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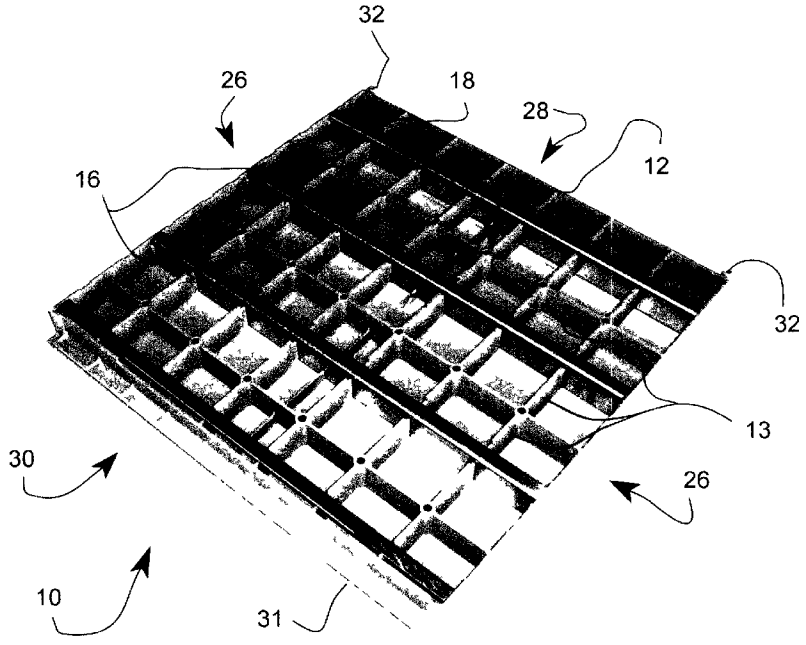
(54) **Title:** DECK TILE WITH SUPPORT BLADE



(57) **Abstract:** A deck tile with support blade comprises a tile structure having a topside and an underside. The underside has channels, and each channel receives a support blade inserted frictionally therein. Each of the tile has four sides wherein two opposite sides are known as water passage openings sides wherein water passage openings are; and two opposite sides perpendicular to the water passage openings sides wherein one is known as tongue side wherein there is a tongue; and groove side wherein there is a groove. Mechanical fastener holes located on each ends of the tongue side allow for mechanical attachment of the tiles.

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Deck tile with support blade

BACKGROUND OF THE INVENTION :

Field of the invention :

The invention relates generally to flooring but more particularly to a tile for use on exterior decks and its method of installation.

Background of the invention :

Tiles have been used for centuries but rarely have they been used on exterior decks vi/here planks are generally used. There are few examples of tiling systems for decks. Those examples are generally systems meant to be used on top of old wood planks decks without having to remove the old planks. The problem with such systems is that usually, the tiles are installed to cover old rotting wood and that wood will continue to rot even after the tiles are installed and since the tiles rely on the wood for support, that support will eventually fail. Moreover, such tiling systems are for use only on already built and generally old decks.

There are also tiles designed for use on new deck constructions but they use rather complex methods of installations. They use variations of tongue and groove insertions that interlock two perpendicular rows together. This has the drawback of requiring

rows with columns Although the use of plastic tiles for covering decks is known. There are some drawbacks to

PRIOR ART CAPABILITY AND MOTIVATIONS. AS HELPING TO SHOW PATENTABILITY HERE

Even in hindsight consideration of the present invention to determine its inventive and novel nature, it is not only conceded but emphasized that the prior art had many details usable in this invention, but only if the prior art had had the guidance of the present invention, details of both capability and motivation.

That is, it is emphasized that the prior art had/or knew several particulars which individually and accumulatively show the non-obviousness of this combination invention. E.g.,

a) cost of wood and recycled plastic planks;

b) The nature of an invention as being a "novel combination", in spite of existence of details separately, is especially significant here where the novelty is of the plurality of concepts, i.e., the use of a tile having a system for evacuating water rapidly so as to limit the possibility of rotting a wooden structure;

c) The addition of providing support members integrated into the tile which can be easily removed to facilitate cutting and sawing;

cl) The matter of particular cost-factors, in a detailed form which would surely convey the realization of the huge costs involved in building wooden decks;

e) The cost-factors involved in the maintenance of wooden decks with frequent painting, staining or varnishing, replacing damaged or rotting planks, etc;

f) The ease of tooling for the present invention has surely given manufacturers ample incentive to have made modifications for commercial competitiveness in a competitive industry, if the concepts had been obvious;

g) The prior art has always had sufficient skill to make many types of tiles, more than ample skill to have achieved the present invention, but only if the concepts and their combinations had been conceived;

h) Substantially all of the operational characteristics and advantages of details of the present invention, when considered separately from one another and when considered separately from the present invention's details and accomplishment of the details, are within the skill of persons of various arts, but only when considered away from the integrated and novel combination of concepts which by their cooperative combination achieve this advantageous invention;

i) The details of the present invention, when considered solely from the standpoint of construction, are exceedingly simple, basically a plastic injection moulding tile with

integrated reinforcement and the matter of simplicity of construction has long been recognized as indicative of inventive creativity;

j) Similarly, and a long-recognized indication of inventiveness of a novel combination, is the realistic principle that a person of ordinary skill in the art, as illustrated with respect to the claimed combination as differing in the stated respects from the prior art both as to construction and concept, is presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate; and

(k) The predictable benefits from a novel tile product and installation method having the features of this invention would seem sufficiently high that others would have been working on this type of product, but only if the concepts which it presents had been conceived.

Accordingly, although the prior art has had capability and motivation, amply sufficient to presumably give incentive to the development a product and installation method according to the present invention, the fact remains that this invention awaited the creativity and inventive discovery of the present Inventor. In spite of ample motivation, the prior art did not suggest this invention.

PRIOR ART AS PARTICULAR INSTANCES OF FAILURE TO PROVIDE THIS NOVEL PRODUCT AND INSTALLATION METHOD

In view of the general economic advantages, ecological advantages, etc., of the present invention as an improved embodiment of the prior art, it may be difficult to realize that the prior art has not conceived of the combination purpose and achievement of the present invention, even though the need for maintenance free decks is a known requested commodity for people nowadays want to spend more time enjoying their deck than having to care for it. Surely the need for low maintenance long durability decks has been known for decades and the technology to achieve such results has been known for years and that the various combination provided in this invention would have been desired and attempted long ago, but only if its factors and combination-nature had been obvious.

Other considerations, as herein mentioned, when realistically evaluated show the inventive nature of the present invention, a change in concept which the prior patent and other prior art did not achieve.

SUMMARY OF THE PRIOR ART'S LACK OF SUGGESTIONS OF THE CONCEPTS OF THE INVENTION'S COMBINATION

And the existence of such prior art knowledge and related ideas embodying such various features is not only conceded, it is emphasized; for as to the novelty here of

the combination, of the invention as considered as a whole, a contrast to the prior art helps also to remind of needed improvement, and the advantages and the inventive significance of the present concepts. Thus, as shown herein as a contrast to all the prior art, the inventive significance of the present concepts as a combination is emphasized, and the nature of the concepts and their results can perhaps be easier seen as an invention.

Although varieties of prior art are conceded, and ample motivation is shown, and full capability in the prior art is conceded, no prior art shows or suggests details of the overall combination of the present invention, as is the proper and accepted way of considering the inventiveness nature of the concepts.

That is, although the prior art may show an approach to the overall invention, it is determinatively significant that none of the prior art shows the novel and advantageous concepts in combination, which provides the merits of this invention, even though certain details are shown separately from this accomplishment as a combination.

And the prior art's lack of an invention of an economical, easy to install deck tile achieving a practical, durable, esthetic look and other advantages of the present invention, which are goals only approached by the prior art, must be recognized as being a long-felt need now fulfilled.

Accordingly, the various concepts and components are conceded and emphasized to have been widely known in the prior art as to various installations; nevertheless, the prior art not having had the particular combination of concepts and details as here presented and shown in novel combination different from the prior art and its suggestions, even only a fair amount of realistic humility, to avoid consideration of this invention improperly by hindsight, requires the concepts and achievements here to be realistically viewed as a novel combination, inventive in nature. And especially is this a realistic consideration when viewed from the position of a person of ordinary skill in this art at the time of this invention, and without trying to reconstruct this invention from the prior art without use of hindsight toward particulars not suggested by the prior art.

FEATURES AND ADVANTAGES OF THE INVENTION

It is a main advantage of this invention to provide for a tiling system which only requires a deck frame structure for support and can thus be installed on brand new decks or on old decks where the rotting planks are removed prior to the installation of the tiles so as to eliminate further rotting.

It is another advantage of this invention to provide for a tiling system that is easy to install using commonly available tools useable by semi skilled hobbyist or laborer.

It is another advantage of this invention to have a tile using a tongue and groove system that allows for a row of tiles to be easily removed without requiring adjoining rows to also be removed as opposed to some system of the prior art.

It is an advantage of this invention to use an installation system that does not require additional accessories besides the tiles themselves in order to be assembled.

SUMMARY OF THE INVENTION

In order to provide the featured advantages, the invention comprises a tile structure having a topside and an underside. The underside has channels, and each channel receives a support blade inserted frictionally therein.

Each of the tile has four sides wherein two opposite sides are known as water passage openings sides wherein water passage openings are; and

two opposite sides perpendicular to the water passage openings sides wherein one is known as tongue side wherein there is a tongue; and

groove side wherein there is a groove. Mechanical fastener holes located on each ends of the tongue side allow for mechanical attachment of the tiles.

The water passage openings are sized and spaced to allow for air circulation to quickly evaporate water.

The support blade can have an « L » configuration or an « I » configuration and in both cases they are configured and sized to frictionally be inserted into the channels.

In yet another variation of the support blade it can have a winglet at each extremity, the winglet is designed to rest on the joist. This is for when a support blade is thicker than the thickness of the tile and cannot be flush with it, therefore winglets are necessary at the joist. To accomodate the winglet the tile used for use with the winglet type support blade requires a winglet notch for each winglet to allow the tile to rest directly on the joist.

The channels are made out of hollow spacings made during the injection moulding manufacturing process.

In a variation of the tile, a compressible sealing gasket can be placed around its periphery so that no water can infiltrate within the gaps between each said tiles.

The tiles have the following method of installation:
each tile is fastened to joists using mechanical fasteners passing through said mechanical fastener holes;
after a fist tile is installed and mechanically fastened a second tile is installed so that the groove side covers the mechanical fastener holes with its groove.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better

appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig. **1** Isometric view favoring the underside of a tile.

Fig. 2 Isometric view favoring the top side of a tile.

Fig. 3 Side view closeup showing water passage openings.

Fig. 4a Isometric view of a support blade « L »shape.

Fig. 4b Isometric view of a support blade « I »shape.

Fig. 5 Perspective view of tiles laid to make a deck.

Fig. 6 Perspective view of the underside of a tile with a sealing gasket.

Fig. 7a Top view of a support blade.

Fig. 7b Side view of a support blade inserted in a tile.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A deck tile (10) is comprised of two faces: A textured topside (14), which can present a variety of colors and patterns or textures to provide anti skid capabilities, or recreate the look of natural paving stones or ceramic tiles for example, and an underside (12) which has channels (16) for receiving a support blade (18) inserted frictionally therein. The underside (12) also has structural ribs (13) to give the tile structural integrity as is well known in the art of injection plastics in general and as is known in some of the prior art plastic tiles. This aspect of the technology being generally well known, it will not be further discussed except to say that various configurations of rib patterns can be created as well as various thickness of tiles depending upon the type of polymer resin being used and the general requirements of the tiles.

The support blade (18) is configured and sized to frictionally be inserted into the channels (16) which are made out of hollow spacings made during the injection moulding manufacturing process. Preferably the blade has an « L » configuration as per fig. 4a but it can be straight or « I » shaped as per fig. 4b. The support blades (18) are inserted so as to be flush with the underside (12) so that when the tile (10) is laid on a joist (22) such as those used to make a deck (24) it rests firmly on it instead of floating with only the support blades (18) making contact.

In the case of a polymer based tile (10) such as those illustrated here by example, a rib pattern is used but in the case of cementeous based tiles (10), such as new technologies involving fibers can make possible, a thick and full underside could be used, but channels (16) and support blades (18) could still be required to prevent breakups or bending.

Eiach tile (10) has four sides wherein two opposite sides are known as the water passage openings sides (26) and where water passage openings (27) are; and two opposite sides perpendicular to the water passage openings sides (26), one known as tongue side (28) wherein there is a tongue (29), and its opposite side, known as groove side (30) wherein there is a groove (31). Mechanical fastener holes (32), found on each ends of the tongue side (28) allow for mechanical attachment of the tiles (10) onto joists (22) using mechanical fasteners (not shown).

The water passage openings (27) are openings sized and spaced to take into account surface tension of water and to allow for air circulation to quickly evaporate water and generally allow for residual water and moisture to be quickly evacuated so as to prevent rotting of the joists (22).

In order to install, each tile (10) is fastened to joists (22) structure using mechanical fasteners, such as screws for example, passing through the mechanical fastener holes (32). Since there is no drilling required, installation is fast. After a fist tile (10) is installed and mechanically fastened, the second tile (10') is installed so that the groove side (30) covers the mechanical fastener holes (32) with its groove (31).

When cutting the tiles (10) for fitting eliminates the mechanical fastener holes (32), the tile (10) can be fastened from underneath using a flat bar fastened to the tile (10) and the structure or else, by diagonally inserted mechanical fasteners (not shown) directly into the structural ribs (13). By following this procedure, no mechanical fasteners are visible on the surface of the deck. To cut a tile (10), the support blades (18) are removed, the tile (10) is cut and the support blades (18) are cut seperately and then reinserted into the channels (16). This procedure is done when using metal support blades (18) which require a different type of cutting blade than that used for cutting polymer. It is however conceivable that future development in materials could have support blades (18) to be cut along the rest of the tile (10) without having to remove the support blades (18).

A variation of installation could have the deck tiles (10) installed directly on a concrete surface (not shown) using concrete mechanical fasteners to allow for direct attachment to the concrete surface if one whishes to cover an otherwise plain concrete surface. In such a case, the support blades (18) would not be necessary.

In such a usage, a compressible sealing gasket (30) can be added to these tiles (10) during the manufacturing process so that no water can infiltrate within the gaps between each tiles, thus affording a perfectly sealed floor covering. There can also be an alternate type of structural ribs (13) in such a tile (10).

The tiles (10) can be installed on a variety of support structures and can even be used on docks. In some cases, a third variation of the support blade (18) can have a winglet (40) at each extremity that rests on the joists (22). The tile (10) has a winglet notch (41) for each winglet (40), which is necessary since the winglet (40) rests on top of the joist (22) instead of being carcved into it. So, a winglet notch (41) is required to allow the tile (10) to rest directly on the joist (22) instead of floating above it.

As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. For example, the word deck is used but the tiles can be used for a variety of usage not limited to decks. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

CLAIMS :

1. A tile comprising:

a topside and an underside;

said underside having channels, each said channel receiving a support blade inserted frictionally therein;

each said tile having four sides wherein two opposite sides are known as water passage openings sides wherein water passage openings are; and

two opposite sides perpendicular to said water passage openings sides wherein one is known as tongue side wherein there is a tongue; and

groove side wherein there is a groove;

mechanical fastener holes located on each ends of said tongue side allow for mechanical attachment of said tiles.

2. A tile as in claim 1 wherein:

said water passage openings being sized and spaced to allow for air circulation to quickly evaporate water.

3. A tile as in claim 1 wherein:

said support blade having an « L » configuration and is configured and sized to frictionally be inserted into said channels.

4. A tile as in claim 1 wherein:

said support blade having an « I » configuration and is configured and sized to frictionally be inserted into said channels.

5. A tile as in claim 1 wherein:

said support blade having a winglet at each extremity, said winglet designed to rest on said joist.

6. A tile as in claim 1 wherein:

said tile having a winglet notch for each winglet to allow said tile to rest directly on said joist.

7. A tile as in claim 1 wherein:

said channels being made out of hollow spacings made during the injection moulding manufacturing process.

δ. A tile as in claim 1 wherein:

said tile having a compressible sealing gasket around its periphery so that no water can infiltrate within the gaps between each said tiles.

9. A tile as per any of previous claims having the following method of installation:

each said tile is fastened to joists using mechanical fasteners passing through said mechanical fastener holes;

after a fist tile is installed and mechanically fastened a second tile is installed so that said groove side covers said mechanical fastener holes with its said groove.

FIG. 1

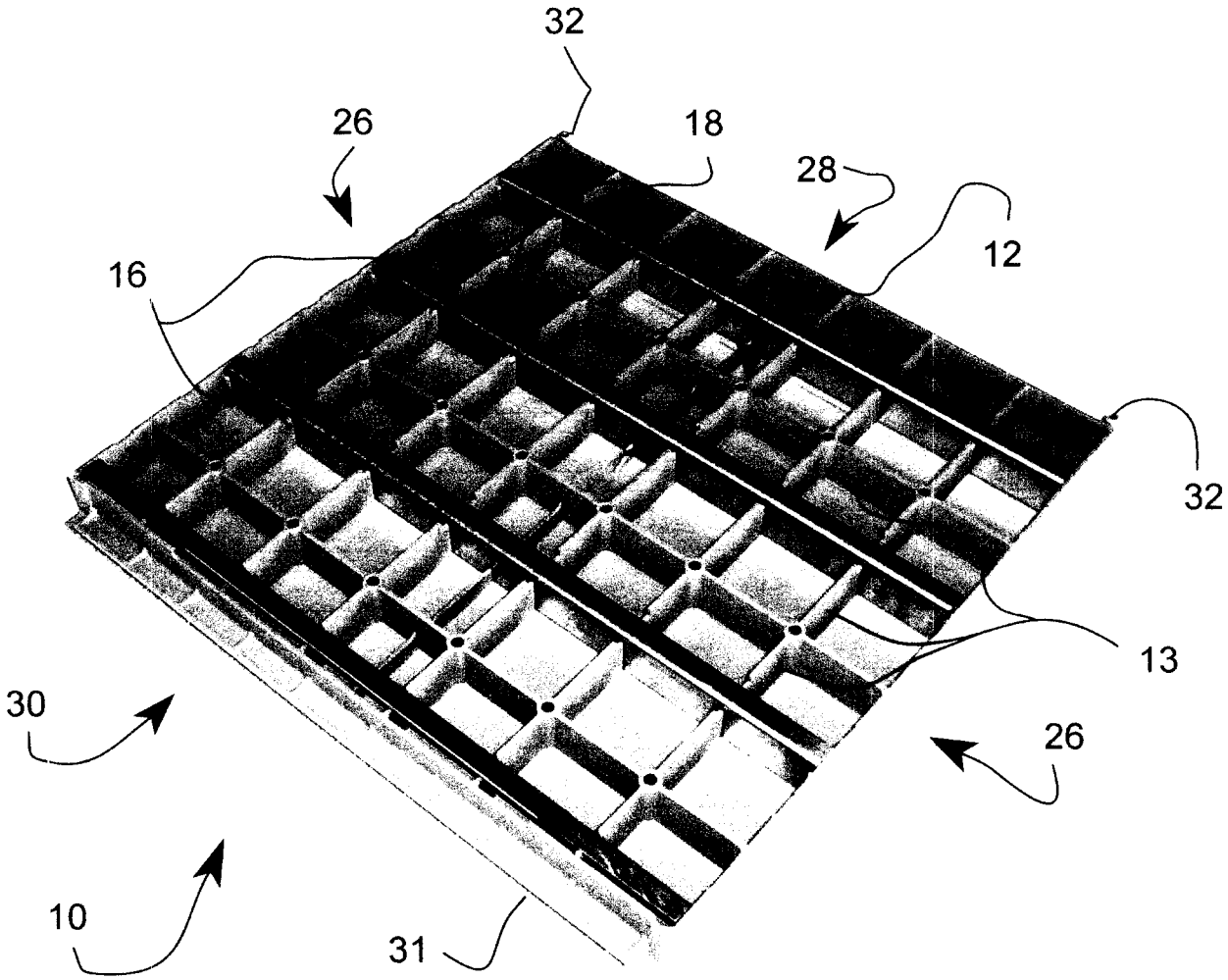


FIG. 2

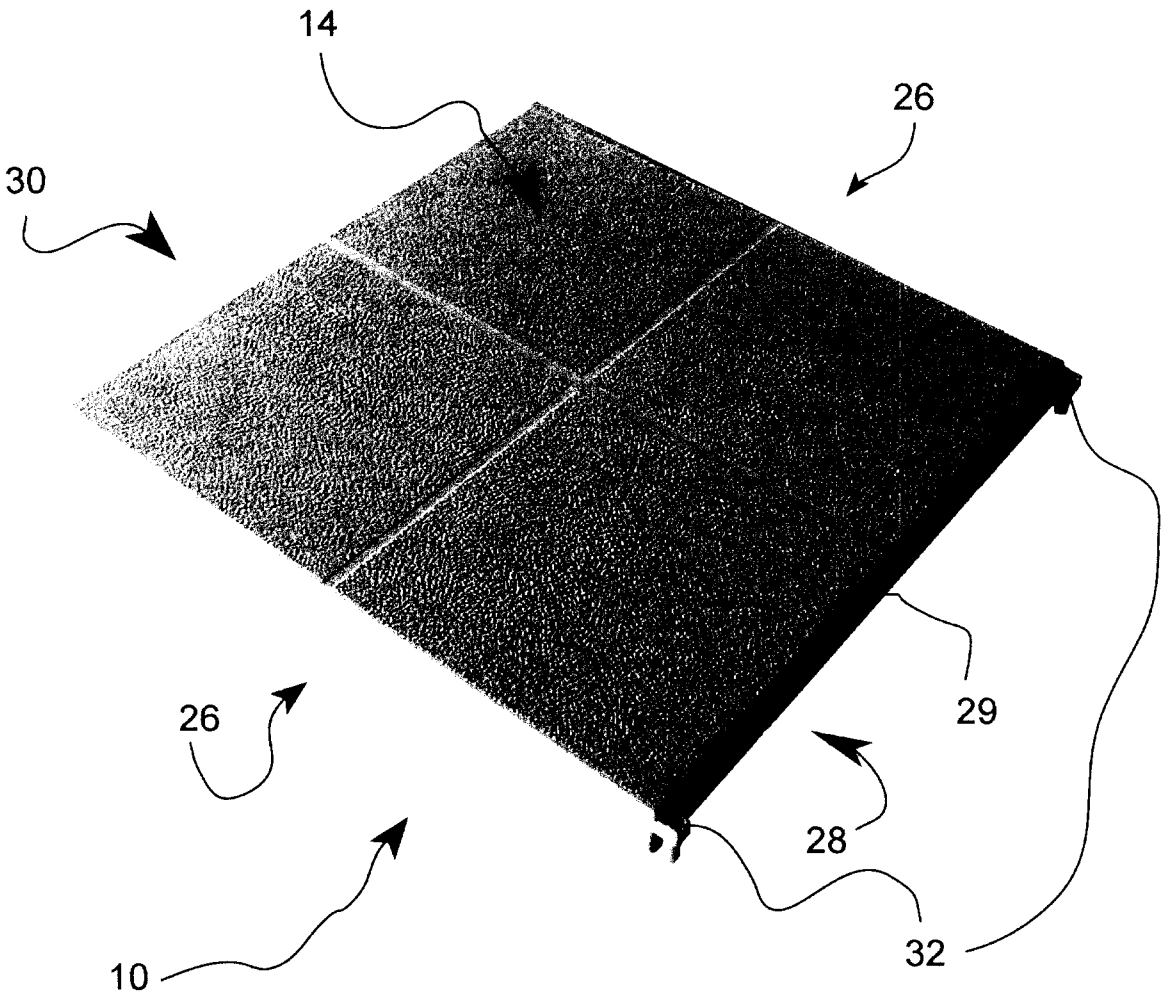
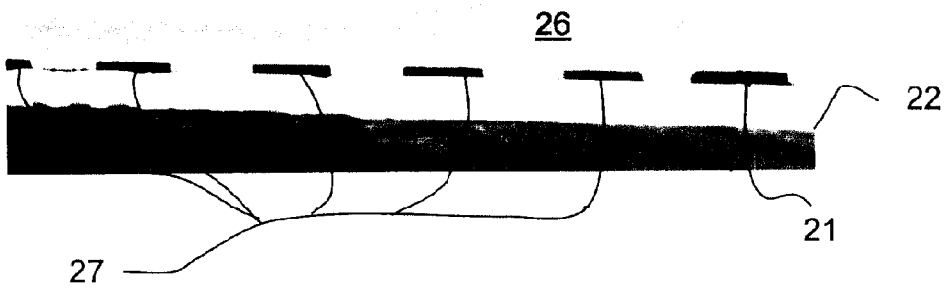


FIG. 3



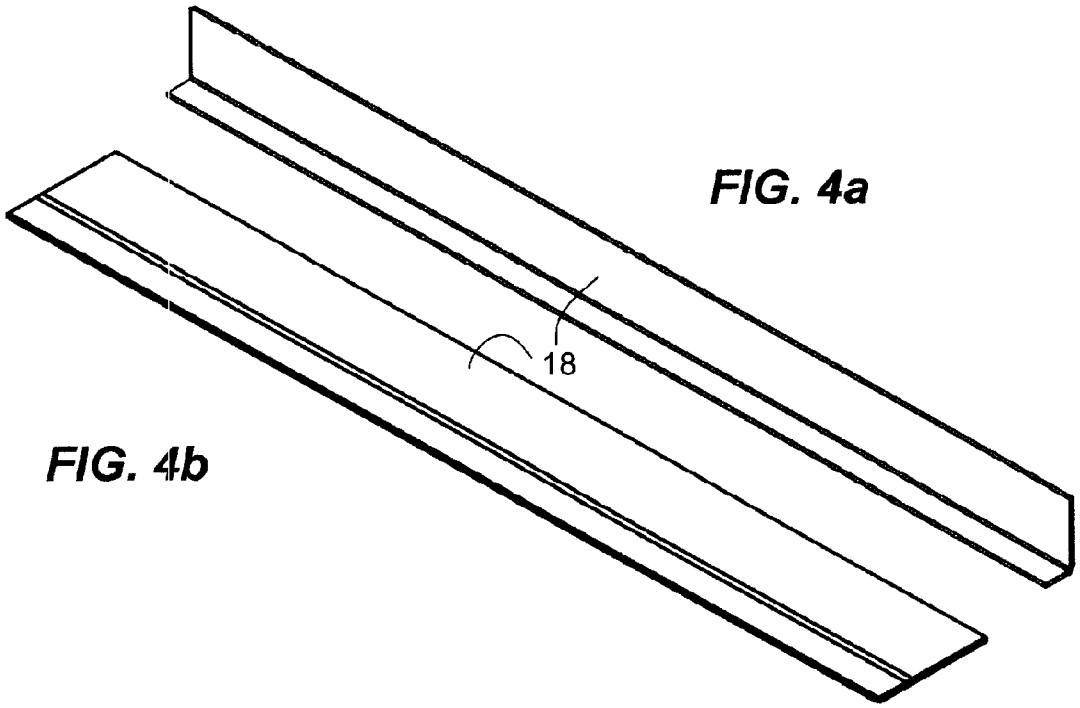


FIG. 4a

FIG. 4b

FIG. 5

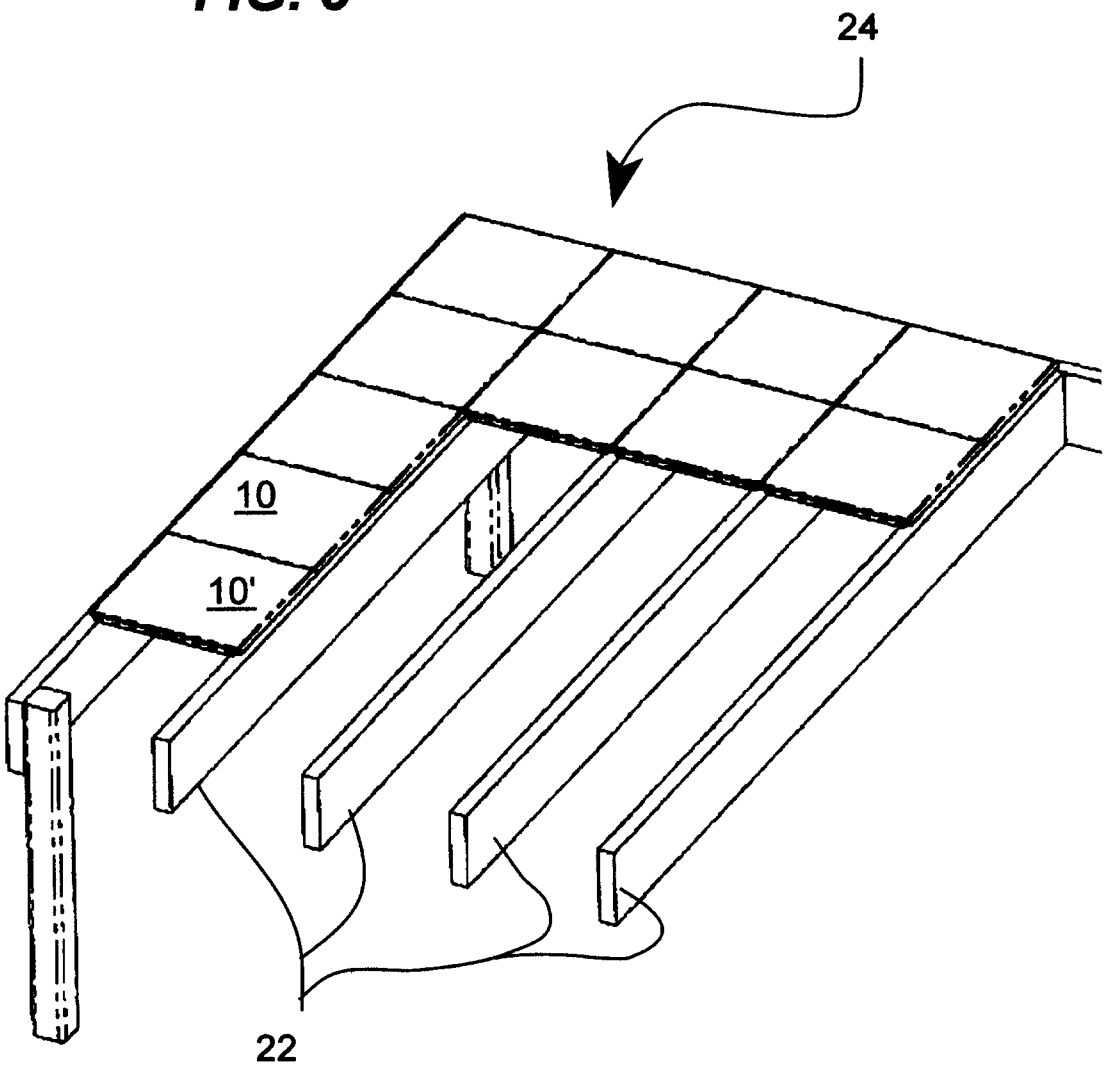


FIG. 6

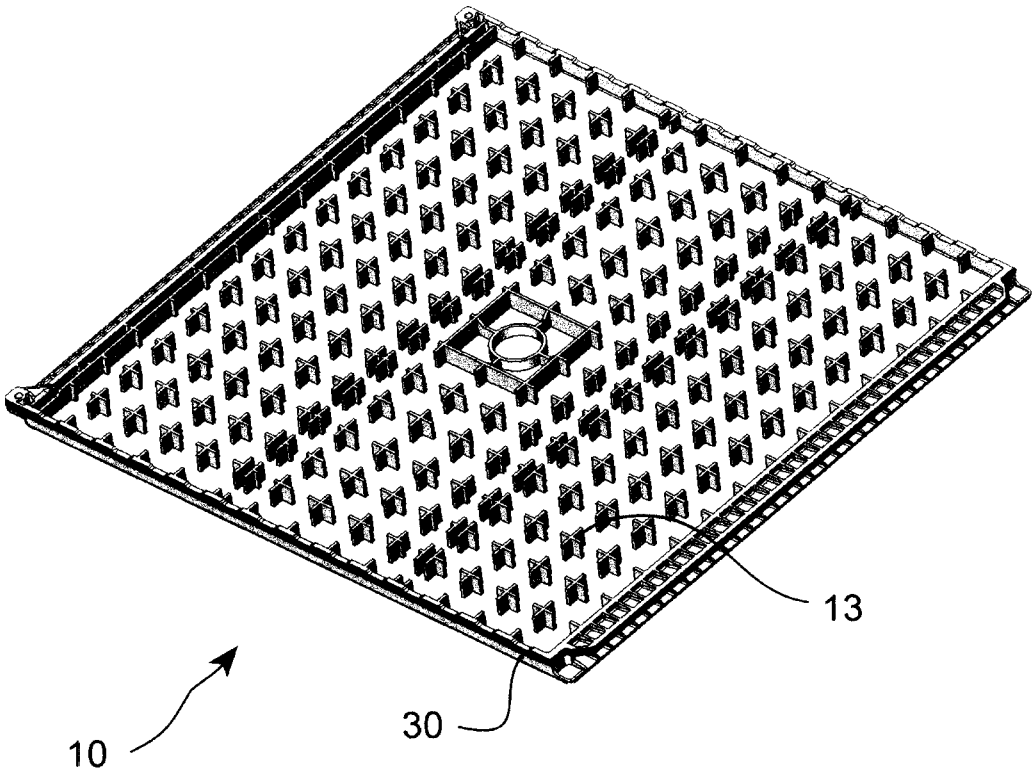
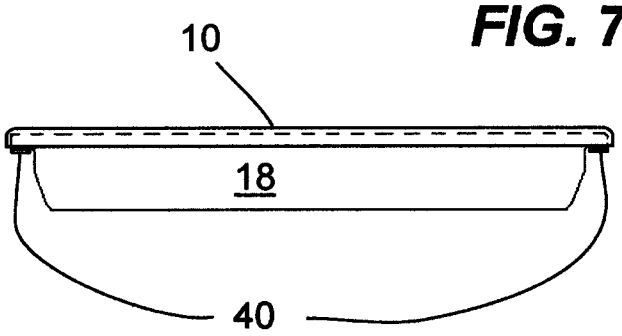


FIG. 7a

FIG. 7b



INTERNATIONAL SEARCH REPORT

International application No
PCT/CA2006/001135

A CLASSIFICATION OF SUBJECT MATTER
IPC: ***E04F 15/10*** (2006 **01)** , ***E04F 15/00*** (2006.01), ***B29D 31/00*** (2006 01)

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

B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: *E04F 15/10* (2006.01) , *E04F 15/00* (2006.01), *E04F 15/02* (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Canadian Patent Database, Delphion (keywords. tile, water, channel, seal, vent*)

C DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	CA 2 453 599 (PERVAN et al.) 13 February 2003 (13-02-2003) *page 45, lines 15-22*	8
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A	CA 2 009 152 (KOLTER) 6 August 1990 (06-08-1990) *whole document*	1-9
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[ ] Further documents are listed m the continuation of Box C. [X] See patent family annex.

* Special categones of cited documents

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"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled m the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 September 2006 (12-09-2006)	27 September 2006 (27-09-2006)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, Cl 14 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec KlA 0C9 Facsimile No 001(819)953-2476	Authorized officer Patrick Cyr (8 19) 953-1304

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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