

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



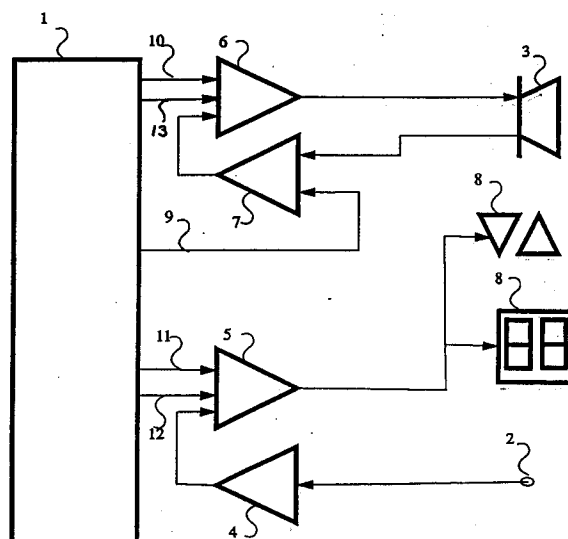
(11) Publication number:

0 518 267 A2

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **92109703.6**(51) Int. Cl.⁵: **G08B 7/00**(22) Date of filing: **09.06.92**(30) Priority: **13.06.91 FI 912842**(43) Date of publication of application:
16.12.92 Bulletin 92/51(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IT LI LU MC
NL PT SE**(71) Applicant: **KONE Elevator GmbH**
Rathausstrasse 1
CH-6340 Baar(CH)(72) Inventor: **Ketoviita, Seppo**
Kaskentie 4 B 8
SF-05840 Hyvinkää(FI)
Inventor: **Leppänen, Heikki**
Lohjantie 1 V
SF-05840 Hyvinkää(FI)
Inventor: **Selin, Kimmo**
Niinipuuntie 2 B 19
SF-05460 Hyvinkää(FI)(74) Representative: **Zipse + Habersack**
Kemnatenstrasse 49
W-8000 München 19(DE)(54) **Procedure for local automatic control of the brightness and sound volume of a signalling device of an elevator.**

(57) The invention relates to a procedure used in an elevator, whereby the brightness and sound volume of the signalling of the signal devices are controlled on the basis of the background illuminance and the noise in the environment. The intensities of the background noise and illuminance are measured before the signalling and the values obtained are compared with given reference values (12 and 13). Based on these, the brightness and sound volume of the signalling are adjusted to suitable values by volume and brightness control units (4,5; 6,7).

**EP 0 518 267 A2**

The invention relates to a procedure in which the brightness of signalling and the volume of sound signals are controlled on the basis of the background light and the noise in the environment.

In many buildings, there are considerable variations in the background lighting and noise, so that the signal devices may not be seen or heard or their excessive brightness/loudness may disturb the activities in the building. For example, in hospitals and hotels, where the activities go on day and night, the noise and illuminance vary greatly at different times of the day. Depending on the situation, different levels of brightness and sound volume of the signal devices are required on different floors. In some cases, additional lamps have been installed in poorly illuminated spaces to improve visibility.

The object of the present invention is to eliminate the present drawbacks and to achieve a considerable improvement in the convenience of use of an elevator. The invention also aims at a simple and low-cost solution. The invention is characterized by what is presented in the claims.

In the procedure of the invention, the sound volume is controlled by measuring the background noise level before the signalling. When the background noise level is high, the sound signal is issued with a higher volume, and similarly, when the background noise level is low, the sound signal is issued with a lower volume. The output-signal obtained from a noise level measuring amplifier can be used directly for the volume control of the audio signal to be issued. It is important that the measurement is finished or that the result of the background noise measurement be locked or stored before the signalling to ensure that the signalling itself will not produce a change in the background noise level. A brightness range or certain possible brightness values may be defined in advance and stored in a control unit, which adjusts the brightness on the basis of the measurement result.

A volume control unit measures the intensity of the background noise before the signalling, and if the background noise level is high, the sound signal is generated or delivered with a higher volume, and similarly, when the background noise level is low, the sound signal is issued with a lower volume. The measurement result is produced by a noise level measuring unit.

The procedure of the invention has the advantages that it

- involves no significant additional costs
- can be implemented using a few additional components
- requires no separate attenuating resistors, switches of wiring for day/night signalling
- can also be implemented as a system con-

trolled automatically according to the time of the day

- allows the use of other signalling devices, such as texts, arrows and numbers
- achieves a considerable improvement in the convenience of use of the elevator
- is a most workable system in hospitals and hotels.

In the following, the invention is described in detail by the aid of an example by referring to the attached drawing, in which Fig. 1 presents signalling devices controlled separately on each floor according to the prevailing external circumstances.

Figure 1 shows a signal device control unit in which the brightness of signalling and the volume of sound signals are controlled on the basis of the background light and the noise in the environment. The control unit 1 controls signal devices 8, such as direction arrows and floor indicators, by means of signalling control signals 11 via a brightness control amplifier 5. The brightness of the light signals given by the signal devices 8 is controlled by the brightness control amplifier 5 by means of a light sensor 2, an illuminance measuring amplifier 4 and a control range level signal 12.

When the background illuminance increases, the output voltage of the illuminance measuring unit 4 rises, producing a larger signal at the output of the brightness control amplifier 5 and a brighter light signal level of the signal devices 8. Similarly, when the background illuminance decreases, the brightness of the light signal issued by the signal device 8 diminishes. A preset signalling control range level 12 determining the range of brightness variation of the signalling may be stored in the control unit 1.

The background noise is measured by means of a loudspeaker 3 of the sound signal device. The loudspeaker 3 reacts to background noise like a microphone, i.e. it provides a signal proportional to the noise. The signal obtained from the loudspeaker 3 is passed to a measuring amplifier 7, whose output is applied to the input of a variable-gain amplifier 6. Before the signalling, the control unit 1 locks the result of the noise level measurement by means of a locking signal 9 to ensure that the signalling itself will not produce a change in the measured background noise level. When the control unit 1 performs the signalling by means of an audio signal 10, the audio control amplifier 6 amplifies the audio signal according to the locked background noise level and a preset sound control range level 13. The signal at the output of the audio control amplifier 6 is the larger the higher is the locked noise level.

In an alternative embodiment, the adjustment of the brightness of the signalling and the volume of the audio signal is performed in the control unit

1, in which case the output signals of the measuring amplifiers 4 and 7 are passed to the control unit 1.

It is obvious to a person skilled in the art that different embodiments of the invention are not restricted to the examples described above, but that they may instead be varied within the scope of the following claims.

Claims

1. Procedure for controlling the brightness and sound volume of the signalling of the signal devices of an elevator on the basis of the background illuminance and the noise in the environment, respectively, **characterized** in that the loudness of the background noise and the intensity of the background illuminance are measured before the signalling and the values obtained are compared with given reference values (12 and 13), on the basis of which the brightness and sound volume of the signalling are adjusted to suitable values by volume and brightness control units (4,5; 6,7).
2. Procedure according to claim 1, characterized in that the brightness of the signalling of the signal devices is controlled by a brightness control amplifier (5) by means of a light sensor (2), an illuminance measuring amplifier (4) and a control range level signal (12).
3. Procedure according to claim 1-3, **characterized** in that the background noise is measured by means of a microphone or loudspeaker (3) of a sound signal device by taking the signal obtained from the loudspeaker (3) to a sound level measuring amplifier (7), whose output is passed further to a variable-gain amplifier (6).
4. Procedure according to claim 1-3, **characterized** in that the control unit (1) contains control range settings (12 and 13) defining the range of variation of the brightness and sound volume of the signalling.
5. Procedure according to claim 1-4, **characterized** in that the control unit (1) locks or stores the result of the noise level measurement by means of a noise level locking signal (9), ensuring that the signalling itself will not produce a change in the measured background noise level.
6. Procedure according to claim 5, **characterized** in that the control unit (1) performs the signalling by means of an audio signal (10) and that the audio amplification takes place in

a sound volume control amplifier (6) according to the locked background noise level.

7. Procedure according to any one of the preceding claims, **characterized** in that the outputs of the amplifiers (4 and 7) measuring the illuminance and noise level are passed to the control unit (1), which performs the adjustment of the sound volume and brightness of the signalling.
8. Signal device means of an elevator with:
 - a signal device control unit (1), in which the brightness and/or volume of a signal is/are controlled dependant on a background noise signal,
 - a noise sensor (2,3) for obtaining a noise output signal,
 - a signal control amplifier (5,6) in which the noise output signal is compared with a control range signal (12,13) derived from the signal device control unit (1) for obtaining a background noise controlled output signal of a signal device (3,8).
9. Signal device means according to claim 8 wherein a signal device is a loudspeaker (3) which is used as noise sensor.
10. Signal device means according to claim 8 or 9 wherein the output signal of the noise sensor (2,3) is fed to a measuring amplifier (4,7) which can be locked by means of a locking signal (9) of the signal device control unit (1).

