Jan. 9, 1923. 1,441,861.

T. B. LEHON.

BUILDING MATERIAL.

FILED MAY 24, 1921.

Fig. 1.

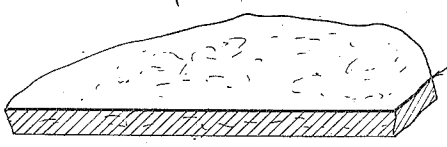


Fig. 2.

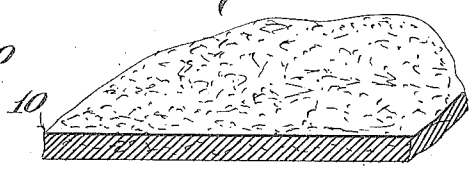


Fig. 3.

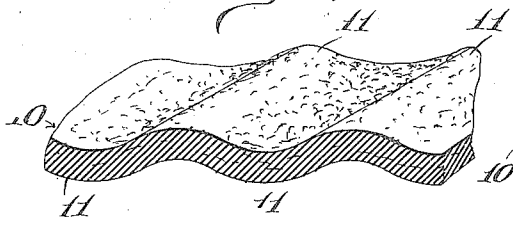


Fig. 4.

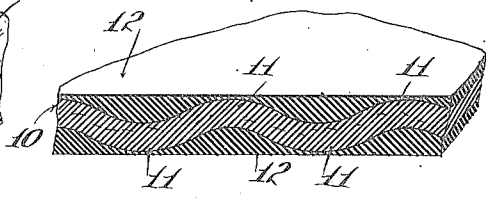


Fig. 5.

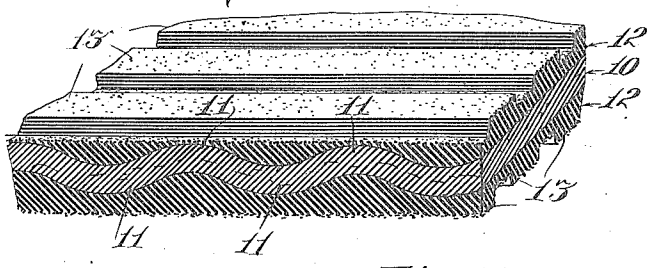


Fig. 6

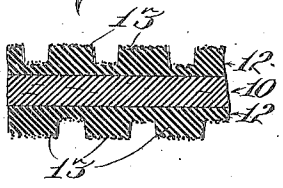
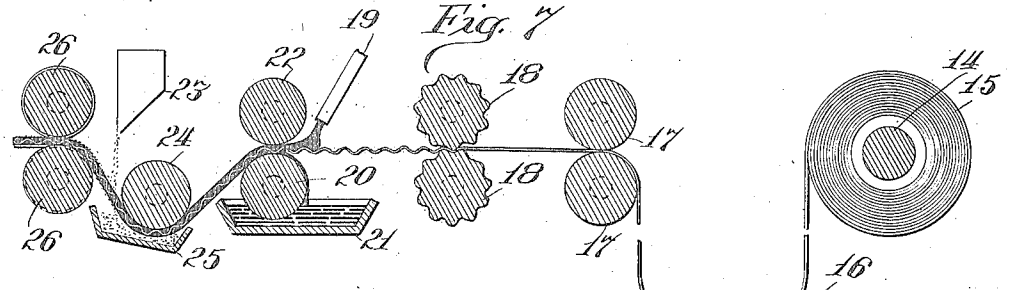


Fig. 7



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UNITED STATES PATENT OFFICE.

THOMAS B. LEHON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE LEHON COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BUILDING MATERIAL.

Application filed May 24, 1921. Serial No. 472,051.

To all whom it may concern:

Be it known that I, THOMAS B. LEHON, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Building Materials, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a novel "built-up" material that is of special value in connection with building operations, and hence is herein designated as building material, although it is to be understood that such material is well adapted for other uses than those requiring it to be incorporated in a building or other similar structure. The invention also embraces the method or process by which the said material is produced.

The invention contemplates the employment of a base, such as felt or other fibrous material of the character commonly used in the production of asphalt roofing-sheets or shingles, and having formed upon the surfaces thereof a comparatively large number of raised portions, the spaces between which are filled in with commercial asphalt such as is generally used in forming roofing sheets, such filling being of a thickness approximately equalling the height of the said raised portions, whereby the product as a whole is of materially greater thickness than was the sheet of felt or other similar material prior to the raising of certain portions of its surfaces and the filling in of the spaces therebetween. A sheet of material of the character thus briefly outlined can, by reason of its thickness as compared with an ordinary sheet of asphalt-coated and impregnated felt, be more advantageously employed in many situations than such ordinary sheet, but for many purposes it is desirable to still further increase the thickness of the material, and to accomplish this result, according to the preferred embodiment of the present invention, the material is provided with additional raised portions, as illustrated in the drawings and hereinafter more particularly described. That which I believe to be new will be set forth in the appended claims.

In the drawings,—

Fig. 1 is a perspective and sectional view of a piece of ordinary roofing felt before having been saturated in the usual manner with asphalt;

Fig. 2 is a similar view that is intended to represent the product shown in Fig. 1 after having been saturated with the asphalt;

Fig. 3 is a similar view showing the material represented by Fig. 2 after it has been operated upon to impart to it on both of its surfaces a plurality of raised portions, here indicated as corrugations;

Fig. 4 is a similar view but showing the spaces between the raised portions of Fig. 3 filled in with asphalt and the tops of such raised portions slightly covered also with the same substance, whereby a comparatively smooth-surfaced product is provided of materially greater thickness than the original felt base shown in Figs. 1 and 2;

Fig. 5 is a similar view but with the product shown in Fig. 4 provided on its surfaces with a plurality of raised portions that are here shown as extending in a different direction from those raised portions shown in preceding figures;

Fig. 6 is a cross-section through the article shown in Fig. 5, the section being taken at right angles to the raised portions on the surfaces of the article in said Fig. 5; and

Fig. 7 is a diagrammatic representation of means employed for carrying out the method or process by which my improved material is made.

Figure 1 to 6, inclusive, are each considerably enlarged in order to better illustrate the constructions.

Referring to the several figures of the drawings and particularly to those figures showing the improved article as fully as the nature of the materials employed will permit,—10 indicates a fibrous or porous sheet constituting the base of my improved new article of manufacture, and which, while preferably of felt, such as before referred to, inasmuch as felt furnishes a comparatively firm, strong and pliable base. may be of any other fibrous or porous material adapted for the treatment required to be given, as hereinafter described, for the production of my novel article of manufacture. Such base is to be impregnated and coated with asphalt, as is commonly practiced and

well understood in connection with the forming of ready-to-lay roofing. From each of the surfaces of this sheet 10 there extend a plurality of projecting portions 11 which, in the construction shown, are in the form of a large number of parallel ridges, the ridges on one surface being located opposite the spaces between the ridges on the other surface. While I do not wish to confine myself to having the raised portions in the shape of ridges or be confined to having them parallel with each other, I have found such construction a very effective one in that it permits of the very ready application to and retention by the sheet of the material that is employed to fill up the spaces between the raised portions. Such filling material is indicated by 12; the material that I use is the ordinary commercial asphalt such as is employed on and in connection with the ordinary asphalt roofing sheet, but usually higher melt-point than the asphalt that was applied for impregnating the base 10 as stated in connection with the showing in Fig. 2. It will preferably be applied while heated and in such an amount as to completely fill the spaces between the said raised portions 10, and when so applied and substantially flush with the outer surfaces of the portions 10, a sheet of material will have been thus produced that will be comparatively smooth over both surfaces and, what is of great importance, will be very much thicker than the base piece 10 in its original form, and, therefore, better adapted for a great number of purposes than a single thin and coated sheet of such base material could be, and which where used in the same situations and for the same purposes as such thin coated sheet will be more effective and enduring.

In all asphalt-coated fabric materials it is customary to sprinkle over the surface thereof a small quantity of finely divided particles of soapstone, talc, slate granules, sand or grit of various kinds in order to prevent sticking together of the surfaces of the sheet when the sheet is rolled up, and my improved material is surfaced in the same manner and for the same purpose. In Figs. 5 and 6, however. the surface of the completed product is shown as provided with a covering of these fine particles.

While a sheet of building material made as above described is strong, flexible, waterproof and comparatively thick, and is, therefore, adapted for use in some building situations, there are certain other situations where it is desirable that a thicker sheet of material be employed, and to comply with such requirements is the object of the present invention. Accordingly I provide the sheet of material constructed as above set forth with integral surface projections which, as here shown, are a series of parallel ribs 13 like the asphalt-embedded parts 11, but which, as in the case of those parts 11, may be of other shape than here shown and of any size and spaced any desired distance apart. As shown, the spaces between these projecting portions 13 are not filled in. While a sheet having these exposed surface projections 13 may be put to many of the same uses as the sheets that do not have such portions, I will state that such sheets with the projecting portions 13 make excellent coverings under many circumstances for cement and other floors, for mats at doors and on automobile floors, etc. In making a sheet with such projecting portions 13 I find that the best results are attained by having them disposed at an angle to the first-named projections 11. In the construction shown where all the projecting portions are in the form of straight ridges or ribs the ribs 13 extend at right angles to the asphalt-enclosed ridges 11. The ribs 13 are, as clearly shown in Fig. 6, substantially flat on their outer surfaces and I prefer to so make them so as to provide a desirable shape for resting upon a floor, when the sheet is used as a floor covering, and also provide suitable surfaces to walk upon.

By my invention I am able to construct a comparatively inexpensive waterproof sheet capable of being employed wherever asphalt-coated sheets are customarily employed, and also adapted to uses to which the ordinary sheets of such material cannot well be put. Inasmuch as the base 10 is comparatively inexpensive in comparison with the asphalt employed, a great advantage in the matter of cost of production is derived by employing my invention over any attempt to gain the desired thickness of material by employing a thick felt base or a plurality of sheets like the base 10 superimposed one upon the other. While, as stated, my invention may be advantageously employed in connection with sheets having the base 10 formed with integral raised portions of different shape than the ridges or ribs herein shown and particularly described, I prefer to make the projecting portions 11 as shown, not only because they permit the ready application and proper retention of the asphalt, as stated, but because they add a certain stiffness to the sheet which, while not impairing the desired flexibility will so stiffen the sheet as to overcome any tendency of the sheet to curl or buckle,—the ribs 13, when employed, also materially aiding in this respect.

Referring to Fig. 7 wherein is diagrammatically represented an apparatus adapted to carry out the method or process by which my improved building material is produced and is also adapted to provide said material with the particular shape of raised portions that are shown in some of the other figures of the drawing,—14 indicates a roller upon

which a web 15 of the base material 10 is wound. From such roller the web of material is led to and through a vat 16 containing a quantity of heated asphalt that saturates the moving sheet. The sheet then passes between a pair of squeezing rolls 17 to remove the excess asphalt, after which it passes between a second pair of rolls 18, the coacting surfaces of which are adapted to produce on the surface of the sheet the desired raised portions—which rolls, as here shown, by reason of being corrugated in the direction of their length, will form the raised portions that appear in other figures as the ridges 11. After passing through the pair of rolls 18 a quantity of asphalt is applied to both surfaces of the sheet, the application of the asphalt to the upper surface being by allowing a quantity of it to flow thereon from a pipe 19 and the supply for application to the lower surface being taken by a rotating roll 20 from a vat 21. Such roll 20 is located beneath another similar roll 22, said two last-named rolls being separated sufficiently from each other so as not to break down the series of raised portions that have been formed by the other pair of rolls 18. The asphalt supplied from the pipe 19 and vat 21 is of course preferably in a heated condition, as is the case in the application of it to roofing felts and papers generally, but it is to be understood that in this application of the asphalt it is applied in a much thicker or higher melt-point condition than is that that is applied in the first instance from the heated vat 16. Having the asphalt comparatively heavy or thick enables it to effectually fill up and remain in the spaces between the raised portions that have just previously been formed in the sheet by the pair of rolls 18, and the pressure of the spaced-apart pair of rolls 20—22 will not only force it solidly into such spaces and spread a thin coating over the raised portions themselves, but will tend to impart a smooth even surface to both sides of the asphalt-coated sheet. After the pressing of this comparatively thick or heavy asphalt into place by the two last-named rolls the product will be in the form shown in Fig. 4, after which it should preferably have sufficient particles of finely-powdered material to prevent stickiness, and such material is applied, as here shown, by dropping the same on the upper surface of the sheet from a receptacle 23 and to its lower surface by forcing such lower surface, by means of a roll 24, into contact with a quantity of such material that is contained in a receptacle 25.

After the last described operation has been performed the product is subjected to an additional operation for the purpose of increasing its effective thickness, such operation being performed by passing the product through a pair of rolls 26 whose surfaces are shaped to produce the raised portions 13 shown in Figs. 5 and 6. In the illustration here given the rolls are corrugated,—the corrugations extending around the rolls instead of lengthwise thereof as in the case of the pair of rolls 18.

The building material herein described may of course be used in the form of long sheets or in short shingle-like pieces, and may have its surfaces left comparatively smooth which is desirable for some uses to which the material may be put, but preferably such surfaces are coated with comminuted material as is now so commonly done in connection with roofings.

What I claim as my invention and desire to secure by Letters Patent, is—

1. A building material comprising a fabric base having a plurality of raised portions on one of its surfaces and a bituminous filling material in the spaces between said raised portions, said space-filled surface having thereon a plurality of other raised portions.

2. A building material comprising a fabric base having a plurality of raised portions on each of its surfaces and a bituminous filling material in the spaces between said raised portions, each of said space-filled surfaces having thereon a plurality of other raised portions.

3. A building material comprising a fabric base having a plurality of surface ridges thereon, and a bituminous filling material in the spaces between said ridges, and a plurality of raised portions on said space-filled surface.

4. A building material comprising a fabric base having a plurality of integral surface ridges thereon, and a bituminous filling material in the spaces between said ridges, and a plurality of raised portions on said space-filled surface.

5. A building material comprising a fabric base having a plurality of integral surface ridges thereon and a bituminous filling in the spaces between said ridges, said space-filled surface having a plurality of integral raised portions thereon.

6. A building material comprising a fabric base having a plurality of integral surface ridges thereon and a bituminous filling in the spaces between said ridges, said space-filled surface having a plurality of integral ribs thereon.

7. A building material comprising a fabric base having a plurality of integral surface ridges thereon and a bituminous filling in the spaces between said ridges, said space-filled surface having a plurality of integral ribs thereon that extend in a different direction from said ridges.

8. A building material comprising a fabric base having integral therewith on each of its surfaces a plurality of ridges,

and a bituminous filling material between the spaces of said two sets of ridges, each of said space-filled surfaces having a plurality of integral ribs thereon that extend in a different direction from said ridges.

9. A building material comprising a fabric base having integral therewith on each of its surfaces a plurality of ridges, and a bituminous filling material between the spaces of said two sets of ridges, each of said space-filled surfaces having a plurality of integral ribs thereon that extend in a different direction from said ridges, the said ribs on each surface lying opposite the spaces that are between the ribs on the other side.

10. The herein-described method of forming a sheet of building material consisting in forming a plurality of raised portions on a surface of the sheet and then filling the spaces between such raised portions with a bituminous material and thereafter forming a plurality of other raised portions on said space-filled surface.

11. The herein-described method of forming a sheet of building material consisting in forming a plurality of raised portions on both surfaces of the sheet and then applying a comparatively heavy bituminous material to such surfaces in quantity sufficient to fill the spaces between such raised portions and thereafter forming a plurality of other raised portions on said space-filled surface.

12. The herein-described method of forming a sheet of building material consisting in ridging the surfaces of the sheet and then applying a comparatively heavy bituminous material to such surfaces in quantity sufficient to fill the spaces between the ridges on both said surfaces and thereafter forming on said space-filled surface a plurality of ribs that extend in a different direction from said ridges.

13. The herein-described method of forming a sheet of building material consisting in ridging the surfaces of the sheet and then applying a comparatively heavy bituminous material to such surfaces in quantity sufficient to fill the spaces between the ridges on both said surfaces and thereafter forming ribs on each of said space-filled surfaces.

14. The herein-described method of forming a sheet of building material consisting in ridging the surfaces of the sheet and then applying a comparatively heavy bituminous material to such surfaces in quantity sufficient to fill the spaces between the ridges on both said surfaces, and thereafter forming on each of said space-filled surfaces a plurality of ribs that extend in a different direction from said ridges.

THOMAS B. LEHON.