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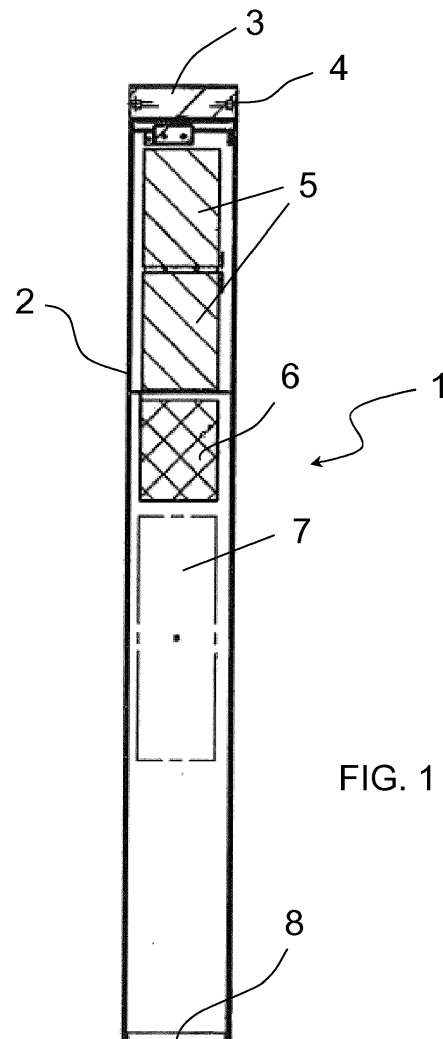
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(54) **A signaling column to improve safety of a pedestrian crossing**

(57) Signaling column (1) for a pedestrian crossing, which can be positioned in a fixed manner on a sidewalk or on the roadside and in the vicinity of a pedestrian crossing, said column comprising at least one control device (3) for activating timed luminous signaling means (4); a signaling system for a pedestrian crossing is also described, said system comprising a plurality of columns according to the invention which are connected together, wherein preferably there is a main column which powers and controls one or more satellite columns.



**FIG. 1**

## Description

**[0001]** The invention relates to the sector of road safety. More particularly, the invention relates to a signaling column for pedestrian crossings.

**[0002]** Not all pedestrian crossings are controlled by traffic lights and/or suitably illuminated. For example there are pedestrian crossings along roads where there is heavy traffic, which are not covered by traffic lights and which, as also shown by the statistical data relating to accidents, prove to be particularly dangerous especially at night time.

**[0003]** The safety of pedestrian crossings is a problem of major concern. Hitherto, (vertical or horizontal) signaling systems, the introduction of low speed limits (e.g. 30 km/h), public awareness campaigns, etc., have not solved entirely the problem and unfortunately accidents are still frequent. The problem is even greater in the case of crossings which are situated close to schools, kindergartens, old people's homes, etc., i.e. in those situations where "socially vulnerable" users are present.

**[0004]** Moreover, crossroads with traffic lights may also constitute a source of danger when the traffic lights are switched off, for example at night time when they are set to a flashing condition.

**[0005]** The aim of the invention is to provide an instrument useful for solving the problem and making pedestrian crossings safer.

**[0006]** The idea underlying the invention is that of providing a signaling column to be installed on the road side, or near the sidewalk, in the vicinity of a pedestrian crossing. The column can be operated directly by a user who wishes to cross the road and is equipped with timed luminous signaling means for signaling the pedestrian crossing.

**[0007]** Advantageously, the column also comprises (optional) acoustic signaling means for facilitating use by blind persons, in particular for providing confirmation that the column is activated.

**[0008]** Preferably, the signaling means may be operated by means of a pushbutton. Said pushbutton may be housed, for example, on top of the column. For example it may consist of a "mushroom" type pushbutton.

**[0009]** According to a preferred aspect, the column comprises an electric energy storage system, such as one or more rechargeable batteries, for low-voltage powering of said signaling means, and a respective recharging system.

**[0010]** The low-voltage (e.g. 12V or 24V) power supply system constitutes a safety feature and does not require particular insulation measures. Advantageously, the recharging system can be connected to the roadway power supply network which is normally available on the site for example for powering the road lighting system (street lamps). In this way, the column draws power from the roadway network and is recharged, during the evening and night time hours, while the street lighting is on; during the day time hours instead, when the lighting is switched

off, the column may operate by means of the internal energy storage system.

**[0011]** Another aspect of the invention consists in a controlled-yielding system for fixing to the ground. This feature results in the column being substantially harmless for motor-vehicle drivers or motorcycle or bicycle riders in the event of an accident. In fact the fixing system is such that the column gives way following an impact of a magnitude greater than a predetermined threshold value, which can be calculated for example based on the energy of the impact, measured in Joules. For example, certain methods for obtaining a controlled-yielding fixing system comprise a base with a hinge, or fixation to the ground with an element having a low flexural rigidity. In this second case, the element is deformed following impact and must then be replaced.

**[0012]** The luminous signaling means consist preferably of LEDs, and more preferably high-luminosity LEDs will be used. The applicant has found that, for example, LEDs with a luminosity of 1700 mcd are suitable.

**[0013]** The outer casing is preferably made of stainless steel, for example AISI 304 stainless steel.

**[0014]** In some situations, groups of columns may be installed, for example on the two sides of the pedestrian crossing, on the four sides of a crossroads, and so on. Preferably, the columns of such a group are connected together, forming a network, so as to be able to exchange signals (via a cable or a wireless connection known per se). In this way, pressing of the pushbutton on a column causes operation of the signaling means of the other columns. Moreover, regulation of the operating parameters, such as the flashing time or the flashing frequency, may thus be centralized.

**[0015]** Advantageously, the group of columns comprises a centralized power supply system. This represents an advantage because there is only one connection to the network, and the connections between the columns (e.g. via underground cables) are all low-voltage and therefore are not dangerous. Said centralized system may be housed inside a main column which powers and controls the other "satellite" columns, or may be situated externally, for example inside a special pit.

**[0016]** For example, in a preferred embodiment, a single column is connected to the roadway power supply network; this column (referred to as "main column") draws the power supply from the (e.g. 230 V) network and provides low-voltage power to the other columns.

**[0017]** More advantageously, the electronic control system is also centralized, for example housed inside the abovementioned main column.

**[0018]** The mode of use of the device is substantially as follows: the user who wishes to cross the road, operates the column control device, for example the pushbutton, activating the timed signaling means, for example the flashing LEDs or the like. It should be noted that the luminous signal of the column is not a code-regulated signal (such as that of a set of traffic lights), but nevertheless has a dual function: it signals to the drivers of

motor vehicles the presence of the pedestrian, who might be poorly visible, especially at night time, and also signals his/her intention to cross the road.

**[0019]** Moreover, it should be noted that the device according to the invention also has an educative value, especially for children and young persons. In fact, the habit of crossing the road, without paying attention to any oncoming vehicles, is a source of danger; using the device instead accustoms one to remaining fully attentive, regarding crossing of the road as a potentially dangerous act and therefore to be made with care.

**[0020]** The invention is now described with reference to a preferred embodiment, with the aid of the figures in which:

- Fig. 1 shows a column according to a mode of implementing the invention, cross-sectioned so that the main internal components are visible; and
- Fig. 2 shows in schematic form a group of columns which may be installed for example in the vicinity of a crossroads.

**[0021]** Fig. 1 shows a column denoted overall by 1 and comprising an outer casing 2, for example made of AISI 304 stainless steel and a movable pushbutton-type head 3 provided with signaling LEDs 4. The LEDs 4 may be distributed around the circumference so as to be visible from any angle. Preferably, the column 1 has a height of less than 1500 mm and more preferably of about 1200 mm. The diameter for example is about 140 mm.

**[0022]** The following are housed inside the casing 2: two rechargeable batteries 5; an electronic control device 6; a system 7 for recharging the batteries 5. The column according to Fig. 1 is therefore self-powered.

**[0023]** Advantageously, the two batteries 5 have an output voltage of 12 V d.c. (direct current) so as to produce overall a power supply voltage of 24 V d.c. The inventor has found that, for example, two 7-Ah lead batteries are suitable for this purpose, using 64 LEDs with a high luminosity (1700 mcd) and calculating a lighting time of 2 hours per day.

**[0024]** The recharging system 7 is connected to the roadway network via a 230 V a.c. (alternating current) input.

**[0025]** The column is fixed to the ground by means of a fixing system 8, for example using brackets.

**[0026]** Said fixing system 8, according to one of the aspects of the invention, may comprise a hinge or more generally a yielding element as a result of which the column 1 gives way in the event of a violent impact, so as to prevent the column itself from posing a danger in the event of an accident.

**[0027]** When the pushbutton 3 is pressed, timed flashing of the LEDs 4 is activated. The electronic device 6 monitors operation and in particular is able to incorporate the following functions: timing interval, pause time, remote radio control, energy saving with switching to stand-

by mode, etc.

**[0028]** The timing interval, i.e. the duration of activation of the signaling means whenever the pushbutton 3 is pressed, in particular may be fixed or variable. In some embodiments, said interval may vary depending on the conditions of use, the time of day (day time or night time) and so on. The flashing frequency may be variable, for example faster towards the end of the interval.

**[0029]** Turning to Fig. 2, an installation which comprises a plurality of columns is schematically shown. Four columns 1<sub>A</sub>, 1<sub>B</sub>, 1<sub>C</sub> and 1<sub>D</sub> are shown, which columns may be arranged, for example, at various points of a crossroads. The column 1<sub>A</sub> is connected to an electric line 10 from which the 230 V a.c. mains power supply is drawn. Said column 1<sub>A</sub> powers the other columns by means of respective low-voltage connections 11, 12 and 13. Moreover, there are bidirectional signal connections between the various columns, such that operation of the pushbutton of one of them causes lighting up of the LEDs - or other signaling means - of all the other columns (or if necessary of a given subgroup of columns in the group). The figures show a signal connection 14. In practice, both the signal connection and the low-voltage power supply connection may be obtained with a single cable. The signal connection may also be implemented wirelessly, via radio or using a suitable communications protocol.

**[0030]** The columns 1<sub>A</sub> - 1<sub>D</sub> form essentially a "network". They may be identical to each other; in an even more preferred embodiment, however, the satellite columns 1<sub>B</sub> - 1<sub>D</sub> are simplified compared to the main column 1<sub>A</sub>. For example, the satellite columns may not have one or more of the following subsystems: control electronics 6, recharging system 7 and batteries 5 since they receive the power supply and the signal directly from the main column 1<sub>A</sub>. In a further variant, the electronic control and power supply section may be centralized for all the columns and housed separately inside a pit.

## Claims

1. Signaling column (1) for a pedestrian crossing, which can be positioned in a fixed manner on a sidewalk or on the roadside and in the vicinity of a pedestrian crossing, said column comprising at least one control device (3) which can be operated directly by a user, and timed luminous signaling means (4) which can be activated by means of said control device.
2. Column according to claim 1, said control device (3) being a pushbutton preferably housed on top of the column.
3. Column according to claim 1 or 2, comprising an electric energy storage system (5) for low-voltage powering of said signaling means, and a respective recharging system (7).

4. Column according to claim 3, wherein the recharging system (7) can be connected to the roadway power supply network.
5. Column according to any one of the preceding claims, comprising a system for fixation to the ground of the controlled-yielding type, so that the column is able to give way following an impact greater than a predetermined threshold value. 5  
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6. Column according to claim 5, said fixing system comprising a hinge or an element having a predetermined deformability.
7. Column according to any one of the preceding claims, wherein the luminous signaling means (4) comprise LEDs. 15
8. Column according to any one of the preceding claims, comprising a substantially cylindrical casing (2) made of stainless steel. 20
9. Signaling system for a pedestrian crossing, comprising a plurality of columns according to any one of the preceding claims, wherein a main column (1<sub>A</sub>) and satellite columns (1<sub>B</sub>, 1<sub>C</sub>, 1<sub>D</sub>) are present and wherein the main column (1<sub>A</sub>) is connected to the roadway power supply network (10) and supplies low-voltage power to the satellite columns connected to said main column. 25  
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10. System according to Claim 9, wherein the satellite columns (1<sub>B</sub>, 1<sub>C</sub>, 1<sub>D</sub>) are simplified compared to the main column, not having one or more control subsystems (6) and/or power supply subsystems (5, 7). 35
11. System according to Claim 9 or 10, comprising signal connections (14) between the columns, of the cable or wireless type, such that operation of the control device of any one of the columns causes activation of the luminous and/or acoustic signaling means of the other columns. 40
12. Signaling system for a pedestrian crossing, comprising a plurality of columns according to any one of the preceding claims, and comprising furthermore a centralized control and power supply system which is separately housed, wherein said system controls and supplies with low-voltage power the aforementioned columns. 45  
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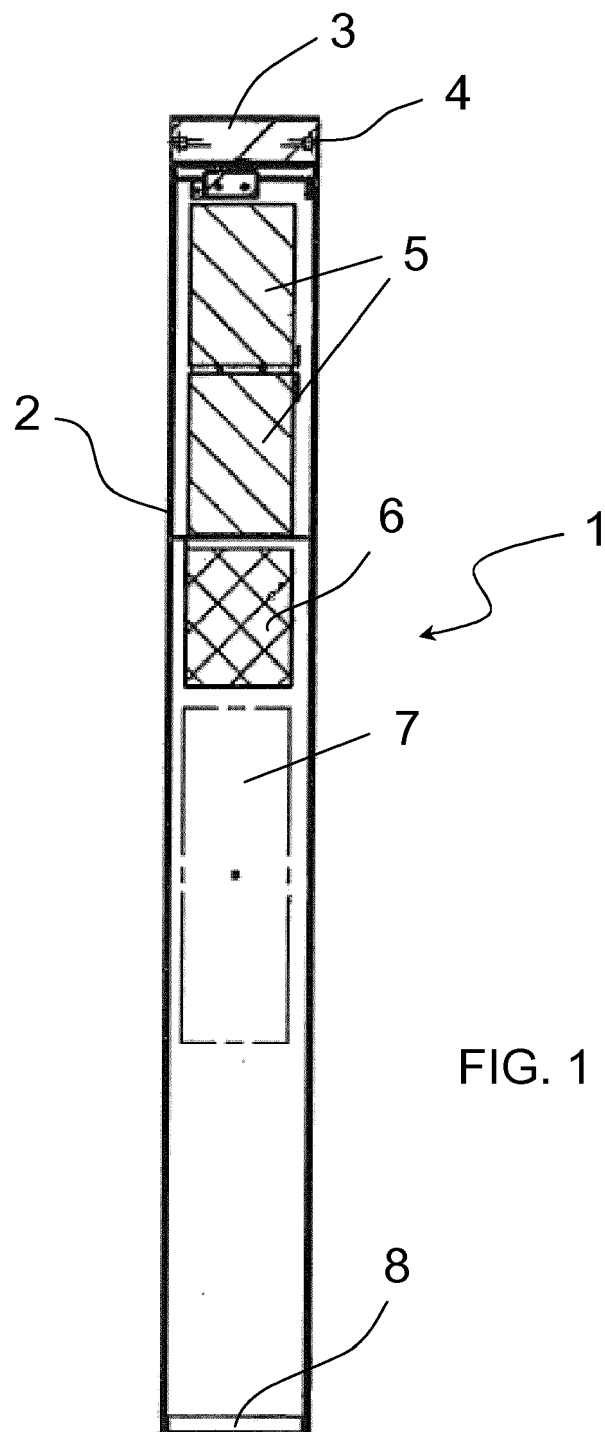


FIG. 1

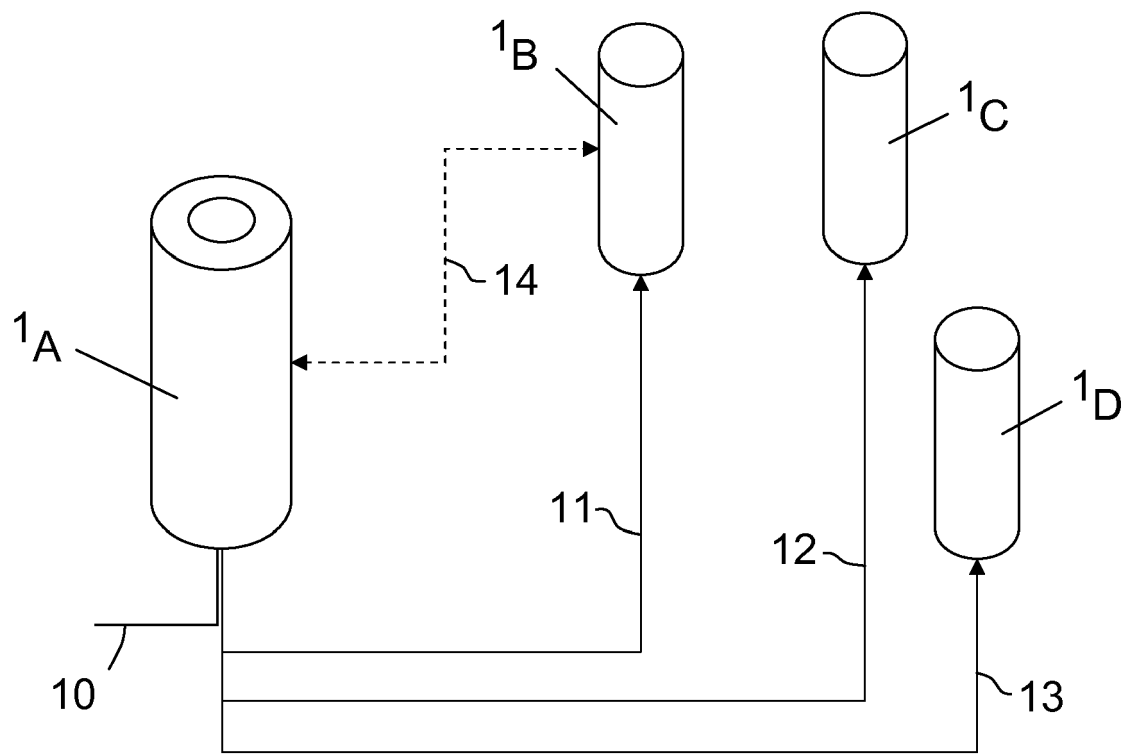


FIG. 2