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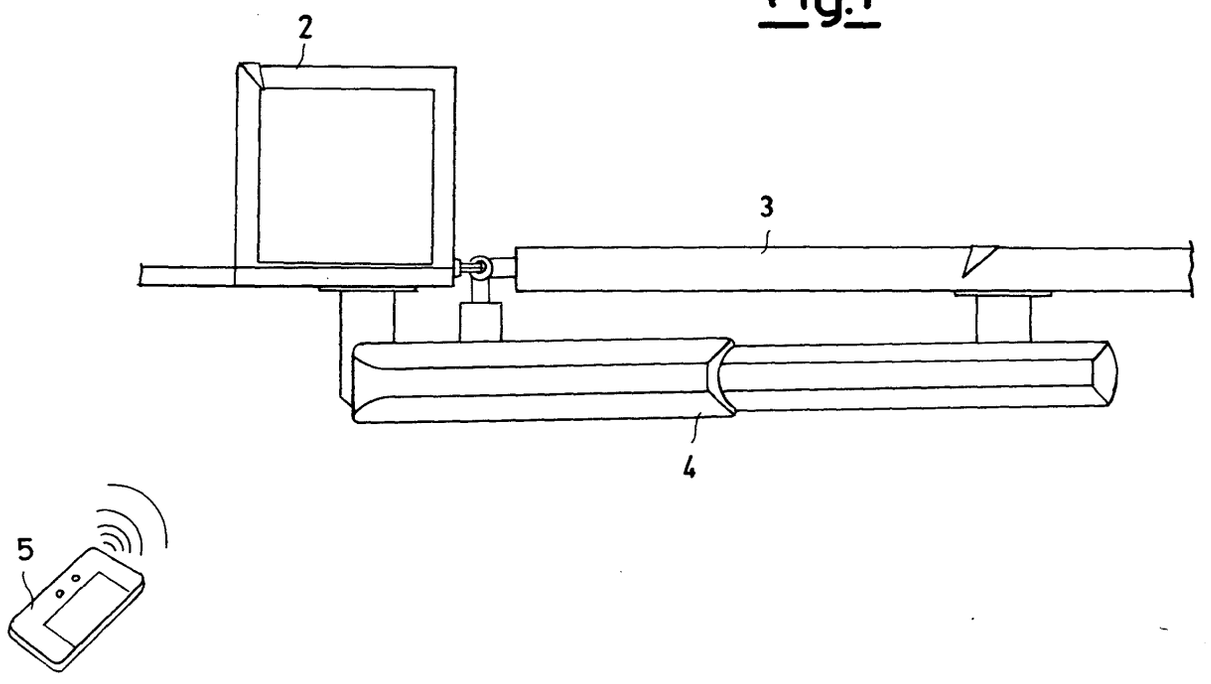
(54) System for moving an automatic gate

(57) System for moving an automatic gate, said gate comprising a mobile door, suitable for covering an access space defined at the ends by fixed parts of said gate, the movement of which is commanded by a main electric motor supplied with mains power.

The system comprises an auxiliary electric motor, supplied with power by a battery, enabled for operation during an emergency situation that deactivates the main motor and activated to move such a door by an external activation command.

Fig.1



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Description

[0001] The present invention refers to a system for moving an automatic gate. In particular, the present invention refers to an automatic system for moving a gate, which allows it to be moved automatically even in an emergency situation, in which either the electric power supply to the electric motor that carries out the movement of the gate is interrupted or a failure occurs in the control station of the gate.

[0002] Automatic gates for gaining access to private areas are usually actuated by the users, at fixed control points, through buttons or keys for opening and closing or by means of remote controls, which send a radio impulse to an electronic control station, which takes care of actuating the gate in the desired direction.

[0003] Moreover, generally, in the case of remote radio transmissions, after having commanded the gate to open, its subsequent closing takes place through the sending of another command by the user or else it takes place automatically after a certain predetermined period of time.

[0004] Such automatic gates are moved through electric motors connected to the normal electrical mains.

[0005] An emergency condition, which occurs, for example, due to a lack of current or due to an electrical failure, implies the shutting down of said electric motor. In such a situation the gate must be able to be moved, with the prior unlocking of the automatic moving mechanism, to allow passage through the entry space even in emergency conditions.

[0006] For such a purpose, the electric motor that moves the gate is unlocked, allowing the door(s) of the gate to be moved manually.

[0007] Normally, such an operation takes place through a conventional key, which allows the electric motor to be decoupled from the door of the gate in such a way allowing the manual movement of the doors themselves.

[0008] Such a system for unlocking a gate in the case of an emergency can at times be troublesome, since it can require difficult manual operations, perhaps to be carried out in uncomfortable positions, or they may have to be carried out during a storm, which has caused the interruption of the electric energy that has locked the gate. In all cases the gate must be moved manually once unlocking has been carried out.

[0009] The Applicant has made a system for moving an automatic gate that allows the gate itself to be moved, even lacking the power supply voltage to the motor that moves the gate. In particular, the system of the present invention is based upon the use of an auxiliary motor, supplied with power by a battery, suitable for allowing the operation of the gate (with radio control or in any case remotely) even in conditions of absence of electrical energy or in the case of damage to the main control board.

[0010] The system can foresee the presence of an auxiliary motor, fitted onto the same shaft of the primary motor, for example it is possible to use a single motor having two stators and a shaft in which two different rotors are fitted.

[0011] An aspect of the present invention concerns a system for moving an automatic gate, said gate comprising a mobile door, suitable for covering an access space defined at the ends by fixed parts of said gate, the movement of which is commanded by a main electric motor supplied with mains power, characterised in that it comprises an auxiliary electric motor, supplied with power by a battery, prepared for operation during an emergency situation that deactivates the main motor and activated to move such a door by an external activation control.

[0012] The characteristics and the advantages of the system for moving automatic gates according to the present invention shall become clearer from the following description, given as an example and not for limiting purposes, referring to the attached schematic drawings, in which:

- figure 1 is a view from above of the moving system applied to an automatic gate, according to the present invention;
- figure 2 is a schematic view of the moving system according to the present invention.

[0013] With reference to the quoted figures, the gate to which the mechanism of the present invention can be applied can be a sliding gate, a swing gate and, more generally the mechanism of the present invention can be applied to barriers in which the access point is opened and closed by at least one door moved automatically through an electric motor, such as front doors, gates, etc.

[0014] In particular, figure 1 illustrates, as an example, a moving mechanism of an automatic gate comprising a post 2 of said gate on which a door 3 of such a gate is rotatably associated. The movement of such a door is carried out through a piston 4, which is connected at one end to such a post and at the opposite end to the rotatable door of the gate.

[0015] The stroke of the piston is regulated by an electric motor arranged inside it; the lengthening and shortening of such a piston allow the rotation of the mobile door of the gate and therefore the opening and closing of the space.

[0016] Moreover, the opening and closing of the gate can be suitably controlled through a radio control 5 that transmits a signal to a control unit of the gate provided with a suitable radio receiver. The control unit controls the movement of the main motor of the gate.

[0017] The moving system according to the illustrated embodiment is inserted inside said piston and comprises a main motor 61 supplied with mains voltage through the control unit 7 of the gate, the rotation shaft 62 of which transmits the movement to the door of the gate,

for example through a motor reducer.

[0018] The system according to the present invention also comprises an auxiliary motor 63 associated with said main motor 61 and fitted on said rotation shaft 62, which can be supplied with power from a battery, for example a rechargeable battery 8 associated with said control unit of the gate.

[0019] A power supply circuit allows the auxiliary motor to be connected to said battery through an activation switch 9 controlled by an external activation signal.

[0020] The activation signal can be sent to the auxiliary motor through a radio control, for example through the same radio control 5 that controls the opening of the gate, or else through a key that, suitably inserted in a suitable seat in the gate, determines such activation.

[0021] In the case in which there is one of the aforementioned emergency situations, the lack of electrical voltage results in the deactivation of the control unit of the gate and consequently the deactivation of the main motor, which prevents the correct movement of the gate. In such a situation, the system according to the present invention allows the auxiliary motor to be activated and in any case the gate to be moved automatically. The activation can be carried out directly by radio control, which, by the way, can have a specific activation button, for example arranged on the base of the radio control, or else it is possible to use the same button used for the normal opening of the gate.

[0022] The power supply circuit of the auxiliary motor is enabled only in the case of interruption of the power supply circuit of the main motor and, through the radio control, during normal operation of the gate, it is only possible to activate the main motor. For such a purpose, the power supply circuit foresees the presence of an enabling relay 10, which when there is an emergency situation takes care of closing the auxiliary power supply circuit connecting the rechargeable battery to the auxiliary motor. Therefore, in short, the auxiliary motor is enabled for operation only when the main motor is deactivated and it is activated by an external command, for example generated by a radio control.

[0023] Moreover, the rechargeable battery is provided with a battery-charging circuit (not shown), which receives the mains power supply and always keeps the battery charged during normal operation of the gate.

Claims

1. System for moving an automatic gate, said gate comprising a mobile door, suitable for covering an access space defined at the ends by fixed parts of said gate, the movement of which is commanded by a main electric motor supplied with mains power, **characterised in that** it comprises
   an auxiliary electric motor, supplied with power by a battery, enabled for operation during an emergency situation that deactivates the main motor and activated to move such a door through an external activation command.

2. System according to claim 1, wherein said auxiliary motor is fitted onto the same rotation shaft of said main motor.

3. System according to claim 1, wherein said battery is a battery that is rechargeable through a battery-charger connected to the mains power supply.

4. System according to claim 1, wherein said activation command is generated by a radio control.

5. System according to claim 1, wherein said activation command closes an activation switch that connects said auxiliary motor and said battery.

6. System according to claim 1, wherein said enabling is carried out through an enabling relay arranged between said battery and said auxiliary motor.

7. System according to claim 4, wherein said radio control determines the opening and closing of the gate in operating conditions.

Fig.1

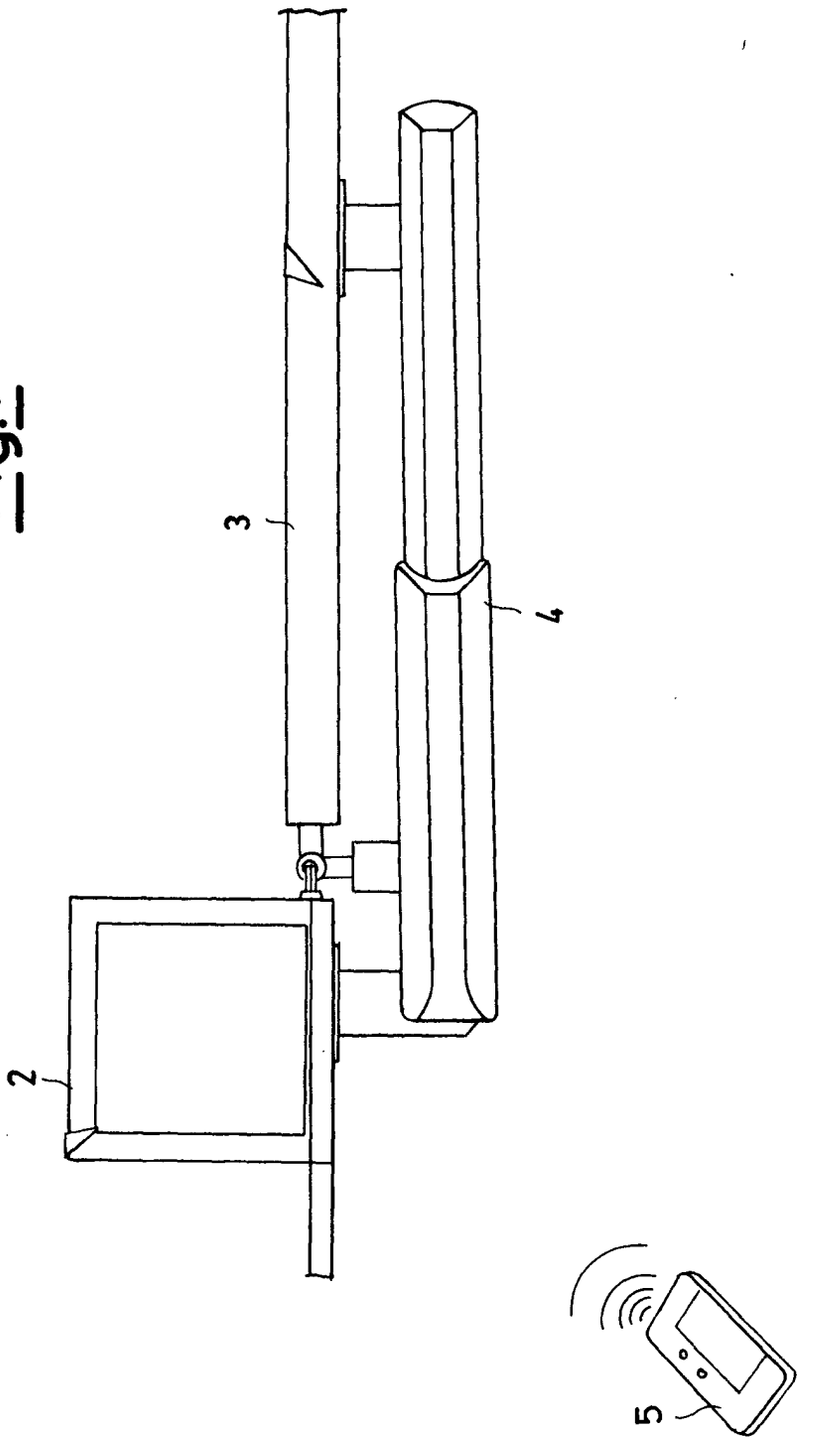

Fig.2