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(71) Applicant: **CAVIS S.r.l.**
Via Roma, 31
I-15023 Felizzano (Alessandria)(IT)

(72) Inventor: **Codrino, Giuseppe, c/o Cavis S.r.l.**
Via Roma, 31
I-15023 Felizzano (Alessandria)(IT)

(74) Representative: **Cicogna, Franco**
Ufficio Internazionale Brevetti
Dott.Prof. Franco Cicogna
Via Visconti di Modrone, 14/A
I-20122 Milano (IT)

(54) An emergency switch for industrial motor vehicles including movable contacts which can be snap closed on fixed contacts.

(57) An emergency switch for industrial motor vehicles comprises movable contact elements which can be snap closed on fixed contact elements, the switch further including resilient point elements mounted on a slider which is operated by two arms constituting the bottom lug elements of a rocking lever the swinging of which is driven by a driving push-button through a rod which can swing about a pivot axis thereof in order to operate a fork spring, the point element driving movable contact elements so as to cause the latter to be snap tilted on corresponding fixed contact elements.

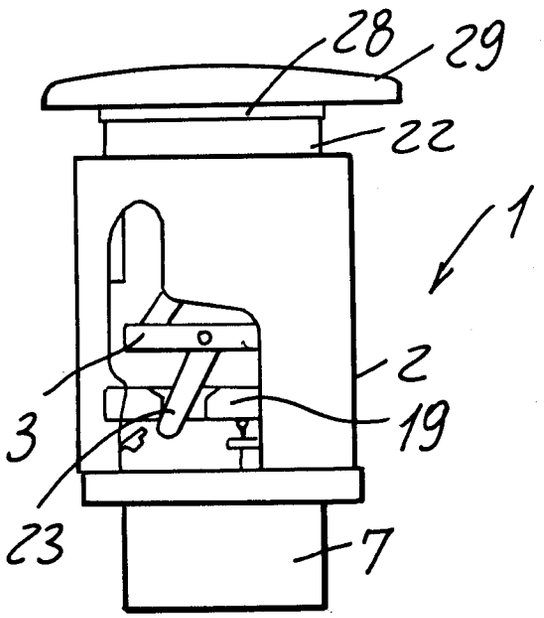

FIG. 1

EP 0 568 760 A1

BACKGROUND OF THE INVENTION

The present invention relates to an emergency switch for industrial motor vehicles including movable contacts which can be snap-closed on fixed contacts.

As is known, at present all of the motor vehicles are provided with the so-called "emergency switches" that is switches which are specifically designed to simultaneously close the circuit of all of the direction lamps.

Also known is the fact that the above mentioned switches are conventionally of a sliding contact type and,because of this,undesired sparking phenomena may occur between the movable contacts and fixed contacts.

This will cause the contacts to be quickly oxidized which, as it should be apparent, represents a great drawback mainly in the case of a switch provided for application on an industrial motor vehicle the switches of which are usually interested by a comparatively high intensity current.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing an emergency switch for industrial motor vehicles in which the movable contact elements are specifically adapted to snap close on the fixed contact elements.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such an emergency switch for industrial motor vehicle, in which the closure movement of the movable contact elements is substantially independent from the operation of the driving push-button.

Another object of the present invention is to provide such an emergency switch for industrial motor vehicles, the movable contact elements of which are specifically designed for supporting comparatively high electrical currents and voltages.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an improved emergency switch for industrial motor vehicles, characterized in that said switch comprises resilient point elements mounted on a slider driven by two arms forming bottom lugs of a rocker lever which is driven to swing by a push-buttom, through a rod which can in turn swing about a pivot axis thereof as controlled by a fork spring, said point element operating on movable contact elements so as to cause said movable contact elements to be snap engaged on corresponding fixed contact elements.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the emergency switch according to the present invention will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of a merely indicative and not limitative example, in the accompanying drawings where:

Figures 1 and 2 respectively illustrate a partially broken away view and a top plan view of the switch according to the invention;

Figure 3 is an exploded view illustrating the several components of the switch;

Figure 4 is a schematic cross-sectional view of a support construction which supports a driving rod element;

Figures 5 and 6 are a schematic cross-sectional view and a schematic top plan view of a box-like body including a rocker lever provided for driving the switch slider;

Figure 7 is a top plan view of a bottom element bearing fixed contact elements;

Figure 8 is a bottom view of said slider; and

Figures 9 and 10 are detail and bottom views illustrating the movable contact elements included in the emergency switch according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the emergency switch for industrial motor vehicles according to the present invention, which has been generally indicated at the reference number 1, comprises a box-like body 2, between the walls of which there is pivoted a rocker lever element 3 provided with bottom lugs 4 and a side lug 5 upwardly directed and bearing a fork spring 6.

In the bottom portion of the mentioned first box-like body, there is housed a second box-like body 7, including an intermediate horizontal wall 8 and a side abutment 9, thereabove there are applied two fixed contact elements 10.

The latter are adapted to supply, through a lamp holder construction 11 removably affixed onto the first box-like body, a lamp or a LED 12.

On the top surface of the above mentioned horizontal wall 8 there are arranged two vertically extending cross members 13 adjoining, respectively, three aligned fixed contact elements 14 and two opposite fixed contact element pairs 15.

On the cross elements, three blade-contact elements 16 and a foil 17 can oscillate, which perimetrically support two pair of pads 18 preferably made of an alloy of Ag/Ni.

In this connection it should be pointed out that the above mentioned fixed contact elements are co-molded on said horizontal wall, thereunder there are provided corresponding connectors with reduced pitch terminal elements.

The bottom portion of the second box-like body, moreover, is so constructed as to provide a seat for receiving and snap engaging a related wiring terminal block.

The above mentioned contacts and movable foil or blade are caused to press on corresponding fixed contact elements by a slider 19 which comprises two series of resilient point elements 20 and which is alternately driven by the bottom lugs 4 of the mentioned rocking lever, which lugs engage in corresponding opposite side seats 21 formed in said slider.

In the top portion of the box-like body 2 there is engaged a third box-like body 22, downwardly opened, which comprises an intermediate vertical lug which rotatably bears a rod 23.

The rod 23 is provided, at a pivot axis thereof, with at least a radial projection 24 which can engage in the top of said fork spring 6.

The third box-like body, in particular, is upwardly biassed by cylindrical springs 25 and is so designed as to define a side compartment 26 which extends above the lamp or LED 12.

On the top of this compartment there is provided an optical prism 27 adapted to deflect the light beam on the top surface of said box-like body, which is suitably slanted.

On the above mentioned third box-like body, or driving body, there is fitted, through a suitable bottom restraining seat 28, a push-button 29 having a translucid central portion on which there is impressed a related ideogram 30.

From the above disclosure and the figures of the accompanying drawings it should be apparent that the invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred ambodiment thereof, it should be apparent that this embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

Claims

1. An improved emergency switch for industrial motor vehicles, characterized in that said switch comprises resilient point elements mounted on a slider driven by two arms forming bottom lugs of a rocker lever which is driven to swing by a push-buttom, through a rod which can in turn swing about a pivot axis thereof as controlled by a fork spring, said point element operating on movable contact elements so as to cause said movable contact elements to be snap engaged on corresponding fixed contact elements.

2. An emergency switch for industrial motor vehicle, according to Claim 1, characterized in that said switch further comprises a first box-like body, said body having walls therebetween there is pivoted said rocking lever including said bottom lugs and an upwardly directed side lug, said side lug bearing a fork spring, said first box-like body having a bottom portion in which tehre is housed a second box-like body including an intermediate horizontal wall and a side abutment thereabove there are applied two fixed contact elements.

3. An emergency switch for industrial motor vehicle, according to Claim 2, characterized in that said fixed contact elements are adapted to power supply, through a lamp holder element removably restrained on said first box-like body, a miniaturized lamp or a LED.

4. An emergency switch for industrial motor vehicle, according to Claim 2, characterized in that on said horizontal wall there are arranged two vertically extending cross elements respectively adjoining three aligned fixed contact elements and two pairs of opposite fixed contact elements, on said cross elements there being swingably engaged respectively three blade contact elements and a further foil at element perimetrically bearing two pairs of pads made of a Ag/Ni alloy.

5. An amergency switch for industrial motor vehicle, according to Claim 2, characterized in that said fixed contact elements are co-molded on said horizontal wall thereunder there are provided corresponding connectors including reduced pitch terminal elements.

6. An emergency switch for industrial motor vehicles, according to Claim 2, characterized in that said second box-like body comprises a bottom portion which includes a seat in which there is engaged and snap restrained a wiring block element.

7. An emergency switch for industrial motor vehicles according to Claim 4, characterized in that said blade contact elements and foil element are caused to press on corresponding fixed contact elements by a slider including two series of resiliently counterbiassed point elements, said slider being alternatively driven

by said bottom lugs of said rocking lever, said bottom lugs engaging in opposite side seats formed in said slider.

8. An emergency switch for industrial motor vehicle, according to Claim 2, characterized in that said first box-like body comprises a top portion in which there is engaged a downwardly open third box-like body which is provided with an intermediate vertical lug rotatably bearing a rod, said rod being provided, on a pivot axis thereof, with at least a radial projection which can engage in a top portion of said fork spring.

9. An emergency switch for industrial motor vehciles, according to Claim 8, characterized in that said third box-like body is upwardly urged by cylindrical springs and is provided with a side compartment extending above a light source, on a top portion of said compartment there being arranged an optical prism for deflecting a light beam on a top slanted surface of said third box-like body.

10. An emergency switch for industrial motor vehicles according to Claim 8, characterized in that on said third box-like body there is fitted, through a bottom restraining seat, a push-button, having a translucid central portion thereon there is impressed an ideogram.

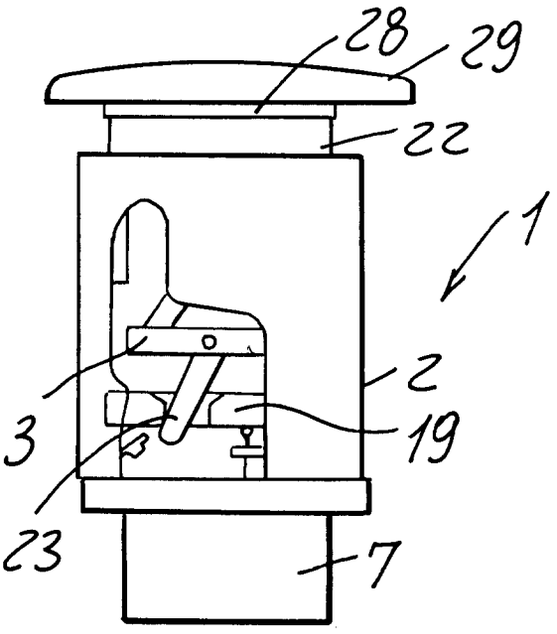

FIG. 1

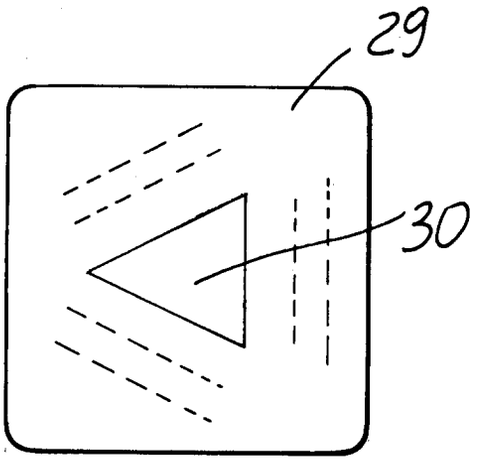

FIG. 2

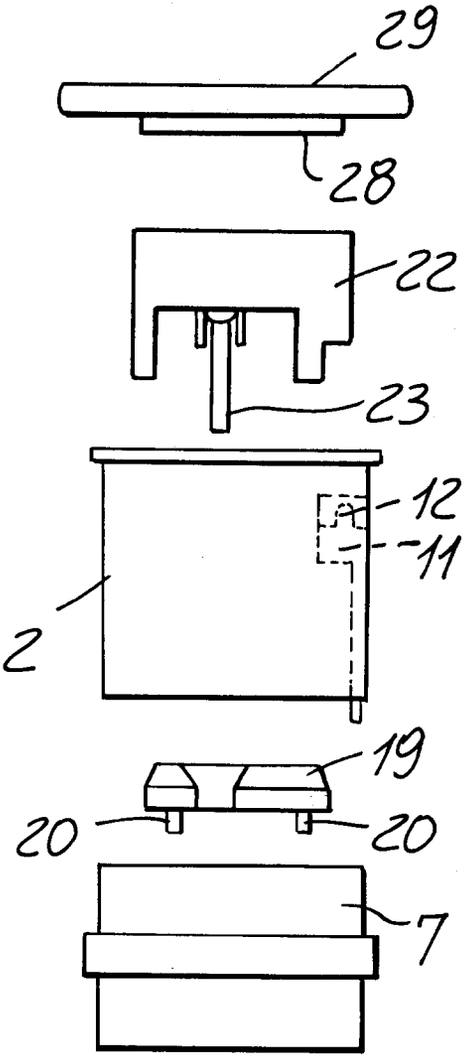

FIG. 3

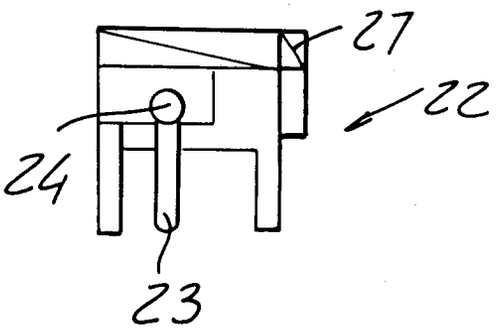

FIG. 4

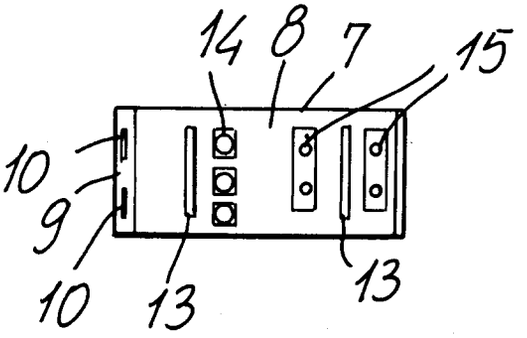

FIG. 7

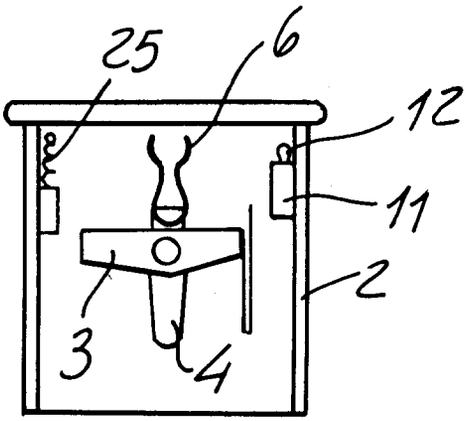

FIG. 5

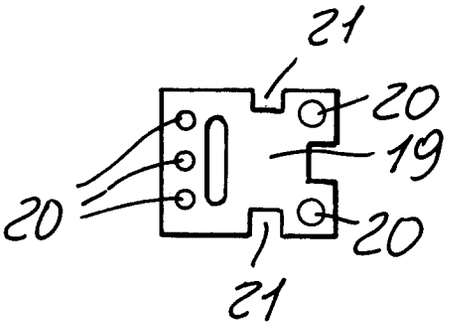

FIG. 8

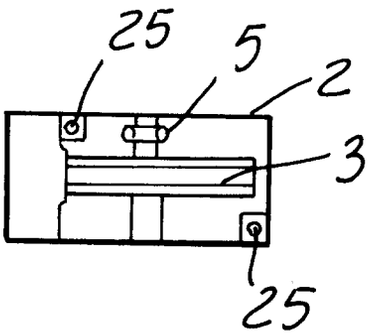

FIG. 6

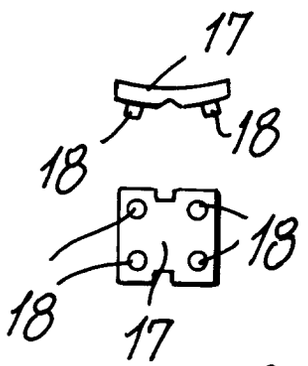

FIG. 9

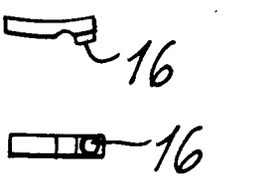

FIG. 10

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 83 0215

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 300 026 (NARTRON CORP.) * the whole document *	1,2,5,6	H01H13/60
Y		3	
Y	DE-A-3 802 765 (INSTA ELEKTRO GMBH & CO KG.) * figures 5,6 *	3	
Y	US-A-4 254 310 (ALCO ELECTRONIC PRODUCTS INC.) * the whole document *	1,2,5,7	
Y	US-A-2 524 410 (F.J. TRAINOR) * column 3, line 33 - column 4, line 10 *	1,2,5,7	
A	EP-A-0 311 523 (JAEGER)	2	
A	DE-B-1 166 874 (G. A. WAHLSTROM)	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22 DECEMBER 1992	OVERDIJK J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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