United States Patent [19]

Johnson

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[54] **OUTDOOR GROUND TILE**

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[52] **U.S. Cl.**..... **52/169,** 52/386, 52/391, 52/506, 404/34, 404/43

[51] **Int. Cl.**..... **E01d 27/00,** E04f 13/08

[58] **Field of Search**.....52/384–392, 506, 510, 511, 52/155, 169

[56] **References Cited**

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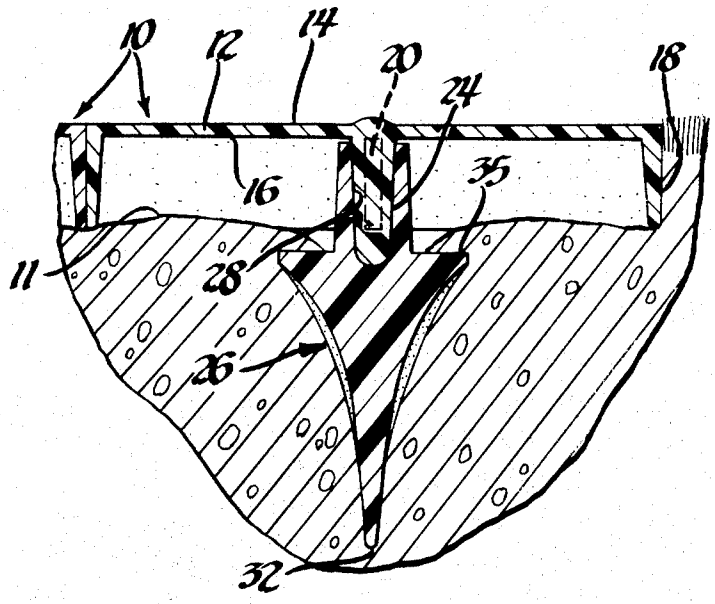
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[57] **ABSTRACT**

An outdoor ground tile having a load bearing portion with depending ground support walls about the periphery thereof and intersecting ribs underneath which reinforce and also provide ground support to the load bearing portion. Anchor pins depend from the underneath side and the ribs and anchors which have a press fit with both the anchor pins and ribs provide for anchoring the tile to a ground surface.

5 Claims, 5 Drawing Figures



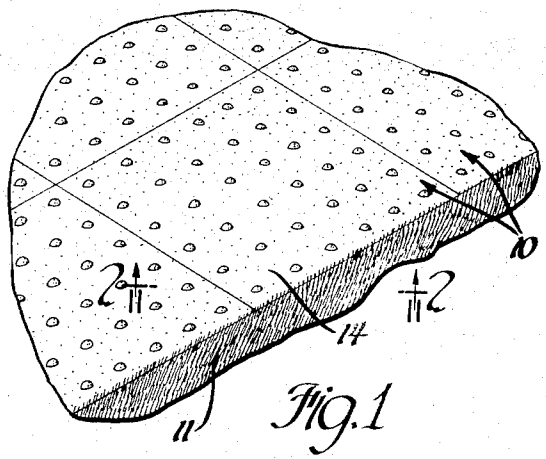


Fig. 1

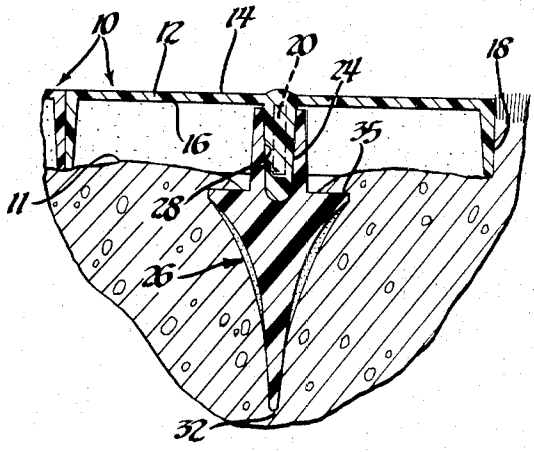


Fig. 2

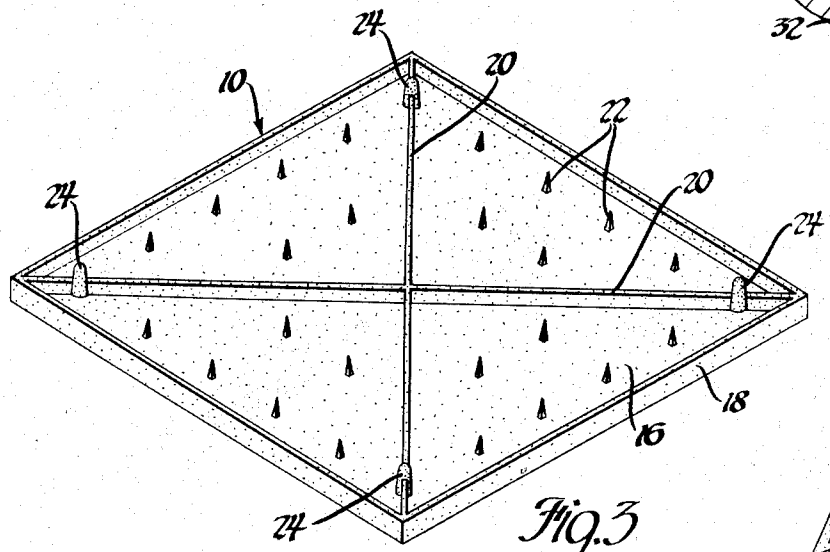


Fig. 3

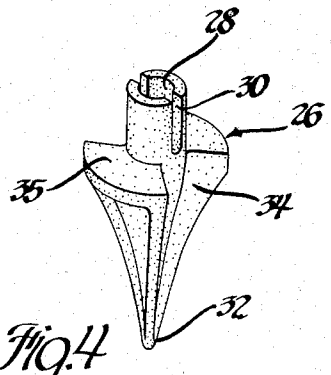


Fig. 4

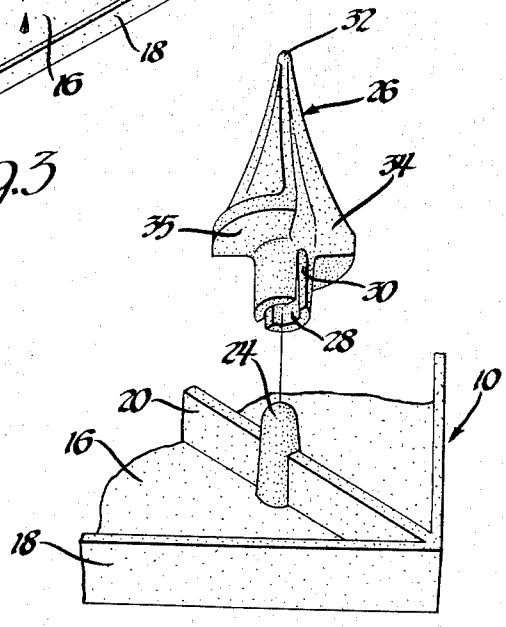


Fig. 5

OUTDOOR GROUND TILE

This invention relates to outdoor ground tile and more particularly to a ground tile of hollow type construction that will anchor to a ground surface.

Up to the present time, outdoor ground tile or block used for walks, patios and the like have been generally made of concrete rather than plastic for several reasons. For example, there is the initial higher cost of plastic that dictates a hollow rather than solid plastic tile or block that will have sufficient load bearing ability and is mass producible. Furthermore, the weight of a concrete tile or block is normally sufficient to hold it in place on the ground but the same surface area tile in plastic would be too light to have such inherent ability. While a plastic tile should have some way of being anchored to the ground the anchoring arrangement should not however add substantial height to the tiles for minimum stacking and packaging height.

The outdoor ground tile according to the present invention meets all the requirements for plastic construction noted above and comprises a load bearing portion having load bearing walls depending downwardly and about the periphery thereof to provide for peripheral ground support thereof. In addition, reinforcing ribs depend downwardly from the underneath side of the load bearing portion and join at their ends with the sides to both reinforce and provide ground support to the load bearing portion. Anchor pins are formed integral with and depend downwardly from both the underneath side and the ribs and separate ground anchors are provided that have a tight fit with the anchor pins and also a tight slot fit with the ribs. The structural outlines of the tile and anchor pins are very simple and renders these parts easily mass producible by injection molding.

An object of the present invention is to provide a new and improved ground tile.

Another object is to provide an outdoor ground tile having a new and improved anchor arrangement for anchoring to a ground surface.

Another object is to provide an outdoor ground tile of hollow design with integral ribs that both reinforce and provide ground support and separate anchors that secure to both the ribs and anchor pins which are formed integral with the ribs.

Another object is to provide an injection moldable plastic outdoor ground tile that on an underneath side has reinforcing ribs and anchor pins integral therewith that add little overall height to the tile and together with the ribs have separate ground anchors press fit thereto.

The present invention further resides in various novel constructions and arrangement of parts, and further objects, novel characteristics and advantages of the present invention will be apparent to those skilled in the art to which it relates and from the following detailed description of the illustrated embodiment thereof made with reference to the accompanying drawing forming a part of this specification and in which similar reference numerals or characters are employed to designate corresponding parts throughout the several views, and in which

FIG. 1 is a perspective view of a grouping of outdoor ground tiles according to the present invention anchored to a ground surface.

FIG. 2 is an enlarged view of one of the tiles and an attached anchor taken along the line 2—2 in FIG. 1.

FIG. 3 is an enlarged perspective view of the underneath side of one of the tiles in FIG. 1 without anchors.

FIG. 4 is a perspective view of one of the anchors.

FIG. 5 is a partial perspective view of the underneath side of one of the tiles in FIG. 1 showing an anchor arranged for assembly therewith.

Referring to FIG. 1, there is shown a grouping of outdoor tiles 10 according to the present invention anchored to a ground surface 11. The tiles 10 which may also be described as blocks are for outdoor use to form walkways, patios, borders and the like. The thin section structural design of the tiles 10 whose details will now be described permits them to be readily made of a tough plastic such as polyethylene by injection molding and to be competitive with tiles or blocks of the same size made of cast material such as concrete. In the embodiment shown the tiles 10 which are formed in one piece have a square load bearing portion of thin section 12 with a decorative top side 14 and an underneath side 16 as shown in FIGS. 1 and 2. Side walls 18 depend downwardly from and extend about the entire periphery of the load bearing portion 12 to provide peripheral ground support therefor as shown in FIG. 2. In addition, a pair of thin section reinforcing ribs 20 depend from the underneath side 16, intersect each other at midpoints and at their opposite ends join with the side walls 18 at the corners as best shown in FIG. 3. The ribs 20 in addition to reinforcing the load bearing portion 12 are the same height as the side walls 18 and provide ground support along their length to the load bearing portion. Further ground support of the load bearing portion 12 is provided by a plurality of slender legs 22 that are circular in cross-section and depend from the underneath side 16 in the areas between the ribs 20 and the side walls 18 as shown in FIG. 3. The legs 22 are preferably the same height as the side walls 18 and ribs 20 to provide the additional ground support. Furthermore, the legs 22 because of their slender size can by building up ground surface inside the side walls 18 serve to penetrate into this ground buildup to provide anchoring of the tile in addition to the primary anchoring structure now to be described. It is also contemplated that the legs 22 may be made longer for better anchoring.

The tiles 10 are primarily anchored to the ground surface by means of anchor pins 24 that depend downwardly from both the underneath side 16 and each rib portion intermediate the intersection of the ribs 20 and each rib end at a corner of the tile as shown in FIGS. 2, 3 and 5. The pins 24 have a circular cross-section with a thickness substantially greater than that of the ribs 20 and for the greater part of their height are integral with the ribs with the result that they are very rigid parts of the tile as best shown in FIG. 5. Preferably, the anchor pins 24 are located near the corners of the tile to obtain a spread-out anchoring arrangement which has been found to give optimum anchoring.

Anchoring of the tile 10 to the ground surface is provided by separate anchors 26 shown in FIGS. 2, 4 and 5. The anchors 26 at their upper end have a cylindrical portion having a hole 28 that tightly receives the full height of the anchor pins 24 and also a radial cross-slot 30 that intersects the hole 28 and tightly receives the full height of the ribs 20 as best shown in FIGS. 2 and 5. The anchors 26 at their lower end have a pointed tip 32 with a fluted portion 34 that increases in cross-sectional area away from the point terminating in a transverse shoulder 35 that is substantially below the

bottom of the ribs **20** and side walls **18** and thus below the normal ground surface when fully implanted as shown in FIG. **2.** This anchor shape has been found to provide easy ground penetration and then firm resistance to both lateral and upward movement. The tile **10** is anchored to the ground surface by press fitting the anchors **26** to the pins **24** and ribs **20,** positioning the tile in the desired location and then applying force on the top side **14** such as stepping theron.

The structure of the tile **10** is ideally suited for injection molding in one piece of a tough plastic such as polyethylene. For this purpose the side walls **18,** ribs **20,** support legs **22,** and anchor pins **24** all have tapers in the same direction away from the underneath side **16** as best shown in FIG. **2.** Furthermore the anchors **26** are similarly made of plastic by injection molding with their hole **28** and cross-slot **30** having a taper. With such tapering there is an added structural benefit in that the anchors **26** then have a taper fit with both the anchor pins **24** and ribs **20.**

To exemplify the extent of rigidity possible with the thin wall tile structure according to the above teaching it was found that for a top side of 12 inches by 12 inches a very rigid structure suitable for hard outdoor load bearing usage as walkways, patios and the like was obtained where the thickness of the legs **22** was about three thirty-seconds inch, the thickness of the load bearing portion **12,** side walls **18** and ribs **20** waw about one sixteenth inch and the height of the side walls **18** and ribs **20** was about one-half inch. Further more, very adequate and rigid anchoring was provided with a tile of this size by the anchoring pins having a diameter of about three sixteenth inch and the anchors **26** being 2 inches long with the fluted portion **34** about 1-¼inches and the shoulder **35** about one-fourth inch below the ribs and side walls and thus the ground surface.

While a rectangular shaped tile has been illustrated, it will be appreciated that the tile according to the present invention may for decorative purposes have other shapes with more or less sides including a round form in which case there would only be one side wall.

Although the illustrated embodiment of the present invention has been described in great detail, it should be apparent that certain modifications, changes, and adaptations may be made in the illustrated embodiment, and that it is intended to cover all such modifications, changes and adaptations which come within the spirit of the present invention.

I claim:

1. An outdoor ground tile of plastic or the like for fixed placement on a ground surface comprising a load bearing portion of substantial area having a top side and an underneath side, a side wall or walls integral with and depending downwardly from and extending about the periphery of said load bearing portion for providing ground support to the periphery of said load bearing portion, a pair of elongated reinforcing ribs integral with and depending downwardly from said underneath side and joining at opposite ends with said side wall or walls and intersecting each other at an intermediate location for reinforcing and also providing ground support to said load bearing portion, an anchor pin integral with and depending downwardly from both said underneath side and each rib portion intermediate the intersection of said ribs and each rib end, said side or sides and said ribs and said anchor pins all tapering to smaller size in the same direction away from said underneath side, and a plurality of separate anchors corresponding to the number of anchor pins, each said anchor at an upper end having a tapered hole that press fits with said anchor pins and also having a cross-slot that press fits with said rib portions, each said anchor at a lower end having a pointed tip for readily penetrating the ground surface to provide anchoring of the tile to the ground surface.

2. The tile set forth in claim **1** and said anchors having a shoulder substantially below both said ribs and said side wall or walls that will penetrate substantially below the ground surface.

3. The tile set forth in claim **1** and a plurality of ground support-anchor legs integral with and depending downwardly from said underneath side in areas between said ribs and said wall or walls for providing ground support to said load bearing portion and also for pinning to the ground surface.

4. The tile set forth in claim **3** and said wall or walls, said ribs and said legs all having the same height and said anchor pins having a substantially greater height.

5. The tile set forth in claim **3** and said load bearing portion, said side wall or walls and said ribs all having the same thickness.

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