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(54) **Support for demountable paving and pavements using said support**

Träger für demontierbaren Pflasterstein und diesen Träger benutzende Plattenbelägen

Support pour pavé démontable et dallages utilisant ce support

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Description

[0001] The present invention relates to a temporary paving, i.e a demountable paving that is particularly useful for events such as fairs, exhibitions, shows, festivals and similar occasions.

[0002] Very frequently the events mentioned above take place in old buildings in which the floors are uneven, and for this reason could cause accidents resulting in injury to the participants. On the other hand, it may be desirable to protect the flooring which could be damaged by being trodden by a large number of visitors or participants.

[0003] Similar problems arise when said gatherings take place outdoors where the surface of the pavement - even where recently laid - is generally irregular.

[0004] At present, the said pavements are covered with wooden boards or hard-wearing plastic materials, fixed to a framework laid on the existing pavement.

[0005] This paving system requires the engagement of considerable labor for both assembly and dismantling of the boards.

[0006] Paving systems have also been proposed which are arranged at some distance from the plane of the original paving and comprise means of support that can move vertically so as to raise or lower the supported pavement where necessary in order to level out irregularities in the underlying surface.

As an example, US 4,736,555 shows a temporary paving comprising panels and supports for the panels, having pivots for regulating the height of the panel. Said supports are massive blocks, with limited ability of regulation of the supported paving, which offer some difficulties in building the lay-out of the network of services which must be disposed under the paving and which cannot be easily stored when not in use.

US 3,961,453 shows a support comprising four sectors for supporting panels and separation means to keeping a certain distance between said panels. Also this device denotes, more or less, the same disadvantages of the previous one.

[0007] These systems are also expensive and require a lot of time for their initial assembly and later dismantling.

[0008] It would therefore be advantageous to have a means of laying down temporary pavements which is easy to assemble and dismantle, is low cost, and occupies reduced space in storage.

[0009] Therefore the object of the present invention is a temporary paving that is of easy to erect, that it can be dismantled in a short time and which occupies little space once dismantled.

[0010] The above-mentioned aims are achieved by using a support comprising four substantially equal sectors, every sector having a pivot located on the bisector line of said sector, every sector being separated from the adjacent sectors by two or more means of separation. The supports support rectangular or square panels that constitute the pavement and which have four holes that

fit over the pivots located on the same supports, while the means of separation constitute a stay that prevents horizontal movement around the pivots of the paving panels.

[0011] The support according to the invention can assume any shape, provided that it allows subdivision into four substantially equal sectors. Therefore the external perimeter of the support will assume the form of a circumference or of a regular polygon with a number of sides equal to four or a multiple of four. Preferably the support will be octagonal or circular in section. In horizontal section, the preferred support has the shape of a circular crown or a geometric figure whose surface is comprised between an external octagon and an inner circle or a polygon concentric with the external octagon but of smaller dimensions.

[0012] According to a preferred embodiment, the pivots are threaded and can be fixed onto the support by being screwed into a threaded hole in the same support and obtained, for example, by embedding a threaded nut in the support. The threaded pivot may carry an integral washer that limits the penetration of the pivot. Unscrewing the pivot raises the washer which is integral with it and in its turn lifts the associated pavement panel. Perfect alignment of the panels that constitute the pavement can be obtained by regulating the said height.

[0013] Preferably the upper extremity of the threaded pivot has a recessed head to take a star-shaped or Allen key, that allows the height of the panel to be regulated by inserting a simple screwdriver into the relative threaded hole after the pavement has been laid down.

[0014] According to a further embodiment, the threaded hole is a through hole and the threaded pivot, not supplied with a washer, can emerge from the opposite part of the support and compensate for any irregularity of the surface below the support.

[0015] A common characteristic of the various embodiments of the present invention, is constituted by appropriate openings made in its side walls to allow the passage of electrical cables in order to ensure supply to the lighting system and the operation of electrical equipment and, where necessary, the passage of pipes for the supply of other services.

[0016] Moreover - always in order to assure supply of electrical power - panels that forms the pavement have one or more corners cambered so that, corresponding to the support, the four cambered corners of the four pavement elements together form a hole that can be used for the passage of wires, cables, tubes, etc.

[0017] The support can be made of plastic, metal or any other hard-wearing material that can support the weight of the pavement structure and the load applied to it by the people or equipment that can be placed on the portion of pavement supported by this support.

[0018] The four sectors that form the support can also be physically separated to be used along the extreme sides of the pavement and on the corners. The sectors separated for use along the extremities or on the corners

of the pavement can be reassembled to reconstruct the original support and/or for ease of storage.

[0019] The line of separation of the support sectors must be such as to allow each sector to accommodate two separators. For this purpose the separators, while being located along the radius that delimits the sectors, are found on opposite sides of the break line along which the sectors effectively separate to allow the same to still accommodate two separators.

[0020] The last row of supports can be eliminated to avoid the formation of a step along the row of extremity panels of the pavement between the pre-existing floor and that realized according to the present invention; and the outside edge of the panel can be made to rest on the surface of the preexisting pavement. Appropriate spacers can be used to prevent these terminal panels from rotating and lifting.

[0021] According to an alternative embodiment of the invention, so-called "floating pavements" can be assembled with the supports. The said supports can, in their turn, be arranged on spacers in order to create a usable space between the plane of the pre-existing pavement and that realised according to the invention. This would make it easier to run heavy cables or pipes or to house service equipment under the pavement. The spacers used to realise the floating pavements according to the invention can advantageously consist of a plurality of supports stacked one above the other.

[0022] Some embodiments of supports according to the invention will be described below with the aid of the attached drawings. The description and the graphical representation of said embodiments are by way of example and should not be interpreted as a form of limitation of the invention to the said examples.

[0023] Figure 1 is a perspective view of a support for paving according to the invention supplied with fixed pivots.

[0024] Figure 2 is a view in axial cross-section of the support of Figure 1.

[0025] Figure 3 is a view from below of the support of Figures 1 and 2.

[0026] Figure 4 is a perspective view of another embodiment of the support according to the invention in which threaded holes have been made for the insertion of vertically moving pivots.

[0027] Figure 5 is a perspective view of the support of Figure 4 in service and in regulatory phase.

[0028] Figure 6 shows a series of panels fixed to the support of Figures 4 and 5 to form a floating pavement.

[0029] In the figures, equivalent elements are identified by the same numerical references. Figure 1 shows the body 1 of the support according to the invention on whose upper surface are present four pivots 2 and separators 3. There are openings 4 in the external and the internal side surfaces that allow passage of the cables for the distribution of electrical power, telephone lines or the supply of other services. As can be seen more clearly in Figures 2 and 3, the support is open, and lacks a lower

base. This embodiment considerably simplifies the production and setting up of the support. Moreover, this form of support considerably reduces the space required to store the same supports in fact, the supports can be stacked one on top of the other to form a stable structure. In order to ensure mechanical strength to the support webs 5 are provided that join the three surfaces of support 1. Pivots 2 can engage with the same panels of Figure 5, while every panel of Figure 5 can fit onto four pivots of various supports in order to create a stable pavement.

[0030] Figures 4 and 5 show another embodiment of the support according to the invention that has vertical through pivots. Pivots 102 are supplied with a thread that engages the threaded hole 107, achieved, for example, by embedding a threaded nut 108 in the support. The threaded pivot 102 has a recessed head 110 and is integral with a washer that limits the downward movement of the same threaded pivot 102. On the other hand, any upward movement of pivot 102 and washer raises the associated pavement panel 12. The pivot 102 and the associated panel can be raised by unscrewing threaded pivot 102 with the aid of a screwdriver 111 inserted into the hole of the panel 12 until it reaches the recessed head 110 of pivot 102.

Claims

1. Temporary paving which is easily put into service, can be dismantled in a short time and occupies a reduced space once dismantled, said paving comprising a plurality of panels (12) laying down on supports, said supports supporting rectangular or square panels that constitute said paving, each support comprising four sectors, each sector having a pivot (2) fitted in a hole provided in said sector, and supporting a corner of one of said paving panels which panels have holes that fit over the pivots said support being **characterized in that:**

- each sector is separated from the adjacent sectors by two or more means of separation (3) which comprises stay means to prevent horizontal movement of said paving panels around the pivots,
- each sector comprises in its side walls openings (4) made to allow the passage of cables and or pipes for the supply of services, and
- said sectors can be physically separated and reassembled to reconstruct the original support.

2. Temporary paving according to Claim 1, **characterised by** the support having the shape of a circular crown.

3. Temporary paving according to Claim 1, **characterised by** the support having the shape of a regular polygon with the number of sides equal to four or to

a multiple of four.

4. Temporary paving according to Claim 3, **characterised by** the support having the shape of a geometric figure whose surface is comprised between an external octagon and an inner polygon concentric with the external octagon. 5
5. Temporary paving according to Claim 1, **characterised by** the support pivots being threaded and being fixed to the support by being screwed into a threaded hole in the same support. 10
6. Temporary paving according to Claim 5, **characterised by** the threaded pivot being integral with a washer that limits the travel of the pivot and, on being raised by unscrewing the pivot, lifts in its turn the associated pavement panel and thus allows the extent of the said lifting to be regulated in order to achieve perfect alignment of the panels that constitute the pavement. 20
7. Temporary paving according to Claim 5, **characterised by** the threaded hole being a through hole and by the threaded pivot being able to emerge from the opposite part of the support and to compensate for any irregularity of the surface below the support. 25
8. Temporary paving according to Claims 6 or 7 **characterised by** the upper extremity of the threaded pivot having a recessed head to take a star-shaped or Allen key, that allows the height of the panel to be regulated by inserting a simple screwdriver into the relative hole after the pavement has been laid down. 30
9. Temporary paving according to Claim 1, **characterised by** being devoid of the last row of supports along the last row of panels at one side of the pavement, the outside edge of said panels resting on the surface of the pre-existing pavement in order to avoid the formation of a step with the preexisting surface along the row of paving panels at said side of the paving. 35
10. Temporary paving according to Claim 1, **characterised by** said panels laying down on spacers, said spacers comprising a plurality of supports stacked one above the other in order to create a so-called "floating pavement". 40
11. Temporary paving according to Claim 1, **characterised by** the sectors that constitute the support being able to be separated and to be reassembled by means of interlocking pin and recess. 50
12. Temporary paving according to Claim 11, **characterised by** the sectors being separated according to break lines that allow each sector to accommodate at least one separator on each braking line of two 55

sectors.

13. Support for panels of a temporary paving according to claim 1 **characterised by** comprising four sectors, each sector having a pivot located on the bisector line of said sector, and each sector being separated from the adjacent sectors by two or more means of separation and by said pivots engaging holes made in rectangular or square panels that constitute the pavement.

Patentansprüche

1. Temporärer Plattenbelag, der einfach zu installieren ist, schnell demontiert werden kann und im demontierten Zustand einen verringerten Raum in Anspruch nimmt, umfassend eine Vielzahl von auf Trägern gesetzten Platten (12), wobei die Träger rechtwinklige oder quadratische, den Plattenbelag bildende Platten tragen, und wobei jeder Träger vier Abschnitte aufweist, die jeweils einen Zapfen (2) besitzen, der in ein in dem jeweiligen Abschnitt vorgesehenes Loch eingepasst ist, und eine Ecke einer der Plattenbelagsplatten trägt, wobei die Platten über die Zapfen passende Löcher besitzen, und wobei der Träger **dadurch gekennzeichnet ist, dass**
 - jeder Abschnitt von den benachbarten Abschnitten durch zwei oder mehr Trennmittel (3) getrennt ist, die Haltemittel aufweisen, um eine horizontale Bewegung der Plattenbelagsplatten um die Zapfen zu vermeiden,
 - jeder Abschnitt an seinen Seitenwänden Öffnungen (4) aufweist, die dazu vorgesehen sind, um das Durchführen von Kabeln und/oder Rohren für das Erbringen von Betriebsleitungen zu ermöglichen, und
 - die Abschnitte körperlich getrennt und erneut zusammengebaut werden können, um den ursprünglichen Träger wiederherzustellen.
2. Temporärer Plattenbelag nach Anspruch 1, **dadurch gekennzeichnet, dass** der Träger die Form einer kreisförmigen Krone besitzt.
3. Temporärer Plattenbelag nach Anspruch 1, **dadurch gekennzeichnet, dass** der Träger die Form eines regelmäßigen Vielecks besitzt, wobei die Anzahl der Seiten gleich vier oder einem Vielfachen von vier ist.
4. Temporärer Plattenbelag nach Anspruch 3, **dadurch gekennzeichnet, dass** der Träger die Form einer geometrischen Figur besitzt, deren Oberfläche zwischen einem äußeren Achteck und einem inneren Vieleck, das konzentrisch zu dem äußeren Achteck ist, festgelegt ist.

5. Temporärer Plattenbelag nach Anspruch 1, **dadurch gekennzeichnet, dass** die Trägerzapfen ein Gewinde aufweisen und an dem Träger angebracht sind, indem sie in ein Gewindeloch in dem gleichen Träger eingeschraubt werden. 5
6. Temporärer Plattenbelag nach Anspruch 5, **dadurch gekennzeichnet, dass** der mit einem Gewinde versehene Zapfen integral mit einer Unterlegscheibe ausgebildet ist, die die Verschiebung des Zapfens begrenzt und die beim Anheben durch Heraus-schrauben des Zapfens während ihrer Drehung die zugeordnete Plattenbelagsplatte anhebt und so ermöglicht, dass das Ausmaß des Anhebens eingestellt werden kann, um eine perfekte Ausrichtung der den Plattenbelag bildenden Platten zu erzielen. 10 15
7. Temporärer Plattenbelag nach Anspruch 5, **dadurch gekennzeichnet, dass** das Gewindeloch ein Durchgangsloch ist, und dass der mit einem Gewinde versehene Zapfen im gegenüberliegenden Teil des Trägers austreten kann, um jegliche Ungleichförmigkeit der Oberfläche unterhalb des Trägers auszugleichen. 20 25
8. Temporärer Plattenbelag nach Anspruch 6 oder 7, **dadurch gekennzeichnet, dass** das obere Ende des Gewindezapfens einen Kopf mit einer Vertiefung für einen kreuzschlitzförmigen Schlüssel oder Inbus-schlüssel besitzt, der ein Einstellen der Höhe der Platte ermöglicht, indem ein einfacher Schrauben-zieher in das relative Loch eingeführt wird, nachdem der Plattenbelag gelegt worden ist. 30
9. Temporärer Plattenbelag nach Anspruch 1, **dadurch gekennzeichnet, dass** keine letzte Träger-reihe entlang der letzten Plattenreihe an einer Seite des Plattenbelags vorgesehen ist, und dass die äußere Kante der Platten auf der Oberfläche des zuvor existierenden Belags aufliegen, um eine Stufenbil-dung mit der zuvor existierenden Oberfläche entlang der Reihe der Plattenbelagsplatten an der Seite des Plattenbelags zu vermeiden. 35 40
10. Temporärer Plattenbelag nach Anspruch 1, **dadurch gekennzeichnet, dass** die Platten auf Ab-standsstücken gelegt sind, und die Abstandsstücke eine Vielzahl von aufeinandergestapelten Trägern aufweisen, um einen sogenannten "schwimmenden Belag" zu erzeugen. 45 50
11. Temporärer Plattenbelag nach Anspruch 1, **dadurch gekennzeichnet, dass** die Abschnitte, die den Träger bilden, getrennt und erneut zusammen-gebaut werden können durch Einrasten eines Stiftes in einer Aussparung. 55
12. Temporärer Plattenbelag nach Anspruch 11, **da-**

durch gekennzeichnet, dass die Abschnitte durch Bruchlinien getrennt sind, die jedem Abschnitt ermöglichen, zumindest ein Trennstück auf jeder Bruchlinie von zwei Abschnitten unterzubringen.

13. Träger für Platten eines vorübergehenden Plattenbelags nach Anspruch 1, **dadurch gekennzeichnet, dass** der Träger vier Abschnitte aufweist, wobei jeder Abschnitt einen Zapfen besitzt, der auf der Winkelhalbierenden des Abschnittes angeordnet ist, und wobei jeder Abschnitt von den benachbarten Abschnitten durch zwei oder mehr Trennmittel und durch die Zapfen getrennt ist, die sich im Eingriff mit Löchern befinden, welche in den rechtwinkligen oder quadratischen Platten, die den Belag bilden, vorge-sehen sind.

Revendications

1. Plancher temporaire qui peut être facilement mis en service, démonté rapidement et occupe un volume réduit une fois démonté, ledit plancher comprenant une pluralité de panneaux (12) reposant sur des supports, lesdits supports soutenant des panneaux rectangulaires ou carrés qui constituent ledit plancher, chaque support comprenant quatre secteurs, chaque secteur présentant un pivot (2) ajusté dans un orifice prévu dans ledit secteur, et supportant un coin desdits panneaux de plancher, ces panneaux présentant des orifices qui s'ajustent sur les pivots, ledit support étant **caractérisé en ce que** :

- chaque secteur est séparé des secteurs adjacents par deux moyens de séparation (3) ou plus qui comprennent des moyens de fixation pour empêcher le déplacement horizontal desdits panneaux de plancher autour des pivots,
- chaque secteur présente sur ses parois latérales des ouvertures (4) réalisées afin de permettre le passage de câbles ou de conduites pour l'alimentation en branchements, et
- chaque secteur peut être physiquement séparé et assemblé à nouveau pour reconstruire le support originel.

2. Plancher temporaire selon la revendication 1, **caractérisé en ce que** le support est en forme de couronne circulaire.
3. Plancher temporaire selon la revendication 1, **caractérisé en ce que** le support présente la forme d'un polygone régulier dont le nombre de faces est égal à quatre ou à un multiple de quatre.
4. Plancher temporaire selon la revendication 3, **caractérisé en ce que** le support présente la forme d'une figure géométrique dont la surface est délimi-

tée par un octogone externe et un polygone interne concentrique avec l'octogone externe.

5. Plancher temporaire selon la revendication 1, **caractérisé en ce que** les pivots de support sont filetés et sont fixés au support en étant vissés dans un orifice fileté de ce même support. 5
6. Plancher temporaire selon la revendication 5, **caractérisé en ce que** le pivot fileté est d'une seule pièce avec une rondelle qui limite la course du pivot et peut être levée par dévissage du pivot et soulever à son tour le panneau de plancher qui lui est associé et permettre ainsi de régler l'importance dudit soulèvement de manière à obtenir un parfait alignement des panneaux qui constituent le plancher. 10
15
7. Plancher temporaire selon la revendication 5, **caractérisé en ce que** l'orifice fileté est un orifice traversant et, grâce au pivot fileté, peut faire saillie de la partie opposée du support et compenser toute irrégularité de la surface de dessous du support. 20
8. Plancher temporaire selon les revendications 6 ou 7, **caractérisé en ce que** l'extrémité supérieure du pivot fileté présente une tête en retrait pour prendre la forme d'une étoile ou d'une clé à six pans, pour permettre de régler la hauteur du panneau en insérant un simple tournevis dans l'orifice concerné après la pose du plancher. 25
30
9. Plancher temporaire selon la revendication 1, **caractérisé en ce qu'il** est dépourvu de la dernière rangée de supports le long de la dernière rangée de panneaux sur une face du plancher, le bord extérieur desdits panneaux restant sur la surface du plancher préexistant afin d'éviter la formation d'une marche avec la surface préexistante le long de la rangée de panneaux de plancher dudit côté du plancher. 35
40
10. Plancher temporaire selon la revendication 1, **caractérisé en ce que** lesdits panneaux reposent sur des pièces d'écartement, lesdites pièces d'écartement comprenant une pluralité de supports empilés les uns sur les autres de manière à créer ce que l'on appelle un "plancher flottant". 45
11. Plancher temporaire selon la revendication 1, **caractérisé en ce que** les secteurs qui constituent le support peuvent être séparés et être assemblés à nouveau au moyen d'une goupille de verrouillage et d'une cavité. 50
12. Plancher temporaire selon la revendication 11, **caractérisé en ce que** les secteurs peuvent être séparés selon des lignes de rupture qui permettent à chaque secteur de loger au moins un séparateur sur chaque ligne de rupture de deux secteurs. 55

13. Support pour panneaux d'un plancher temporaire selon la revendication 1, **caractérisé en ce qu'il** comprend quatre secteurs égaux, chaque secteur comportant un pivot situé sur la ligne bissectrice dudit secteur, et chaque secteur étant séparé des secteurs adjacents par deux moyens de séparation ou plus et par ces pivots s'engageant dans des orifices réalisés dans des panneaux rectangulaires ou carrés qui constituent le plancher.

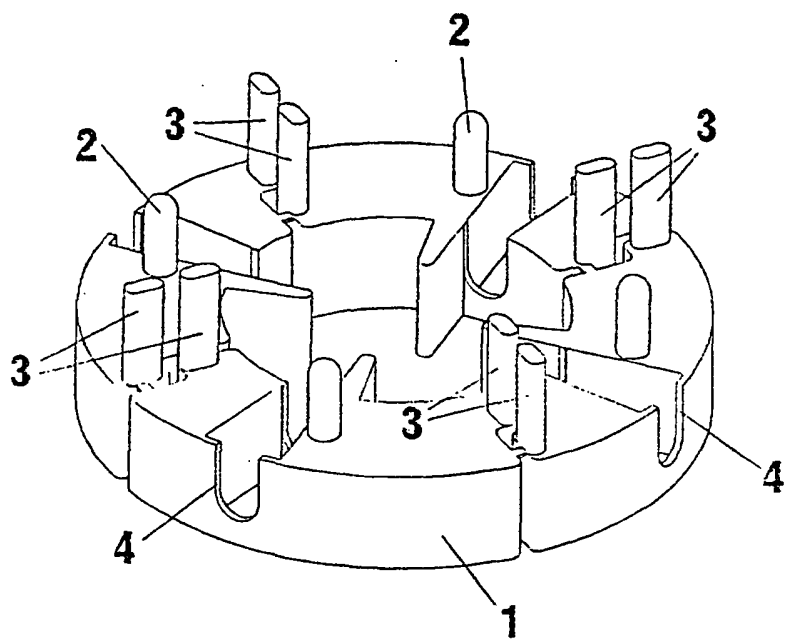


FIG. 1

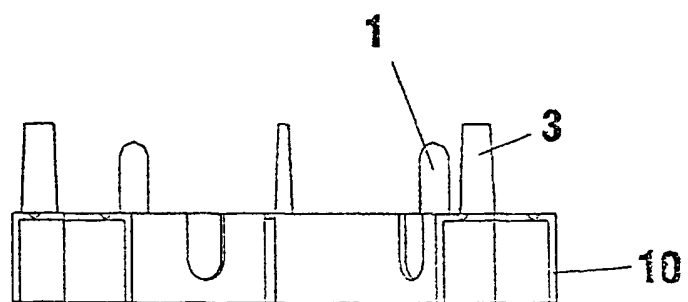


FIG. 2

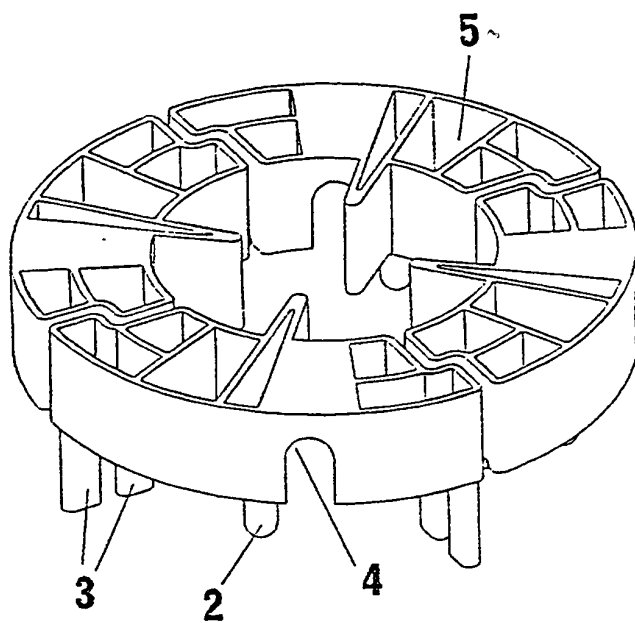


FIG. 3

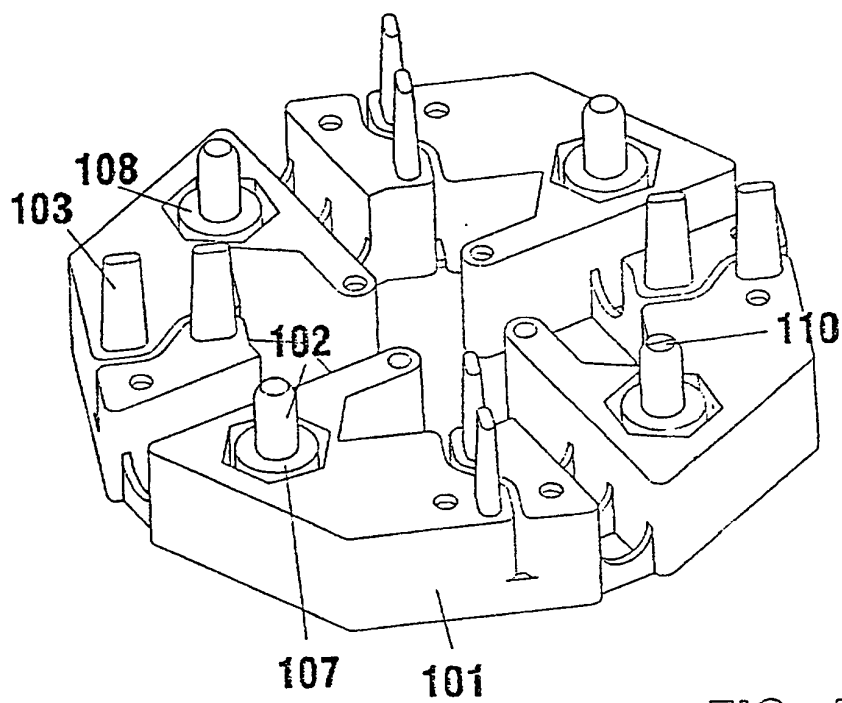


FIG. 4

