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(54) **Roofing shingle.**

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Roofing shingle

Background of the Invention

The present invention relates to a covering element, preferably for roofs, of the type commonly known as a shingle. In the publically accessible Norwegian patent application No. 75.2695 a particular type of covering element is described in which a plastic film covering an asphalt layer on the underside of the shingle is further coated with a release agent.

It is common practice that covering elements of the type described in Norwegian application 75.2695, as well as conventional shingle types in which the plastic film is not coated with a release agent, are shaped in such a manner that the shingle will to some degree simulate roofing slate or roofing tile when mounted on a roof. The conventional shingle can be of the general type described in U.S. Patent No. 2,863,405 and a particularly preferred embodiment is a shingle provided with "tongues" such as illustrated in Fig. 6 of U.S. Patent 2,863,405. However, since the known shingle types normally have a thickness in range 3—4 mm, they will not provide the same relief effect which can be obtained by the normally thicker roofing tiles when laid on a roof.

The present invention provides a shingle type which has a thickness such that the laid shingle will better simulate a roofing tile and hence will give an enhancement relief effect.

In Danish patent specification No. 105,177 a bituminous roofing felt is claimed, the complete underside of which is covered with a layer of porous, particulated particles of fired clay. The purpose of the particulated material is to provide ventilation in order that trapped moisture, for instance from a concrete substrate, can be permitted to escape via the channels formed by the particulated material.

GB—A 888 651 claims a roofing material comprising a sheet of plastics and/or metal foil and a layer of coarse granules scattered on the complete underside of the sheet to leave spaces between the granules. The granules project from the sheet and are formed from an elastic flexible heat-insulating material. The purpose of the particulated material is to provide ventilation in order that trapped moisture can be permitted to escape via the channels formed by the particulated material.

Summary of the Invention

As mentioned above, an object of the instant invention is to provide a shingle type which, when laid, will exhibit an improved esthetic appearance by having an enhanced relief effect.

Another object is to provide a roofing shingle which utilizes inexpensive materials, preferably recycled materials.

A further object of the present invention is to provide a shingle which has reduced elasticity or increased stiffness which facilitates the manufacture of the shingle and allows the shingle to be handled more easily during installation.

These objects are obtained by providing a shingle having the features defined in claim 1. The monolayer includes at least one particulated material. The particulated light material may be spheres of expanded polystyrene or a similar soft, elastic and resilient particulated material such as rubber particles, cork particles, or polymeric particles having a dimension preferably in the range of 1—6 mm. The stiffening layer may be a material selected from plastic film, paper, glass fiber tissue, felt or other similar material.

Further objects, advantages and features of the invention will become more fully apparent from a consideration of the constituent parts of the invention as set forth in the following specification taken together with the accompanying drawing.

Description of the Drawing

In the drawing,

Fig. 1 is a bottom view of a preferred shingle in accordance with the present invention, a portion of the stiffening layer not being shown so as to illustrate the layer of particulate material,

Fig. 2 is a top view of the shingle of Fig. 1, and

Fig. 3 is an enlarged cross-sectional view of the shingle of Fig. 1 taken along line 3—3.

Detailed Description of the Preferred Embodiment

Referring now to Fig. 1, there is shown a shingle 10 which is a preferred embodiment of the present invention. Shingle 10 includes a web 12 of felt, glass fiber tissue or like material impregnated with asphalt or bitumen or mixtures thereof. Web 12 has a generally rectangular shape with one or more extending three sided tongues 14. Covering the tongues 14 and a portion of the remainder of the web 12 is a layer of spheres 16 of expanded polystyrene.

The portion of web 12 not covered by layer of spheres 16 preferably has a coating of adhesive 18 which facilitates the retention of the shingle to a roof surface. The coating of adhesive 18 may further be covered with a peelable plastic film 20 which protects the adhesive prior to installation of shingle 10.

It is preferred that only the tongues 14 of shingle 10 and that portion of the shingle which is not in contact with the roof structure be covered with a monolayer of the spheres 16, i.e., only the part of the shingle which is overlapping the underlying layer of the adjacent shingles should be covered with the spheres. Such a construction facilitates the fixing of the

shingle 10 to the roof structure. However, the entire bottom surface of shingle 10 could be provided with a monolayer of spheres 16.

Shingle 10 further includes a stiffening layer 30 over the layer of spheres 16 so that a "triplex" type shingle is formed comprising web 12, the layer of spheres and the stiffening layer. In Fig. 1, a portion of layer 30 has not been shown so that layer of spheres 16 may be illustrated. The material for stiffening layer 30 may be selected from plastic film, paper, glass fiber tissue, felt or other similar materials. The inclusion of stiffening layer 30 tends to reduce the elasticity of shingle 10 which thereby facilitates the cutting and packing operations in the manufacture of the shingles and also allows the shingle to be handled more easily when being laid on a roof or the like due to the increased stiffness of the shingle. The increased stiffness also will prevent the shingle from being blown up by wind when laid.

Stiffening layer 30 may be attached to the layer of spheres 16 by applying an adhesive 28 to the layer of spheres 16 by applying an adhesive 28 to the layer of spheres and subsequently applying the stiffening layer to the adhesive. For example, web 12 of shingle 10 with layer of spheres 16 already applied may be brought into contact with an adhesive application roller so as to apply a suitable adhesive 28 such as melted asphalt on to the layer of spheres, and then applying stiffening layer 30 to the adhesive. In practice, it has been found advantageous to apply stiffening layer 30 to shingle 10 just before web 12 is cut to individual shingles. In this manner, the elasticity of shingle 10 can be utilized in the manufacturing process and the desired and advantageous stiffness provided by the addition of layer 30 may be utilized in the cutting operation and in the subsequent finishing, packaging and handling operations for the shingles.

Fig. 2 illustrates the top surface of the shingle 10 of Fig. 1. The surface of shingle 10 is provided with a pattern 22 for simulating roofing slate or roofing tile. In addition, the surface of shingle 10 has areas 24 which have an adhesive coating. The adhesive areas 24 help to secure and interlock the shingle to overlapping shingles when the shingle is installed on a roof.

Fig. 3 is a cross-sectional view of the shingle of Fig. 1 along line 3—3. The cross-sectional view is of course not drawn to scale in order to more clearly show the construction of shingle 10. Shingle 10 includes web 12 and the layer of spheres 16 on a portion of the one surface of the web. Over layer of spheres 16 is adhesive 28 joining the layer to stiffening layer 30. On the remaining portion of this surface of shingle 10 are adhesive coating 18 and optionally peelable plastic film 20. On the opposite surface of web 12 is an area of adhesive 24.

In addition to improving the esthetic appearance of the laid shingles, a layer of, for instance, expanded polystyrene spheres will also improve the insulating properties of the laid roof as shingles usually are laid with approximately 5 cm overlap. The improved insulation can be of importance in countries with cold winter climate. Furthermore, the monolayer of the expanded spheres will also reduce the noise caused by heavy rain. Thus, by providing shingles with a monolayer of spherical material such as expanded polystyrene with the above-mentioned diameter, it is possible to increase the "effective" thickness of a portion of the shingle without a significant increase in the weight of the shingle. The most effective relief effect is obtained when using dark colored spheres such as black spheres.

Although the above description has been directed to shingles 10 utilizing a layer of spheres 16 of expanded polystyrene shingles in accordance with the present invention may also utilize other soft, elastic and resilient particulated materials in lieu of spheres of polystyrene to provide the same or similar advantages set forth in the preceding paragraph. Such soft, elastic and resilient particulated materials include cork particles, rubber particles or other expanded or non-expanded polymer particles. The use of these soft, elastic and resilient particulated materials in shingles allows the shingles to be easily cut by the knives of a cutting machine in the shingle manufacturing operation. When rubber particles are utilized, preferably these particles are produced by grinding or disintegrating worn or unusable vehicle tires such as automobile tires so as to significantly reduce material costs for the shingles by using recycled materials. Such rubber particles have a further advantage in that they are generally of a dark or black color which, as was mentioned above, provides the most effective relief effect for shingles.

Claims

1. A roofing shingle comprising a web (12) having at least one tongue (14), the top surface of the web (12) having a pattern which simulates roofing slate or roofing tiles, characterized in that the bottom surface of the tongue (14) has a monolayer of soft, elastic and resilient particulated material (16) having a dimension of at least 1 mm covering at least part of the tongue (14) and that a stiffening layer (30) of material is provided over at least the portion of the web (12) covered by the monolayer, said monolayer being sandwiched between the web (12) and the stiffening layer (30).

2. A roofing shingle according to claim 1, wherein the monolayer includes at least one particulated material (16) selected from rubber particles, cork particles, expanded polymeric particles and non-expanded polymeric particles.

3. A shingle according to claim 2, wherein the rubber particles are produced by the dis-

integration of vehicle tires.

4. A shingle according to claim 1, wherein the bottom surface of the web (12) has an adhesive coating (18).

5. A shingle according to claim 4, wherein the web (12) is impregnated with a material selected from asphalt and bitumen or mixtures thereof.

6. A shingle according to claim 4, wherein the adhesive coating (18) is coated with a plastic film (20).

7. A shingle according to claim 6, wherein the top surface of the web is provided with areas of an adhesive coating (24) adapted for securing and interlocking the shingle to adjacent shingles when laid.

8. A shingle according to claim 1, wherein the particulated material (16) has a dimension in the range of 1 to 6 mm.

Patentansprüche

1. Dachschindel, bestehend aus einem Steg (12) mit mindestens einer Zunge (14) und einer Oberseite, die ein Muster hat, das Schieferdachplatten oder Dachziegel nachbildet, dadurch gekennzeichnet, daß die Unterseite der Zunge (14) eine einlagige Schicht aus weichem, elastischem und federndem, gekörntem Material (16) mit einer Abmessung von wenigstens 1 mm hat, die zumindest einen Teil der Zunge (14) bedeckt, und daß eine Versteifungsschicht (30) zumindest auf dem von der einlagigen Schicht bedeckten Teil des Steges (12) vorgesehen ist, wobei die einlagige Schicht sandwichartig zwischen dem Steg (12) und der Versteifungsschicht (30) liegt.

2. Dachschindel nach Anspruch 1, dadurch gekennzeichnet, daß die einlagige Schicht zumindest ein gekörntes Material (16) umfaßt, das aus Gummiteilchen, Korkteilchen, aufgeblähten Polymerteilchen und nicht aufgeblähten Polymerteilchen ausgewählt ist.

3. Dachschindel nach Anspruch 2, dadurch gekennzeichnet, daß die Gummiteilchen durch Zerkleinerung von Fahrzeugreifen hergestellt sind.

4. Dachschindel nach Anspruch 1, dadurch gekennzeichnet, daß die Unterseite des Steges (12) einen Kleberüberzug (18) hat.

5. Dachschindel nach Anspruch 4, dadurch gekennzeichnet, daß der Steg (12) mit einem Material imprägniert ist, das aus Asphalt und Bitumen oder einem Gemisch hiervon ausgewählt ist.

6. Dachschindel nach Anspruch 4, dadurch gekennzeichnet, daß der Kleberüberzug (18) mit einem Kunststofffilm (20) bedeckt ist.

7. Dachschindel nach Anspruch 6, dadurch gekennzeichnet, daß die Oberseite des Steges mit Kleberflächen (24) zur Befestigung und Verankerung der verlegten Schindel an angrenzenden Schindeln versehen ist.

8. Dachschindel nach Anspruch 1, dadurch gekennzeichnet, daß das gekörnte Material (16) eine Abmessung im Bereich von 1 bis 6 mm hat.

Revendications

1. Bardeau de couverture comprenant une plaque (12) qui comporte au moins une languette (14), la surface supérieure de la plaque (12) comportant un motif imitant une ardoise ou des tuiles de couverture, caractérisé en ce que la surface inférieure de la languette (14) comporte une monocouche (16) de matière molle, élastique et souple sous forme de particules ayant une dimension d'au moins 1 mm et recouvrant au moins une partie de la languette (14) et en ce qu'une couche de matière de renforcement (30) est prévue sur au moins la partie de la plaque (12) recouverte par la monocouche, cette dernière étant prise en sandwich entre la plaque (12) et la couche de renforcement (30).

2. Bardeau de couverture selon la revendication 1, caractérisé en ce que la monocouche comprend au moins une matière sous forme de particules (16) choisie parmi des particules de caoutchouc, de liège, ou de particules polymères expansées ou non.

3. Bardeau selon la revendication 1, caractérisé en ce que les particules de caoutchouc sont obtenues par désintégration de pneumatiques de véhicules.

4. Bardeau selon la revendication 1, caractérisé en ce que la surface inférieure de la plaque (12) comporte un revêtement d'adhésif (18).

5. Bardeau selon la revendication 4, caractérisé en ce que la plaque (12) est imprégnée d'une matière choisie parmi l'asphalte et le bitume ou leurs mélanges.

6. Bardeau selon la revendication 4, caractérisé en ce que le revêtement adhésif (18) est revêtu d'un film plastique (20).

7. Bardeau selon la revendication 6, caractérisé en ce que la surface supérieure de la plaque est pourvue de zones d'un revêtement adhésif (24) agencé pour fixer et verrouiller l'élément sur les éléments adjacents lors de sa pose.

8. Bardeau selon la revendication 1, caractérisé en ce que la matière en particules (16) a une dimension comprise entre 1 et 6 mm.

Fig. 1.

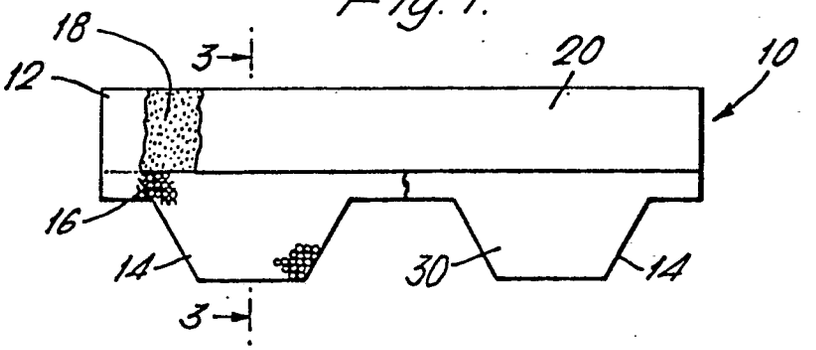

Fig. 2.

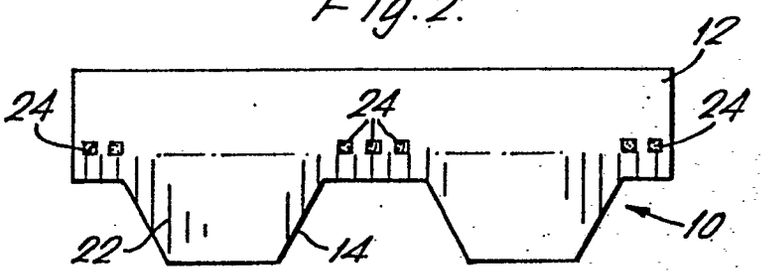

Fig. 3.