



US 20070231067A1

(19) **United States**

(12) **Patent Application Publication**
Roche et al.

(10) **Pub. No.: US 2007/0231067 A1**

(43) **Pub. Date: Oct. 4, 2007**

(54) **VEHICLE VISIBILITY VEST**

(30) **Foreign Application Priority Data**

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Apr. 4, 2006 (EM) 0005451 40-0001
Apr. 4, 2006 (GB) 3024426

Publication Classification

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(51) **Int. Cl.**
E01F 9/00 (2006.01)

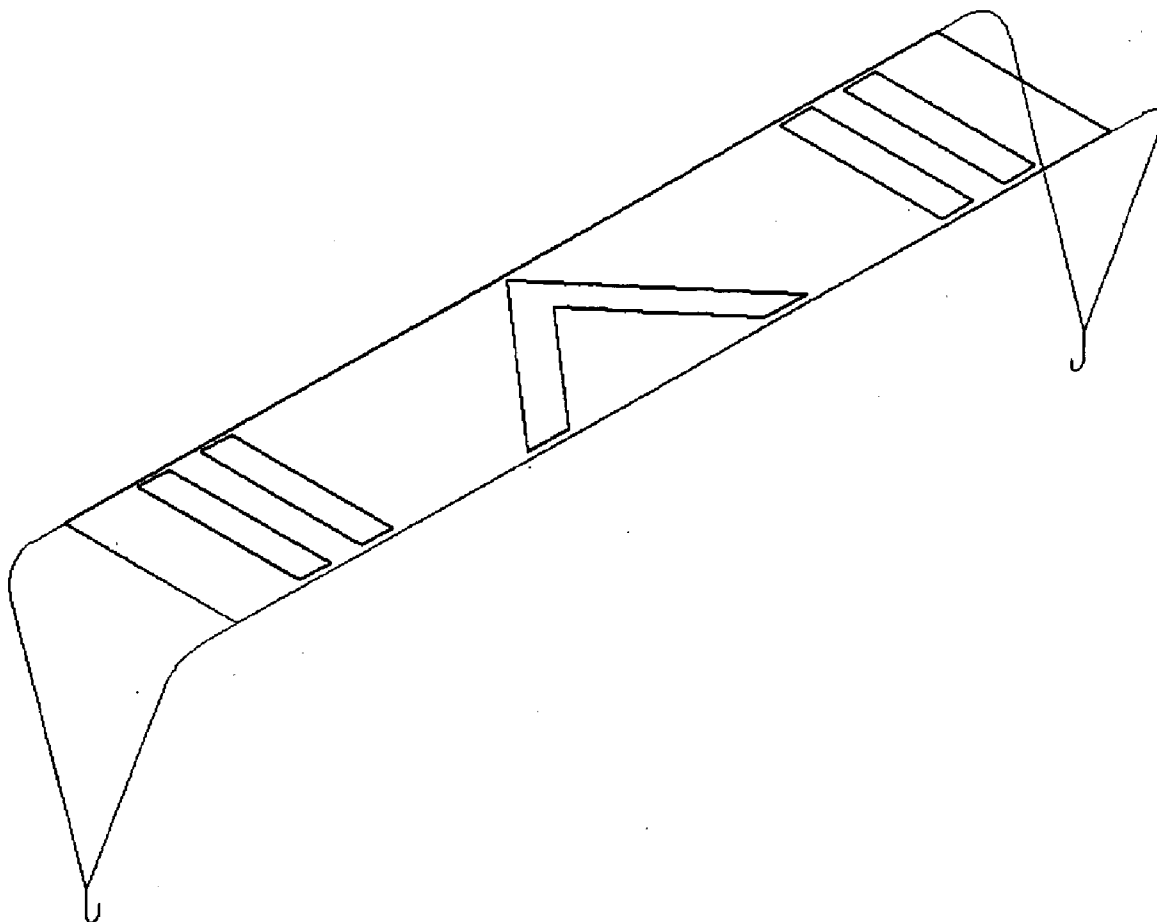
(52) **U.S. Cl.** **404/9**

(57) **ABSTRACT**

(21) Appl. No.: **11/636,556**

A high visibility fluorescent fabric and retro-reflective tape banner to be attached to the rear of a vehicle in the event of a breakdown. It will raise visibility to approaching vehicular traffic thereby reducing the risk of collision and injury.

(22) Filed: **Dec. 11, 2006**



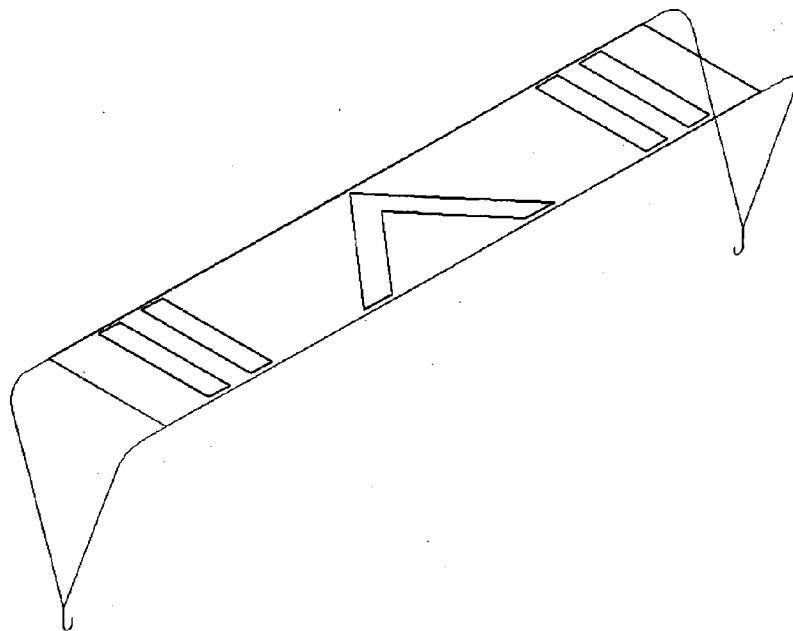


Figure 1

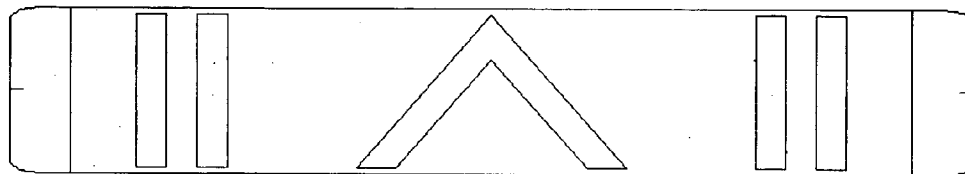


Figure 2

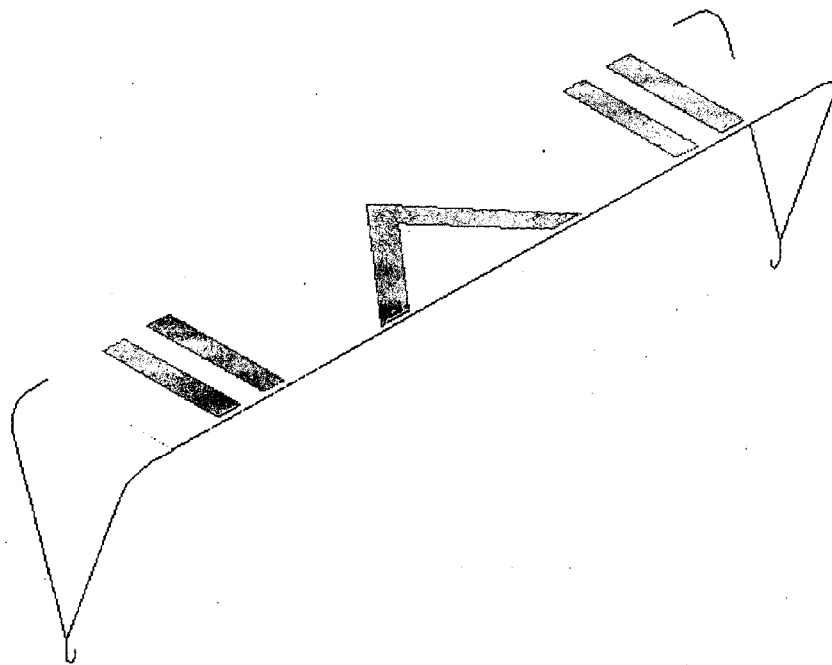


Figure 3

Figure 4

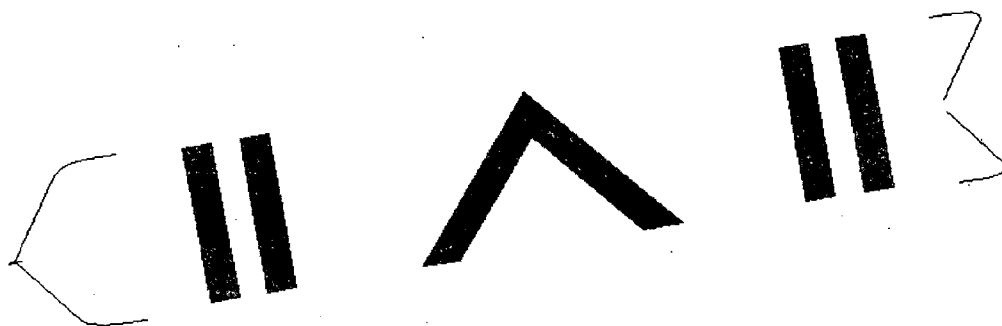


Figure 5

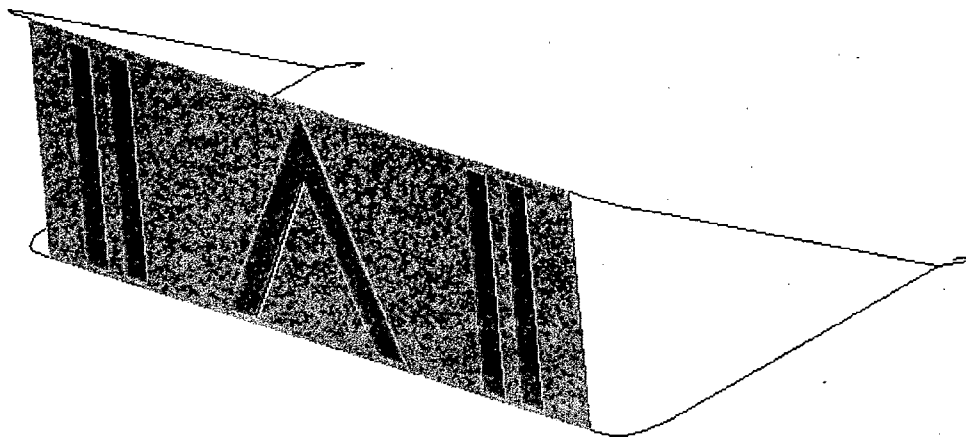
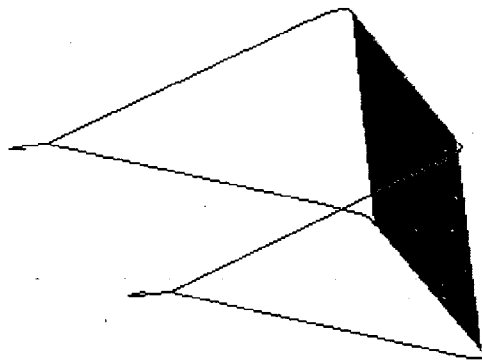


Figure 6



VEHICLE VISIBILITY VEST

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX

[0003] Not applicable

FIELD OF THE INVENTION

[0004] This invention relates to the use of existing high visibility fluorescent fabric and reflective tape commonly used in safety vests/clothing in a design for use in the event of a breakdown involving motor vehicles.

BACKGROUND OF THE INVENTION

[0005] The combination of fluorescent fabric and retro-reflective tape is widely used to produce high visibility safety clothing for workers in high risk environments, in particular for workers involved in highway construction. This safety clothing is worn because it will increase the visibility of the wearer and therefore reduce the risks of collision from passing traffic.

[0006] In recognition of this problem various standards have been proposed and adopted addressing the need for high visibility safety apparel to be worn by persons subject to vehicular hazard. For example, various states have adopted standards for safety apparel to be worn by maintenance workers on state highways. Various countries can have their own standards. These standards typically dictate minimum coverage area and placement of highly reflective material on safety apparel to be worn by the persons subject to traffic hazards.

[0007] A significant amount of deaths and injuries in car accidents are caused by drivers colliding with stationary vehicles at the roadside or edge of highway, particularly in conditions of reduced visibility, darkness, rain or snow. At present there is no requirement for drivers to increase the visibility of their vehicle if it breaks down although the use of flares is advised. This invention is designed to be used immediately upon breakdown, increasing visibility of the disabled vehicle and raising the awareness of approaching drivers. Unfortunately, a number of motorists die each year due to collisions from passing vehicles that have not seen the broken-down vehicle.

[0008] This invention is also designed to bring immediate attention to cars and drivers in distress; alerting any passing potential assistance, official or otherwise as quickly as possible. The nature of the fluorescent fabric chosen for this invention allows for high visibility during daylight, as well as during darkness. The addition of the retro-reflective stripes to the fluorescent fabric makes this invention especially visible to approaching motorists at night.

[0009] This invention works extremely well in severe automotive breakdown situations, such as ones that include inclement weather and in particular, loss of a vehicle's

lights. A large number of motor vehicles that breakdown will do so as a result of electrical problems and lack of battery power. These types of break downs are very common during winter months when many journeys are made in darkness and inclement weather and with increased demands on vehicles' electrical systems. A vehicle that suffers a break down due to electrical problems will be left without lights that will give a warning to approaching traffic. This invention will increase the visibility of a broken-down vehicle to any approaching traffic and in doing so will significantly decrease the likelihood of a collision. If the aforementioned situation occurred in a rural area, it may be some time before other motorists pass. With this invention, which can be seen (depending upon a vehicle's lights and road construction) from quite a significant distance, any passing motorists will be instantly alerted to a vehicle in distress.

SUMMARY OF THE INVENTION

[0010] This invention takes the idea of high visibility clothing and applies it to a broken down vehicle. By utilizing existing materials in a different manner we can increase the visibility of vehicles that are in hazardous situations and in doing so reduce the risk of collisions and therefore reduce the number of fatalities and injuries that would result from these collisions.

[0011] Often increasing visibility in a breakdown situation involves utilizing battery power; headlights or hazard lights. Loss of battery power is often the cause of the breakdown thereby rendering use of these lights impossible. Motorists are also taught to use flares as a means of alerting others of their distress. This implies that you have flares with your vehicle that have not expired or at all, for that matter. If one does have a working flare, it will only burn for a limited amount of time, dependent upon weather, etc. Using this invention would solve both of these problems, as it is everlasting and highly visible day and night without being reliant upon battery power. This device is also completely safe and tightly secured, making it stable, unlike flares and common hazard triangles.

DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0012] FIG. 1 is a perspective view from above right side of the invention showing the layout of the high visibility stripes on the background and the shock cords attached at either end of the invention.

[0013] FIG. 2 is a facing view of the invention showing the layout of the high visibility stripes on top of the background and the shock cord attached at the ends of the invention

[0014] FIG. 3 is a color drawing of the invention showing a perspective view from the left front below. Also shown are the shock cords with the hooks at the ends for fixing the invention to a vehicle.

[0015] FIG. 4 is a color drawing of the invention showing a facing view that indicates the layout of the retro-reflective stripes on the fluorescent background.

[0016] FIG. 5 is a color drawing of the invention showing a perspective view from the right again showing the layout of the retro-reflective stripes on the background and the shock cords and hooks used for fixing the invention to a vehicle.

[0017] FIG. 6 is a color drawing of the invention showing a perspective view from the left and slightly behind showing the back of the invention and the shock cords and hooks used for fixing the invention to a vehicle.

DETAILED DESCRIPTION OF THE INVENTION

[0018] The invention is constructed by using a rectangular background of fluorescent fabric that has stripes of retro-reflective tape attached in a distinctive pattern. A retro-reflective material is one having the ability to return a substantial portion of incident light in the direction of origination of the light.

[0019] The background material is typically a colored fluorescent material that is highly conspicuous and emits optical radiation at wavelengths longer than those absorbed. Fluorescent material enhances daytime visibility, especially at dawn and dusk, and is usually lime-yellow, red or red-orange in color.

[0020] Retroreflection, as opposed to mirror reflection or diffuse reflection, occurs when a high percentage of radiant energy is returned back in the direction from which it came, and over a wide variety of angles from which the material is being struck. A retro-reflective material has the property to reflect light directly back to the light source through a wide range of entrance angles. In particular, it will reflect a vehicle headlight back to the vehicle. The efficiency of a retroreflective material in returning light to its source is indicated by its coefficient of retroreflectivity.

[0021] A suitable example of this trim is available from 3M Company, St. Paul, Minn., as Scotchlite Reflective Vest Trim. The silver stripes have a coefficient of retroreflection, as measured by retroreflective intensity testing procedures ASTM E809 and E810, of 500 candelas/lux/square meter typical at -4 deg. entrance angle, 0.2 deg. observation angles. Reflected color is white.

[0022] There are two vertical stripes of retro-reflective tape stitched on at each end of the fluorescent background

with two diagonal stripes of retro-reflective tape forming a 'V' stitched in the central portion of the fluorescent background. The device is attached to a vehicle using shock cord fitted with hooks fixed to each end of the device that allows it to be attached to the rear wheel arch of a vehicle. The shock cords stretch to enable the device to be extended across the rear of a vehicle and then retract to hold it taut against the bumper. The shock cords allow the device to be held tightly against the rear of a vehicle so that it remains visible to any approaching vehicles and will not be affected by the wind.

[0023] The invention is typically sized at approximately 60 inches long by 12 inches wide with shock cord of 36 inches length attached at either end. These dimensions can be adapted to produce a larger or smaller version of the device that will be more easily attached to vehicles of different sizes.

[0024] It is to be understood that the above is merely a preferred mode of carrying-out the invention and that various changes and alterations can be made without departing from the spirit and broader aspects of the invention as defined by the claims set forth and by the range of equivalency allowed by law.

What is claimed is:

1. A high visibility safety device to be attached to the rear of broken-down vehicles to increase the visibility of the broken-down vehicle to other road users and thereby reduce the risk of collision for other road users. The device is constructed to comply with retroreflection standards of an acknowledged and recognized safety garment standard specifying a minimum coefficient of retroreflectivity where the stripes have an area and a coefficient of retroreflection so as to comply with European standard EN471. A safety device base formed of a fluorescent colored background material; with vertical and diagonal high visibility retro-reflective safety stripes attached to the base so as to increase visibility.

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