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Hickey

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[54] SYNTHETIC TERRAIN COVERING

[75] Inventor: **James R. Hickey**, Green Bay, Wis.

[73] Assignee: **Robert H. Mosher, doing business as R. M. Associates**, Neenah, Wis.

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[52] **U.S. Cl.**..... **272/56.5**, 404/72, 404/17, 161/410

[51] **Int. Cl.**.....**E01c 13/00**

[58] **Field of Search** 94/7, 3; 272/56.5

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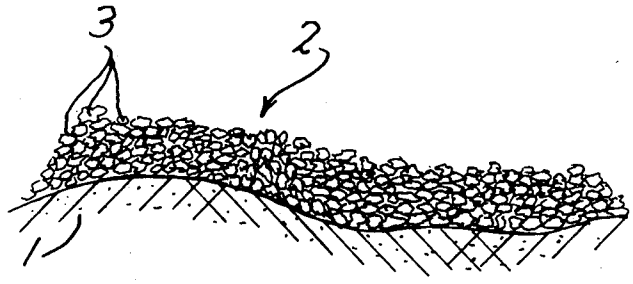
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Primary Examiner—Nile C. Byers, Jr.
Attorney—Andrus, Sceales, Starke & Sawall

[57] **ABSTRACT**

A synthetic terrain covering comprising a multiplicity of small, curved, irregularly shaped flakes or platelets of thermoplastic resin. The peripheral edges of the platelets are provided with slits or serrations which, along with the curved configuration, enables the platelets to mechanically interlock and resist shifting, particularly on steep terrain. The platelets can be used alone as a substitute for snow, or it can be used with natural or artificial snow as a covering for ski hills and trails, tobogganing areas, snowmobile trails, and other recreational areas.

10 Claims, 3 Drawing Figures



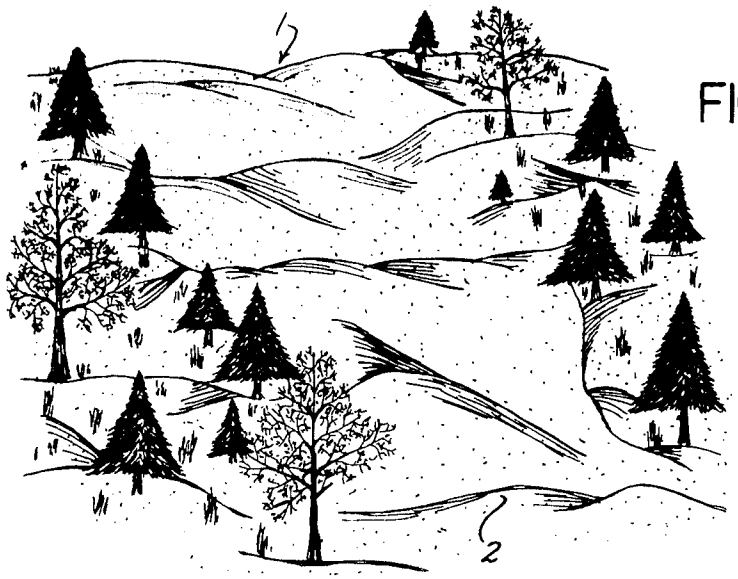


FIG. 1

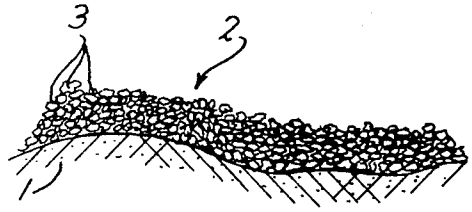


FIG. 2

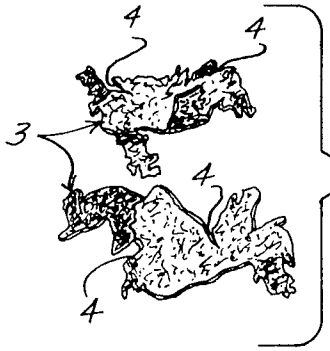


FIG. 3

INVENTOR.
JAMES R. HICKEY
BY
Andrus, Sceales, Starke & Sawall
Attorneys

SYNTHETIC TERRAIN COVERING

BACKGROUND OF THE INVENTION

Particulate plastic materials of various types have been used in the past on a limited scale to cover small areas of ski jumps, ski hills, toboggan runs or the like. For the most part, the plastic or synthetic materials have been combined with less expensive fillers to provide a composite covering material. Due to the large surface area normally involved in recreational usage and due to the high cost of the synthetic material, the use of synthetic coverings has been extremely limited. Moreover, the plastic or synthetic coverings which have been developed in the past have a tendency to shift position, particularly on steep slopes, and are susceptible to wind blowing due to the lack of interlock between the particles. Because of these problems, synthetic ground coverings for recreational areas have not been practical in the past and have been used only on a very limited scale.

At the present time, thermoplastic bottles, such as those used in the household for milk, bleach, detergent and other products, represent a very serious problem to waste disposal organizations. Thermoplastic bottles can be disposed of by incineration at high temperatures, but most disposal incineration units do not achieve the necessary high temperatures, without the expensive addition of external heat sources. Without the external heat source, the plastic bottles, when incinerated in conventional incineration units, melt and fuse into heat-resistant lumps which clog the furnace grates. Furthermore, the presence of polyvinylchloride resins also results in acid formation during the combustion which causes corrosion of the iron and steel grates as well as attack on the furnace wall.

Furthermore, plastic bottles present additional problems when utilized in land fill disposal methods. The hollow construction of the bottle, plus their relative stability to chemical decomposition by the usual organic mechanisms make the plastic bottles very unsuitable for the customary land fill disposal systems. Thus, the disposal of plastic bottles has been a serious problem in the past and, due to the increased use of the plastic bottles, presents even greater disposal problems for the future.

SUMMARY OF THE INVENTION

The invention relates to a synthetic terrain covering comprising a multiplicity of small curved irregularly shaped platelets or flakes of thermoplastic resin which are preferably fabricated from thermoplastic bottles. The peripheral edges of the platelets are provided with slits or notches which, along with the generally curved configuration, enables the platelets to mechanically interlock when applied to terrain as a covering and resist shifting, particularly on steep slopes.

The platelets can be applied as a covering or layer to any type of recreational terrain, such as ski hills and trails, tobogganing runs, snowmobile and sleighing trails and the like, and can be used as a substitute for snow or can be used in conjunction with either natural or artificial snow. The material is also suitable for covering assembly areas around warming huts and chalets, as well as providing a suitable base for T-bars and rope tows for ski hills.

The synthetic covering of the invention can be applied over ground which has been merely levelled with no need for grading or smoothing, nor is it necessary to employ any preliminary ground treatment or coating. Once the material has been positioned on the terrain, it requires minimum maintenance since it is not a continuous coating which must be anchored into place. However, if it is necessary to move the material or shift its position, the covering material can be readily moved by utilizing conventional equipment available at winter sports areas such as plows, rear end loaders, shovels, and the like.

Due to the fact that the coating material of the invention is not a continuous coating, it allows for easy drainage of rain or runoff of water during the melting of snow.

Because of the irregular nature of the platelets, the overall coating possesses a low coefficient of sliding friction, thereby permitting skis or sled runners to move easily without drag. This is due primarily to the fact that the skis or sled runners do not contact a continuous layer of the material, but only contact spaced projecting portions of the platelets due to their curved and irregular nature.

In warm weather regions, the covering material of the invention can be employed as a substitute for snow, and the material can be used throughout the entire range of ambient temperatures without decomposition or modification. Furthermore, the material is not affected by rain or other ambient conditions.

In colder climates, the covering material of the invention acts as a base for either natural snow or man-made snow and blends with the snow to provide a superior base for recreational use.

As the covering material of the invention is preferably formed of a light colored material, it serves as an insulating layer and in spring when the natural or artificial snow begins to melt, the light color of the synthetic coating, in combination with its thermal insulating capacity, acts to maintain effective snow cover on the active recreational surfaces far beyond the period when the snow in the surrounding areas has melted.

The irregular nature of the platelets or flakes, in combination with the slits or serrations in the edges, acts to interlock the platelets to resist wind blowing or slippage on steep slopes.

As a further advantage, the covering material of the invention is non-toxic and will not decompose chemically, so that there are no leachable components which can in any way affect the growth of surrounding plant life or contaminate lakes or streams.

Other objects and advantages will appear in the course of the following description. The drawings illustrate the best mode presently contemplated of carrying out the invention.

In the drawings:

FIG. 1 is a perspective view of a typical recreation area having a slope covered with the synthetic terrain covering of the invention;

FIG. 2 is an enlarged cross section showing the covering as applied to the terrain; and

FIG. 3 is a perspective view of a group of the individual platelets which compose the covering.

Referring to the drawings, FIG. 1 shows a recreational area 1,such as a ski slope, which is covered with a layer of a synthetic terrain covering 2. While FIG. 1 illustrates the covering material 2 of the invention as

applied to a ski slope, it is contemplated that the covering material can be applied to any recreational surface, such as ski slides and trails, toboggan and ski bobbing areas, snowmobile and sleighing trails, as well as well trafficed areas around ski chalets, rope tows and T-bars. It is also contemplated that the covering material can be used to cover roads or other areas in order to eliminate muddy or wet conditions.

As best shown in FIGS. 2 and 3, the covering 2 consists of a plurality of small, generally curved, irregularly shaped platelets or flakes 3 formed of a thermoplastic resin. The particular resin employed in forming the platelets is not critical and may take the form of polyolefin resins, such as polypropylene or polyethylene, polyvinylchloride, polystyrene copolymers, and the like.

The platelets are irregular in shape and size and can vary from a small dimension of one-fourth inch to a maximum dimension of 2 inches. Generally, the platelets have a thickness in the range of one-sixteenth to one-half inch. As best illustrated in FIG. 3, the peripheral edge of each platelet is irregular and includes a series of slits, notches or serrations 4. When the platelets are applied to the terrain as a covering, the slits 4, in combination with the curved contour of the platelets, provide a mechanical interlock to resist shifting of the covering as well as wind blowing.

While the color of the platelet is not critical, it is preferred to use a light color, such as white or off-white. The use of a light color has distinct advantages in that it more nearly blends in with natural or artificial snow, and secondly, the light color will tend to reflect sunlight, and this along with the inherent thermal insulating qualities of the thermoplastic resin, will resist melting of the snow which is combined with the covering, so that the snow will be retained on the active recreational surface beyond the period when the snow may be melting in other areas or has become spotty or scarce.

The platelets being formed of a thermoplastic material have a low coefficient of sliding friction and present a minimum drag to skis or sled runners or the like. This is particularly true since the entire surface of the ski or sled runner is not in contact with the platelets because of the irregular shape and configuration of the platelets. Furthermore, ski bottoms are normally made of polyolefin resins which are compatible with the platelet composition.

The platelets 3 are preferably formed by shredding or comminuting discarded thermoplastic bottles, such as the type of bottles used in the household for milk, detergents, bleach, shampoo and the like. The plastic bottles can be shredded or comminuted by conventional shredding equipment to provide the platelets with the desired size and shape. Before shredding, the metal caps are removed from the bottles, but it is not necessary to remove the paper labels, because during the shredding operation, a portion of the paper will be removed, while the remaining portion of the labels will decompose when the platelets are applied as a covering to the terrain.

While the preferred method of forming the platelets is to shred plastic bottles to thereby provide a convenient manner of disposal of the bottles, it is also contemplated that the platelets can be molded into the desired shape or can be shredded or comminuted from other types of plastic material.

The platelets can be applied to the terrain in any desired depth depending on the particular recreational area and the degree of activity. Normally, the platelets will be applied in a depth of about 3 to 5 inches. In warmer areas, the platelets may constitute the entire surface coating for the terrain, while in colder climates the platelets can comprise a base for either natural or artificial snow. The platelets serve to blend in with the snow and due to their interlocking nature, serve to retain the snow in the desired locations in heavily trafficed areas.

Because of the irregular and curved shape of the platelets, the covering layer is relatively non-compactable even with extensive use. The covering layer has an insulating effect, which, in combination with the light color of the platelets, aids in preventing the snow on the recreational surface from melting in warm weather. Thus, the snow which is blended in with the coating material of the invention will normally remain a substantial period of time after the snow has melted in other adjacent areas.

The interlocking nature of the platelets resists shifting and blowing of the covering layer. However, under certain extreme conditions, such as active ski slopes, the covering material will shift, but it can readily be moved or smoothed by conventional earth moving equipment.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A surface covering for a recreational area, comprising a plurality of non-bonded, thin, irregularly shaped platelets formed of a thermoplastic resin, said platelets being generally curved and having a size in the range of one-fourth to 2 inches and having a plurality of irregularities in the peripheral edge, said platelets being mechanically interlocked to provide a synthetic covering for said surface.

2. The surface covering of claim 1, wherein said irregularities comprise a series of slits in the peripheral edge which aids in interlocking of the platelets.

3. The surface covering of claim 1, wherein the platelets are fabricated from discarded bottles.

4. The surface covering of claim 1, wherein the platelets have a thickness in the range of one-sixteenth to one-half inch.

5. The surface covering of claim 1, wherein the platelets have a generally light color to reflect sunlight.

6. A recreational area comprising a surface, and a covering disposed on said surface, said covering comprising a plurality of mechanically interlocked, thin, irregularly shaped platelets formed of a thermoplastic resin, said platelets being generally curved and having a size in the range of one-fourth to 2 inches, and interlocking means associated with the peripheral edges of the platelets for mechanically interlocking the platelets to prevent shifting of the covering on said surface.

7. The area of claim 6, wherein said interlocking means comprises a series of irregularly shaped slits formed in the peripheral edges of the platelets.

8. The area of claim 6, wherein said covering includes snow mixed with said platelets.

9. A method of forming a surface covering for a surface, comprising the steps of comminuting thermoplastic resin bottles to provide a plurality of thin, curved,

non-uniformly shaped platelets having a size generally in the range of one-fourth to 2 inches and having a plurality of irregularities in the peripheral edge, and disposing the platelets as a layer on the surface to provide a covering.

10. The method of claim **9,** wherein said bottles are light colored, and said layer has a depth of about 3 to 5 inches.

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