United States Patent

Phillips

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[54] FENDER WARNING DEVICE

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[52] **U.S. Cl.**.....**340/102,** 340/100, 340/61, 200/61.42, 200/61.44

[51] **Int. Cl.**.....**B60q 5/00**

[58] **Field of Search**.....200/52 B, 61.44, 61.42; 340/100, 102, 61, 70

[56] **References Cited**

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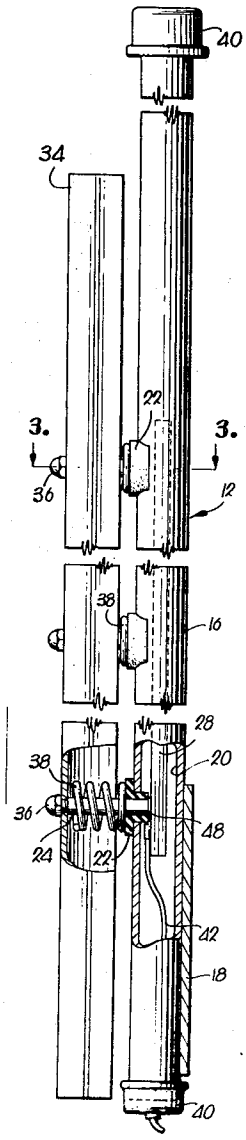
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[57] **ABSTRACT**

A warning device for a moving vehicle has an upright, electrically conductive tube connected in a series energizing circuit with an alarm, a battery, and a conductive bar shiftably mounted within the tube for movement into and out of engagement with the inner surface thereof. Three studs projecting outwardly from the bar through respective openings in the tube extend outwardly beyond a vulnerable exterior portion of the vehicle and support a shield in spaced relationship to the tube. Engagement of the shield with an obstruction causes the shield and bar to shift in unison with the bar contacting the inner surface of the tube, thereby completing the circuit and actuating the alarm. Resilient mounts within the tube openings support the studs and permit shifting of the bar toward the inner surface in a number of directions.

4 Claims, 5 Drawing Figures



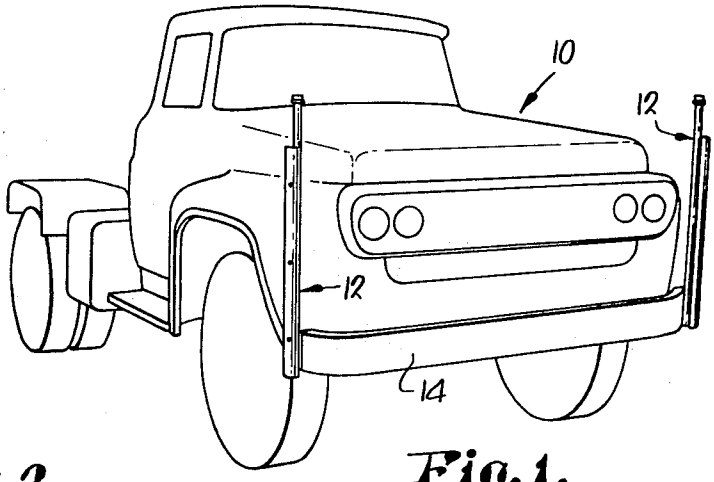


Fig.1.

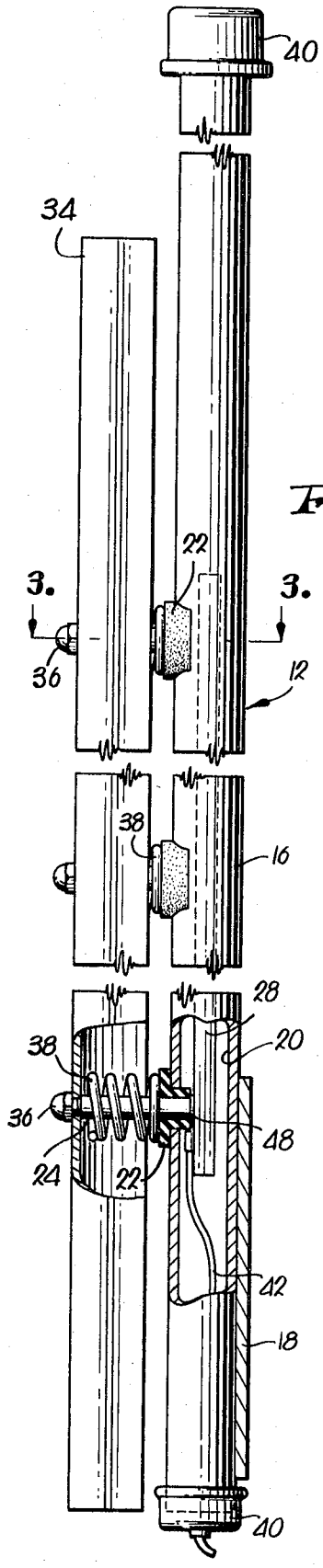


Fig.2.

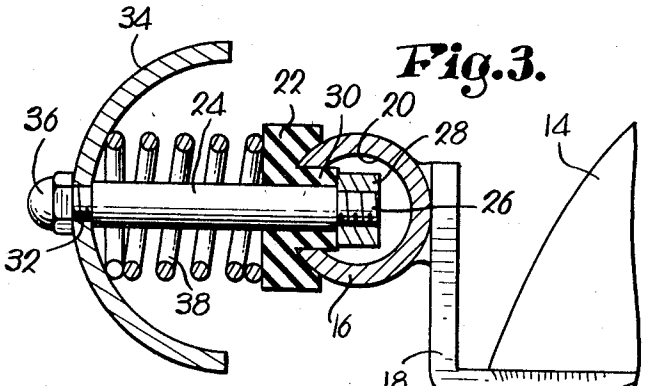
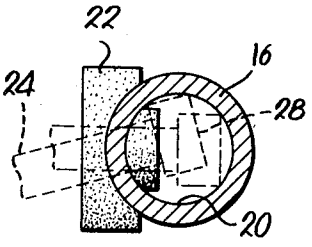


Fig.3.



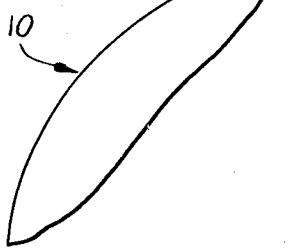


Fig.4.

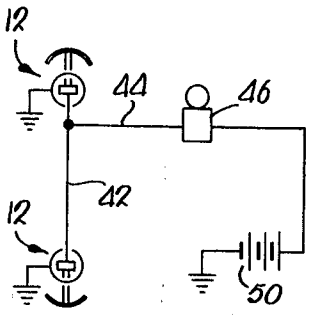


Fig.5.

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FENDER WARNING DEVICE

This invention relates to an electrical warning device which may be mounted adjacent a vulnerable exterior portion of a vehicle to warn the driver of the close proximity of an obstruction to the vulnerable portion during maneuvering of the vehicle.

In some instances the immediate area around loading docks may consist of narrow alleyways or other restricted passages which present confined areas in which to maneuver a truck, in particular, a large tractor trailer. During such manuevering the driver is required to exercise intense concentration in order to properly align his vehicle with the loading dock. Accordingly, he is often unaware of the exact position of the vehicle relative to the walls of the alley, particularly the front fenders which are especially susceptible to damage from scraping or bumping the walls.

It is, therefore, an important object of the present invention to provide a protective device which may be mounted exteriorly of the vehicle in a vulnerable position and which is actuatable upon engagement with an adjacent obstruction during maneuvering of the vehicle to warn the driver of the close proximity of the obstruction. In this respect it is an important aim to provide an alarm device which alerts the driver to the close proximity of the obstruction while allowing him to devote his full attention to aligning the vehicle.

Another important object of the invention is to provide such a device which is responsive to engagement with an obstruction form a number of different angles.

A further important object of the present invention is to provide an electrical warning device as aforesaid which is reliable and simple in construction and which will not a adversely affect the electrical system of the vehicle though exposed to moisture and inclement weather.

In the drawing:

FIG. 1 is a perspective view showing a pair of warning devices embodying the principles of the present invention mounted on the front bumper of a tractor unit;

FIG. 2 is an enlarged, fragmentary elevational view of the warning device mounted on the driver's side, parts of the device being broken away and shown in vertical cross section for clarity;

FIG. 3 is a horizontal cross-sectional view of the device taken along line 3—3 of FIG. 2;

FIG. 4 is an enlarged, fragmentary view similar to FIG. 3 illustrating various positions of the contact element during engagement of the device with the obstruction at various angles; and

FIG. 5 is a circuit diagram of the electrical circuit employed with the device shown in FIGS. 1–4.

In order to afford the most effective protection for the vehicle 10 in FIG. 1, it is preferably that at least a pair of warning devices 12 be mounted in vulnerable positions thereon, such as at opposite ends of the front bumper 14. Each device 12 includes an upstanding tubular member 16 rigidly mounted on bumper 14. Each device 12 includes an upstanding tubular member 16 rigidly mounted on bumper 14 by an L-shaped bracket 18 and having an electrically conductive inner surface 20. The member 16, illustrated herein as a steel pipe, is provided with three longitudinally spaced openings which tightly receive three flexible, rubber or plastic mounts 22 respectively, each of the mounts 22 having a central bore for slidably receiving an elongated stud 24. One end 26 of each stud 24 projects into the inside of member 16 and is threaded to engage and support therewithin an elongated, electrically conductive contact bar 28 which extends axially of member 16 between the three studs 24.

As shown most clearly in FIG. 3, the contact bar 28 is normally spaced in one direction from the conductive inner surface 20 by a projecting portion 30 of each of the mounts 22. The opposite ends 32 of the studs 24 project outwardly from the member 16 and support bumper structure in the form of an upright, elongated transversely concavo-convex, aluminum shield 34 rigidly held thereon by threaded acorn nuts 26. As may be noted viewing FIG. 3, outwardly beyond the fender of vehicle 10, thereby insuring that the fender does not made the initial contact with an adjacent obstruction. A return spring 38 surrounding each stud 24 between mount 22 and shield 34 yieldably biases the latter outwardly from member 16 and, in addition, yieldably maintains the bar 28 in its normal position against portion 30 apaced from surface 20.

A cap 40 is provided at each end of member 16 to weatherproof the components therewithin, the lower cap 40 having a hole therein permitting entry of one branch 42 of the ground lead 44 from a bell alarm 46 which is preferably located within the cab of vehicle 10. The eyelet terminal 48 of branch 42 is carried by the end 26 an stud 24 between mount portion 30 and bar 28, and energy is conveniently supplied to the series circuit by means of the vehicle battery 50, with the devices 12 being grounded through the bumper 14.

As mentioned above, when each of the devices 12 has been properly mounted for use, the shields 34 should be disposed to engage the alley wall or other obstruction before the fender of vehicle 10. It may be seen that the generally arcuate configuration of shield 34 makes each warning device 12 particularly receptive to engagement with an obstruction from a variety of angles, that is, the shield 34 is receptive to forces applied not only in a direction parallel to the longitudinal axes of the studs 24, but also in a direction substantially perpendicular thereto.

If the shield 24 bumps the obstruction at an angle generally parallel to the longitudinal axes of the studs 24 the latter will be shifted in relatively straight line fashion through the mounts 22 as springs 38 are compressed. During this action, the bar 28 moves in unison with the shield 34 into its actuated position in engagement with surface 20 of member 16 as shown in FIG. 4. Engagement of bar 28 with the surface 20 completes the electrical circuit and actuates alarm 46 to warn the driver of the nearness of the obstruction. Upon movement of vehicle 10 to clear the shield 34 from engagement with the obstruction, the springs 38 return shield 34 to its outer position and relocate the bar 28 in its normal position against portion 30, thus breaking the circuit and silencing alarm 46.

If the shield 34 scrapes the obstruction in a direction other than parallel with the axes of studs 24, the studs 24 flex the yieldable mounts 22 and swing the bar 28 into electrical contact with the surface 20 as shown in FIG. 4.

It may be appreciated that by utilizing the present invention, even a careless driver cannot excuse damage to the vehicle on the ground that maneuvering limits were too confining. Furthermore, the invention eliminates the need for constant concern over the exact location of vulnerable portion of the vehicle, and thus allows the driver to concentrate completely on the job of properly aligning the vehicle with the loading dock.

What is claimed is:

1. A protective device for warning the operator of a moving vehicle of the close proximity of an obstruction, said device comprising:

a support member including an elongated tube having a plurality of longitudinally spaced openings therein and an inner surface presenting electrically conductive contact means;

means for rigidly mounting said member on the vehicle adjacent an exterior portion thereof to be protected from damage;

shiftable bumper structure carried by said member and adapted to be disposed for engagement with the obstruction;

a shiftable, electrically conductive contact bar disposed within said tube and having a normal position in spaced relationship to said contact means and an actuated position in engagement therewith; means interconnecting said structure and said bar for movement in unison to shift the bar to its actuated position upon engagement of the structure with the obstruction,

said interconnecting means including a plurality of support arms rigid with said bar and spaced longitudinally thereof, extending outwardly therefrom through respective openings, and supporting said bumper structure in spaced relationship to said tube; and

an electrically operable arm for signalling the operator and electrically connected in a series energizing circuit with said bar and said contact means whereby, when the bar is shifted to its actuated position, the alarm is rendered operable.

2. The protective device as claimed in claim 1, there being yieldable means at said openings shiftably mounting said arms on the tube for movement of the bar therewith in a number of directions toward said inner surface in response to engagement of the structure with said obstruction.

3. The protective device as claimed in claim 2, there being spring means in engagement with said bumper structure for returning said bar into spaced relationship with said inner surface following engagement of the structure with said obstruction.

4. The protective device as claimed in claim 3, said yieldable mounting means having an insulating portion thereof projecting into said tube beyond said inner surface, said portion being engageable with said bar to space the same from the inner surface when the bar is returned by the action of said spring means.

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