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⑤④ **Handle control for opening the doors of vehicles in an emergency situation.**

⑤⑦ A handle control for opening the doors of vehicles in an emergency is provided with a light source (20) powered from batteries (16) and activated automatically on the occurrence of a voltage drop in the electric system of a vehicle on which the control is installed.

This affords prompt location, in a hazardous situation, of the control, and specifically of the handle (5) thereof.

EP 0 315 758 A1

This invention relates to a handle control for opening the doors of vehicles in an emergency situation, which control comprises a holder and a handle mounted to said holder and constituting a means of enabling said doors to be opened in an emergency situation.

Bus doors, and especially doors opening toward the outside of the vehicle, are usually driven open or closed by means of pneumatic or electric motors. In order to prevent the doors from opening untimely in the event of a malfunction occurring to the pneumatic or electric systems for said motors, locking devices of a mechanical type are generally provided which are operative to hold a door in its closed condition on the occurrence of such malfunctions.

However, since emergency situations may be encountered where the passengers of a vehicle are to get out of it in a hurry, such as on the occasion of a malfunction endangering the passengers additionally to putting the door opening motors out of use, it has become common practice to provide handle controls for emergency operation by the passengers themselves to disable the door mechanical locking devices and open the doors.

Such emergency door controls are usually located close to the doors they are to serve, within easy reach in normal visibility conditions.

Situations may be encountered, however, where visibility inside the vehicle can be very bad. This would be the case, for example, of a vehicle becoming involved in a crash accident in the dark, or developing a failure in its electric system, thereby the emergency door-opening controls cannot be located promptly.

A similar situation is likely to arise in case of fire on board the vehicle; in a situation such as this, the vehicle electric system is usually put quickly out of service. Furthermore, any smoke formation inside the vehicle is bound to hinder prompt location of the door emergency opening handles.

In all these circumstances, the passengers' own safety is endangered.

To obviate such shortcomings, it has been proposed by the prior art that handles for opening the doors in an emergency be given a specially bright color, but it has been found that not even a bright color is adequate to provide the desired effect in the dark or under conditions of reduced visibility.

The problem underlying this invention is to provide a handle control for opening the doors of vehicles, and specifically the doors of buses, in an emergency, which can be readily located even under conditions of poor visibility.

This problem is solved according to the invention by a handle control of the type specified above being characterized by the provision of a light

source on said holder.

The light source is advantageously mounted on the holder such that it will illuminate said handle in its activated condition.

According to another aspect of the invention, the control incorporates a battery supply for said light source which is connected to the light source by a normally open circuit, said circuit including a means of sensing a reference voltage and closing said circuit upon the reference voltage dropping below a predetermined minimum. The reference voltage is preferably the normal operating voltage of the electric system of a vehicle mounting the handle control of this invention.

The features and advantages of the invention will be better understood by making reference to the following detailed description of a preferred, though not exclusive, embodiment thereof, to be taken by way of example and not of limitation in conjunction with the accompanying drawings, where:

Figure 1 is a perspective view of a handle control according to the invention, shown with its handle in the inoperative or home position; and

Figure 2 is a perspective view of the control of Figure 1, shown with its handle in the operative position.

The reference numeral 1 designates throughout the drawing views a handle control for opening the doors of vehicles in an emergency. The control 1 comprises a holder 2 having a longitudinal main dimension and being preferably molded from a plastics material as one piece with two parallel cheeks 3 formed at one end thereof.

A handle 5 is pivot mounted between the cheeks 3 by means of a pivot pin 7, thereby it is allowed to swing in the directions of the arrow f between a home position (Figure 1) and an operative position (Figure 2).

The handle 5 is conventionally provided with a one-way detent means, such as a ratchet mechanism, effective to prevent it from swinging back to its home position once it has been pulled to the operative position. Such a detent means can be released manually by means of a pushbutton 9 shown in Figure 1.

The handle 5 is formed, at its end journaled to the holder 2, with a seat 10 for a cable drive, not shown, acting conventionally on a corresponding locking device of a vehicle door such that the locking device can be released by swinging the handle 5 to the operative position of Figure 2 from the position shown in Figure 1.

Formed through the free end of the handle 5 is an opening 11 engaged by a peg 12 projecting from the holder 2 when the handle 5 occupies its home position. A seal, not shown, is affixed to the

peg 12 to deter tampering with the control 1.

A bracket 13 formed integrally with the holder 2 extends at right angles therefrom, on the longitudinally remote end from the cheeks 3. An opening 14 is formed in the bracket 13 which extends transversely of the longitudinal dimension of the holder 2 and handle 5.

Mounted to the bracket 13 is a transparent cowl 17 enclosing a printed circuit board generally designated 15.

The board 15 carries an electronic compare circuit, known per se, which is supplied a reference voltage, such as a 24-Volt DC voltage supplied from storage batteries, not shown, normally equipping the vehicle.

The compare circuit is connected to one or more rechargeable batteries 16 accommodated within the holder 2, so that the batteries 16 can be charged with the electric current from said storage batteries on the reference voltage exceeding a predetermined minimum.

Mounted on the board 15 are also two small lamps 20 facing the opening 14 on the sides of the handle 5 with the latter in its home position shown in Figure 1.

The lamps 20 are connected electrically to the batteries 16 via the electric compare circuit of the board 15. Upon the reference voltage reaching or exceeding the predetermined minimum (such as a slightly lower value than 24 Volts) said electric compare circuit will behave as an open circuit in relation to the connection between the batteries 16 and lamps 20. Under this condition, the lamps 20 would be in an off state.

Upon the reference voltage dropping below said predetermined minimum, the compare circuit will make the connection between the batteries 16 and the lamps 20, turning the latter on.

The specific components of the compare circuit and their linking are not shown because quite conventional and well known to the skilled person in the art.

The control 1 is intended for installation on a vehicle, in particular a bus, equipped with outwardly opening doors for enabling such doors to be opened in an emergency.

Under normal conditions, the power supplied by the vehicle own batteries is used in part to charge the batteries 16 via the electronic compare circuit provided on the board 15. This function is regulated by the electronic compare circuit by measuring the reference voltage of the vehicle batteries. The door opening, closing, and locking are likewise placed under full control by conventional mechanisms of an electromechanical type powered from the vehicle own batteries.

Should a failure occur in the vehicle electric system, such as on the occasion of a crash ac-

cident, said electromechanical mechanisms hold the doors locked shut until the door opening is enabled by turning the handle 5 to its operative position.

The control 1, and specifically the handle 5 thereof, can be promptly located, however, even in a situation of poor visibility because, as soon as the reference voltage (voltage level of the vehicle own batteries) shows a drop, the lamps 20 would be powered from the batteries 16. The lamps 20 will spread their light through the cowl 17 and directly illuminate the handle 5 through the opening 14.

Claims

1. A handle control for opening the doors of vehicles in an emergency situation, comprising a holder (2) and a handle (5) mounted to said holder (2) and constituting a means of enabling said doors to be opened in an emergency situation, characterized by the provision of a light source (20) on said holder (2).

2. A handle control according to Claim 1, characterized in that the light source (20) is arranged on the holder (2) to illuminate, when activated, said handle (5).

3. A handle control according to either Claim 1 or 2, characterized in that it comprises a battery (16) for powering said light source (20) and being connected to the light source (20) via a normally open circuit, said circuit including a means of sensing a reference voltage and making said circuit upon the reference voltage dropping to a value below a predetermined minimum.

4. A handle control according to Claim 3, characterized in that said battery (16) is of a rechargeable type, and that said circuit is a charge circuit for said battery (16).

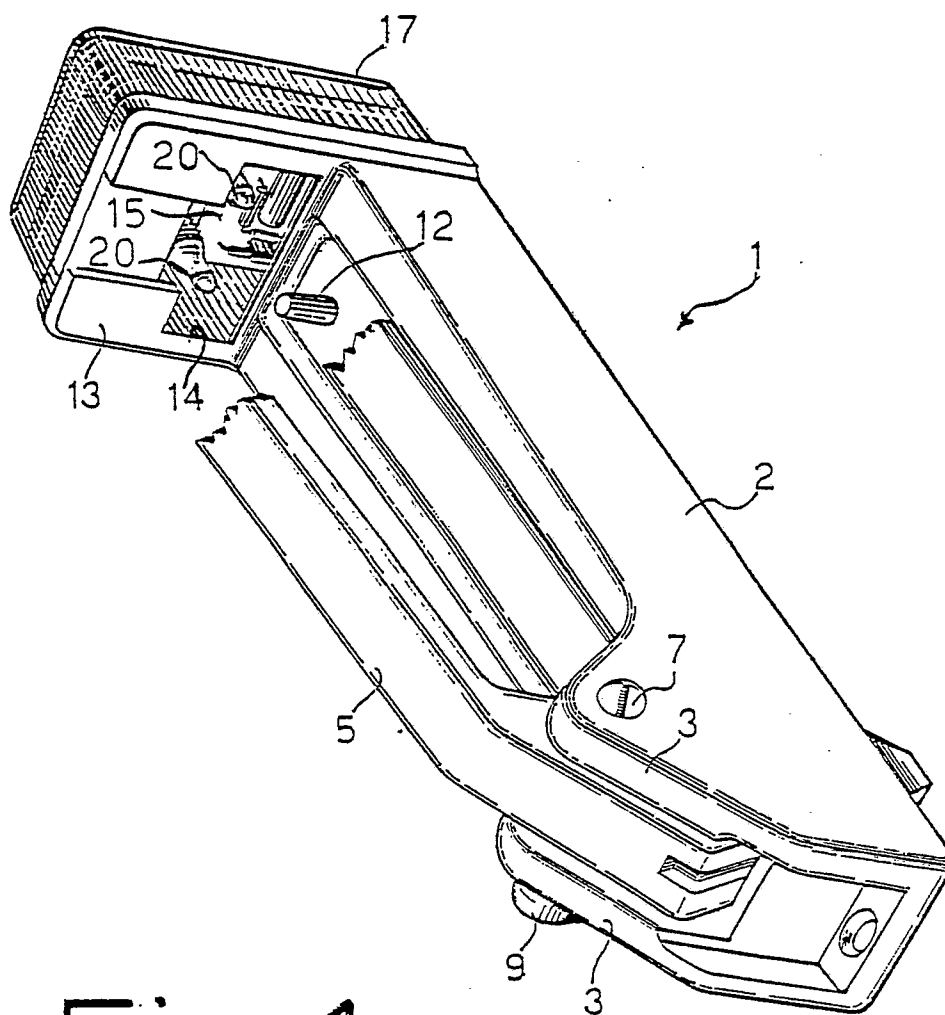


Fig 1

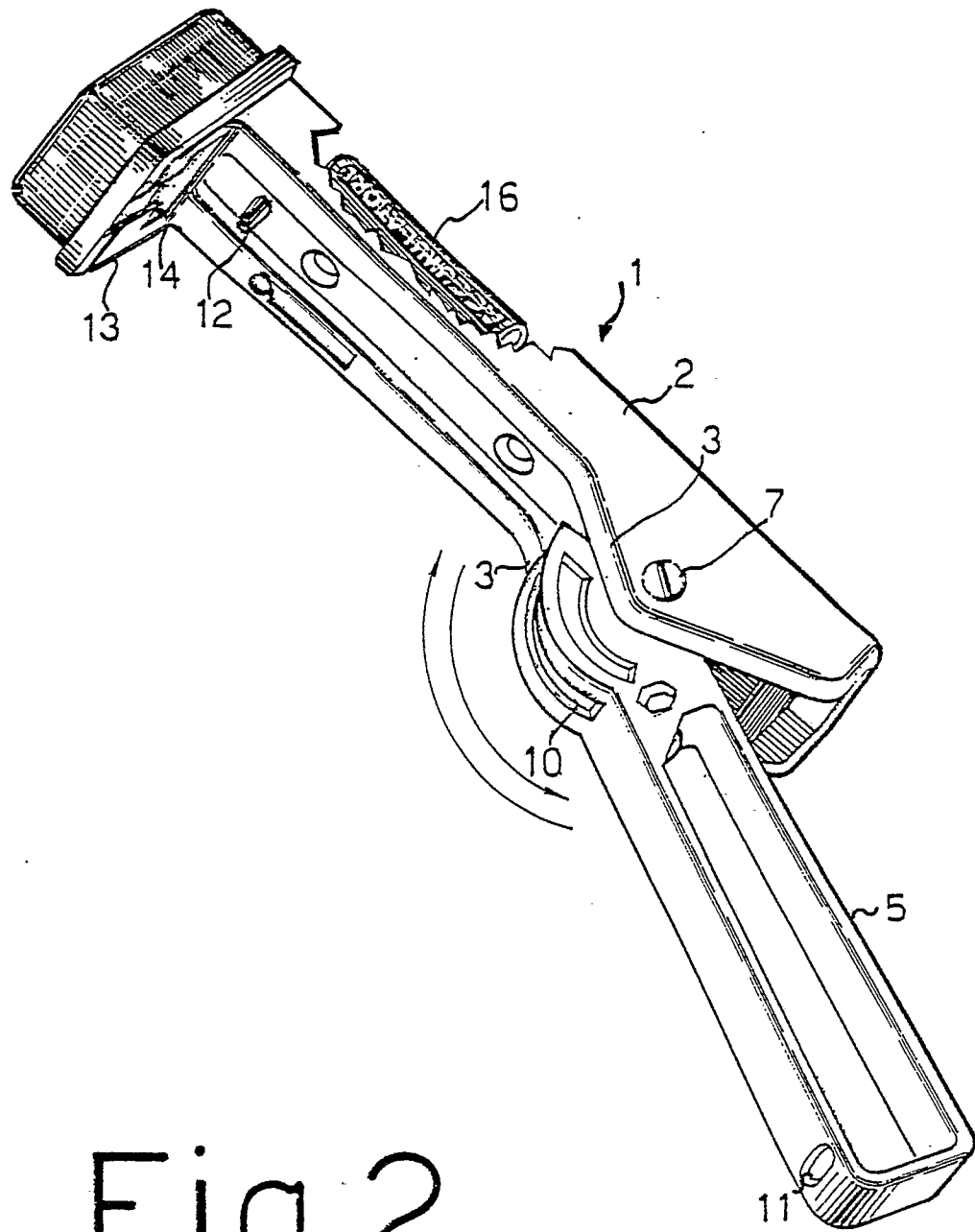


Fig 2



DOCUMENTS CONSIDERED TO BE RELEVANT			EP 88115211.0
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	DE - A1 - 3 440 442 (KIEKERT GMBH & CO.) * Fig. 1-2; claims 1-8 * -----	1,2	E 05 B 65/20
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			E 05 B
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 28-11-1988	Examiner CZASTKA
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			