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[54] **SECURITY ACCESS CONTROL AND ALARM SYSTEM**
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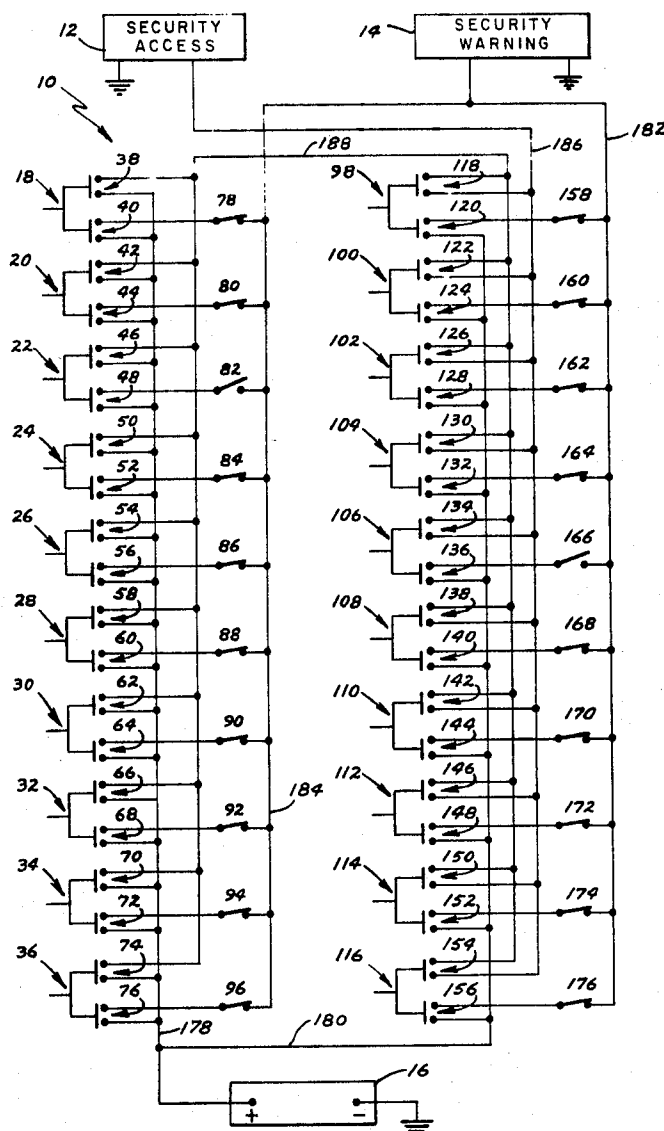
[50] Field of Search..... **340/274,**
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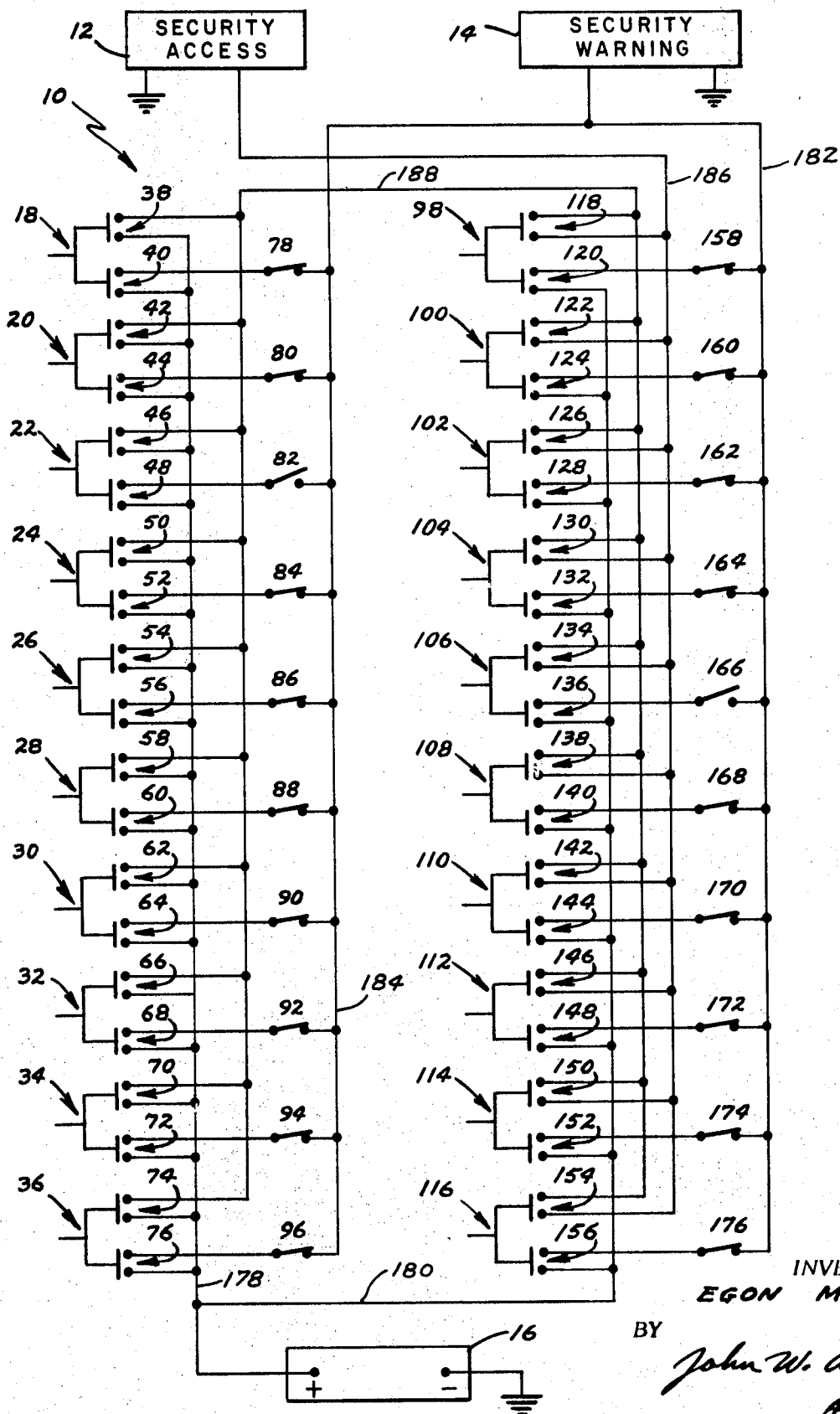
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ABSTRACT: A control system for a restricted area to which only authorized personnel should have access in which the user operates a switching system to gain admittance. So long as the persons seeking admittance operate the required number of switches, the control system will allow access to the area, but will signal a remote alarm unless the operated switches correspond to a preset combination which is given only to authorized personnel.





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SECURITY ACCESS CONTROL AND ALARM SYSTEM

In many applications of security systems, it is desirable to have a warning or alarm given if an unauthorized person attempts to enter a restricted area. However, many of those who would attempt to rob a bank or supermarket would be capable of injuring employees and innocent bystanders if they became aware that an alarm was being given. Thus, it is desirable to have a control system to restrict access to a security area which requires operation of the control system for admittance to the area. It is desirable that the same control system by capable of giving an alarm without arousing the suspicions of the lawbreaker.

My invention meets these requirements, by providing a control system for a restricted area which requires the operation of electrical switches for admittance, but which will give an alarm unless operated according to a predetermined combination. The controlled area may be, for example, a bank vault or safe-deposit room or a supermarket cashier's drawer. To gain admittance to the area, it is necessary to actuate one or more switches on the control system to operate a lock-releasing device. For example, the control may have two columns or stages of switches, each containing 10 switches. It is necessary to operate one switch in each column or stage to gain admittance to the restricted area.

In the example shown in the accompanying drawing, one switch in each of the two stages may be operated, releasing the lock on a vault door or the latch on a cashier's drawer. Operation of two buttons, any one from each of the two columns, will release the locking device; however, a remote security warning system will give an alarm if any switches are operated, other than the two switches which have been preselected to bypass the alarm circuit. Thus, I have provided a control system which must be operated in order to gain access to a restricted area and which, if operated other than according to a preset combination, will give a warning that the restricted area is being violated. Thus an employee, ordered by a gunman to open a vault door or cashier's drawer, may use a combination which will give a warning at a police station or a private protection office or even an employee at another location within the building. In other words, a control system is provided which can be operated by an employee in a normal fashion and which may also be used by the same employee to secretly signal a warning when under duress.

Accordingly, it is the object of this invention, to provide a security access control for a restricted access area which will allow access to the area by the use of any combination according to the design of the control, but will give a security warning when any other than the correct combination is used.

Another object of this invention is to provide a security access control having a system of electrical switches to accomplish the dual function of giving access to a restricted area and giving an alarm if any other than the predetermined combination of switches is actuated.

These and other objects and advantages of this invention will be apparent from the following description made in connection with the accompanying drawing which constitutes a wiring diagram illustrating an embodiment of this invention.

Referring now to the drawing, reference numeral 10 designates the security access control according to my invention. A security access device such as a lock on a door or a latch for a drawer is designated as numeral 12. The security warning system is designated by reference numeral 14 and the power source for the entire system is designated as 16.

Two columns of switches are illustrated, each column forming a stage corresponding to one unit of a preset combination. It is clear that a single column of switches may be used. Also, multiple stages of switches may be provided, thereby forming a combination of a greater complexity. In the illustration provided, the first column of switches forming the first stage of the combination is formed by the switches numbered 18, 20, 22, 24, 26, 28, 30, 32, 34, and 36. Each switch has two pairs of switch contacts, each pair of contacts forming one pole of a double-pole switch. For example, switch 18 has poles

designated 38 and 40. Switch 20 has poles 42 and 44. Switches 22, 24, 26, 28, 30, 32, 34, and 36 are associated respectively with poles 46 and 48, 50 and 52, 54 and 56, 58 and 60, 62 and 64, 66 and 68, 70 and 72, and 74 and 76. With one pole of each switch is associated an alarm control switch. Thus, alarm control switch 78 is associated with one of the connections to pole 40 on switch 18. Similarly, alarm switches 80, 82, 84, 86, 88, 90, 92, 94, and 96 are associated respectively with switches 20, 22, 24, 26, 28, 30, 32, 34, and 36. The alarm switches are used to set the combination for a particular switching stage.

Similarly, a second switching stage is shown comprised of a column of switches numbered 98, 100, 102, 104, 106, 108, 110, 112, 114, and 116. Just as in the previous stage, two poles are associated with each switch. Poles 118 and 120, 122 and 124, 126 and 128, 130 and 132, 134 and 136, 138 and 140, 142 and 144, 146 and 148, 150 and 152, and 154 and 156 being associated respectively with switches 98, 100, 102, 104, 106, 108, 110, 112, 114, and 116. Alarm switches 158, 160, 162, 164, 166, 168, 170, 172, 174, and 176 are associated respectively with one pole each of switches 98, 100, 102, 104, 106, 108, 110, 112, 114, and 116. All the alarm switches are located separately from the panel of switches used in regular operation.

The power supply 16 is connected to the various switches by wires 178 and 180. In the first section of switches having numbers between 18 and 36 inclusive, one contact of each of the switch poles is connected to the power source. The alarm switches associated with the security warning system switch poles are connected by wire 184 to the security warning device 14. The switch contacts associated with the security access system are connected with wire 188, which goes to the second switch stage. The power supply is also connected by wire 180 to the switches of the second stage, which are associated with the security warning system. These switches are in turn connected to the security warning system by wire 182. Wire 186 is associated with the switch poles for opening the security access area. If there were further switch stages to this particular system, wire 186 would be directed to the next succeeding stage, just as wire 188 interconnects the first and second stage. Wires similar to wires 182 and 184 associated with the alarm switches would be connected from every stage to the security warning system.

In operation, the unit would work as follows. The restricted access area is locked or secured by the security access system 12. Someone who desires to gain admittance to the restricted area operates the unit by closing one switch in each of the switching stages. If, for example, this unit were installed in a bank and a bank employee desired to gain entrance to the vault area, he would operate switches 22 and 106. By operating both switches, a complete circuit through wires 178, 188, and 186 would be formed to open the locking device of the security access control. However, since alarm switches 82 and 166 are open, no circuit would be made to the security warning system. Naturally, the alarm switches are in a different location than the other switches and are protected from any possible tampering.

However, supposing there were an emergency situation or someone were to operate the control system by using switches 36 and 106, it can be readily seen that by operating switches 36 and 106, a complete circuit would be formed to the security access control, and the user would be admitted to the restricted access area. However, since switch 96 is closed, a complete circuit would be formed through wire 184 to the security warning system. Thus, the unauthorized user, while gaining admittance by using a supposedly correct combination obtained under duress from a bank employee, would achieve the desired connection for his purpose but would sound an alarm which would ultimately bring assistance to the bank personnel and perhaps allow the permanent time-locking of other areas of the bank.

It can be seen that any combination of switches, so long as one switch in each stage is used, will cause the access system

to allow admittance. However, the use of the wrong combination will give an alarm. It can, of course, be seen that the combination may be changed as often as desired by simply adjusting the alarm switch settings. For example, switch 82 may be closed and switch 88 opened, thereby changing the correct combination from 22 and 106 to 28 and 106.

An important advantage of this system is that it is possible for a bank employee to sound an alarm while complying with a robber's demands and yet not attract attention by the giving of the alarm. In many cases, a robber will force an employee to operate a control system at gunpoint or threaten an employee to obtain a control system combination, in which case, the combination used will allow access to the guarded area, thus arousing no suspicion of an alarm being given. As mentioned earlier, the alarm which is given could summon help which could be in position by the time a robber was ready to leave the victim's place of business. In addition, the alarm could be used to lock or otherwise secure further areas of a bank or supermarket, for example, in such fashion that it would be obvious to a robber that no bank employee could readily comply with further demands to give access.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportion of the parts without departing from the scope of the invention, which generally stated, consists in the matter set forth in the accompanying claims.

What is claimed is:

1. A security access control and alarm system for a restricted access area having a multiplicity of switching stages, each stage having a multiplicity of switches, each switch having at least two poles, one of said poles of all of said switches in each stage, connected in series with the other stages for operation of said security access control and the other pole of all but one switch in each stage connected in parallel to operate a security warning system, whereby, if any one switch in each of every stage is operated, said security access control will allow access to said area and said security alarm system will be rendered inoperative, only if a predetermined combination of

said switches is actuated.

2. The security access control of claim 1 having only one switching stage said first named group of poles of all of said switches being connected directly to said security access control.

3. The apparatus of claim 1 having a multiplicity of alarm switches associated with said second named poles of all of said switches, so that the one combination of switches which will allow access to said area without operating said security alarm may be variably altered.

4. A combined security access control and alarm system for a restricted access area comprising,

control means for controlling access to said area,

a control circuit connected to said control means for actuating the same,

a plurality of switches connected in said control circuit, each switch having a first set of contacts effective when actuated to cause said control means to open said restricted area whenever any combination of said switches is actuated,

an alarm circuit,

at least a second set of contacts on said switches to control said alarm circuit,

said alarm circuit connected with all but one predetermined combination of said second set of contacts to close the alarm circuit whenever any but said predetermined combination of said switches is actuated.

5. The apparatus of claim 4 having alarm switches associated with said second switch contacts, so that said predetermined combination may be variably altered.

6. The apparatus of claim 4, in which said switches are grouped in a plurality of stages requiring the actuation of a plurality of switches to form said predetermined combination.

7. The apparatus of claim 6, in which said first switch contacts of each stage are connected in series to form said control circuit and all but said predetermined combination of said second named contacts are connected in parallel to said alarm circuit.