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MICROBE RESISTANT ROOF

Filed Nov. 17, 1967

FIG. 1

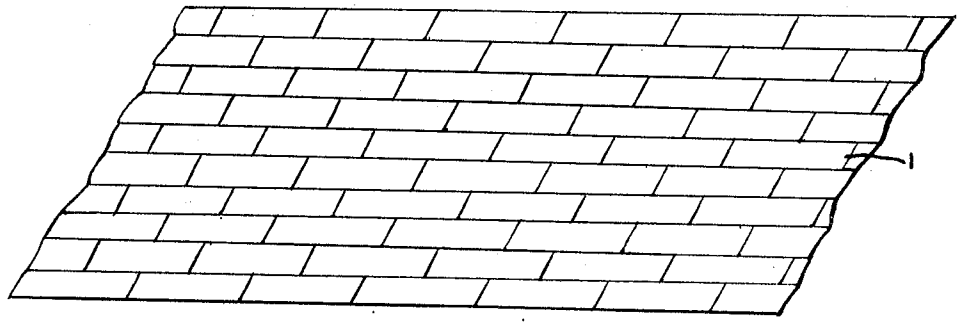


FIG. 2

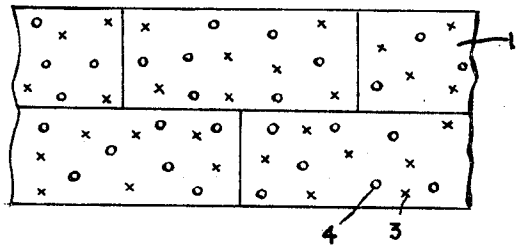


FIG. 3

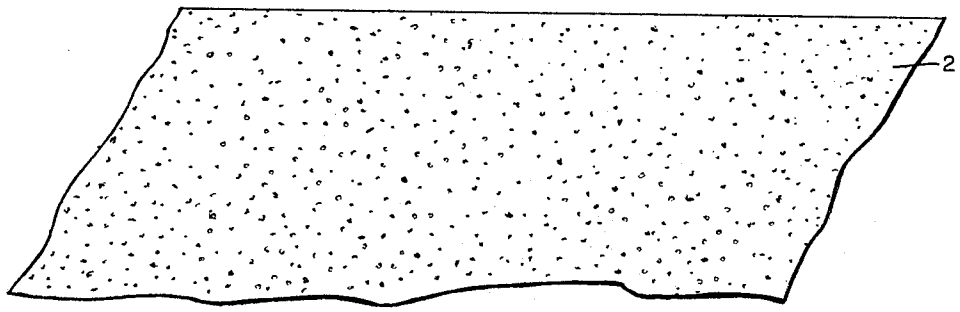
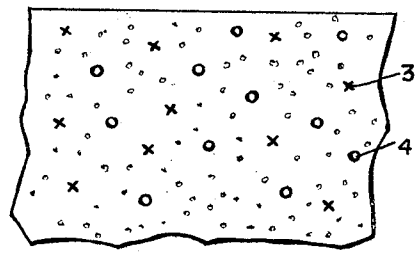


FIG. 4



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OR IN 21/61

United States Patent Office 3,494,727 Patented Feb. 10, 1970

3,494,727

MICROBE RESISTANT ROOF

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Continuation-in-part of application Ser. No. 398,623, Sept. 23, 1964. This application Nov. 17, 1967, Ser. No. 689,218

Int. Cl. A61j 3/00, 5/00, 7/00, 9/00; B27k 1/02, 3/00

U.S. Cl. 21—61 10 Claims

ABSTRACT OF THE DISCLOSURE

A roofing material having incorporated therein particles of metallic elements capable of forming biocidal ionic solutions. The periodic formation of such solutions by rain or dew prevents the darkening of roofs by killing the fungus or bacteria.

BACKGROUND OF THE INVENTION

This is a continuation-in-part of my copending application Ser. No. 398,623, filed Sept. 23, 1964 and now abandoned for Intrinsically Microbe Resistant Roofs.

In many tropical and semi-tropical areas it is quite common for roofs to be subject to a dark discoloration with age. While the exact cause of this phenomenon is not known, it is believed to be the result of biological action, such as microbial or fungal growths. The discoloration may be due to the growth itself or may be produced indirectly as a result of the organism's metabolic products. When the proper conditions exist, the discoloration can be so extreme as to change a white roof to black in a period of a few years. Northerly exposed roofs change more rapidly than southerly exposed roofs and the color change appears to be more pronounced in some neighborhoods than in others. The change affects roofs of all colors and, in all known instances, the color changes are toward black. The blackening is not only unsightly but also has adverse economic effects in that it increases the heat absorption of the roof and thus defeats the very purpose of the light roof.

It has been observed by me that when lead, copper, or zinc is exposed on the roof, as pipe or flashing for example, the water run-off pattern is free of the darkening. This is probably due to the growth-retarding effect of the ions of slightly soluble salts of these elements. It has been suggested that thin metallic strips, such as copper, be mounted on shingled roofs to prevent such darkening. However, the application of such strips complicates the laying of a roof and thereby increases its expense. Furthermore, it is believed that a synergistic effect may be achieved by use of two separate metallic elements in rather close physical conjunction. Accordingly, it is a primary object of the present invention to provide a roofing material which is itself biocidal without the application of extraneous elements. Another object is to provide such a roof in which the biocidal effect is enhanced to a greater degree than is possible by the use of any single metallic element.

SUMMARY OF THE INVENTION

The present invention comprises a roofing material having embedded therein small particles, or chips, of at least one metallic element. The element is selected from those having microbiocidal ions. Thereafter, normal weathering will result in the production of such ions which will be spread over the surface of the roof by the action of rain or dew.

BRIEF DESCRIPTION OF THE DRAWING

For a further understanding of the present invention, attention is directed to the following description, the appended claims and the figures of the attached drawing, wherein:

FIG. 1 illustrates a portion of an asphalt shingle roof;

FIG. 2 is an enlarged view of a portion of the roof of FIG. 1;

FIG. 3 illustrates a portion of a rock-tar roof; and

FIG. 4 is an enlarged portion of the roof of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The ions of a number of metallic elements have been found to have microbiocidal characteristics. These elements include, for example, copper, lead, and zinc. The objects of the present invention are achieved by incorporating the particles of one or more of such metallic elements directly into the roofing material. They may be included, for example, in the body or coating of an asphalt shingle roof during production of the shingles. In a tar or rock-tar roof, they may be incorporated by admixture into the roofing ingredients either prior to their application or during their application on the roof surface.

The effectiveness of the metallic inclusions may be synergistically increased by including two different metals. If one such metal is electronegative with respect to the other, galvanic action will take place, accelerating corrosion of the anodic metal when exposed to moisture. Suitable combinations of metals would include, for example, copper-lead, and zinc-iron.

With particular reference to FIGS. 1 and 2 there is illustrated a roof comprising shingles **1**. Embedded in the matrix of each of the shingles **1** are metallic copper chips **3** and metallic lead chips **4**. As pointed out above, such particles form electrical couples which accelerate corrosion and thus result in an increased release of ions over that obtainable from either metal alone.

A modification of the invention is illustrated in FIGS. 3 and 4 wherein a rock-tar roof **2** has embedded therein copper chips **3** and lead chips **4**.

It is to be understood that the present invention is not limited to the specific elements set forth but includes roofing materials having particle inclusions of any metals capable of releasing ions which are microbiocidal to the particular micro-organisms involved. It will also be apparent that the individual particles may be composite in nature. In other words, each particle may include both copper and lead or both zinc and iron. Various other modifications of this invention will be apparent to those skilled in the art. Accordingly, the foregoing description is to be construed as illustrative only, rather than limiting. This invention is limited only by the scope of the following claims.

What is claimed is:

1. A roofing material having embedded therein visually observable chips of metallic elements, the ions of said metallic elements being capable of producing microbiocidal effects on microbes coming into contact with said roofing material.

2. The material of claim **1** wherein said chips are copper.

3. The material of claim **1** wherein said chips are lead.

4. The material of claim **1** wherein said chips are zinc.

5. The material of claim 1 wherein said material is a shingle.

6. The material of claim 1 wherein said chips are zinc and including additional chips of iron.

7. The material of claim 1 wherein each of said chips is a bimetallic admixture of copper and lead.

8. The material of claim 1 wherein each of said chips is a bimetallic admixture of zinc and iron.

9. The material of claim 1 wherein said elements are selected from the group consisting of copper, lead, zinc, and combinations thereof.

10. The material of claim 9 wherein some of said chips are copper and others are lead.

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U.S. Cl. X.R.

21—2, 58; 52—517; 106—15; 117—168; 161—224, 271; 424—131, 140, 145