

IMPROVED WARNING SIGN

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Field of the Invention

The invention relates to warning signs and, in particular, warning signs for
5 indicating danger related to road safety. Further, the invention relates to those
instances where following an accident, it is necessary to warn passing vehicles of
the danger. To this end, the invention provides added convenience and
functionality for impromptu use.

Background

10 There exists a plethora of different warning signs used in relation to road
safety. It follows that the vast majority of these are used and deployed by
statutory and other government bodies to warn the general public of potential
danger. Typically, transport departments, police, fire department, ambulance and
the like all use different devices to warn of an accident, stalled vehicle or other
15 impending hazard to the flow of traffic.

Often a member of the general public who is first on the scene in the case
of an accident or will first notice a hazard to the traffic flow. Not surprisingly,
members of the general public will not be equipped with high quality or a variety
of warning devices and will often be required to use makeshift devices to act as a
20 signal to other drivers. Conditions of reduced visibility, which will often lead to the
original hazard, are also the conditions in which a member of the general public
will wish to warn other drivers. However, without the correct equipment, any
makeshift device used to warn drivers will lack the most basic means to enhance
visibility and so will be of little effect.

25 There are, however, commercially available warning devices for use in
such circumstances and have been available to the general public for some time.
Typically, these are warning signs, commonly being of a triangular shape, and
having a reflective surface so that drivers approaching the hazard can identify
said hazard. An example of such signs is the type placed on the inside of the
30 trunk-lid of some makes of car whereby a member of the general public, having
identified a hazard, will park a safe distance (20 metres being a United Nations
recommendation) from the hazard and will lift the trunk lid so as to display the
highly visible warning sign located thereon. Such a device is not always useful



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when one considers that when raining it is undesirable to open the boot lid and so allow ingress of rain. In any event, the use of such signs is not widespread among car manufacturers and does not provide for other members of the general public who are not driving a vehicle.

5 There are also available similar highly visible warning signs, which may be separably erected on the ground through connection with a foldable stand. These are convenient as they can be stored and deployed as necessary. However, being at ground level, the visibility of the sign to oncoming traffic is reduced, particularly for high clearance vehicles. Further, the driver of an oncoming vehicle
10 will often only notice the warning sign when it looms into view after the second vehicle has moved out of his arc of vision, which can potentially happen very close to the hazard.

A further application of a commercially available warning sign is having a magnetic base wherein the sign may be attached to an object made from a
15 ferromagnetic material such as the side of a car, a street sign, or other flat surface. It follows, however, that such a flat surface, which is also conveniently located so as to maintain visibility, is often not available and so rendering the convenience of a magnetic base unusable in practical terms.

It would, therefore, be useful to have a warning sign which may be
20 conveniently stored in a vehicle and when required may be useable on a wide range of surfaces and objects so as to be able to place the warning sign in the optimal position for visibility by oncoming traffic.

Statement of the Invention

It is therefore an object of the invention to optimize the visibility of the
25 warning sign by maximizing its opportunity for attachment to an object.

The invention provides, therefore, a warning sign for attachment to an object, said warning sign including a front display face, a rear magnetic face, and a discrete element having elevated magnetic properties, wherein where a ferromagnetic portion of the object is curved, the warning sign is capable of
30 moulding the rear magnetic face to the curved surface and where the object has only a small portion, which is ferromagnetic, the discrete element is capable of attaching the warning sign to the small portion.

It is known to have warning signs with magnetic attachments so that they can be affixed to a flat ferromagnetic surface, which is conveniently available, proximate to a hazard. However, for a warning sign to have its intended effect, visibility to oncoming traffic must be optimized so as to avoid further accidents
5 occurring through drivers being unaware of the hazard until it is too late. To this end, the present invention maximizes the opportunity to use the sign by making use of recent magnet technology. A popular use of warning signs is to mount them to a conveniently placed vehicle. Because many of the panels, and particularly those around the trunk area, are curved, it is difficult to securely
10 mount warning signs of the prior art and so this has generally been unsuccessful. The present invention, however, provides affixability of the warning sign to a curved surface of a ferromagnetic material. Thus, any of the car panels, may be selected by the user to optimize visibility by oncoming traffic.

In a preferred embodiment, the warning sign itself may be made from a
15 flexible, magnetic material whereby the reflective material and other typical high visibility surfaces are applied to one side with the opposing side available for mounting to a curved surface. This preferred embodiment has further advantage in that if the warning sign is made from such a flexible magnetic material, then it will consequently be very light and may be flexible enough to roll up so as to fit
20 conveniently in a car trunk or glove box.

There will be circumstances where the optimal location of the warning sign, so as to maximize visibility, may not be a large ferromagnetic surface, curved or otherwise. Instead, the only object having a ferromagnetic portion may be as small as a bolt head projecting from a timber beam, a conveniently placed wire
25 fence, the handle bars of a bicycle, or even a car jack. In each of these cases, whilst a ferromagnetic portion is available, none provides a surface onto which a warning sign of the prior art could be securely fixed. It should be noted that a warning sign being proximate to a road must be able to support, not only, its own weight, but must also remain securely fixed due to wind from passing vehicles, or
30 storm conditions. The warning signs of the prior art are not usable with any of the aforementioned objects. Consequently, a prior art sign would be placed in a non-optimal position compromising visibility and so providing little or no benefit. Because the present invention provides for a discrete element having elevated

magnetic properties, the user has a vastly increased range of positions in which to place the warning sign as compared to the warning signs of the prior art.

In another preferred embodiment, the discrete element may be at least one super magnet placed so as to effect attachment to a small ferromagnetic object.

5 There are many instances where the most convenient place to place a warning sign is not on the road surface, nor attached to a large vehicle or large object but, instead, to a post that may be supporting a fence or form a road barrier. If such a post is made of timber, then the only ferromagnetic portion available in this optimal position may be a projecting bolt head from the post. A magnetic warning

10 sign of the prior art would be unable to support itself on such a projection and, thus, this optimal position would be rejected. The present invention, however, permits selection of such a location and, thus, provides a clear advantage over the prior art.

The super magnet may be in the form of a button magnet having 4,200

15 surface gauss which provides sufficient strength to hold the warning sign on the thin edge of an opened, rear trunk lid of a car. In this example, when the trunk lid is opened and the warning sign is mounted, the sign will typically be positioned some two metres above the road surface providing excellent visibility for oncoming traffic.

20 In another preferred embodiment, the super magnet may be a separate member, so that the warning sign is placed between the magnet and the mounting point.

Alternatively, the magnet may be bonded to the rear face of the warning sign, attaching directly to the mounting point.

25 In another example of the present invention, where it is desired to place the warning sign a considerable distance from the hazard, but no convenient position is available, a car jack can be used as the ferromagnetic object to which the warning sign is attached. Because a car jack does not have a large flat surface on which to attach a magnetic warning sign of the prior art, this is not an

30 application that has previously been available. The present invention, however, permits such an attachment and so further increasing the applicability of the present invention as compared to the prior art.

Description of Preferred Embodiment

It will be convenient to further describe the present invention with respect to the accompanying drawings, which illustrate possible arrangements of the invention. Other arrangements of the invention are possible and, consequently, the particularity of the accompanying drawings is not to be understood as superseding the generality of the preceding description of the invention.

Figure 1 is an elevation view of the warning sign according to the present invention, from the display face;

Figure 2 is an elevation view of the warning sign of Figure 1 from the rear magnetic face.

Figure 3 is a side elevation view of one application of the warning sign of Figure 1 according to the present invention.

Figure 1 shows a warning sign 1 according to the present invention having an overall shape of an equilateral triangle of sides approximately 290 mm. The warning sign 1 is substantially made from a flexible magnetic material having the properties and resiliency of the elastomeric parent material. On a display face of the warning sign 1 has been pasted Diamond Grade reflective materials from 3M Inc. and arranged in an orientation recognised internationally to represent a hazard condition. Specifically, there is an outer border 2 of 3M Scotchlite Reflective Sheeting of the colour designation Red 3992 providing a 30 mm border around the peripheral edge of the warning sign 1. Within this border is located a further border 3 of the same material having a colour designation Fluorescent Orange LDP3924F/G, with this second border 3 being of width 12 mm. Within this second border 3 is infill 8 being of colour designation Silver 3870/2870. Finally, within the infill 8 is located an "exclamation mark" of colour designation Black 1178. The highly reflective and visible borders 2, 3 and infill 8 provide a dramatic contrast to the central black "exclamation mark" and together are recognised internationally as designating a warning for a hazard. It is to be noted that the foregoing description of the display face represents one possible arrangement and in no way limits the possibility of a different arrangement for the display when applied to the present invention.

Super magnet 7 is a button magnet of dimensions 10 mm x 10 mm, having a 4,200 surface gauss and so designed to have substantially greater

magnetic properties than that of the flexible magnetic material from which the warning sign 1 has been made. In this preferred embodiment, super magnet 7 is selectively detachable from the warning sign. In use, the warning sign 1 is placed over a mounting point, being a small ferromagnetic object. The super magnet 7 is then placed on the display face of the sign 1 corresponding with the mounting point. Thus, the sign 1 is held in place, sandwiched between the super magnet 7 and the mounting point

Figure 2 shows rear face 6 which is adapted for attachment of the warning sign 1 to a ferromagnetic object (not shown).

10 The key aspect of the present invention is the combination of the general magnetic properties of the warning sign so as to make it affixable to a ferromagnetic surface, the use of a flexible magnetic material for the entire warning sign 1 permitting attachment of the warning sign 1 to a curved surface and, lastly, the addition of super magnet 7. In circumstances where a large
15 ferromagnetic surface is not available for attaching the warning sign 1, because of the placement of the super magnet 7, any ferromagnetic object, large or small, may be utilised for attachment.

Typical locations of prior art warning signs include the inside face of a trunk lid of a car or, in combination with a stand, placed on the road surface or the roof
20 of a car. Whilst circumstances may make such positions optimal, this will not always be the case. Often, the optimal position for visibility will not coincide with the location of a flat ferromagnetic surface. Because the magnetic warning signs of the prior art do not provide the flexibility to attach to a curved surface, they are limited to use on a flat ferromagnetic surface.

25 Figure 3 shows a parked vehicle 11 having been arranged in a position to warn oncoming traffic of a hazard. The trunk lid 9 of the vehicle 11 has been opened to its full extent and attached to a leading edge 12 of the trunk lid 9 is positioned the warning sign 1 of the present invention. The arrangement of Figure 3 provides an example of the application of the invention that would be
30 unavailable to warning signs of the prior art. In this instance, the owner of vehicle 11 has sought to provide maximum visibility of the warning sign 1 by attaching the warning sign 1 to the leading edge 12 of the trunk lid 9. This is achieved by the warning sign 1 having its display face 5 directed rearwardly from the vehicle 11.

In normal circumstances the magnetic attraction of the magnetic material from which the warning sign 1 is made would be insufficient to maintain a secure attachment to the thin edge 12 of the trunk lid 9. Consequently, the super magnet 7 has been placed on the opposing side to the edge 12, securing the warning sign 1 between said magnet 7 and the edge 12. This provides a distinct advantage over similarly mounted warning signs which are located on the inside face 10 of the trunk lid 9. The edge 12, being of greater elevation than position 10, provides an enhanced visibility of the warning sign 1 and so greater functionality of the invention.

10 Further, examples of locations where the present invention may be used but warning signs of the prior art cannot include:

A. Attachment to a car jack so that in a circumstance where mounting on the road surface is preferable. A purpose-built stand is not required as the present invention can be attached to portions of the car jack.

15 B. The curved rear panels of a car. If it is raining and the driver does not wish to have the trunk lid open, the present invention provides for attachment to the vehicle.

C. If the vehicle is a form of utility vehicle where the rear tray is substantially timber, the present invention may still be mounted to the rear at a 20 bolt head or the support frame through use of the super magnet.

D. If the vehicle is a bicycle or motorbike, the present invention can be attached to the frame. This is particularly applicable to the present invention as the flexibility of the magnetic material allows for folding or rolling of the warning sign and so the warning sign of the present invention may be conveniently carried 25 within a motorcycle or bicycle.

E. A fence, such as a wire fence having a ferromagnetic material used for the fencing material, is sufficient for the present invention but is insufficient to provide the flat ferromagnetic surface required of the prior art warning signs.

THE CLAIMS

1. A warning sign for attachment to an object, said warning sign including a front display face, a rear magnetic face and a discrete element, having elevated magnetic properties, wherein where a ferromagnetic portion of the object is curved, the warning sign is capable of moulding the rear magnetic face to the curved surface, and where the object has only a small portion which is ferromagnetic the discrete element is capable of attaching the warning sign to the small portion.
2. The warning sign according to claim 1 wherein the discrete element is a unitary member which is placed on the front face in a position corresponding to the position of the small object when said object is in contact with the rear face.
3. The warning sign according to according to claim 1 wherein the discrete element is integral with the rear magnetic face.
4. The warning sign according to any one of the preceding claims wherein the discrete element is a super magnet.
5. The warning sign according to claim 4 wherein the super magnet has a surface gauss of at least 4200.
6. The warning sign according to any one of the preceding claims wherein the warning sign is substantially made from a flexible magnetic material.
7. The warning sign according to claim 6 wherein the flexible magnetic material is an elastomer impregnated with a magnetized ferromagnetic material.
8. The warning sign according to any one of the preceding claims wherein the display face is marked with an internationally recognised symbol designating a hazard.

9. The warning sign according to any one of the preceding claims wherein the display face is marked with a Diamond Grade reflective materials.