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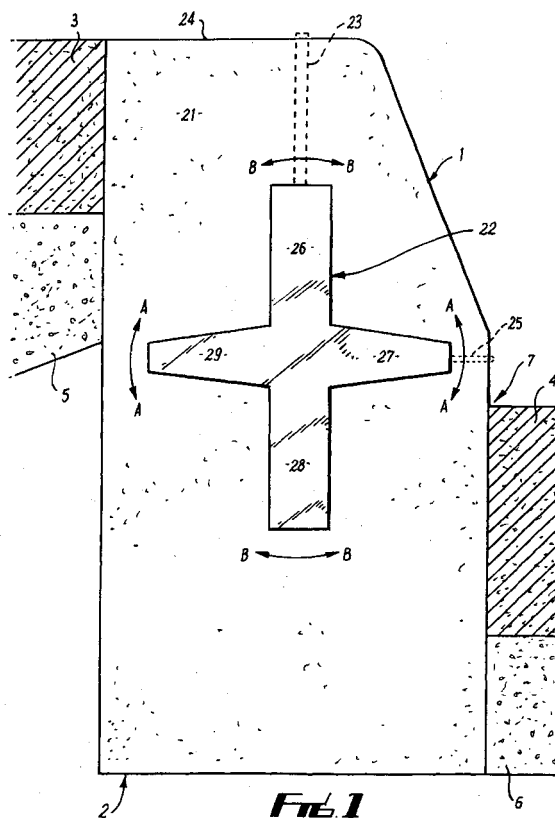
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(54) **A spacer and method of ensuring a gap between kerb stones**

(57) Kerb stones 1 by their nature are heavy and unwieldy articles which are difficult to accurately manipulate and align. Nevertheless, it is desirable to provide a predetermined gap between adjacent end edges of kerb stones for drainage and expansion. This problem is further exacerbated when higher rates of kerb stone laying are required. A spacer 22, 31, 41, 52, 62, 82 is provided having significant radial components to ensure that an accurate gap is provided between adjacent kerb stone 1 edges. The spacer members take the form of typically a cross in order to ensure accurate spacing in the crossed axes X and Y as the two kerb stone edges are brought together. Typically, a spacer is secured to one kerb stone edge and then brought into abutment with an adjacent kerb stone edge to ensure accurate alignment and spacing. Possibly, a dangle or positioning tag 23 is provided to ensure appropriate location upon the kerb stone edge.



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Description

[0001] The present invention relates to spacers and more particularly to spacers used to ensure a gap between kerb stones.

[0002] It will be understood that a line of kerbstones are provided between a pavement surface and a road surface. The kerb stones provide an edge to the pavement surface which is generally above the road surface in order to prevent inadvertent vehicle stray onto that pavement surface where vehicles may encounter pedestrians. It will also be understood that a raised kerb edge to a road or highway provides essential guttering for rainwater dispersal down the slope of a normal road surface camber.

[0003] Generally, kerb stones are laid into a prepared trench with at least foundation aggregate for the pavement surface and road surface either side. The actual pavement surface or road surface can be laid later. A gap in the order of 2mm is provided between juxtaposed end surfaces of adjacent kerb stones to accommodate for expansion, distortion and other factors which may occur during the lifetime of the kerb/road surface/pavement surface combination. It will be understood, if a gap is not provided these end surfaces may abrade due to rubbing or splinter/chip under compressive loads against each other. It will also be understood that occasionally vehicles mount the kerb causing downward compression of each respective kerb stone at least transiently such that again kerb stones in compression may abrade and chip about the compressed interface between the end surfaces of adjacent kerb stones.

[0004] A gap of 2mm is generally desirable to alleviate the problems of abrasion and compression chip actions whilst insufficient to cause paving foundation sand and leakage or water/ice erosion. Unfortunately, kerb stones are inherently heavy and the previous practice of an installer judging the 2mm gap by eye is difficult if not impossible to maintain particularly at the rates of kerb stone laying normally commercially expected.

[0005] The present invention provides a spacer for kerb stones, the spacer comprising a member to prevent in use orientational variation in the gap provided by the spacer when between adjacent kerb stones. Normally, the member is shaped for flat abutment to ends of kerb stones to maintain gap spacing and presentation in use between those ends of adjacent kerb stones. Generally, the member is radially extending including divergent limbs.

[0006] Also in accordance with the present invention there is provided a method of forming a kerb edge for a pavement or pathway, the method comprising provision of an appropriate trench for a kerb edge, securing a spacer to at least one end of juxtaposed ends of kerb stones to be located in the trench and bringing that spacer into abutting contact with the end of an adjacent kerb stone whereby the juxtapositioned ends of the kerb stones in the trench are held at a desired spacing sub-

stantially determined by the thickness of the spacer. Generally, the spacer used is that described above.

[0007] Typically, the thickness of the spacer is in the order of 2mm.

[0008] Normally, the member when a radially extending member is a cross or crucifix element. The member may be a simple cross or a cross of the Lorraine or X cross member or disc or oval. Alternatively, the member could be a Y or double inverted Y or star or other radial limb projecting shape.

[0009] Typically, the spacer will be secured to a kerb stone by an adhesive.

[0010] Possibly, more than one spacer is secured to a kerb stone.

[0011] Possibly, abutment surfaces of the spacer are roughened to facilitate abutment or adhesive engagement with kerb stone ends.

[0012] Possibly, the spacer includes a positional tag. Normally, the positional tag is detachable.

[0013] Possibly, the spacer incorporates an adhesive blister appropriately released in order to secure that spacer to a kerb stone.

[0014] Preferably, the spacer is formed from a resilient elastomeric material. Typically, the spacer is formed from a plastics material. Generally, the spacer is formed by a moulding process. Possibly, the spacer may be incorporated in an end surface of a kerb stone during moulding or drying/firing of that kerb stone.

[0015] Further in accordance with the present invention there is provided a kerb edge including a spacer as described above and/or formed by a method as described above.

[0016] Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Fig. 1 is a schematic end view illustrating a spacer in accordance with the present invention secured to an end surface of a kerb stone;

Fig. 2 is a plan view of a second spacer in accordance with the present invention;

Fig. 3 is a plan view of a third embodiment of a spacer in accordance with the present invention;

Fig. 4 is a plan view of a fourth spacer in accordance with the present invention;

Fig. 5 is a plan view of a fifth embodiment of a spacer in accordance with the present invention;

Fig. 6 is a schematic plan view of a sixth embodiment of a spacer in accordance with the present invention; and,

Fig. 7 is a schematic plan view of a kerb edge.

[0017] Referring to Fig. 1 illustrating an end view of a kerb stone 1 located within a trench 2 formed between a pavement surface 3 and a road surface 4 respectively incorporating foundation aggregate 5, 6. Typically, the kerb stone 1 will be formed from concrete and as illustrated in Fig. 1 a substantial depth of that kerb stone 1 will be below the surface of both the pavement 3 and road surface 4. In such circumstances, the kerb stone 1 is a weighty and substantial component difficult to manually manipulate accurately. The kerb stone 1 provides an edge to the pavement surface 3 such that there is a height differential between that pavement surface 3 and the road surface 4 in order to protect pedestrians on that pavement surface 3 and provide a gutter 7 about the junction between the kerb stone 1 and the road surface 4 to facilitate runaway of rainwater incident upon the road surface 4.

[0018] Fig. 7 illustrates a schematic plan view of a kerb edge 71 which divides a pavement surface 73 from a road surface 74. The kerb edge 71 is formed from a number of kerb stones generally aligned with end surfaces following on. As depicted, the kerb stones may be straight but it will also be understood that curve sections of kerb edge may be provided either by curved sections of kerb stones or slight angular presentation of short straight kerb stone sections. In accordance with the present invention, a gap 72 is provided consistently between the kerb stones of the kerb edge 71. These gaps 72 are achieved through use of a spacer (not shown in Fig. 7) which ensures the desired spacing and configuration between the kerb stone end surfaces is achieved.

[0019] Again referring to Fig. 1 the kerb stone 1 has an end surface 21 upon which a spacer 22 is secured. This spacer 22 is in substantially flat abutment with the end surface 21. Generally the thickness of the spacer 22 is that desired between respective kerb stones 1 in a kerb edge. The spacer 22 is secured to the end surface 21 through an adhesive (not shown) at an appropriate position. Such an appropriate positioning can be achieved by approximate high positioning or specific measurement. Alternatively, a positioning tag 23 may be provided which hooks over an upper end 24 of the kerb stone 1 in order to achieve good positioning as required. Similarly, a front positional tag 25 could be used to ensure appropriate lateral positioning of the spacer 22. These positional tags 23, 25 are shown in broken line as they are inessential with respect to the present invention and will normally be readily detachable from the spacer 22 when that spacer 22 is secured to the end surface 21. The positional tags 23, 25 will be re-released from the spacer 22.

[0020] As indicated previously, mis-presentation with respect to kerb stones and in particular the junction between kerb stone end surfaces 21 can be in all orientations. Thus, as depicted in Fig. 1 the spacer 22 is generally a simply formed member such as a radially extending member with respective limbs 26, 27, 28, 29 extending perpendicularly from each other. In such circum-

stances, abutment between the limbs 26 to 29 against respective kerb stone end surfaces 21 ensures appropriate spacing. The limbs 26, 28 resist deformation in the direction of arrowheads A whilst the limbs 27, 28 resist distortions in the direction of arrowheads B.

[0021] The simple cross or cruciform configuration of a radially extending member as a spacer 22 ensures that the compound affective longitudinal lengths of the limb combinations 26, 28 and 27, 29 are relatively great in comparison with the size of the spacer 22 and volume of material used to form that spacer 22. It will also be understood that the compound limb combination 26, 28 is greater than that of the compound limb 27, 29 combination to replicate the different dimensions of the kerb stone 21 and the potentially greater damaging effects of loads provided downwards upon the kerb stone.

[0022] Figs. 2 to 6 illustrate alternative radially extending member configurations in accordance with the present invention. Thus, Fig. 2 illustrates in a plan view a spacer 31 in which a spine limb combination 36 is provided with laterally extending arm limb combinations 37, 38. In such circumstances, the spacer 31 comprising the radially extending member incorporating the limbs 36, 37, 38 ensures when secured to an end surface of a kerb stone appropriate spacing irrespective of the orientation of mis-presentation between them.

[0023] Fig. 3 illustrates a third embodiment of a spacer 41 in accordance with the present invention. Thus, a spine limb combination 46 incorporates an X cross limb combination comprising limb elements 40, 42, 43, 44. Thus, these limb elements 40, 42, 43, 44 ensure appropriate spacing between end surfaces of a kerb stone irrespective of the orientation of mis-placement between those stones.

[0024] Fig. 4 illustrates a fourth embodiment of a spacer 52 in accordance with the present invention. Thus, the spacer 52 essentially has a Y shaped plan view in which a stem limb 53 extends upwards to divide into limb elements 54, 55 in order to again provide appropriate spacing between end surfaces of adjacent kerb stones with resistance to the angle of orientation of distortion.

[0025] Fig. 5 illustrates a fifth embodiment of a spacer 62 in accordance with the present invention. This spacer 62 generally comprises an opposed Y or inverted Y configuration in which a central stem 63 extends at either end into respective limb elements 60, 61, 64, 65. In use, the spacer 62 as indicated previously with other spacers is secured to at least one end surface of a kerb stone and the limb elements 60, 61, 63, 64, 65 act to provide appropriate spacing despite the orientation of any distortion presented to the junction between these adjacent end surfaces of kerb stones.

[0026] As indicated previously, a balance must be struck between the size of spacer and volume of material used in that spacer such that open crossed configurations as depicted in Figs. 1 to 5 are preferred. However, other radially extending member configurations for

a spacer can be provided. Thus, as depicted in Figure 6 a crossed member in the form of a dumbbell can be provided. In Fig. 6 a spacer 82 comprises a central limb stem 83 from which extend limbs 80, 81. Thus, where the spacer 82 is secured to an end surface of a kerb stone spacing between end surfaces of adjacent kerb stones in a kerb edge is maintained. The end limbs 80, 81 take the form of expanding triangle portions which provide a degree of lateral stability for the spacer 82. As illustrated, these triangular sections could be replaced with a T end (broken lines) so that the spacer 82 could take the form of an I shaped plan section. Alternatively, a H plan section could be provided.

[0027] As illustrated with respect to Figs. 5 and 6 further lateral portions 66, 86 could be provided in order to further ensure gap stability in use between end surfaces of kerb stones.

[0028] The method of forming a kerb edge 71 in accordance with the present invention will now be described with reference to Fig. 7. Thus, essentially a road surface 74 will be laid and a trench formed at the edge of that road surface 74 in order to accommodate respective kerb stones 75. Generally, the road surface 7 will be formed as a compacted or foundation surface which at the time of forming the kerb edge 71 will not be covered with tarmac or other final road surfacing. In any event, typically the kerb stones 75 will be roughly placed into the trench formed at the side of the road surface 74 and then brought into appropriate juxtaposed position with an adjacent kerb stone 75 such that end surfaces have a desired gap 72 as described previously. Possibly, the kerb stones 75 as received on site already incorporate spacers in accordance with the present invention secured to an end surface of the kerb stone 75. However, more usually a spacer in accordance with the present invention will be specifically secured on site to an end surface of each kerb stone 75. Advantageously, only one of the adjacent kerb stones in a juxtaposed position will have a spacer secured to it such that only one spacer provides the necessary gap retention desired for installation performance. As indicated previously, that desired gap is normally in the order of 2mm between adjacent juxtaposed end surfaces of kerb stones 75.

[0029] Each spacer will normally be secured using an appropriate adhesive. As indicated previously, positional tags (23, 25 in Fig. 1) may be provided to ensure appropriate positioning of the spacer upon the end surface. Generally, an adhesive will be daubed upon one abutment side of the spacer and then the spacer pressed into association with the end surface of the kerb stone. It will be understood that the other abutment side of the spacer may also be daubed with adhesive just prior to positioning an adjacent kerb stone to that upon which the spacer is already secured as it is manoeuvred into position. In such circumstances, the spacer is normally at least secured to one end surface of kerb stones in an adjacent and juxtaposed position but also may be secured by adhesive to the other end surface as well. Al-

ternatively, the positional tags 23, 25 (Fig. 1) may simply suspend the spacer until the abutment forces between adjacent kerb stones hold the spacer in place.

[0030] Rather than daub adhesive upon the abutment surfaces of the spacer, it may be possible to provide a blister of adhesive upon those surfaces. Thus, the spacer would be placed in position either by hand or suspended upon positional tags and then a percussive force such as through a mallet strike will burst the adhesive blister in order to release adhesive over the abutment surface and secure the spacer to the end surface of the kerb stone. These adhesive blisters may simply comprise blobs of adhesive in which the outer skin has dried such that when an appropriate squeezing force is presented the blister bursts releasing the adhesive. Adhesive blisters could be provided to both abutment sides of the spacer which in use will be in contact with end surfaces of respective adjacent kerb stones.

[0031] Once the spacer is appropriately positioned upon one end surface of a kerb stone, its adjacent kerb stone will then be brought into position in terms of alignment height and orientation but in particular with accordance with the present invention with the desired spacing between the opposed end surfaces of the respective adjacent kerb stones. Normally, one kerb stone will be substantially stabilised and possibly cemented into position and it is upon this kerb stone that the spacer will be secured then a second is use adjacent kerb stone will be brought to that now stabilised kerb stone and then itself stabilised in the desired position and in accordance with the present invention the desired gap between the end surfaces of the adjacent kerb stones. Finally, the pavement surface on one side and the final road surface on the other side of the kerb edge 71 will be laid.

[0032] A spacer in accordance with the present invention must be sufficiently resilient to withstand the potentially relatively high compression forces between adjacent opposed end surfaces of kerb stones. However, it will also be understood that the general act of manipulation of the respective kerb stones requires that the spacer is also relatively robust and not brittle. In such circumstances, normally the spacer is made from a plastics material such as polyurethane and will be generally be formed by a moulding process. As indicated previously, the objective is to maximise the orientational resistance to gap closure thus the spacer is generally a radially extending member including limbs which project away from each other in order to create an effective footprint resistant to gap closure which extends widely in the same plane between the opposed adjacent end surfaces of the kerb stones. The abutment surfaces either side of the spacer may be roughened, stippled or otherwise treated in order to facilitate adhesive location of the spacer upon an end surface of a kerb stone and also to provide essentially improved friction with an end surface of a kerb stone. Furthermore, the spacer may be a disc or oval shaped member to provide the desired multi-orientational stability. More than one spacer may be pro-

vided between adjacent kerb stone ends and the spacers may be the same or differently shaped to act in concert for gap stabilisation.

[0033] Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

Claims

1. A spacer for kerb stones, the spacer comprising a member to prevent in use orientational variation in the gap provided by the spacer when between adjacent kerb stones. 5
2. A spacer as claimed in claim 1 wherein the member is shaped for flat abutment to ends of kerb stones to maintain gap spacing and presentation in use between those ends of adjacent kerb stones. 10
3. A spacer as claimed in claim 1 or claim 2 wherein the member is radially extending including divergent limbs. 15
4. A spacer as claimed in claim 3 and any claim dependent thereon wherein the member when a radially extending member is a cross or crucifix element. 20
5. A spacer as claimed in any preceding claim wherein abutment surfaces of the spacer are roughened to facilitate abutment or adhesive engagement with kerb stone ends. 25
6. A spacer as claimed in any preceding claim wherein the spacer includes a positional tag. 30
7. A spacer as claimed in claim 6 wherein the positional tag is detachable. 35
8. A spacer as claimed in any preceding claim wherein the spacer is formed from a resilient elastomeric material. 40
9. A spacer as claimed in any preceding claim wherein the spacer may be incorporated in an end surface of a kerb stone during moulding or drying/firing of that kerb stone. 45
10. A method of forming a kerb edge for a pavement or pathway, the method comprising provision of an appropriate trench for a kerb edge, securing a spacer to at least one end of juxtaposed ends of kerb

stones to be located in the trench and bringing that spacer into abutting contact with the end of an adjacent kerb stone whereby the juxtapositioned ends of the kerb stones in the trench are held at a desired spacing substantially determined by the thickness of the spacer.

11. A method as claimed in claim 10 wherein more than one spacer is secured to a kerb stone.
12. A method as claimed in claim 10 or claim 11 wherein each spacer is as claimed in any of claims 1 to 9.
13. A kerb edge including a spacer as claimed in any of claims 1 to 9.

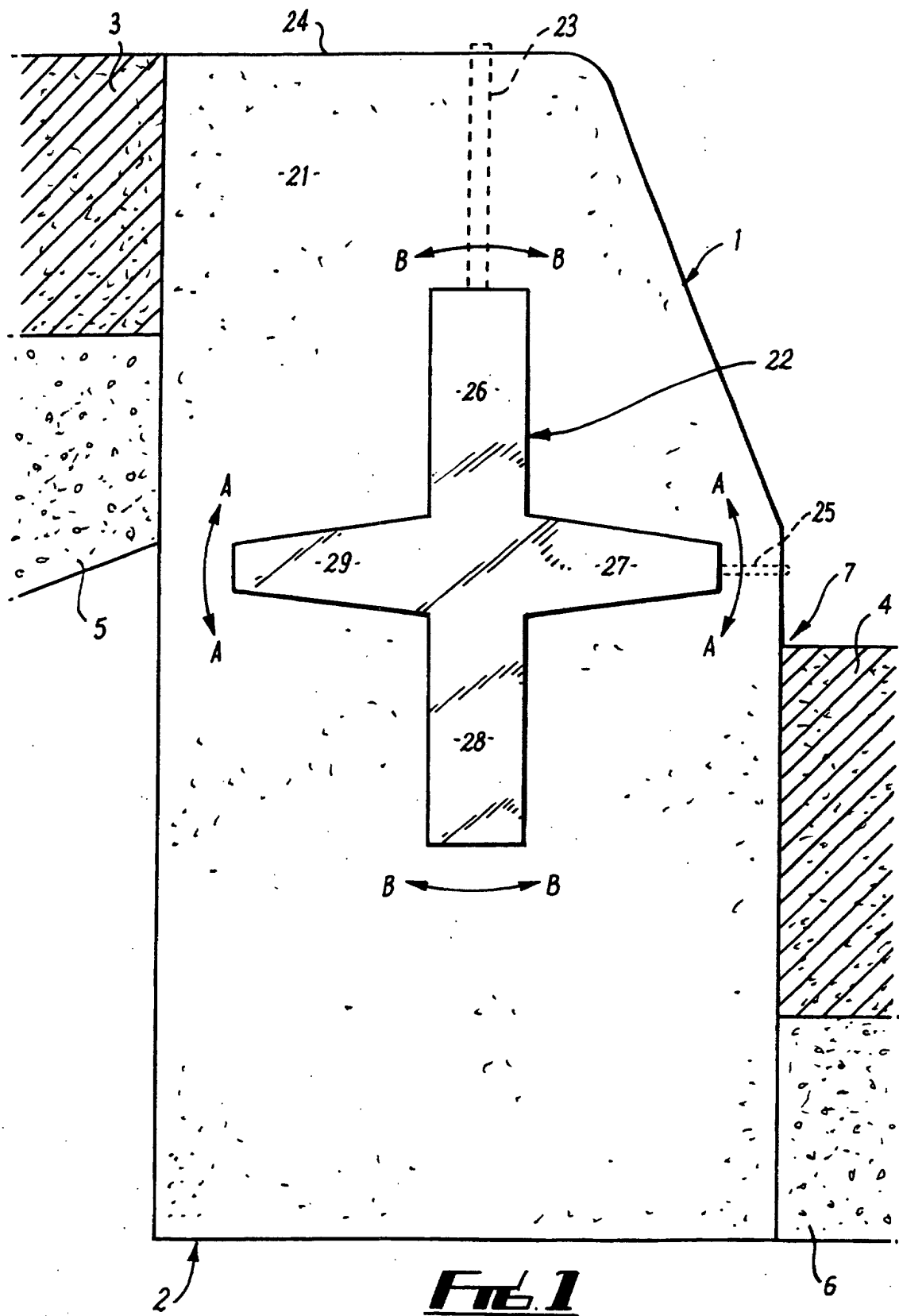


Fig. 1

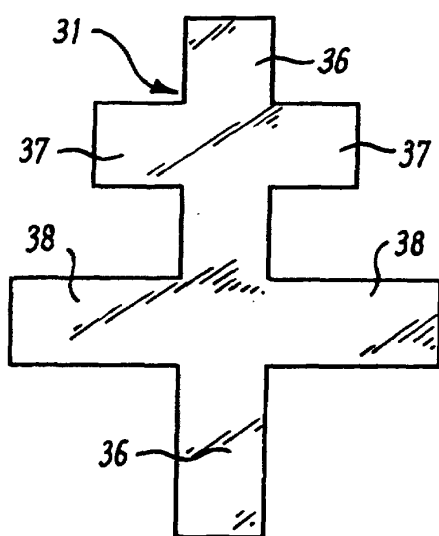


Fig. 2

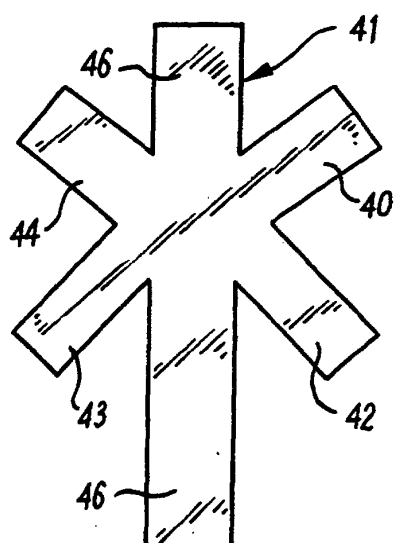


Fig. 3

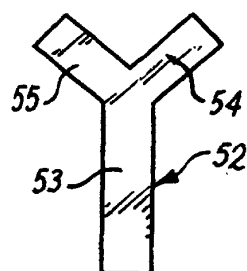


Fig. 4

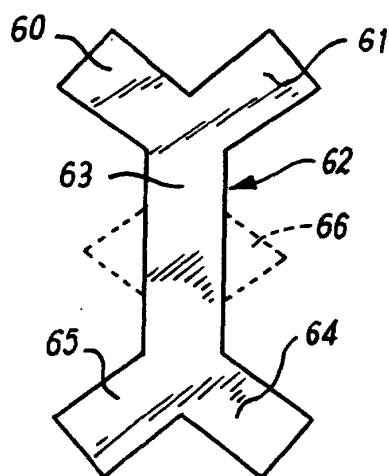


Fig. 5

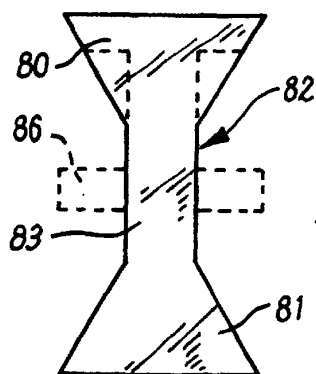


Fig. 6

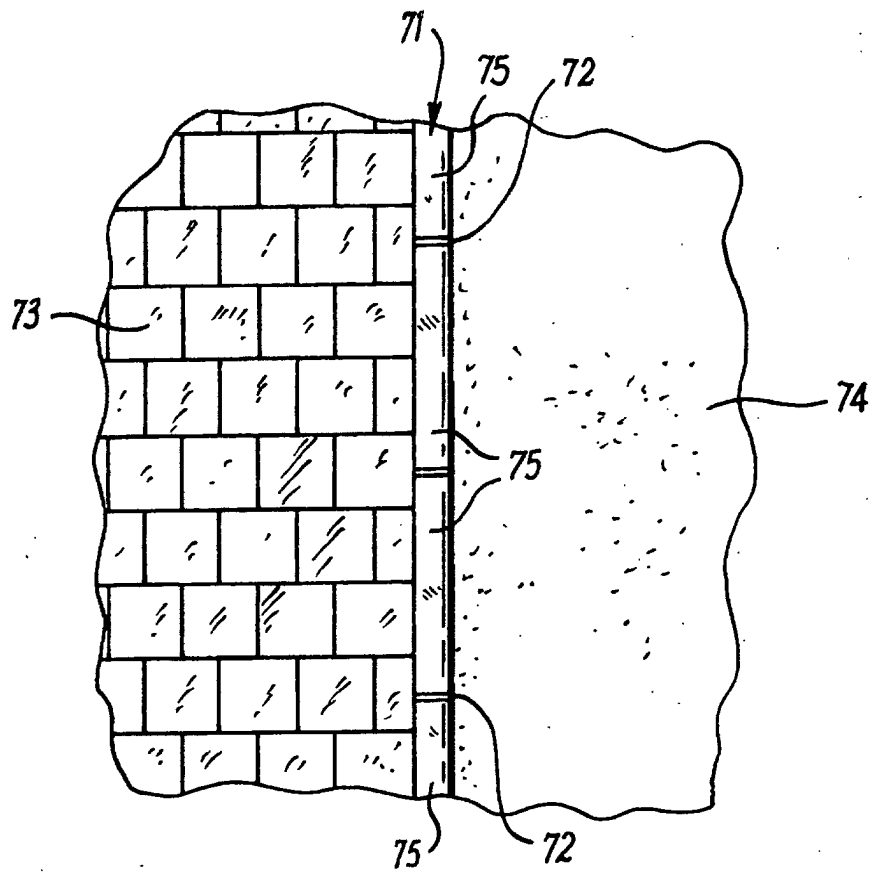


FIG. 2