United States Patent

[11] 3,609,730

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[54] ELEVATOR EMERGENCY TESTING SYSTEM
4 Claims, 2 Drawing Figs.

[52] U.S. Cl. ..... 340/214, 340/248 R, 340/333
[51] Int. Cl. G08b 29/00
[50] Field of Search 340/248, 253, 327, 333, 214, 410, 411; 307/64, 66; 315/86, 87

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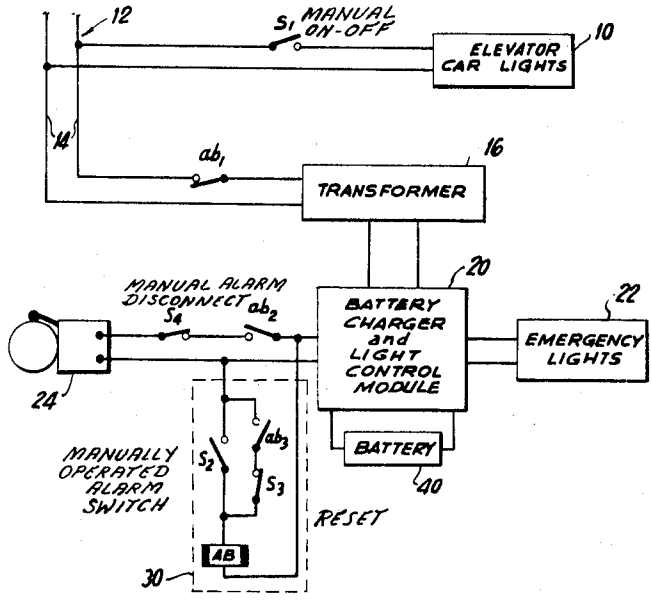
ABSTRACT: An elevator emergency testing system is incorporated in the alarm and emergency lighting circuits. The elevator car emergency lights are supplied electrical energy through a battery maintained in the charged state by a battery charger and light control module which is fed by the car service supply voltage. One pole of an elevator alarm button is employed to trigger the alarm in the conventional sense while another pole of the same button automatically disconnects the car supply voltage triggering the emergency lights.



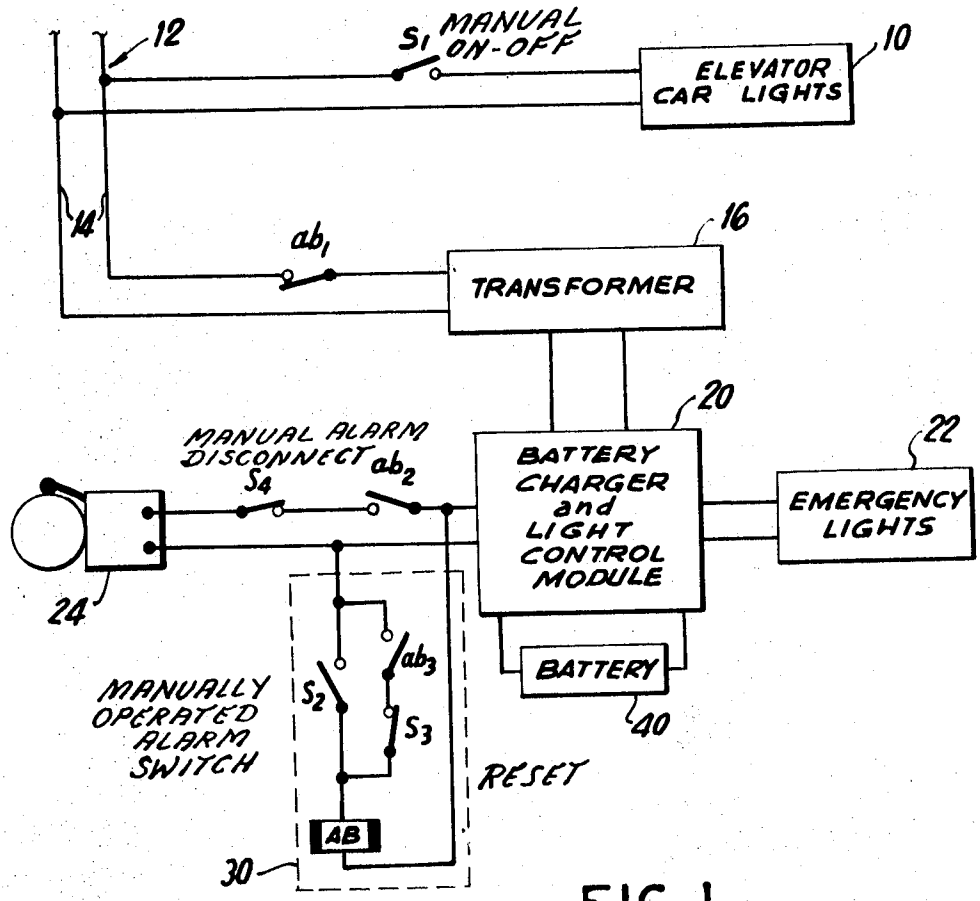


FIG. 1

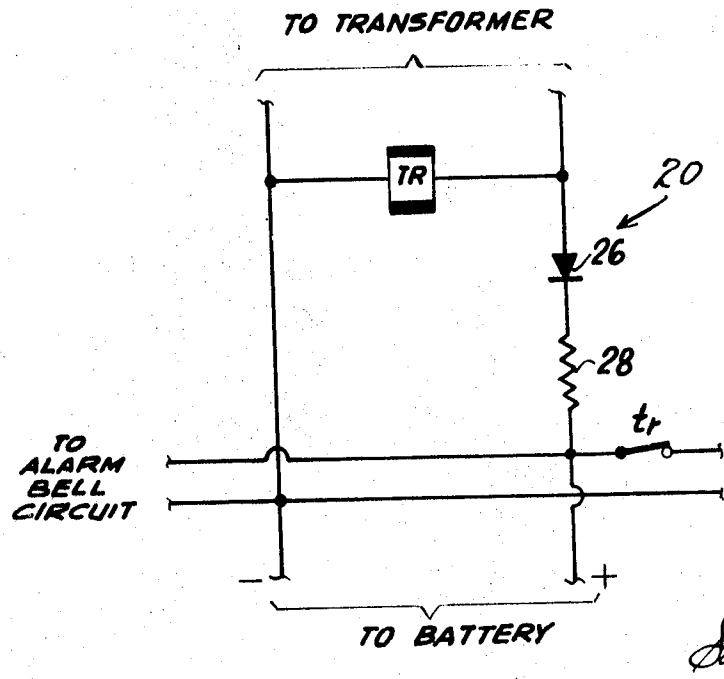


FIG. 2

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ELEVATOR EMERGENCY TESTING SYSTEM

BACKGROUND OF THE INVENTION

This invention relates to elevator alarms, elevator emergency lighting, and means for automatically testing such devices.

The elevator codes in most states make it mandatory for the provision of emergency lights in the car which will provide some minimum amount of illumination should the normal light supply fail. Additionally, most codes also require the provision of an emergency alarm bell which can be triggered by a car occupant in an emergency. Since the emergency may be a power failure halting the car between levels the alarm system must also be operable in case of the lack of power.

Accordingly, it is the object of this invention to provide a device which satisfies the alarm code requirements and simultaneously affords a means of testing the emergency lighting.

It is a further object of this invention to provide an arrangement whereby the same apparatus and circuitry may be used for testing and in actual emergency situations.

Briefly, the invention is predicated upon the concept of providing a second pole to the alarm test button which automatically disconnects the normal car supply voltage thereby triggering the emergency lights. It is a feature of this invention that both the alarm contact and the power-disconnect self-hold until manually reset, thereby providing continuous lighting (and if desired–alarm) regardless of an intermittent supply voltage.

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will best be understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, the description of which follows.

FIG. 1 is a block schematic of the inventive circuitry; and

FIG. 2 is a detail of the battery charger and light control module of FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

Turning now to FIG. 1, the elevator car lights **10** which are generally recessed in the car ceiling derive their energy from the umbilical cable **12** supplying line voltage to the elevator car. Light switch S_1 is disposed at the cab control panel for convenience in operating the elevator lights.

Voltage supplied to the car is also available via lines **14** and through the normally closed contact ab_1 of the alarm relay AB to transformer **16** which provides a reduced voltage necessary for the battery charger and light control module **20**. Battery charger and light control module **20** is connected to the emergency lights **22**, which may also be disposed on the inside of the car roof, and the alarm bell **24** which may be disposed, for example, under the car. The latter is coupled via normally open relay contact ab_2 of relay AB.

As may be seen from FIG. 2, the battery charger and light control module supply the emergency lighting battery **40**, which is preferably of the nickel-cadmium type which can be repeatedly cycled, and will maintain a peak charge upon being supplied a trickle current. The charge and trickle charge is supplied the battery **40** via diode **26** and charging resistor **28** which converts the transformer secondary voltage to D.C. Relay TR is connected across the transformer secondary and

is energized so long as the voltage supply to the cab is not interrupted. Upon interruption, relay TR will cease to hold open the normally closed contact *tr*, thereby energizing the emergency lights with battery power.

When it is desired to test the alarm of in case of an actual emergency, alarm switch S_2, a single pole manual switch, is depressed energizing relay AB via battery power. This opens normally closed contact ab_1 and closes normally open contact ab_2, thereby initiation the following: Contact ab_2 connects the battery **40** to the alarm bell **24**, while contact ab_1 opens the transformer primary deenergizing relay TR and energizing the emergency lights via contact *tr*. Activation of the switch S_2, which may be of the momentary contact type, also causes relay AB to self-hold via contact ab_3 and battery **30**. In self-holding, the alarm bell will ring and the emergency lights will remain in operation for as long as desired and unaffected by momentary transitions which would cause a fluttering of relay TR. The release of the test circuit is effected manually by the opening of contact S_3, causing relay AB to drop out, and releasing the alarm contact ab_2 and restoring the normally closed line contact ab_1.

As may be seen, the described arrangement provides an extremely simple and expeditious manner of testing the emergency lights periodically in conjunction with alarm bell testing. It may be further seen that in case of an actual emergency situation, the actuation of alarm switch S_2 and the energization of relay AB will maintain the emergency lights on even during power fluctuations until the circuit is reset manually through switch S_3. If desired, a separate switch S_4 having normally closed contact is provided for convenient alarm bell shut off.

Where less sophistication is desired, the circuit **30**, shown enclosed by the dashed lines, may be deleted and contacts ab_1 and ab_2 replaced by the normally closed and normally opened poles, respectively, of a double pole switch. In this case, the double pole switch would be of the bistable type having on and off positions.

What is claimed is:

1. An elevator emergency testing system comprising:
a battery;
a battery charger and control circuit;
emergency lights coupled to said control circuit;
an audible alarm coupled to said control circuit;
means in said control circuit responsive to a power failure for coupling the emergency lights to the battery;
an alarm button; and
means under control of said button for interrupting the power to said control circuit and simultaneously connecting said alarm to said battery.

2. The elevator emergency testing system claimed in claim **1**, wherein the means under control of said alarm button comprises first and second contacts, respectively located in circuit with said alarm and said control circuit.

3. The elevator emergency testing system claimed in claim **2**, wherein said means under control of said alarm button comprises a relay coupled in series between said alarm button and said battery for controlling said contacts.

4. The elevator emergency testing coil claimed in claim **3**, wherein a further set of contacts are provided for said relay connected to self-hold said relay; said system further comprising means for manually releasing said grounded

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,609,730 Dated September 28, 1971

Inventor(s) Stephen A. Hornung

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 57, After "testing" cancel "coil" and subtitute therefor ---system---

Column 2, line 60, Cancel "grounded" and substitute therefor ---relay---

Column 2, line 60, Insert a period ---.--- at the end of the line

Signed and sealed this 6th day of June 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

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