Abstract: A safety helmet (10), especially for motorcyclists, including a light-signalling device (16) and/or (160) and means that are fixed and/or integrated into the helmet crown (12) and interacting among themselves and with the vehicle braking devices actuated by the driver.
"Safety helmet especially for motorcyclists integrating a light-signalling device"

DESCRIPTION

TECHNICAL RELD

This invention refers to a safety helmet, especially for motorcyclists, integrating a light-signalling device. More particularly this invention refers to a safety helmet whose function is to improve visibility of the helmet wearer by other vehicle drivers.

BACKGROUND ART

As known, the main function of the helmet is to provide protection to the helmet wearers against concussions caused, for instance, by road accidents or by the fall of objects. By taking motorcyclists as an example, it is extremely important, for road safety as well as for physical safety of both the motorcyclists and the other motor vehicle drivers engaging the roads, to guarantee good visibility of the vehicle's driver by other drivers who follow him, especially in case of slowing down or braking.

Unlike the case of motor vehicles, where in addition to the traditional braking lights, located within the rear optical unit, a third braking light is incorporated into the rear window or into the spoiler and higher than the traditional braking lights, as to be also visible to motor car drivers who, standing in a column, are not immediately behind the braking car, motorcycles and scooters are typically equipped with one sole braking light located in the rear optical unit and hence they are not always immediately visible to vehicles standing behind them.
Moreover, ordinary helmets have not features that are meant to improve or widen the visibility of the motorcyclist by other vehicle drivers; sometimes, in order to increase such visibility, particular accessories are used such as, for instance, adhesive strips made of a reflecting material applied onto the helmet surface.

However, these accessories cannot effectively increase the motorcyclist visibility by other vehicle drivers and furthermore their functionality tends to decrease in daylight.

DISCLOSURE OF INVENTION
The object of this invention is to remedy the drawbacks described above.

More particularly, the object of this invention is to provide a safety helmet, especially for motorcyclists, integrating a light-signalling device that increases visibility of the motorcyclist by the other vehicle drivers and remains effective both during the day and the night.

A further object of this invention is to make available to users a safety helmet as specified above, which is fit to guarantee an appropriate degree of resistance and reliability in the course of time and furthermore to be easily and cheaply manufactured.

These and other objects are fulfilled by the flashing optical indicator device for helmets of this invention comprising a light-signalling device and means that are fixed and/or integrated in the helmet crown, interacting among themselves and with the vehicle braking devices actuated by the driver.

BRIEF DESCRIPTION OF DRAWINGS
The structural and functional characteristics of the safety helmet integrating a light-signalling device of this invention can be better understood from the detailed description that follows, wherein reference is made to the enclosed drawings showing a preferential embodiment which is not meant as restricting, wherein:

figure 1 schematically illustrates a side view of the safety helmet, especially for motorcyclists, integrating the light-signalling device according to the invention;

figure 2 illustrates, in a front axonometric projection, a schematic view of the very safety helmet that makes up the object of the invention.

BEST MODE FOR CARRYING OUT THE INVENTION

With reference to above-mentioned figures, the safety helmet, especially for motorcyclists, integrating a light-signalling device of this invention, generally referenced with 10 in figure 1, includes a traditional helmet crown 12, basically globe-shaped, on whose upper region one or more shaped supports 14 are applied in a known manner.

This support 14, made from a plastic material, carbon fibre or any other suitable material, has a shaped profile that complements to the crown 12 and is located close to the central-frontal and partial rear side of the helmet crown itself, as shown in figures 1 and 2.

This support 14, close to the frontal and the rear portions, has light-signalling devices 16 and 16', comprising for instance a plurality of high-luminosity L.E.D. (Light Emitting Diodes), which are fixed in a known manner to the above-mentioned support 14.

This very support 14, to cover and protect the light-signalling devices 16
and 16', is advantageously equipped with two covering elements 18 and 20, respectively located close to the rear and front areas of the support 14.

The covering elements 18 and 20 are made of a transparent or non-transparent plastic material, coloured if necessary, such as for instance polycarbonate, plexiglass or similar materials which preferably have the inner surface at least partly knurled or faceted, as to make up a screen that is fit to increase the luminous and reflecting effect of the light-signalling devices 16 and 16' themselves.

The light-signalling devices 16 located below the covering element 18 of the support 14 are arranged according to a line that is basically vertically and/or horizontally oriented.

Similarly, the light-signalling devices 16' located below the covering element 20 of the support 14 are arranged according to a basically vertical and/or horizontal line.

The light-signalling devices 16 located close to the covering element 18 of the support 14 are connected to the brake actuation gear as it will be indicated hereinafter and are red coloured or feature a neutral colour, with in this latter case the covering element 18 red colour, as to recall the braking light of the rear optical unit of the motorcycle.

On the contrary, the light-signalling devices 16' located close to the covering element 20 are fixed and can be manually switched on by the motor vehicle driver for the purposes that will be described hereinafter.

The safety helmet the object of this invention is connected to the brake actuation gear and when the motor vehicle driver actuates the brake
actuation gear, as usual, it brings about the actuation of the motorcycle braking light; at the same time, however, even the light-signalling devices 16 located underneath the covering element 18 light up intermittently or continuously.

The signal causing such lighting is advantageously transmitted by the braking circuit to the light-signalling devices 16 of the covering element 18 of the support 14 of the crown 12, by means of a transmitter/receiver unit.

This transmitter (not shown in the figures) is a traditional two-channel coded transmitter, located on the vehicle, e.g. inside the assembly that includes the braking light, connected to the electrical circuit of the brake and fed through the vehicle battery and/or through an independent battery.

The receiver, preferably lodging within the support 14 of the crown 12, or in any other suitable position along the crown itself, is a two-channel coded receiver, of a known type and, hence, not illustrated; the receiver is battery-fed, too.

The safety helmet of this invention, in the preferred embodiment, for its activation avails of a traditional holder, with a lock for the insertion of the motorcycle ignition key, located on the motorcycle itself in an easily accessible area, like for instance the one under the saddle, and connected to the electrical brake circuit; a further actuation system, located on the crown 12, consists of a helmet closing strap 15 inside which electrical cables or a strap (not shown in the figure) which, at one end, is connected to the receiver lodged in the support 14 of the crown.
12 and, at the other end, is connected to the closing buckles 15' of the strap 15 itself.

Upon actuating the light-signalling device that is integrated into the helmet, the motorcyclist, the scooterist or the driver of similar means puts on the helmet and buckles the strap 15, as to actuate the receiver circuit, hence he enables the helmet safety circuit by inserting the key into the lock of the above-mentioned holder, then extracts the key and inserts it into the vehicle instrument panel in order to start it as usual.

Thus the vehicle driver enables the communication between the transmitter and the receiver and hence, any time he actuates the brake lever, the braking light lighting signal will also be sent to the light-signalling devices 16 located below the covering element 18.

The light-signalling devices 16' located close to the covering element 20 do not light up when the motorcyclist switches on the actuation device but are advantageously switched on in a manual mode, through the operation of a multiple-position switch (not shown in the figure), of a traditional type, located close to the lower edge 22 of the crown 12, when the motorcyclist requires a better lighting of the frontal area that is immediately close to him, e.g. in order to service the motorcycle. This switch, in addition to the switching on of the light-signalling devices 16', also causes the light-signalling devices 16 to simultaneously light up in a fixed mode, so that the vehicle driver can always be easily seen by the other vehicles that drive along the road. Moreover, the same switch allows to disable the connection between the transmitter and the receiver so that, in the presence of a passenger being on the
motorcycle, too, only one light-signalling device is enabled, namely that of the passenger helmet.

In an alternative embodiment, the support 14 is integrated or made into the helmet frame, namely in the crown 12, and makes one sole body with it; this solution proves to be particularly useful as it avoids any possible interference between the support 14 and the helmet visor, market with 24, when the latter is lifted.

Moreover the light-signalling devices 16 and 16' can be made of luminous strips applied to the support 14 or directly to the crown 12, whereas for the transmission of the braking light lighting signal from the braking circuit to the helmet, a transmission/reception system can be used which uses the bluetooth technology.

In a further alternative embodiment, the helmet safety circuit actuation system is integrated into the motorcycle instrument panel, so as to actuate this safety device in one sole operation, at the time when the key is inserted into the vehicle instrument panel to start the vehicle.

Furthermore, the receiver can be fed with power through a battery recharged by means of sun cells lodging in the support 14 of the crown 12.

As one may deduce from the foregoing description, the advantages brought by the invention are obvious.

The safety helmet, especially for motorcyclists, integrating a light-signalling device 16 of this invention advantageously increases the visibility of the helmet-wearer by the other vehicle drivers both in the day and in the night, as to considerably increase personal safety levels.
A further advantage stands in that the switch located close to the lower edge 22 of the crown 12 allows the communication between the receiver and the transmitter being disabled, thus allowing a longer battery life in cases when no connection with the transmitter is demanded, such as in cases when the motor vehicle is being serviced. Not least among the advantages is the fact that, as the transmitter is connected to the electrical brake circuit and fed through the vehicle battery and/or through an independent battery, the safety helmet ensures operation even when the motor vehicle braking lights are not working.

Further advantageous is the possibility to have additional light-signalling devices 16', manually actuated, which allow the user to avail of a light beam to be used in case of need.

Although the foregoing invention has been described by making special reference to one preferential embodiment, which is only illustrative in character and is not meant as restricting, several variations and changes will be obvious to anyone skilled in the art in the light of the foregoing description. Therefore, this invention intends to include all the changes and variations that fall within the object and the scope of the following claims.
CLAIMS

1. A safety helmet (10), especially for motorcyclists, comprising a light-signalling device (16) and/or (160), characterized in that it includes means that are fixed to and/or integrated with the crown (12) of the helmet and interacting among themselves and with the vehicle braking devices actuated by the driver.

2. A safety helmet according to claim 1, characterized in that the crown (12) includes one or more supports (14) made of a plastic material, a carbon fibre or any other suitable material, featuring a shaped profile that complements that of the crown (12), located close to the central-frontal and/or partial rear area of the crown itself and equipped with the above-mentioned light-signalling devices (16) for automatic and (160) manual actuation.

3. A safety helmet according to the previous claims, characterized in that the above-mentioned means interacting among themselves and with the vehicle braking devices include coded two-channel transmitter and receiver devices.

4. A safety helmet according to one or more of the previous claims, characterized in that the transmitter device is located on the motorcycle or motor vehicle, inside the assembly that makes up the braking light or inside the instrument panel including the lock for the starter key, the receiver device being integrated into or fixed to the support (14) of the crown (12).

5. A safety helmet according to one or more of the previous claims,
characterized in that the transmission/reception system is made by using the *bluetooth* technology.

6. A safety helmet according to one or more of the previous claims, wherein the light-signalling devices (16, 160 of the support (14) of the crown (12) are protected by covering elements (18) and (20), made of a transparent or non-transparent, coloured if necessary, material.

7. A safety helmet according to one or more of the previous claims, characterized in that the covering elements (18) and (20) are located close to the rear and front area of the support (14) of the crown (12).

8. A safety helmet according to one or more of the previous claims, characterized in that the light-signalling devices (16, 160 are formed by a plurality of high-luminosity L.E.D. (Light Emitting Diodes) arranged according to a basically vertical and/or horizontal orientation line.

9. A safety helmet according to one or more of the previous claims, characterized in that the light-signalling devices (16, 160 are formed by luminous strips featuring a basically vertical and/or horizontal orientation.

10. A safety helmet according to one or more of the previous claims, characterized in that the light-signalling devices (16' - 16) located close to the covering elements (20) and (18) of the support (14) can be manually actuated through a multiple-position switch located close to the lower edge (22) of the crown.
11. A safety helmet according to one or more of the previous claims, characterized in that the inner and/or outer surface of the covering elements (18) and (20) is at least partly provided with knurling or facets.

12. A safety helmet according to one or more of the previous claims, characterized in that the receiver is fed with power through a battery recharged by means of sun cells lodging in the support (14) of the crown (12).

13. A safety helmet according to one or more of the previous claims, characterized in the helmet (10) is equipped with a closing strap (15) inside which there are electric cables or a metal strap with one end connected to the receiver lodging into the support (14) of the crown (12) and the other end connected to the closing buckles (150 of the strap (15) itself.
### A. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) and/or both national classification and IPC.

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched:

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

- EPO-Internal
- WPI Data

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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- Further documents are listed in the continuation of Box C
- See patent family annex

### Date of the actual completion of the international search

12 March 2007

### Date of mailing of the international search report

19/03/2007

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