A security screen for installation in a motor vehicle. The screen consists of an upper portion (2) and a lower (1) portion, both portions (1, 2) being of moulded plastics material which can be joined and installed in the vehicle to provide a screen that will isolate the front from the rear of the vehicle. The screen includes brackets (9, 11) by which it can be secured to the interior of the body of the vehicle. The upper (2) and lower (1) portions also include wing members (3) extending outwardly from either side of the lower (1) and upper (2) portions towards the front of the vehicle.
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Title

Security Screen for Motor Vehicles

Background to the invention

The necessity to provide protection for the drivers of public vehicles such as taxicabs is well known. Criminal records recount many instances of the driver of such vehicles being attacked by a passenger or passengers and various proposals have been made with the intention of providing adequate protection for a driver. Some of those proposals consist merely in placing a barrier between the driver and the passengers, but those proposals have not been found to be satisfactory.

Prior art

One such proposal is described in US Patent specification 3,549,195 (Kallinokos). In Kallinokos reference is made to providing a protective shield across the back of the driver’s seat to physically separate the driver from a passenger in the rear seat. The specification discusses the problem of a driver being vulnerable to attack from a passenger in the front seat and the invention disclosed in Kallinokos is a screen in the form of a L-shaped shatterproof partition which it is stated, will provide the driver with protection from a person seated in the front passengers seat. The partition is intended to surround the driver on two sides and it is provided with ventilation holes to assist air circulation in the vehicle. The partition of Kallinokos is designed to remain rigidly in place once it has been installed in the vehicle.

Another form of safety arrangement for a taxicab is described in US patent specification 4,509,788 (Jan). The Jan device is also a partition positioned between the
driver's seat and the passengers' seat and is fixed to the floor of the vehicle and to the top interior of the vehicle body. The partition comprises a back partition and a side partition which are interconnected and provided with air ventilation holes and a window for payment of the fare.

It is apparent the need exists for a well constructed screen that can be utilised in a variety of vehicles without any major modification and which will isolate the front seat from the rear seat or seats and which will afford adequate protection not only for the driver of the vehicle but also for any other person who might occupy the front seat of the vehicle.

Object of the invention

It is therefore an object of this invention to provide an improved security screen for motor vehicles which will meet the above security requirements for a range of motor vehicles and which will provide adequate protection to the driver of the vehicle from a passenger or passengers occupying a seat or seats behind the driver.

Statement of the invention

Accordingly one form of the invention comprises a security screen adapted to be secured to the interior of a motor vehicle between the front seat and the rear seat of the vehicle, said screen comprising a structure having a lower portion and an upper portion each formed to extend across substantially the full width of the interior of the vehicle and wherein the upper portion is adapted to be joined to the said lower portion, the said lower and upper portions also including wing members extending outwardly from either side of the lower and upper portions towards the front of the vehicle, and further wherein means are provided to adjustably anchor the screen to the interior of the vehicle.
Preferably the upper portion includes a cavity closeable by a window which has a guided up and down sliding movement within the cavity.

Preferably a lintel extends across the top of the window opening, said lintel having means to receive the upper edge of the window when the window is closed.

Preferably the screen includes brackets extending outwardly from the screen, said brackets being adapted to be adjustable secured to the interior of the vehicle body.

Preferably each bracket includes an elongated slot shaped to receive a mounting bolt by which the bracket is secured to the interior of the vehicle body.

Preferably the lower portion of the screen also includes bottom flaps which, when the screen has been installed in the vehicle, will extend forwardly underneath the front seat.

Preferably a strengthening rail is located adjacent the joint between the upper and lower portions.

Preferably a strengthening frame is affixed to or forms part of the screen and extends around substantially all of the perimeter of the screen.

Preferably at least a part of the said upper portion is curved towards the front of the vehicle.
Brief description of the drawings

Preferred forms of the invention will now be described with the aid of the accompanying drawings, wherein:

Figure 1 is a partly diagrammatic elevational view of a typical security screen of the present invention from the rear.

Figure 2 is an elevational view from the front of the screen illustrated in Figure 1.

Figure 3 is a side view of the screen illustrated in Figure 1, and

Figure 4 is a sectional view along the line A – A of Figure 1.

Detailed description of the preferred embodiments

As illustrated, the screen is preferably formed from a moulding or mouldings of a tough synthetic material. The screen is of a size that it will extend substantially across the width of the interior of a typical motor vehicle and be able to be positioned immediately behind the front seat of the vehicle. Preferably the screen will occupy a minimal amount of space between the rear of the front seat and the front of the rear seat. In one form the material comprising the screen is treated to provide colour or opacity in a selected portion or portions or the screen. In another form at least a part of the surface of the screen can be covered with a surface coating. In a highly preferred form at least the exposed face of the lower portion of the screen which in use will face the rear of the vehicle can be covered by a material such as carpet.
Although the screen will generally be formed by a moulding or mouldings of the
synthetic material, in certain circumstances it can be advantageous to include a
strengthening frame (not shown in the drawings). The frame can be made from a suitable
corrosion resistant metal and attached to the screen by known means. Preferably the
strengthening frame will extend at least around the perimeter of the screen.

As illustrated in Figures 1 through 4, the screen includes a lower portion 1 and an
upper portion 2. Various means as will be apparent to those skilled in the art can be
utilised for joining the two portions together. Preferably the jointing means is not
obtrusive and is simple to operate to facilitate the assembly of the screen into the motor
vehicle and subsequent removal from the vehicle as will be further described.

The lower portion 1 of the screen will extend across essentially the full width of the
interior of the vehicle at the rear of the front seat or seats. At least a part of the upper
portion is preferably angled or curved towards the front of the vehicle. Because the upper
portion is so angled or curved, the bottom portion 1 of the screen can be tilted towards the
rear of the vehicle and thereby accommodate the usual range of tilting of the front seat or
seats of the motor vehicle. When the shape of the upper portion 2 is so curved that will
minimise undue intrusion of the screen in the air space in the rear of the vehicle.

The upright sections of the upper and lower portions include wings 3 which form
part of the screen and which extend outwardly from the upright sections. The wings are
angled in relation to the upright sections of the lower and upper portions in a manner that
when installed in the vehicle, the wings will extend forwardly from the upright edges of the
screen. As indicated in the drawings, the wings and in particular the wings extending from
the sides of the upper portion 1 are also curved to assist in the aesthetic qualities of the screen. The curvature of the wings can be varied to suit particular requirements.

The upper portion 2 of the screen preferably includes a sliding window 6 which is arranged to have up and down sliding movement in channels 7. The window 6 can occupy a greater or lesser area of the upper portion of the screen according to the preferences of the manufacturer. While it is highly preferred to include a sliding window in the screen, it will be understood in certain circumstances, it may be preferable not to include a window in the screen but to have the screen continuous, without any cavity.

As illustrated in the drawings, the channels 7 are shaped, such as by being curved to complement the shape of the upper portion. The window 6 is movable between a fully raised position to a position where the top of the window lies either close to or preferably slightly below the sill formed in the window opening. To provide additional security, a lintel 4 extends across the top of the window opening with the lintel having a groove or the like into which the top of the window can engage when the window is fully raised. In order that the window can follow the curvature of the channels 7, the window is also preferably formed of a tough transparent synthetic material. The material is of a sufficient thickness that when the window is raised, adequate protection for the driver will be provided.

Preferably the raising and lowering of the window 6 is controlled by an electrical winding mechanism 8 which is accessible from the front seat and which has controls suitably placed for operation by the driver of the vehicle.
Various means can be provided for removably attaching the screen to the interior of a vehicle. One suitable means comprises forming brackets 9 which are rigidly attached or integrally formed at or near the bottom of the frame as illustrated in the drawings. The brackets 9 include a mounting slot or slots 10. Upper brackets 11 are also attached to the frame or form part of an integral moulding and are provided with a mounting slot or slots 10. The slots 10 and 12 enable the brackets 9 and 11 to be suitably attached to anchors (not shown in the drawings) which are attached to anchorage points inside the vehicle. The slots 10 and 12 will allow the position of the screen within the vehicle to be changed or adjusted within predetermined limits to accommodate a range of adjustments to the front seats.

Preferably the lower portion 2 of the screen also includes bottom flaps 14 which, when the screen has been installed in the vehicle, will extend forwardly underneath the seat. As illustrated the flaps are separated by a blank section to accommodate the drive shaft tunnel of the motor vehicle. The flaps may be formed as part of the lower portion 2 and extend forwardly a sufficient distance to provide protection against access between the front seat back and the front seat squab.

Preferably also the screen includes a strengthening rail 16 which extends across at least a portion of the screen at or near the junction of the lower portion with the upper portion of the screen. The strengthening rail can also act as a grab rail for the rear passengers. In addition other accessories can also be attached to or formed part of the screen, such accessories being in the form of loops, rails and the like, so if the vehicle is being used for law enforcement, then the accessory can be utilised as an anchor point to restrain a passenger or passengers within the vehicle.
In a highly preferred form, the screen is installed into the interior of the vehicle by first and separating it into the upper and lower portions. The lower portion can be installed first and mounting bolts or the like are passed through the slots 10 in a manner that the lugs 9 will be firmly anchored to suitable anchorage points inside the vehicle. The upper portion 2 is then manoeuvred into place and is joined to the lower portion by the jointing means. Mounting bolts may then be passed through the slots 12 in the flanges 11 to secure the upper portion to the interior of the vehicle. Because the flanges include slots, it is possible to adjust the actual positioning of the screen within the vehicle to the best advantage.

It will be understood that it may be necessary to manufacture a screen of different shape and dimensions to accommodate different motor vehicles. However, a significant number of vehicles used in the taxi industry are of a similar make or model and only minor adjustments, if any, will be required to enable the screen to be used in a variety of motor vehicle.

The fitting of the screens described above will enable the driver of the vehicle to determine whether the window is to be closed or open or partly open and thus be able to acquire the desired degree of protection.

Having been apprised of the preferred form of the invention, it will be apparent to those skilled in the art that various modifications and amendments can be made to certain constructional details and yet still come within the general scope of the invention. All such modifications and amendments are intended to be included in the scope of this invention.
Claims

1. A security screen adapted to be secured to the interior of a motor vehicle between the front seat and the rear seat of the vehicle, said screen comprising a structure having a lower portion and an upper portion each formed to extend across substantially the full width of the interior of the vehicle and wherein the upper portion is adapted to be joined to the said lower portion, the said lower and upper portions also including wing members extending outwardly from either side of the lower and upper portions towards the front of the vehicle, and further wherein means are provided to adjustably anchor the screen to the interior of the vehicle.

2. The screen as claimed in claim 1, wherein the upper portion of the screen includes a cavity closeable by a window which has a guided up and down sliding movement within the cavity.

3. The screen as claimed in claim 1, wherein a lintel extends across the top of the window opening, said lintel having means to receive the upper edge of the window when the window is closed.

4. The screen as claimed in claim 1, wherein the screen includes brackets extending outwardly from the screen, said brackets being adapted to be adjustable secured to the interior of the vehicle body.

5. The screen as claimed in claim 4, wherein each bracket includes an elongated slot shaped to receive a mounting bolt by which the bracket may be secured to the interior of the vehicle body.
6. The screen as claimed in claim 1, wherein the lower portion of the screen also includes bottom flaps which, when the screen has been installed in the vehicle, will extend forwardly underneath the front seat.

7. The screen as claimed in claim 1, wherein a strengthening rail is located adjacent the joint between the upper and lower portions.

8. The screen as claimed in claim 1, wherein a strengthening frame is affixed to or forms part of the screen and extends around substantially all of the perimeter of the screen.

9. The screen as claimed in claim 1, wherein at least a part of the said upper portion is curved towards the front of the vehicle.
### INTERNATIONAL SEARCH REPORT

**International application No.**

PCT/NZ 99/00166

**A. CLASSIFICATION OF SUBJECT MATTER**

Int Cl\(^6\): B60R 21/12, 21/06, 27/00

According to International Patent Classification (IPC) or to both national classification and IPC

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<td>AU 67391/94 A (MONMOUNT PTY LTD et al) 19 January 1995 Page 3 line 32 to page 5 line 12 and page 5 line 30 to page 7 line 14, Claims 6 - 8, and figures 1 - 4</td>
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<td>X</td>
<td>US 4964666 A (DILLON) 23 October 1990 Column 3 lines 3 to 39, column 4 lines 1 - 34, column 5 line 49 to column 7 line 30, claims 3-5, 14 and 20 and figure</td>
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<td>X</td>
<td>US 4173369 A (ROGGIN) 6 November 1979 Column 1 lines 43 to column 3 line 44, claims 1 - 11 and figure 1 to 7</td>
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Date of mailing of the international search report

07 JAN 2000

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