(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 489 786 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.08.2012 Bulletin 2012/34

(51) Int Cl.:
E01F 9/03 *(2006.01)*

(21) Application number: **12250038.2**

(22) Date of filing: **21.02.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **21.02.2011 GB 201102979**

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(54) Guard for a safety barrier

(57) This invention relates to a guard (5) for an elongate safety barrier to provide added protection for workmen who are working alongside the safety barrier. The guard comprises a mounting bracket (6) to mount onto the safety barrier and that holds in use an arm (7) whereby the arm projects transversely from the barrier so that its distal end remote from the barrier is a predetermined distance from the axis of the barrier to define a safe operational distance from the safety barrier for workmen. The mounting bracket may be ingeniously formed as a clip to clip onto the beam of the barrier quickly at any point and the arm is suitably flexible for safety and suitably demountable from the mounting bracket for stowage or replacement. The arm suitably carries a line at its distal end.

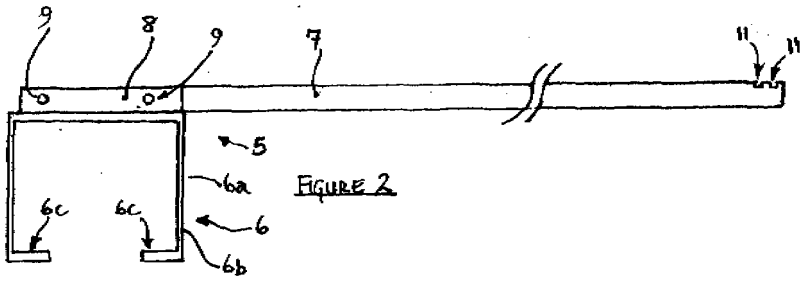

FIGURE 2

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Description

Field of the Invention

[0001] The present invention concerns a guard for a safety barrier which is adapted to provide added protection for workmen who are working alongside the safety barrier. The guard applies primarily to temporary/ mobile barriers for road construction and maintenance works but may also be useful for other similar situations where workers need to work alongside a safety barrier in proximity to fast-moving vehicles.

Background to the Invention

[0002] During road construction and maintenance works it is customary to separate the lane in which the work-men are operating, e.g. hard shoulder, from the nearest open traffic lane by a safety barrier. The primary current model of safety barrier for road traffic in universal use throughout the UK is a robust steel mobile safety barrier known as the VARIOGUARD(R) as manufactured by Asset International.

[0003] Referring to Figure 1, this commonest mobile safety barrier comprises modular barrier lengths 1 of the order of 4m long and each ground-standing to be of the order of 0.9m high to deflect road vehicles. Each barrier length 1 has a broad support base 2 that is 0.7m wide at the ground and tapering inwardly upwardly to grip and hold upright a number of posts or legs 3 at spaced intervals along its length. The tops of the posts 3 bear a horizontal box beam 4 that is fixed to the post tops. The system is designed to be installed rapidly in the 4m lengths with the lengths linked together end-to-end. The assembled chain of barrier lengths 1 primarily relies on its weight to hold it in place, being anchored only at conveniently spaced apart terminal locations, which are commonly hundreds of metres apart. The safety barriers of this type are extremely quick to install in long lengths and generally do their job well but they can present a particular hazard when struck by vehicles in that they can in some circumstances transmit an impact wave along the chain of the safety barrier that can cause it to whip farther down the chain. This can be dangerous to work-men that are too close to the barrier when whipping occurs. For most practical purposes it is necessary for the work-men to stay a minimum distance of between about 0.9m and 1.03m away from the safety barrier at all times in case such impacts arise but they will often stray over th is limit.

[0004] It is an objective of the present invention to provide a guard for a safety barrier of the type in question and which seeks to mitigate or prevent such hazard by ensuring the workmen keep their distance from the barrier.

Summary of the Invention

[0005] According to a first aspect of the present invention there is provided a guard for an elongate safety barrier to provide added protection for workmen who are working alongside the safety barrier, the guard comprising a mounting bracket to mount onto a safety barrier and that holds in use an arm whereby the arm projects transversely from the barrier so that its distal end remote from the barrier is a predetermined distance from the axis of the barrier to define a safe operational distance from the safety barrier for workmen.

[0006] Particularly usefully, the mounting bracket has a resilient clip structure for quick assembly to a safety barrier. This greatly enhances speed and economy of installation and especially where the barrier is already in place and the guards are fitted to the barrier in situ. For the commonest type of mobile safety barrier described above the mounting bracket has a form that is shaped to embrace the box beam at the top of the barrier. It preferably has an open collar-like form with a limb or pair of limbs that reaches around the barrier's beam. The limb or limbs resiliently flex open like jaws to fit around the barrier's beam.

[0007] In the preferred form the mounting bracket has a pair of opposing limbs that fit over the respective opposing sidewalls of the box beam and with inward returning lips. The lips face the underside, if mounted from above, or topside, if mounted from below, of the box beam to secure the mounting bracket to the barrier.

[0008] For extra security of hold of the mounting bracket to the barrier when installed, the bracket may be provided with a clasp or other releasable fastening means on the limb or limbs to releasably fasten the limb or limbs in place, closed around the barrier.

[0009] The mounting bracket is preferably moulded of plastics or may be of a light spring steel to provide the resilient clipping function. It does not need to be strong since it does not need to have a barrier function. The purpose of the guard is to deter workmen from straying too close to the safety barrier. It is suitably clipped onto the beam of the barrier at intervals along the length of the barrier, for example at intervals of the order of every 5m along the barrier.

[0010] The arm may be marked or coloured for high visibility, ie with yellow or red or other colours that contrast strongly to the grey of the steel barrier and may suitably have luminous coloration and or striped hazard warning markings thereon_ It may be provided as a set of coloured arms that provide a countdown marker to alert to the proximity of the entrance to/ exit from the workmen's area.

[0011] The distal end of the arm away from the barrier preferably is adapted to receive a rope, cord, tape or other elongate line that may be strung therefrom parallel to the length of the barrier. In preferred embodiments the distal end of the arm has apertures for the line to pass through or, better still for speed of installation, one or more notches on an edge through which the line may pass.

[0012] Importantly the arm is flexible to be able to flex if struck by a vehicle so that it does not represent a hazard

itself. Suitably it is of a plastics material - preferably an extrusion of a plastics, e.g. such as of nylon or polyethylene, and preferably has the form of a slim bar. In one embodiment it resembles a thick plastics metre ruler in its form and dimensions. Under extreme impact the arm will suitably snap off.

[0013] The mounting bracket preferably is configured to de-mountably hold the arm so that the arm may be replaced if it is damaged and allowing for stowage of the arm alongside the barrier lengths in storage or transport. The bracket suitably has a socket into which a proximal end of the arm mounts and which suitably has one or more releasable clamping means such as for example a threaded bolt that engages and releasably secures the arm in the socket. In practice it is preferred to pre-assemble the arms to the mounting brackets off-site to allow for speedy installation.

[0014] In other embodiments of the invention the mounting bracket/ mount for the arm may be formed or assembled integrally to the safety barrier so that the guard becomes an in-built feature of the safety barrier requiring only the addition of the arm on-site. The mount in that case may comprise a simple socket on a side of the box beam of the barrier and preferably having a fastening means to secure the arm in the socket in use.

Brief Description of the Drawings

[0015] A preferred embodiment of the present invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a vertical section view of a typical VARIOGUARD(R) road traffic safety barrier to protect workmen, showing the base, upstanding support post and box-section horizontal beam of the barrier,

Figure 2 is a side elevation view of the guard of the preferred embodiment of the present invention, showing the mounting bracket that fits onto the box beam of the barrier and the arm extending from the bracket;

Figure 3 is a plan view of the guard of Figure 2 from above;

Figure 4 is an end elevation view of the guard;

Figure 5 is a side elevation view of a variant of the bracket incorporating a securing clip; and

Figure 6 is an end elevation view of the Figure 5 bracket.

Description of the Preferred Embodiment

[0016] Referring to Figure 1. the typical VARIOGUARD(R) road traffic safety barrier to protect workmen comprises a base 2, upstanding support post 3 and box-section horizontal beam 4 that extends in the lengthwise direction/ axis of the barrier 1 as noted previously.

[0017] The guard 5 of the preferred embodiment of the present invention comprises a mounting bracket 6 that is adapted to quickly and securely fit onto the box beam 4 of the barrier 1. The guard 5 also comprises an arm 7 extending a predetermined distance from the mounting bracket 6 orthogonal to the bracket 6 such that it is substantially horizontal and orthogonal to the lengthwise direction/axis of the barrier 1 and provides the required safe clearance from the barrier 1. The extent of projection of the arm 7 corresponds to the allowed speed of traffic in the adjacent open traffic lane. This is suitably of the order of 600mm for slow-moving 50mph restricted traffic or greater for higher traffic speed limits e.g. of the order of 900mm at about 60mph or of the order of 1030mm for speed of traffic up to 70mph. Indeed the arm 7 may be fitted to the mounting bracket 6 in a way that allows adjustment of the length of projection of the arm 7. preferably in discrete steps to suit the allowed speed of traffic.

[0018] The mounting bracket 6 is moulded of plastics or formed of a light spring steel and defines a resilient clip structure 6a. It has limbs configured to embrace the box beam 4 at the top of the barrier 1 and through resilient flexure apart of the limbs like an opening jaw it may be put into place on the beam 4 at any point along the length of the beam 4 and the limbs resiliently close together to fit or grip around the beam 4. The clip structure 6a has a collar-like form with an opposing pair of limbs 6b that extend over the respective opposite sidewalls of the box beam 4. The lower ends of limbs 6b have inward returning lips 6c that extend towards each other and face against the underside or topside of the box beam 4 to clippingly detain and secure the mounting bracket 6 to the barrier 1. The mounting bracket 6 may be fitted to the box beam 4 from above or from below and In the letter case will fall vertically more readily when disengaged from the box beam 4.

[0019] In a variant of the mounting bracket shown in Figures 5 and 6, the bracket may have the limbs 6b configured to be fastened secure together once they have snapped resiliently close in together around the box beam 4. Here the bracket is slimmer and one or both of the returning lips 6c are longer to meet closer together and be secured/ latched close together by a latching clip or clasp 10. The latching clip or clasp 10 shown is of quick-release type, having a pivoting loop 10a of the clasp 10 on one lip 6c that engages with a hook 10b of the clasp 10 on the other lip 6c.

[0020] The mounting bracket 6 may be further adapted to have a socket or auxiliary bracket 6d as mounting means to hold a countdown marker flag to the barrier to highlight proximity to the exit / entry points through the barrier to the works area. The marker flags might for example comprise a set of a few vertical poles that are each of different colour to denote increasing proximity to the

exit / entry point. Alternatively, rather than having a separate marker, the arm 7 may be provided in a set of different colours to serve as the countdown marker to denote increasing proximity to the exit / entry point.

[0021] In a simpler but much less convenient and far less versatile variation of the mounting bracket 6, it may have a complete or broken collar-like form but not as a resilient clip structure and be adapted to slidingly mount onto a box-beam 4 from one end rather than being directly clip-mounted in a selected position. Nevertheless it is far preferred that the mounting bracket 6 be a resilient clip structure as described and since it is this that makes the device so practical and economic to use. For newly manufactured road traffic safety barriers the arm-mounting bracket 6 of the guard 5 may be integrally installed/ assembled to the barrier 1, suitably projecting from the box-beam 4 of the guard 5.

[0022] The arm 7 is suitably an extrusion of a plastics, e.g. such as of nylon or polyethylene, and has the form of a slim bar. As illustrated it resembles a thick plastics metre ruler in its form and dimensions. It is flexible to be able to flex if struck by a vehicle so that it does not itself represent a hazard and under extreme impact the arm 7 will simply snap off. The mounting bracket 6 has a tubular socket 8 to de-mountably hold the arm 7 so that the arm 7 may be replaced if it is damaged. The proximal end of the arm 7 mounts slidingly into the socket 8 and a pair of clamping bolts 9 are screwed in to engage and releasably secure the arm 7 in the socket 8. In practice it is preferred to pre-assemble each arm 7 to the respective mounting bracket 6 off-site to allow for speedy installation.

[0023] The arm 7 is marked for high visibility, ie with yellow and/ or red or other colours that contrast strongly to the grey of the steel barrier and serve as hazard warning markings. The distal end of the arm 7 away from the barrier 1 is adapted to receive a rope, cord, tape or other elongate line strung from it parallel to the length of the barrier 1. As illustrated the distal end of the arm 7 has a pair of notches 11 on an upper edge through which the line may pass and whereby the line may be wrapped around the arm 7 and tied/ knotted in place at one end.

[0024] In the preferred embodiment as illustrated the socket 8 which holds the arm 7 is on the top of the mounting bracket 6. In other embodiments it could be on the side or even the underside of the bracket 6. Nevertheless it is preferably positioned so as to minimise interference with the resilient jaw opening and closing action of the limbs 6b of the bracket 6.

Claims

1. A guard for an elongate safety barrier to provide added protection for workmen who are working alongside the safety barrier, the guard comprising a mounting bracket to mount onto a safety barrier and that holds in use an arm whereby the arm projects transversely from the barrier so that its distal end remote from the barrier is a predetermined distance from the axis of the barrier to define a safe operational distance from the safety barrier for workmen.

2. A guard for an elongate safety barrier as claimed in claim 1, wherein the arm is flexible to be able to deflect if struck by a vehicle.

3. A guard for an elongate safety barrier as claimed in claim 1 or 2, wherein the arm is an extrusion of a plastics material.

4. A guard for an elongate safety barrier as claimed in claim 1, 2 or 3, wherein the distal end of the arm away from the barrier is adapted to receive a rope, oord, tape or other elongate line that may be strung therefrom parallel to the length of the barrier.

5. A guard for an elongate safety barrier as claimed in any preceding claim, wherein the mounting bracket is configured to de-mountably hold the arm.

6. A guard for an elongate safety barrier as claimed in claim 5, wherein the mounting bracket has a socket into which a proximal end of the arm mounts and which has one or more releasable clamping means that engages and releasably secures the arm in the socket.

7. A guard for an elongate safety barrier as claimed in any preceding claim, wherein the mounting bracket has a resilient clip structure for quick assembly to a safety barrier.

8. A guard for an elongate safety barrier as claimed in any preceding claim, wherein the mounting bracket has a rape and form that is adapted to clippingly embrace around a box beam at the top of a mobile safety barrier.

9. A guard for an elongate safety barrier as claimed in claim 8, wherein the mounting bracket has a pair of limbs that may be resiliently flexed apart to be placed over the respective opposing sidewalls of the beam.

10. A guard for an elongate safety barrier as claimed in any preceding claim, wherein the mounting bracket is formed of spring steel.

11. A guard for an elongate safety barrier as claimed in any of claims 1 to 10, wherein the mounting bracket has one or more limbs that flex to embrace the barrier and a clasp or other releasable fastening means that releasably secures the one or more limbs in place, closed around the barrier.

12. A guard for an elongate safety barrier as claimed in

claims 11, wherein the mounting bracket has a pair of opposing limbs that flex apart and close together to embrace the barrier and the clasp or other releasable fastening means releasable secures an end of one limb to an end of the other limb to hold the mounting bracket in place..

13. A guard for an elongate safety barrier as claimed in any preceding claim, wherein a set of arms or flags are provided each for a respective one of a set of guards and that are differently marked or coloured to provide a countdown marker for proximity of an entrance / exit through the safety barrier.

14. A guard system for an elongate safety barrier to provide added protection from transport vehicles for workmen who are working alongside the safety barrier, the guard system comprising a plurality of lengths of elongate safety barrier having thereon a plurality of guards, each guard comprising a mounting that holds in use an arm whereby the arm projects transversely from the safety barrier so that its distal end remote from the barrier is a predetermined distance from the axis of the barrier to define a safe operational distance from the safety barrier for workmen.

15. A guard system as claimed in claim 14, wherein each length of elongate safety barrier has an integral said mounting for the arm.

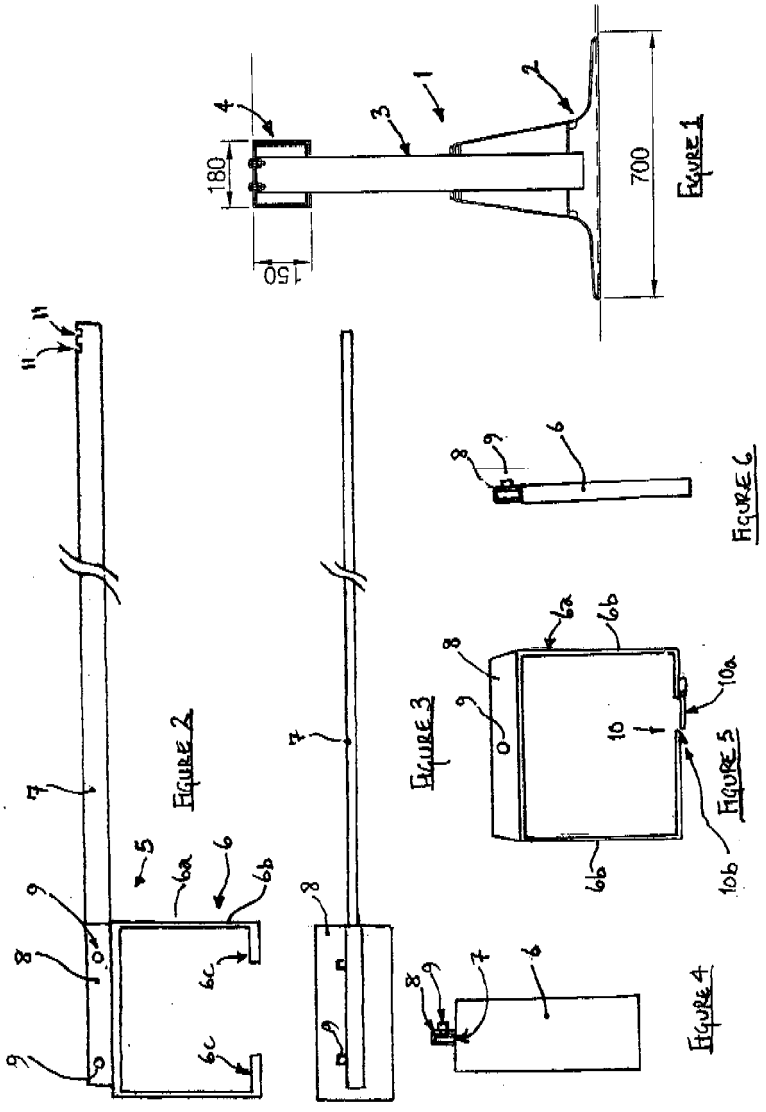

FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

FIGURE 5

FIGURE 6