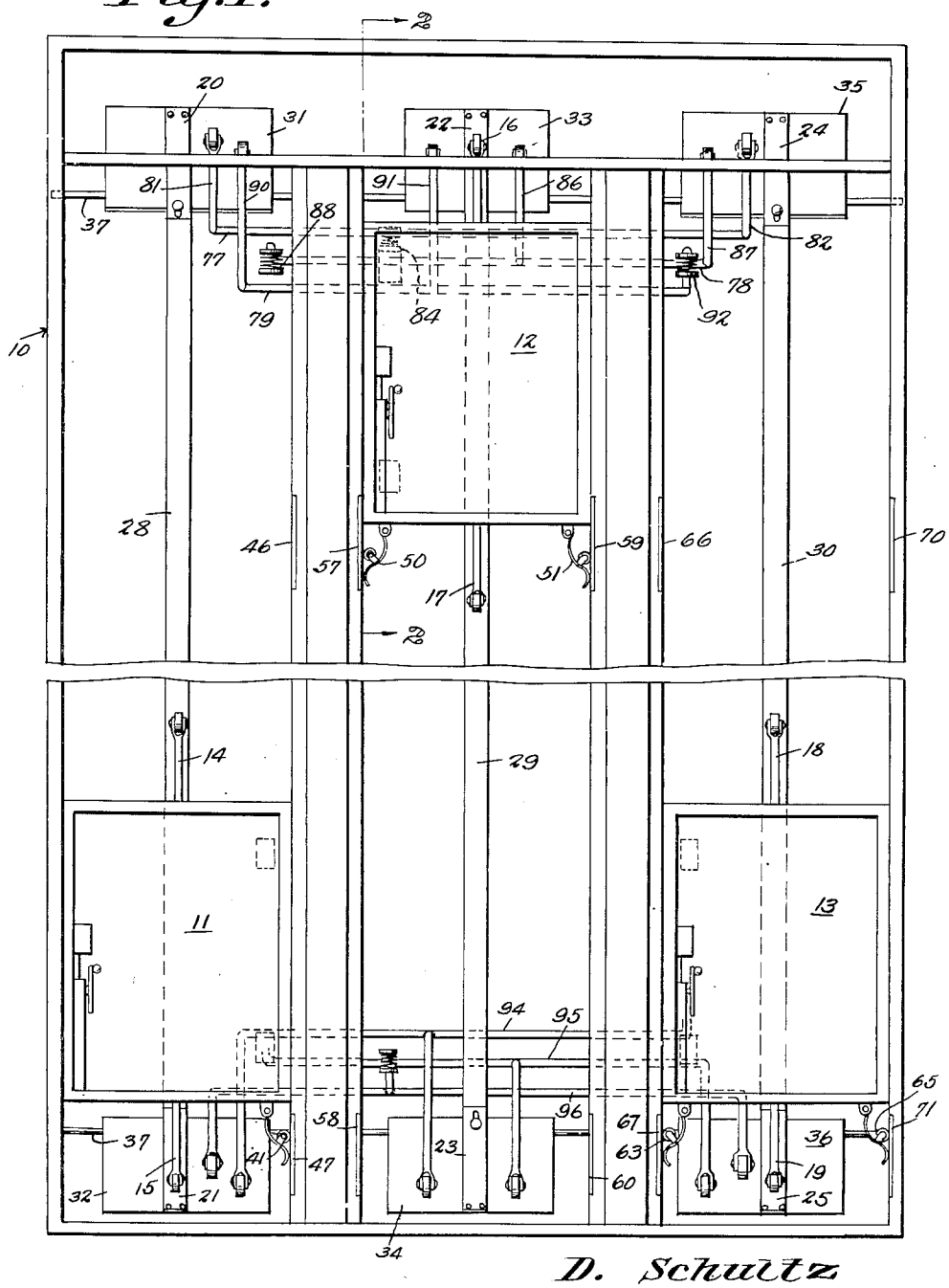
March 4, 1952 D. SCHULTZ 2,588,299

SIGNAL SYSTEM FOR ELEVATORS

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Fig. 1.



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SIGNAL SYSTEM FOR ELEVATORS

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Fig. 2.

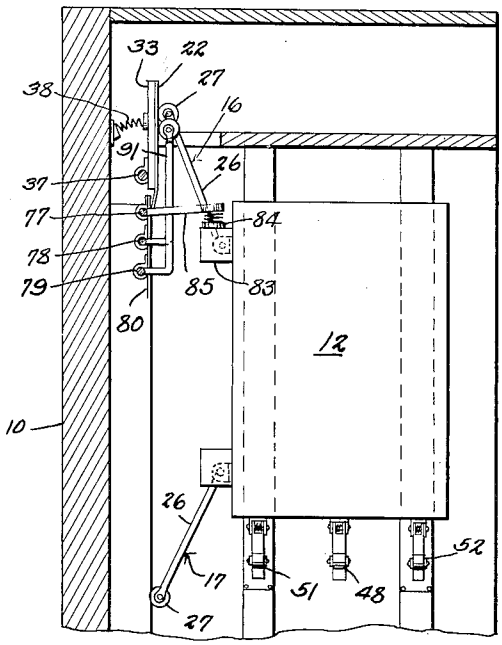


Fig. 3.

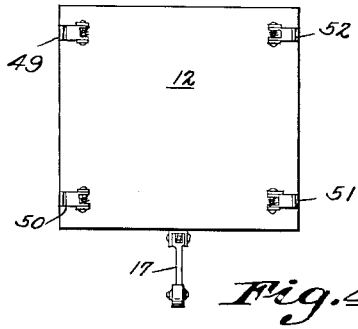


Fig. 4.

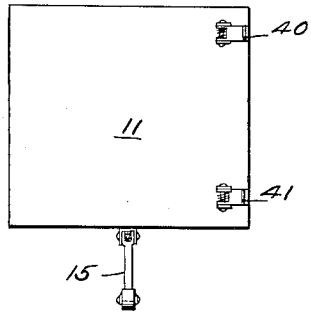


Fig. 5.

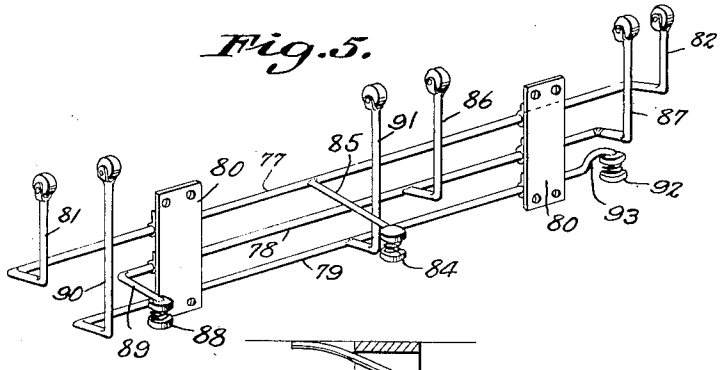
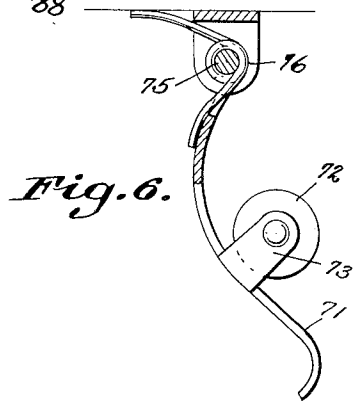


Fig. 6.



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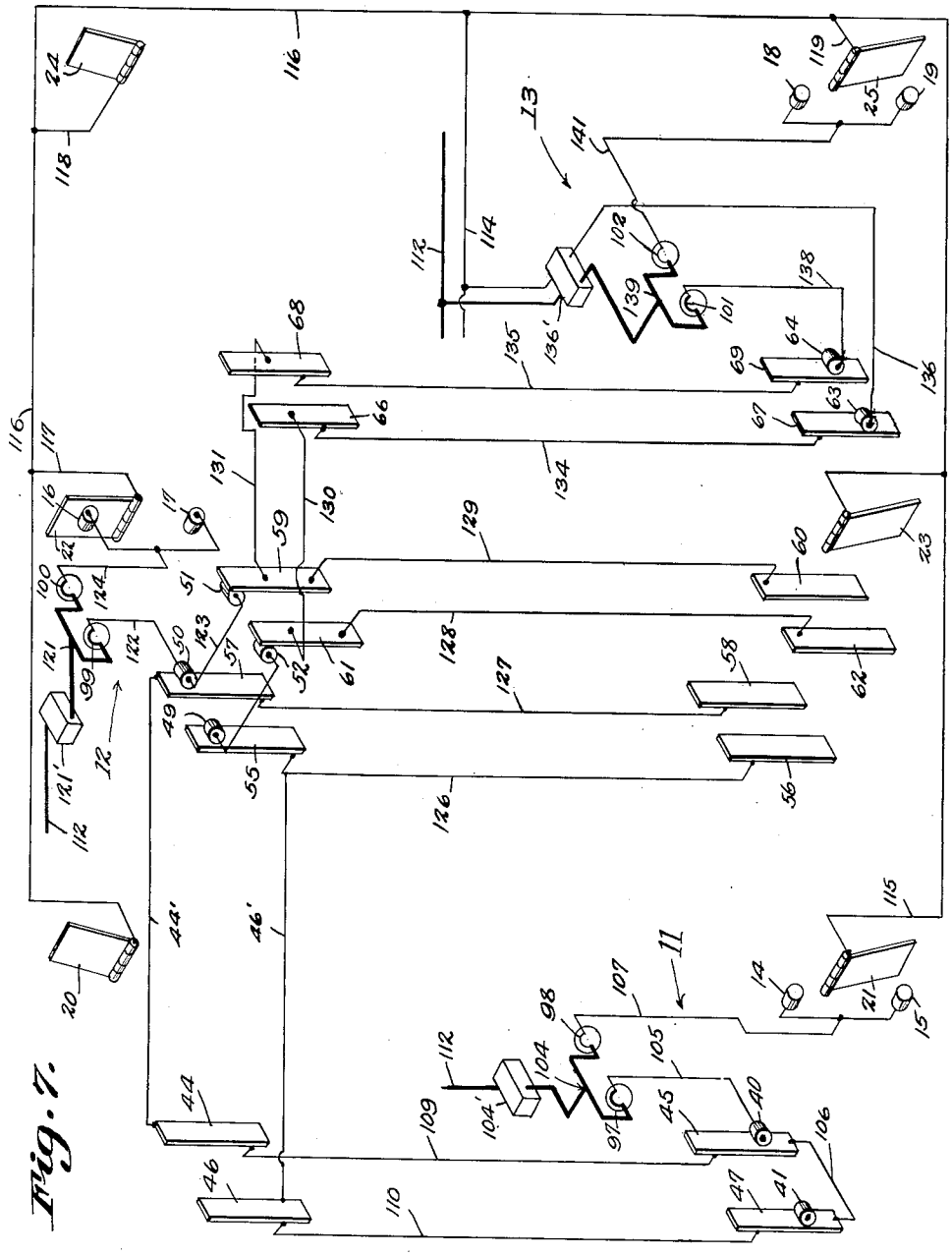


Fig. 7.

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UNITED STATES PATENT OFFICE

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SIGNAL SYSTEM FOR ELEVATORS

Don Schultz, Los Angeles, Calif.

Application November 9, 1949, Serial No. 126,363

2 Claims. (Cl. 177—336)

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This invention relates to signal systems and more particularly to such systems adapted to indicate to the operator of an elevator the position of another, or other, elevators in a multiple elevator group, and has for its principal object the provision of indicating means, as for example, a light in each car for each other car of the group adapted to be illuminated when its related elevator is at the opposite end of its upward or downward trip from that of the car containing the indicating means.

Another object of the invention is the provision of means whereby such lights are only illuminated at the termination of a trip indicating that the car is ready for a return trip and not during the upward or downward travel of the elevator.

A further object is the provision of such a signal system which will indicate to an operator the position of all other cars of the group, thus indicating the proper time to start a return trip and eliminating the necessity for an elevator starter.

Other objects will in part be obvious and in part be pointed out hereinafter and shown in the accompanying drawings wherein:

Figure 1 is a front elevational view, partially broken away, of a group of elevators embodying the instant invention, certain details being exaggerated for the sake of clarity of illustration.

Fig. 2 is a sectional view taken substantially along the line 2—2 of Fig. 1 as viewed in the direction indicated by the arrows.

Fig. 3 is a bottom plan view of the center elevator of the group.

Fig. 4 is a bottom plan view of one of the end elevators of the group.

Fig. 5 is a perspective view of a constructional detail.

Fig. 6 is an enlarged view, partially in section, and partially in elevation of one of the electrical contact members, and

Fig. 7 is a schematic wiring diagram illustrating the control circuit.

Referring now to the drawings in detail and more particularly to Fig. 1, there is generally indicated at 10 an elevator shaft containing a group of elevators 11, 12 and 13. Each elevator carries upwardly and downwardly extending contact members 14 and 15, 16 and 17, and 18 and 19 adapted to engage alternatively upper and lower contact plates 20 and 21, 22 and 23, and 24 and 25, in accordance with the position of the associated elevator for a purpose to be more fully described hereinafter. These contact members are identical in construction and, as best shown

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in Fig. 2, comprise extending arms 26 pivotally connected to the rear of the elevator, extending toward the rear wall of the shaft and terminating in contact rollers 27. The rollers travel on strips of insulating material 28, 29 and 30 between their associated upper and lower contact plates. Each contact plate 20, 21, 22, 23, 24 and 25 is mounted on a sheet of insulating material 31, 32, 33, 34, 35 and 36 respectively, which sheets in turn are pivoted as on pivots 37 for movement of the contact plates towards and away from their associated contact rollers, in a manner to be more fully described hereinafter, and spring biased, as by springs 38 towards such contact rollers.

In addition to the above mentioned contact members, each elevator is provided with a plurality of additional contact members depending from the floor thereof and adapted to engage additional contact plates fixedly positioned in the shaft adjacent their path of travel. Car 11 is provided with contact members 40 and 41 adapted to selectively engage upper and lower contact plates 44 and 45 and 46 and 47 respectively. Center car 12 carries contact members 49, 50, 51 and 52 adapted to engage contact plates 55 and 56, 57 and 58, 59 and 60 and 61 and 62 respectively, while car 13 carries contact members 63 and 64 adapted selectively to engage contact plates 66 and 67, 68 and 69 respectively. The above mentioned contact members are identical and take the form of rollers 72 carried by brackets 73 of arms 74 pivotally mounted on pivots 75 and spring biased as by springs 76 towards their associated contact plates (see Fig. 6). Insulating strips are provided between related upper and lower contacts for each roller to travel upon between the extremities of the elevator's trips, whereby the circuits illuminating the signals are closed only when the elevator is at the top or bottom of the shaft.

Mechanical circuit breaking means are provided for breaking certain circuits under conditions to be pointed out hereinafter and take the form, as best shown in Fig. 5, of a plurality of parallel horizontal rods 77, 78 and 79 extending the full width of the shaft and journaled for rotation in journal members 80. Rod 77 is provided with two upwardly extending arms 81 and 82 terminating in rollers and positioned to contact insulating plates 31 and 35 respectively and adapted when rod 77 is rotated to move contact plates 20 and 24 respectively out of engagement, or out of the path of possible engagement with contact members 14 and 18 respectively. Such rotative movement is effected by the abutment of

a projection 83 on the rear of elevator 12 with a spring bumper 84 carried by a forwardly projecting arm 85 secured to rod 77.

Similarly rod 78 carries upwardly extending arms 86 and 87 adapted to abut insulating plates 33 and 35 when bumper 88 and arm 89 are raised by a corresponding projection carried by car 11, while rod 79 is provided with arms 90 and 91 which move plates 31 and 33 when bumper 92 and arm 93 are moved by a projection carried by car 13. Thus it will be seen that when any car is at the top of the shaft the pivoted switch plates associated with the other two cars are moved out of position precluding the closing of any circuit through the upwardly extending contact arms carried by the other two cars.

An identical device, inverted, is provided at the lower extremity of the shaft including horizontal rods 94, 95 and 96 and identical arms and bumpers adapted to preclude the closing of circuits through two of lower contacts 21, 23 or 25 when any car is at the bottom of the shaft.

Referring now particularly to Fig. 7, it will be noted that the cars 11—12 and 13 are each provided with a panel board 104'—121'—136' respectively and each panel board has two lamps designated by the numerals 97 and 98, 99 and 100, 101 and 102, respectively. A source of electrical supply is diagrammatically indicated as a positive lead 112 and a negative lead 114. Positive leads are shown from each of the panel boards to one side of each of its respective lamps, while the negative side of the circuit is established through plates and rollers connected to the negative side 114 of the power circuit. It will be understood that the power circuit is introduced into each car through the usual push button panel located in all elevators.

Lights 97 and 98 are connected by a positive wire 104 extending from the panel board in car 11. A wire 105 connects the negative side of light 97 with roller 40. The contact plates 45 and 46 are connected by a wire 106. The negative or ground terminal of light 98 is connected through a wire 107 with both contact rollers 14 and 15. Contact plates 44 and 45 and 46 and 47 are connected by wires 109 and 110, respectively. Wires 44' and 46' connect the plates 44 and 57, 46 and 55 respectively. Pivoted contact plate 21 is also connected by a wire 115 to line 114. Upper pivoted contact plate 20 is connected with line 114 by a wire 116 from which latter wires 117, 118 and 119 lead to pivoted contact plates 22 and 23, 24 and 25 respectively.

Lamps 99 and 100 of car 12 are connected by a positive wire 121 to panel board 121'. The negative side of lamp 99 is connected through wire 122 with roller contact 50 which in turn is connected by a wire 123 with roller contact 51, while from the negative side of lamp 100 a wire 124 leads to roller contacts 16 and 17. Wires 126, 127, 128 and 129 connect contact plates 55 and 56, 57 and 58, 61 and 62 and 59 and 60 respectively, while additional wires 130 and 131 connect contact plates 61 and 66 and 59 and 68 respectively.

Wires 134 and 135 extend between contact plates 66 and 67 and 68 and 69 respectively. A wire 136 connects roller 63 with the negative side of the line at cabinet 136'. Roller 64 in turn is connected by a wire 138 with lamp 101 and by positive wire 139 to panel board 136' and lamp 102. Wire 141 connects the negative side of the lamp 102 with roller contacts 18 and 19.

From the foregoing the operation of the system should now be readily understandable. With the cars in the position shown in Figs. 1 and 7, that is with cars 11 and 13 at the bottom of the shaft and car 12 at the top, it will be seen that lights 97 and 101 are illuminated, the circuit being from the source 112 to the cabinet 104' through wire 104, lamp 97, wire 105, roller 40, plate 45, wire 109, plate 47, wire 110, plate 46, wire 46', plate 55, rollers 49 and 52, plate 61, wire 130, plate 66, wire 134, plate 67, roller 63, wire 136 to the cabinet 136' and thus to the negative side 114 of the power circuit. The circuit for lamp 101 is readily traceable from the diagram and a detail description is deemed unnecessary. Lamps 98 and 102 are out due to the fact that the car 13, through the mechanical circuit breaking device previously described, has broken the circuit through pivoted contact plate 21 to lamp 98 and correspondingly, car 11 has similarly broken the circuit to lamp 102 through pivoted contact plate 25. Thus there is disclosed to the operators of cars 11 and 13 the fact that one car is at the top of the shaft and the other either at the bottom or in transit.

Conversely both lights 99 and 100 are illuminated, the circuits being from source 112 through lead 112 to the cabinet 121', wire 121, lamp 99, wire 122, roller 50, plate 57, wire 44', plate 44, wire 109, plate 45, wire 106, plate 47, wire 110, plate 46, wire 46', plate 55, rollers 49 and 52, wire 130, plate 66, wire 134, plate 67, wire 136 back to the negative side of the power circuit. Also the lamp 100 is in a closed circuit including leads 121, 124, roller 16, plate wires 117 and 116 to the negative side 114 of the power circuit.

If now, for example, car 13 starts up the shaft, the circuit to lamp 101 will obviously be broken, nor will the lamp be re-illuminated until contacts 56, 68 are engaged by their associated rollers, and such re-illumination will be dependent on the relative positions of the other cars. If both cars are at the bottom of the shaft, contact 24 will be engaged by roller 18 and both lamps illuminated. It is to be noted that upward movement of car 13 releases the mechanical circuit breaker permitting the plate 21 to engage contact roller 15 thus illuminating lamp 98.

The further illumination or extinguishment of one or both lamps in either car may be readily determined by tracing the various circuits involved and accordingly further description of the operation is believed unnecessary.

While in the foregoing a group of three elevators has been shown and described, it is to be understood that any number of elevators in a group may utilize the system of the instant invention by extension of the above described circuits, the number of lights in each car being one less than the number of cars in the group.

As many embodiments may be made of this inventive concept and as many modifications may be made in the embodiment shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

Having thus described the invention, what is claimed is:

1. In a signal system for multiple grouped elevators, signals in each of said elevators corresponding to each other elevator in the group, mechanical circuit breaking and circuit making means including a plurality of pivoted contacts each having an insulator secured thereto and each associated with a signal in one elevator, a plurality of parallel pivoted rods, each carrying arms adapted to engage all of said contacts ex-

cept one, and projecting means on the elevator associated with said one of said pivoted contacts adapted to rotate a rod to pivot the remainder of said pivoted contacts breaking circuits.

2. In a signal system for multiple grouped elevators, signals in each of said elevators corresponding to each other elevator in the group, mechanical circuit breaking means including a plurality of pivoted contacts, each having an insulator secured thereto and each associated with a signal in one elevator, a plurality of parallel pivoted rods horizontally disposed in spaced relation with each other, each rod carrying arms adapted to engage all of said pivoted contacts except one, projecting means on the elevator associated with said one of said pivoted contacts

adapted to rotate a particular rod pivoting the remainder of said pivoted contacts away from said arms carried by the parallel rods.

DON SCHULTZ.

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