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Temporäre Verkehrszeichen

Structure de signalisation provisoire

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(56) References cited:
FR-A- 1 436 788 **FR-A- 1 595 176**
FR-A- 2 659 160 **GB-A- 2 262 955**

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Description

The present invention relates to modular assemblies for use as road signs, and is particularly concerned with temporary road signs and barriers placed by contractors at the sites of road and pavement works.

Temporary road signing to alert road users and pedestrians to the presence of road working gangs and excavations is well known, the principal arrangements used for road signs being frames constructed from 'L' section metal bars to which flat metal sign boards are attached by means of resilient clips. Conventional barriers to alert pedestrians to the presence of holes in the pavement have been formed by plastics pillars supporting brightly coloured crosspieces.

French Patent Application FR-A-2659160 describes a portable road sign having a pivotally mounted sign board which can tilt about a horizontal axis when blown by wind. The supporting frame for the sign comprises a pair of front feet and a pair of rear feet joined by an inverted 'U' shaped frame, which is itself joined to the sign frame by a bar pivoted at the top of the sign frame. A single bracing strut extends from the lower edge of the sign frame to the bar, and is positioned midway between the top of the bar and the rear feet when the sign is erected.

In French Patent FR-A-1436788, there is described a sign wherein a sign frame is pivotally attached at its lower edge to the front edge of a base frame, a bracing strut being attached to the upper edge of the sign frame. In the erect position, the lower end of the bracing strut is received in a socket in the base frame to support the sign frame in an upright position.

These prior art signs have several disadvantages, principally that they are heavy and unwieldy. The prior road signs, due to their metallic construction, also tend to suffer permanent damage when road users collide with them, thus shortening the effective life of the road sign. Again, the heavy metallic construction of the signs inflicts severe damage on vehicles colliding with them, resulting in onerous insurance claims against the sign users. The signs of the prior art have the further disadvantage that the four feet generally provided to support the sign can contact the ground only when the sign is placed on a relatively flat surface, and the sign is thus unstable when on uneven ground.

The present invention relates to a temporary road sign constructed from elongate extruded plastics members, the individual extruded members of the structure being joined together by means of angled brackets to form a planar sign frame which is generally upright in use and has two front legs extending downwardly therefrom, a rear leg being pivotally attached to the upper part of the sign frame for swinging movement about a first horizontal axis between a retracted position adjacent the sign frame and an extended position wherein the rear leg extends at an angle to the sign frame, the sign further comprising a pair of swinging links pivotally at-

tached at one of their respective ends to the sign frame for swinging movement about a second generally horizontal axis spaced from the first, and held at their other respective ends in sliding contact with the rear leg of the sign, the pair of swinging links being attached to a slider which is slidable along substantially the entire length of the rear leg, the arrangement being such that in the retracted position of the rear leg the swinging links lie adjacent the rear face of the sign frame and the slider engages the rear leg adjacent its upper end, and in the extended position the swinging links extending substantially perpendicularly to the sign frame, and the slider engages the rear leg adjacent its lower end.

The pivotal attachments are preferably spherical joints of the bail-and-socket type. Other embodiments are defined in the dependent claims.

A road sign according to the present invention will now be described in detail with reference to the accompanying drawing, in which:

Figure 1 shows a perspective view from the rear of a triangular road sign;

Referring now to the drawings, Figure 1 is a view from the rear of a triangular road sign having a planar sign frame comprising a signboard 1 fixed to a frame formed by two inclined upper members 2a and 2b, two legs 3a and 3b, and an optional crosspiece 4. The two inclined upper members 2a and 2b are joined to respective legs 3a and 3b by corner brackets 5a and 5b, and are joined together at their respective upper ends by an apex bracket 6.

The signboard 1 is preferably formed of plastics material, polypropylene sheet of 2 mm thickness being the preferred material. The signboard can be printed with the sign material to be displayed, or may have an adhesive sign fixed thereto. The elongate members surrounding the signboard are preferably extruded from plastics material, and are preferably hollow. Each of the extruded sections may include an outer wall which is re-entrant to form at least one undercut slot, having an elongate opening and a detent surface adjacent the opening and facing away therefrom. The purpose of these slots, which extend along the length of the extruded members, will become clear in the description to follow.

The extruded members shown in Figure 1 may be joined by means of brackets which engage either in undercut slots extending along the outer surfaces of the members, or the brackets may have spigots to engage the ends of the extruded members.

The road sign of Figure 1 comprises a triangular signboard 1, and a pair of extruded members 2a and 2b adapted to extend along two sides of the signboard 1, and are joined by brackets 5a and 5b to legs 3a and 3b which extend in parallel away from the signboard 1. The extruded members 2a and 2b are joined at their upper ends by an apex bracket 6.

Attached to the legs 3a and 3b intermediate their ends are respective spherical pivots 7a and 7b. The two spherical pivots 7a and 7b may be identical components, or may be "handed". The spherical pivots 7a and 7b may alternatively be in engagement with external slots in the extruded members 2a and 2b, or positioned on the cross member 4, and in such cases it may be necessary to form cutouts (not shown) in the signboard 1 to provide clearance for the spherical pivots 7a and 7b.

Each of the pivots 7a and 7b is engaged by a complementary pivot 8a, 8b fitted to an end of a swinging arm 9a, 9b. The other ends of the arms 9a, 9b are attached to a slider 10 which is longitudinally slidable along a rear leg 11 of the sign. The rear leg 11 is pivotally attached at its upper end 11a to the apex bracket 6, and at or adjacent its lower end 11b has a stop 12 against which the slider 10 abuts in the erected position of the sign.

Attached to the arms 9a, 9b is a ballast weight 13, which has a recess in its underside to accommodate the rear leg 11 in the folded position of the sign.

The sign is shown in its erected position in the Figure. To fold the sign for storage, the slider 10 is moved upwardly along the rear leg 11, causing the swinging arms 9a and 9b to rise and pivot about the pivots 7a, 7b respectively. During the initial stage of this movement, the rear leg 11 is first pivoted away from the sign frame until the arms 9a and 9b occupy a plane at right angles to the rear leg, and thereafter the rear leg 11 pivots towards the sign frame as the slider 10 moves further up the rear leg 11. The folded position is reached when the slider 10 is in its position closest to the apex bracket 6, and the rear leg 11 and swinging arms 9a and 9b lie adjacent the rear face of the sign frame. In this position, a first face of the ballast weight 13 that was uppermost in the erected position of the sign lies against the rear face of the sign frame, and a second face of the ballast weight 13 that was lowermost in the erected position of the sign faces away from the sign frame. A recess or slot is preferably provided in the second face of the ballast weight 13 to receive the rear leg 11 in the folded position, so as to reduce the thickness of the folded sign to a minimum.

The sign is erected from the folded position by reversing the above procedure, sliding the slider 10 down the rear leg 11 until it abuts the stop 12.

In an alternative embodiment (not illustrated), the rear leg 11 may be replaced by a pair of rear legs, pivotally attached at their upper ends to the sign frame for pivoting about a common horizontal axis. The slider 10 will then engage both rear legs, and will preferably comprise a crosspiece with sliding collars at its ends to engage the respective rear legs. To maintain the stability of the structure, the crosspiece should be held perpendicular to the rear legs. The swinging arms preferably each engage one end of the crosspiece, but alternatively may be attached to a common point at the centre of the crosspiece. The alternative embodiment with two

rear legs is preferred when a sign having a rectangular sign frame is to be produced, such a sign comprising a horizontal top member extending along the upper edge of the signboard, a pair of vertical sidepieces extending down from the ends of the top member, a pair of rear legs pivotally attached to the top member, a slider engaging both rear legs, and a pair of swinging arms pivotally attached to the sidepieces and to the slider, respectively. A ballast weight of generally trapezoidal shape may be fixed to the swinging arms, two recesses being provided in the ballast weight to receive the rear legs in the folded position.

In a further alternative embodiment (not illustrated), the rear leg 11 may be replaced by a pair of rear legs, pivotally attached at their upper ends to the sign frame for pivoting about a common horizontal axis. The slider 10 will then preferably engage both rear legs, and will preferably comprise a crosspiece with sliding collars at its ends to engage the respective rear legs. To maintain the stability of the structure, the crosspiece should be held perpendicular to the rear legs. The swinging arms may extend from a common point at the centre of a cross member extending along the lower edge of the sign frame, the swinging arms diverging to form a triangle with the crosspiece of the slider. In such a sign, the triangular structure will lie between the rear legs and adjacent the rear face of the sign frame in the folded position, and a ballast weight may be provided within the triangular structure. A further pair of swinging arms may also be provided, extending from the respective ends of the crosspiece of the slider to the outer edges of the sign frame, level with its lower edge.

In any of the embodiments described, latching means may be provided to retain the sign in the erected and/or folded positions. Such a latching means may comprise means to prevent sliding of the slider along the rear leg, or means to retain the rear leg adjacent the sign frame by cooperating elements positioned on the rear leg and the sign frame respectively.

Claims

1. A temporary road sign constructed from elongate extruded plastics members (2a, 2b, 4), the individual extruded members of the structure being joined together by means of angled brackets (5, 6) to form a planar sign frame which is generally upright in use and has two front legs (3a) extending downwardly therefrom, a rear leg (11) being pivotally attached to the upper part (6) of the sign frame for swinging movement about a first horizontal axis between a retracted position adjacent the sign frame and an extended position wherein the rear leg (11) extends at an angle to the sign frame, the sign further comprising a pair of swinging links (9a, 9b) pivotally attached at one of their respective ends (8a, 8b) to the sign frame for swinging movement about a sec-

ond generally horizontal axis spaced from the first, and held at their other respective ends (10) in sliding contact with the rear leg (11) of the sign, the pair of swinging links (9a, 9b) being attached to a slider (10) which is slidable along substantially the entire length of the rear leg (11), the arrangement being such that in the retracted position of the rear leg (11) the swinging links (9a, 9b) lie adjacent the rear face of the sign frame and the slider (10) engages the rear leg (11) adjacent its upper end (6), and in the extended position the swinging links (9a, 9b) extend substantially perpendicularly to the sign frame, and the slider (10) engages the rear leg (11) adjacent its lower end (12).

2. A temporary road sign according to claim 1, wherein the second generally horizontal axis passes adjacent the upper ends of the front legs (3a, 3b).
3. A temporary road sign according to claim 1 or claim 2, wherein the pivotal attachments (7a, 7b, 8a, 8b) joining the pair of swinging links (9a, 9b) to the sign frame are spherical joints of the ball-and-socket type.
4. A temporary road sign according to any preceding claim, wherein the rear leg (11) comprises a pair of parallel leg portions attached to the sign frame for pivotal movement about a common horizontal axis, and the slider (10) engages both rear leg portions (11), the slider (10) comprising a crosspiece with sliding collars at its ends to engage the respective rear leg portions.
5. A temporary road sign according to claim 4, wherein the pivotal attachments joining the pair of swinging links to the slider are positioned at the respective ends of the crosspiece, and the pivotal attachments (7a, 7b, 8a, 8b) joining the pair of swinging links (9a, 9b) to the sign frame are positioned at the midpoint of the lower edge of the sign frame.
6. A temporary road sign according to claim 5, wherein a second pair of swinging links join the sign frame to the slider, the second pair of swinging links extending from respective collars of the slider to points adjacent the ends of the lower edge the sign frame.
7. A temporary road sign according to claim 4, wherein the pivotal attachments joining the pair of swinging links to the slider are positioned at the midpoint of the crosspiece.
8. A temporary road sign according to any preceding claim, wherein latching means are provided to retain the sign in the erected and/or folded positions.
9. A temporary road sign according to claim 8, wherein

the latching means comprises means to prevent sliding of the slider along the rear leg.

10. A temporary road sign according to claim 8, wherein the latching means comprises means to retain the rear leg adjacent the sign frame by cooperating elements positioned on the rear leg and the sign frame respectively.

Patentansprüche

1. Temporäres Verkehrszeichen mit langgestreckten Spritzgußkunststoffelementen (2a, 2b, 4), wobei die einzelnen Spritzgußelemente der Struktur mittels winkliger Klammern (5, 6) miteinander verbunden sind, um einen ebenen Schildrahmen zu bilden, welcher im wesentlichen aufrecht im Gebrauch ist und zwei Vorderfüße (3a) besitzt, welche sich davon ausgehend nach unten erstrecken, einem Hinterbein (11), welches schwenkbar am oberen Teil (6) des Schildrahmens für Schwenkbewegungen um eine erste horizontale Achse zwischen einer zurückgezogenen Position angrenzend an den Schildrahmen und einer ausgestreckten Position, in der das Hinterbein (11) winkelig zum Schildrahmen verläuft, befestigt ist, wobei das Verkehrszeichen außerdem ein Paar Schwenkverbindungsstücke (9a, 9b) besitzt, welche schwenkbar an jeweils einem ihrer Enden (8a, 8b) am Schildrahmen für Schwenkbewegungen um eine zweite im wesentlichen horizontale, von der ersten beabstandeten Achse befestigt sind, und an ihrem jeweiligen anderen Ende (10) in verschieblichem Kontakt mit dem Hinterbein (11) des Schildes gehalten werden, wobei das Paar Schwenkverbindungsstücke (9a, 9b) mit einem Schieber (10) verbunden ist, welcher im wesentlichen über die gesamte Länge des Hinterbeines (11) verschieblich ist, wobei die Anordnung so ist, daß in der zurückgezogenen Position des Hinterbeines (11) die Schwenkverbindungsstücke (9a, 9b) angrenzend an die Rückseite des Schildrahmens liegen und der Schieber (10) in Eingriff mit dem Hinterbein (11) angrenzend an dessen oberen Ende (6) steht, und in der ausgefahrenen Position die Schwenkverbindungsstücke (9a, 9b) im wesentlichen senkrecht zum Schildrahmen verlaufen und der Schieber (10) in Eingriff mit dem Hinterbein (11) angrenzend an dessen unteren Ende (12) steht.
2. Temporäres Verkehrszeichen nach Anspruch 1, wobei die zweite im wesentlichen horizontale Achse angrenzend an die oberen Enden der Vorderfüße (3a, 3b) verläuft.
3. Temporäres Verkehrszeichen nach Anspruch 1 oder 2, wobei die schwenkbaren Befestigungen

(7a, 7b, 8a, 8b), die das Paar Schwenkverbindungsstücke (9a, 9b) mit dem Schildrahmen verbinden, kugelförmige Verbindungen nach Art eines Kugelgelenkes sind.

4. Temporäres Verkehrszeichen nach einem der obigen Ansprüche, **wobei** das Hinterbein (11) ein Paar paralleler Beinabschnitte besitzt, welche am Schildrahmen für eine schwenkbare Bewegung um eine im allgemeinen horizontale Achse befestigt sind, und der Schieber (10) mit beiden Hinterbeinabschnitten (11) in Eingriff steht, wobei der Schieber (10) ein Querelement mit verschieblichen Manschetten an seinen Enden besitzt, um mit den jeweiligen Hinterbeinabschnitten in Eingriff zu stehen. 5
5. Temporäres Verkehrszeichen nach Anspruch 4, **wobei** die schwenkbaren Befestigungen, welche das Paar Schwenkverbindungsstücke mit dem Schieber verbinden, an den jeweiligen Enden des Querstückes positioniert sind, und die schwenkbaren Befestigungen (7a, 7b, 8a, 8b), die das Paar Schwenkverbindungsstücke (9a, 9b) mit dem Schildrahmen verbinden, am Mittelpunkt der Unterkante des Schildrahmens positioniert sind. 10
6. Temporäres Verkehrszeichen nach Anspruch 5, **wobei** ein zweites Paar Schwenkverbindungsstücke den Schildrahmen mit dem Schieber verbindet, wobei das zweite Paar Schwenkverbindungsstücke sich von den jeweiligen Manschetten des Schiebers zu Punkten hin erstreckt, welche an die Enden der Unterkante des Schildrahmens angrenzen. 15
7. Temporäres Verkehrszeichen nach Anspruch 4, **wobei** die schwenkbaren Befestigungen, welche das Paar Schwenkverbindungsstücke mit dem Schieber verbinden, am Mittelpunkt des Querstückes positioniert sind. 20
8. Temporäres Verkehrszeichen nach einem der obigen Ansprüche, **wobei** eine Verriegelungsvorrichtung zum Zurückhalten des Schildes in aufgerichteter und/oder gefalteter Position vorgesehen ist. 25
9. Temporäres Verkehrszeichen nach Anspruch 8, **wobei** die Verriegelungsvorrichtung eine Vorrichtung zur Verhinderung des Gleitens des Schiebers entlang des Hinterbeines besitzt. 30
10. Temporäres Verkehrszeichen nach Anspruch 8, **wobei** die Verriegelungsvorrichtung eine Vorrichtung zum Zurückhalten des Hinterbeines angrenzend an den Schildrahmen durch kooperierende Elemente, welche jeweils an dem Hinterbein und dem Schildrahmen positioniert sind, besitzt. 35

Revendications

1. Signal routier provisoire construit à l'aide d'éléments en matière plastique extrudés allongés (2a, 2b, 4), les éléments extrudés individuels de la structure étant réunis les uns aux autres aux moyens d'étriers en angle (5, 6), de façon à former un bâti de signal plan qui est globalement vertical lors de l'utilisation et qui comporte deux pattes avant (3a) s'étendant vers le bas à partir de celui-ci, une patte arrière (11) étant fixée de façon à pouvoir pivoter à la partie supérieure (6) du bâti de signal pour effectuer un mouvement de basculement autour d'un premier axe horizontal entre une position rétractée voisine du bâti de signal et une position étendue dans laquelle la patte arrière (11) s'étend selon un certain angle par rapport au bâti de signal, le signal comprenant de plus une paire de bras de liaison basculants (9a, 9b) fixés de façon à pouvoir pivoter à l'une de leurs extrémités respectives (8a, 8b) au bâti de signal pour effectuer un mouvement de basculement autour d'un deuxième axe globalement horizontal espacé du premier, et maintenus à leurs autres extrémités respectives (10) en contact de coulissement avec la patte arrière (11) du signal, la paire de bras de liaison basculants (9a, 9b) étant fixée à un élément coulissant (10) qui peut coulisser sensiblement sur toute la longueur de la patte arrière (11), l'agencement étant tel que, dans la position rétractée de la patte arrière (11), les bras de liaison basculants (9a, 9b) se trouvent au voisinage de la face arrière du bâti de signal et que l'élément coulissant (10) vienne en prise avec la patte arrière (11) au voisinage de son extrémité supérieure (6), et que, dans la position étendue, les bras de liaison basculants (9a, 9b) s'étendent sensiblement perpendiculairement au bâti de signal, et que l'élément coulissant (10) vienne en prise avec la patte arrière (11) au voisinage de son extrémité inférieure (12). 40
2. Signal routier provisoire selon la revendication 1, dans lequel le deuxième axe globalement horizontal passe au voisinage des extrémités supérieures des pattes avant (3a, 3b). 45
3. Signal routier provisoire selon la revendication 1 ou la revendication 2, dans lequel les fixations pivotantes (7a, 7b, 8a, 8b) réunissant la paire de bras de liaison basculants (9a, 9b) au bâti de signal sont des joints sphériques du type à rotule. 50
4. Signal routier provisoire selon l'une quelconque des revendications précédentes, dans lequel la patte arrière (11) comprend une paire de parties de patte parallèles fixées au bâti de signal pour effectuer un mouvement de pivotement autour d'un axe horizontal commun, et l'élément coulissant (10) vient en prise avec les deux parties de patte arrière (11), l'élé- 55

ment coulissant (10) comprenant une entretoise avec des colliers coulissants à ses extrémités pour venir en prise avec les parties de patte arrière respectives.

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5. Signal routier provisoire selon la revendication 4, dans lequel les fixations pivotantes réunissant la paire de liaisons oscillantes à l'élément coulissant sont positionnées aux extrémités respectives de l'entretoise, et les fixations pivotantes (7a, 7b, 8a, 8b) réunissant la paire de bras de liaisons basculants (9a, 9b) au bâti de signal sont positionnées au point milieu du bord inférieur du bâti de signal. 10
6. Signal routier provisoire selon la revendication 5, dans lequel une deuxième paire de bras de liaison basculants réunissent le bâti de signal à l'élément coulissant, la deuxième paire de bras de liaison basculants s'étendant à partir de colliers respectifs de l'élément coulissant jusqu'à des points voisins des extrémités du bord inférieur du bâti de signal. 15
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7. Signal routier provisoire selon la revendication 4, dans lequel les fixations pivotantes réunissant la paire de liaisons oscillantes à l'élément coulissant sont positionnées au point milieu de l'entretoise. 25
8. Signal routier provisoire selon l'une quelconque des revendications précédentes, dans lequel des moyens de verrouillage sont présents pour maintenir le signal dans les positions érigées et/ou repliées. 30
9. Signal routier provisoire selon la revendication 8, dans lequel les moyens de verrouillage comprennent des moyens pour empêcher le coulissement de l'élément coulissant le long de la patte arrière. 35
10. Signal routier provisoire selon la revendication 8, dans lequel les moyens de verrouillage comprennent des moyens pour maintenir la patte arrière au voisinage du bâti de signal à l'aide d'éléments coopérants positionnés sur la patte arrière et le bâti de signal, respectivement. 40

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FIG 1

