



(11)

EP 1 728 925 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
06.12.2006 Bulletin 2006/49

(51) Int Cl.:
E01F 13/08 (2006.01)

(21) Application number: **05253348.6**

(22) Date of filing: **01.06.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
 Designated Extension States:
AL BA HR LV MK YU

(72) Inventor: **Knight, Roger Phillip**
Franborough,
Hampshire GU14 9LN (GB)

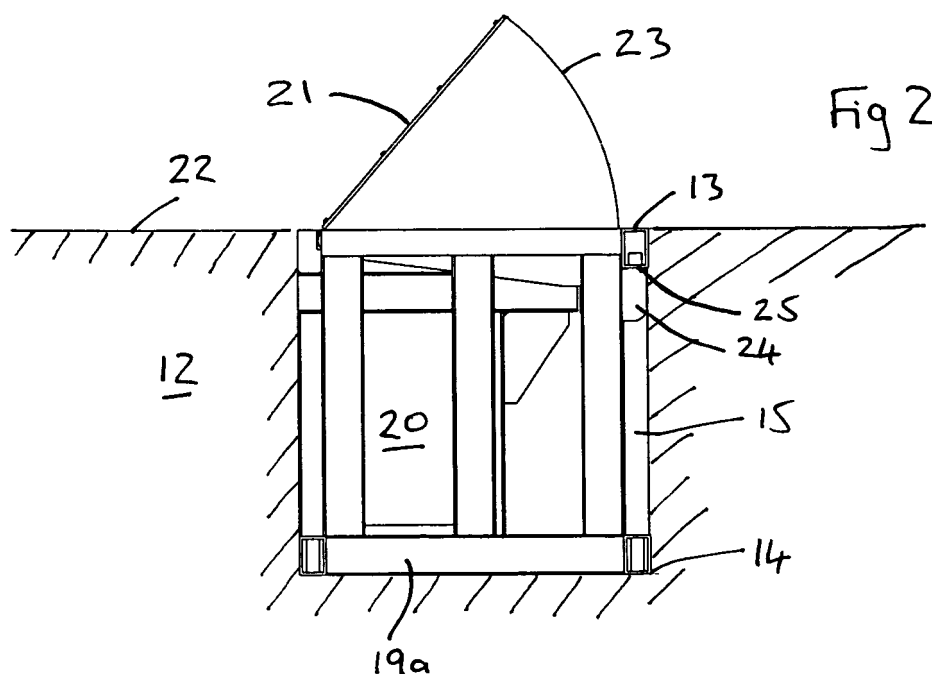
(74) Representative: **Haley, Stephen**
Gill Jennings & Every LLP
Broadgate House
7 Eldon Street
London EC2M 7LH (GB)

(71) Applicant: **APT CONTROLS LIMITED**
Harrow,
Middlesex HA3 6NY (GB)

(54) **Vehicle blocking device**

(57) A device for selectively allowing and preventing the passage of one or more vehicles along a pathway, the device comprising: a frame (11) for, in use, insertion into the pathway; a blocking element (21) connected to and movable relative to the frame between a first position

in which, in use, the blocking element allows passage along the pathway and a second position in which, in use, the blocking element projects from the frame so as to prevent passage along the pathway; and a latch element (24) on the blocking element for engaging with the frame when the blocking element is in the second position.



EP 1 728 925 A1

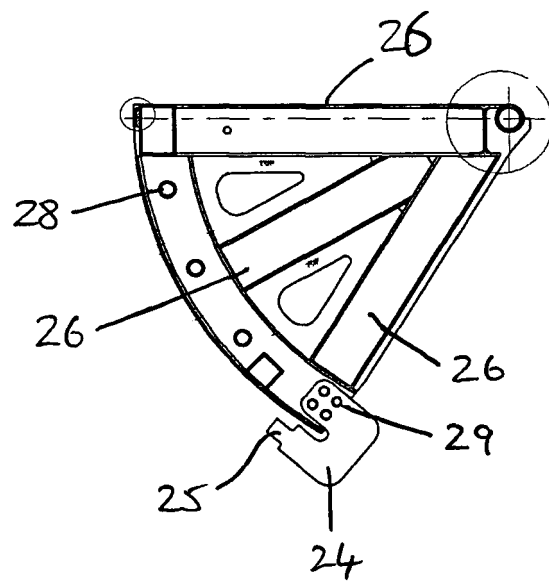


Fig 4

Description

[0001] This invention relates to a device for selectively allowing and preventing passage of one or more vehicles along a pathway and, in particular, to such a device which is located substantially within the pathway along which it is intended to control passage.

[0002] Various types of device for selectively allowing and preventing the passage of one or more vehicles along a pathway are known. In the simplest construction, one or more poles are pivotally connected to a surface such that they can be moved between a substantially horizontal position in which passage is allowed along a pathway and a substantially vertical position, into which they can be locked, thereby preventing passage along the pathway on which they are located. Such devices are extremely simple to manufacture and therefore are relatively cheap, but do not provide a significant deterrent to a large or fast moving vehicle which is able to break the pole(s) and/or the locking means without difficulty. The pole(s) may or may not be housed in the substantially horizontal position within the pathway itself. However, the drawback that they are relatively unsubstantial and cannot withstand a vehicle colliding with them, in a determined effort to pass along the pathway which they block, means that they are not suitable for high security locations.

[0003] Other devices comprise one or more barrier elements which can be raised into position to prevent the passage along a pathway, many of which are hydraulically operated and are significantly more sturdy than the simple pole arrangement described above.

[0004] For example, it is well known to construct, typically from steel or other suitably strong material, a framework which is located substantially within the pathway, typically within a concrete casing within the ground. The framework supports, typically in a pivotal arrangement, a blocking element which can be raised from a first position in which its uppermost surface is substantially level with or below the surface of the ground and a second position in which at least a portion of the blocking element projects above the surface of the pathway to prevent passage along that pathway.

[0005] In order to present a significant barrier to vehicles and, in particular, to larger vehicles such as jeeps, lorries and coaches, such blocking elements typically project, in the second position, approximately one metre above the surface of the pathway which they are blocking.

[0006] In a collision between a vehicle and the blocking element, the majority of the force transmitted from the vehicle to the blocking element travels down the blocking element into the framework within the ground, typically through the connections between the blocking element and the frame, such that a significant proportion of the force of the impact is absorbed on the frame within the ground and its support structure.

[0007] However, the blocking elements of such devices tend to crumple if collisions with larger vehicles, for

example over 5 tonnes in weight, or at higher speeds are encountered, for example, a vehicle travelling at 50 mph.

[0008] The present invention aims to provide a device for selectively allowing and preventing the passage of one or more vehicles along a pathway which provides increased strength in order to prevent passage of larger and/or faster vehicles.

[0009] According to the present invention, there is provided a device for selectively allowing and preventing the passage of one or more vehicles along a pathway, the device comprising:

a frame for, in use, insertion into the pathway;
a blocking element connected to and moveable relative to the frame between a first position in which, in use, the blocking element allows passage along the pathway and a second position in which, in use, the blocking element projects from the frame so as to prevent passage along the pathway; and
a latch element on the blocking element for engaging with the frame when the blocking element is in the second position.

[0010] Blocking devices of the type described in the present invention are particularly useful on the entry roads in to secure locations such as embassies, military bases, government buildings and the like and are intended to provide a significant deterrent to vehicles attempting to gain entry to those secure locations. As such, the strength and stopping ability of the blocking devices is paramount.

[0011] The provision of the latch element between the blocking element and the frame ensures that a greater proportion of the strength of the frame can be utilised in absorbing an impact on the blocking element.

[0012] A plurality of latch elements may be provided at different positions on the blocking element. In particular, it is preferable that each latch element engages with the frame on the opposite side of the frame to the connection of the frame and the blocking element. Although the blocking element may be moved into the second position in any suitable manner, it is preferable that the blocking element is pivotally connected to the frame such that, when the blocking element is in the second position, the pivot is on the opposite side of the blocking element from the intended direction from which a collision would occur. By providing the latch on the portion of the blocking element facing the intended direction of the collision, the latch can engage with the front of the frame and utilise the strength of this portion of the frame to absorb an impact. The force of the impact is distributed over a greater proportion of the frame and therefore the device can more readily withstand either impacts from heavier vehicles or impacts at greater speed.

[0013] The device of the present invention preferably further comprises an actuator for moving the blocking element between the first and second positions and the actuator is preferably hydraulically operated, although it

may be driven by electric motors or the like.

[0014] The actuator is preferably arranged such that it has a fail safe mode so that, if power to the actuator is lost, the blocking element is biased towards, or retained within, the second position, thereby ensuring that the blocking element remains in a blocking position.

[0015] The device may include one or more locking mechanisms for retaining the blocking element in the second position. Additionally and/or alternatively, the hydraulic actuator may provide part or all of that function.

[0016] The blocking element preferably includes a blocking face, the blocking face having at least one elongate support element which extends across substantially the whole of the width of the blocking element. In this arrangement, an impact on one end of the blocking face of the blocking element is distributed across the whole of the blocking element, thereby improving the overall strength of the device.

[0017] The blocking face may be frangible, such that an input with a vehicle, a serrated edge or other suitable piercing device is revealed for engaging the tyre(s) of the colliding vehicle to prevent it driving over the blocking device.

[0018] One example of the present invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a view from the front, above and one side of a blocking device of the present invention;
Figure 2 is a schematic side view showing the device of Figure 1 in the raised position;
Figure 3 shows a front view of the blocking element only, when in the lowered orientation; and
Figure 4 shows a side elevation view of the blocking element of Figure 3.

[0019] Figure 1 shows a device 10 for selectively allowing and preventing the passage of one or more vehicles along a pathway, the device comprising a framework 11 which, as can be seen in Figure 2, is located within the ground 12 in use. The framework 11 comprises an upper 13 and a lower 14 support channel spaced apart by a plurality of substantially vertical props 15, typically in the form of an I-beam. A similar construction is used on the rear of the device and has upper 16 and lower 17 support channels spaced apart by props 15. Additional props 18, again in the form of I-beams, are provided between upper 19 and lower 19a side channels. Thus, the frame 11 defines a substantially box-like enclosure 20. A blocking element 21 is pivotally connected to the frame 11 at the rear upper channel 16. In Figures 1 and 2, the blocking element 21 is shown in the raised position in which it projects above the level of the pathway 22. In Figures 1 and 2, a blocking face 23 faces the intended direction of impact and takes the form of an arcuate surface.

[0020] The blocking face 23 is formed by a plurality of sheets of steel or other suitable material which are riveted

to the framework of the blocking element 21 as shown in Figures 3 and 4. Alternatively they may be fixed by welding or other means.

[0021] As can be seen more clearly in Figures 3 and 4, the blocking element 21 is provided with a plurality of latch elements 24 which have an engagement portion 25 which engages with the upper front channel section 13 when the blocking element 21 is in the second raised position. By engaging with the upper front channel 13, any impact on the blocking face 23 of the blocking element 21 is not only absorbed in the blocking element itself and by the pivotal connection between the blocking element 21 and the frame 11, but is also transmitted through the latching of the blocking element 21 to the upper front channel 13 of the frame. The impact is thus dissipated throughout the whole of the frame 11, thereby greatly enhancing the strength of the overall device.

[0022] As can be seen in Figures 3 and 4, the blocking element 21 takes the form of a cylinder having a cross section which is a segment. The blocking element 21 is formed from a plurality of structural members 26 radiating from the apex of the segment and which, at their other end, are bound by the blocking face 23. A curved support member 27 also joins the distal ends of the support members 26. Adjacent curved elements are joined, along the direction of the phase 23, by a plurality of elongate support tubes 28 which help to dissipate an impact on the blocking face 23 across the entire width of the element 21.

[0023] A latch element 24 is fixed, by means of four bolts 29 to a respective curved support member 27 and is substantially U-shaped, having the latching portion 25 on the opposition arm of the U to the four fixing bolts 29.

Claims

1. A device for selectively allowing and preventing the passage of one or more vehicles along a pathway, the device comprising:
 - a frame for, in use, insertion into the pathway;
 - a blocking element connected to and movable relative to the frame between a first position in which, in use, the blocking element allows passage along the pathway and a second position in which, in use, the blocking element projects from the frame so as to prevent passage along the pathway; and
 - a latch element on the blocking element for engaging with the frame when the blocking element is in the second position.
2. A device according to claim 1, wherein the latch element engages with the frame on the opposite side of the frame to the connection of the frame and the blocking element.
3. A device according to either claim 1 or claim 2,

wherein the blocking element is pivotally connected to the frame.

4. A device according to any one of the preceding claims, further comprising an actuator for moving the blocking element between the first and second positions. 5
5. A device according to claim 4, wherein the actuator is hydraulically operated. 10
6. A device according to claim 5, wherein the actuator is arranged so as to move the blocking element to, or retain the blocking element in, the second position if hydraulic pressure is lost. 15
7. A device according to any one of the preceding claims, further comprising a mechanism for locking the blocking element in the second position. 20
8. A device according to any one of the preceding claims, wherein the blocking element includes a blocking face, the blocking face having at least one elongate support element which extends across substantially the whole of the width of the blocking element. 25

30

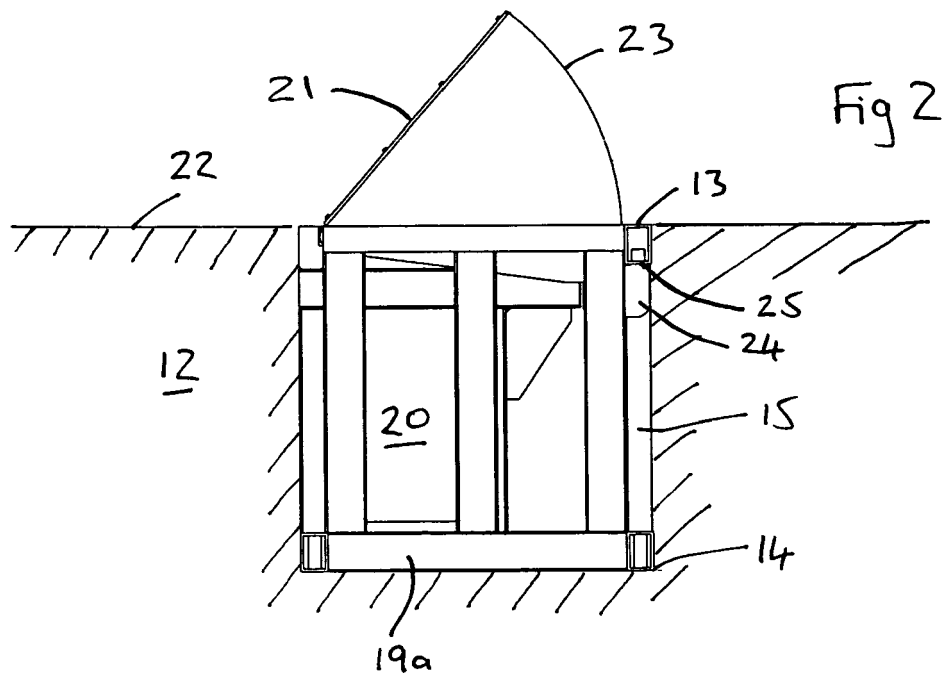
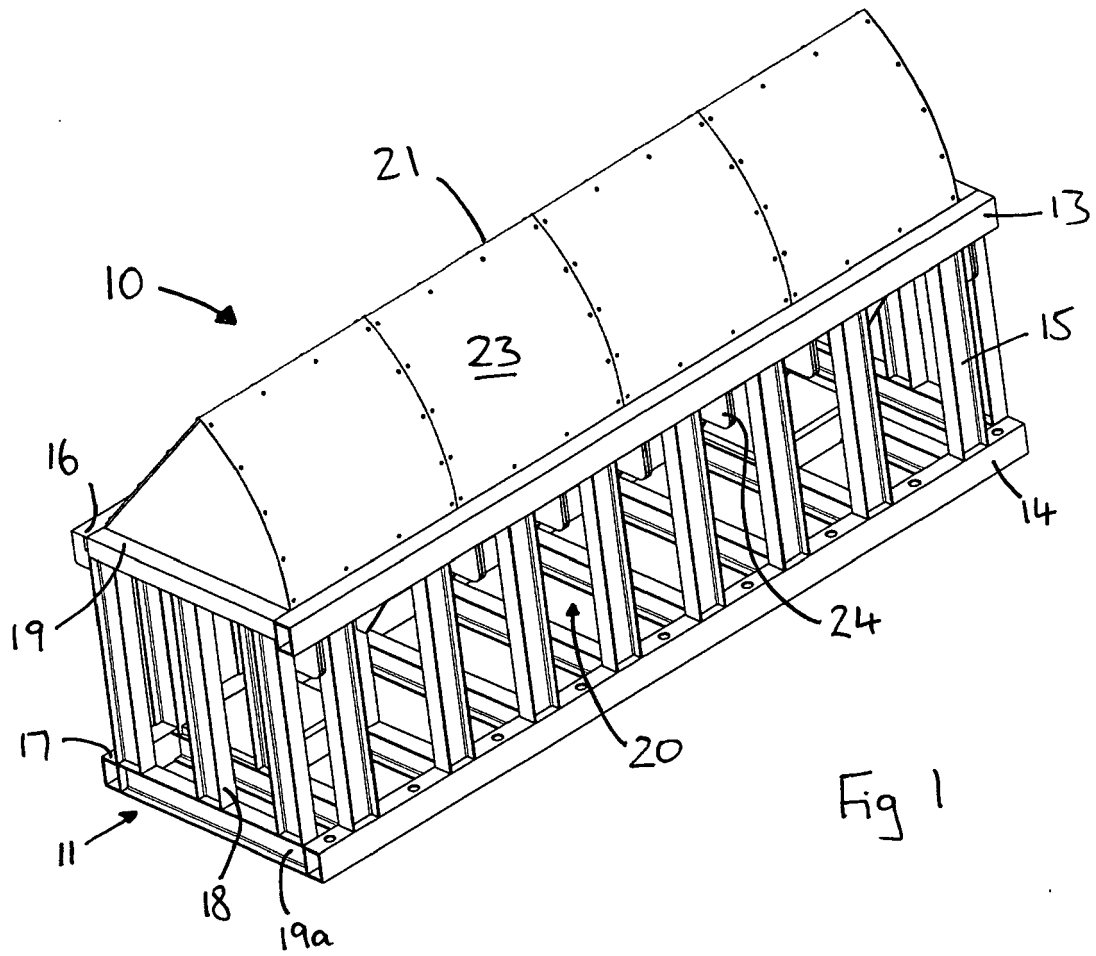
35

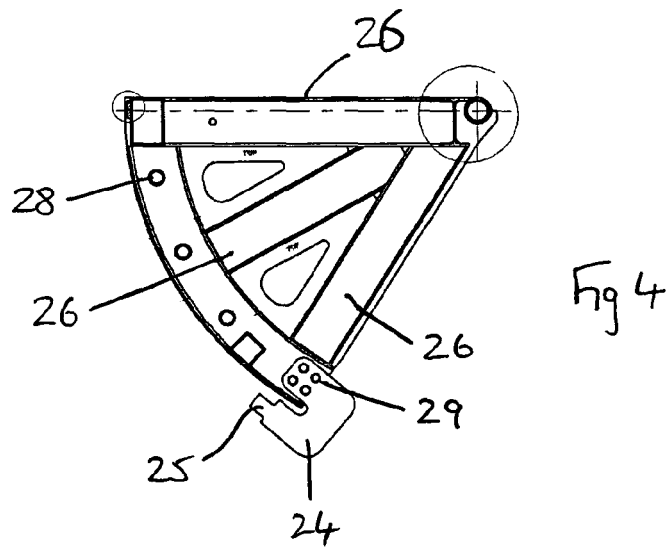
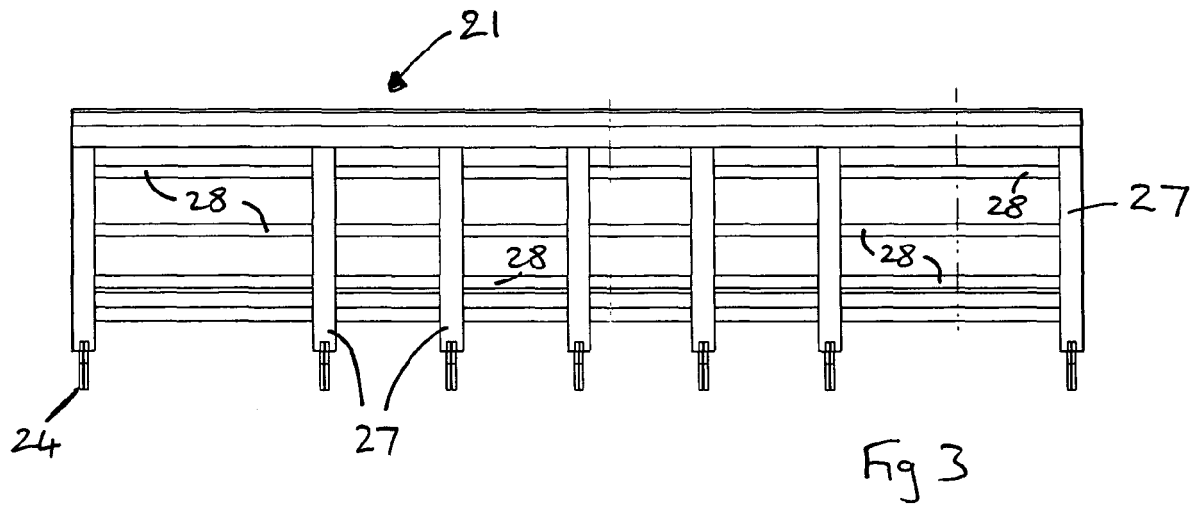
40

45

50

55







DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 392 050 A (GRADE CROSSING GUARD CORPORATION) 11 May 1933 (1933-05-11)	1-4	E01F13/08
Y	* page 1, line 85 - page 2, line 55; figures 2,7 *	5-8	

X	FR 2 791 716 A (SOCIETE D'ETUDES ET DE REALISATIONS INDUSTRIELLES) 6 October 2000 (2000-10-06) * page 11, line 15 - page 14, line 20; figures 7-9,11 *	1-3,7,8	

Y	US 4 490 068 A (DICKINSON ET AL) 25 December 1984 (1984-12-25) * column 3, lines 27-61; figures 1-3 * * column 4, lines 18-44; figure 5 *	5-8	

			TECHNICAL FIELDS SEARCHED (IPC)
			E01F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 November 2005	Examiner Flores Hokkanen, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 25 3348

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-11-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 392050	A	11-05-1933	NONE	

FR 2791716	A	06-10-2000	BE 1012732 A5	06-02-2001
			IT RE20000027 A1	01-10-2001

US 4490068	A	25-12-1984	GB 2138883 A	31-10-1984
			ZA 8403076 A	29-05-1985
