July 13, 1926. 1,592,760

A. C. FISCHER

ROOFING MATERIAL

Filed March 15, 1920 2 Sheets-Sheet 1

Fig. 1

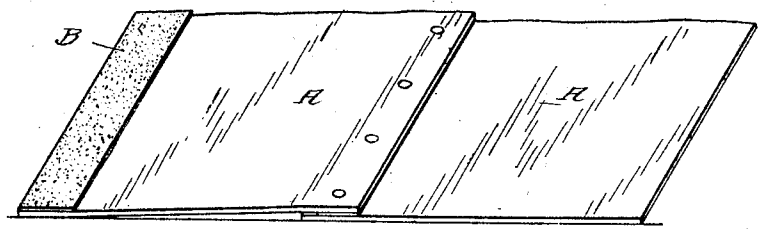


Fig. 2

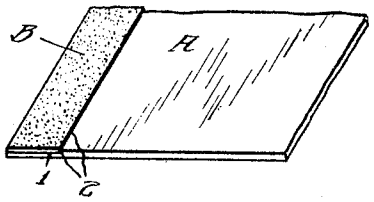


Fig. 3.

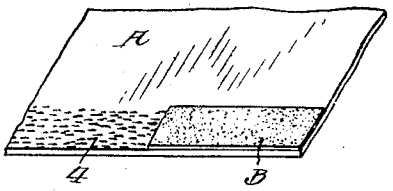


Fig. 4

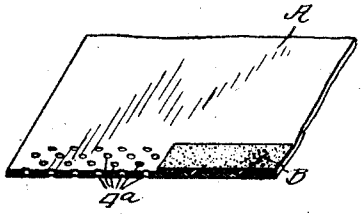


Fig. 5

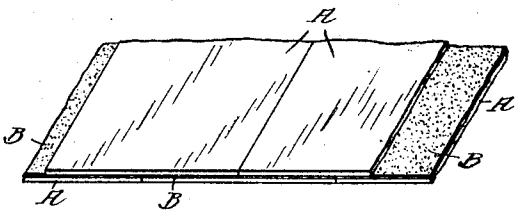


Fig. 6

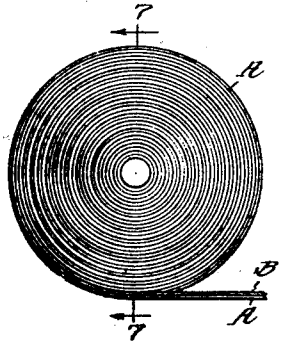
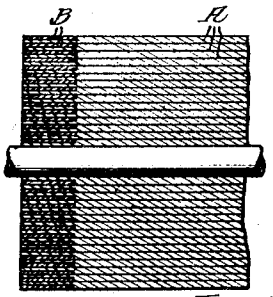


Fig. 7.



Witness.
R Burkhardt

Inventor.
Albert C Fischer,
By Wilkinson, Huxley, Byron & Knight
Attys.

July 13, 1926. 1,592,760

A. C. FISCHER

ROOFING MATERIAL

Filed March 15, 1920 2 Sheets-Sheet 2

Fig. 8

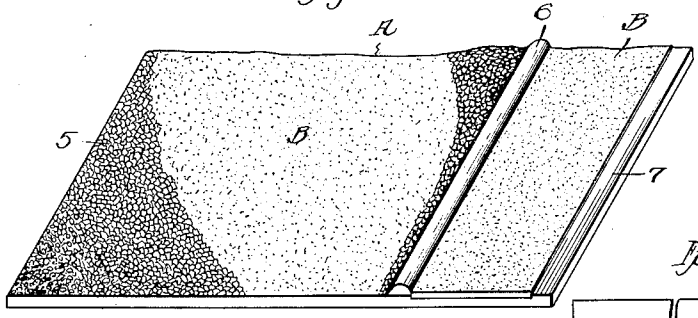


Fig. 15

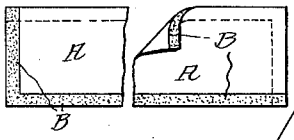


Fig. 16.

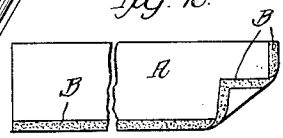


Fig. 9.

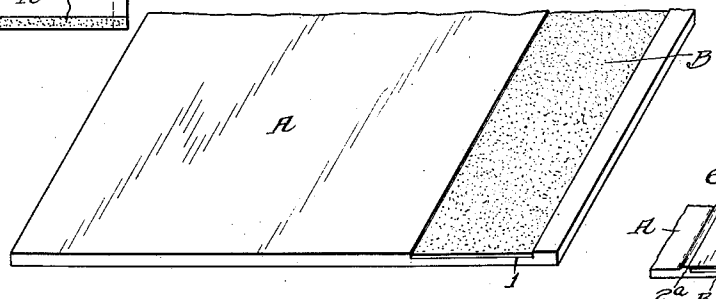


Fig. 11.

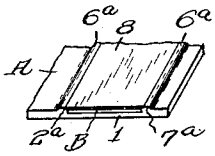


Fig. 13.

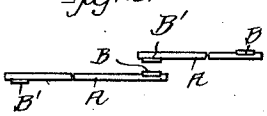


Fig. 10

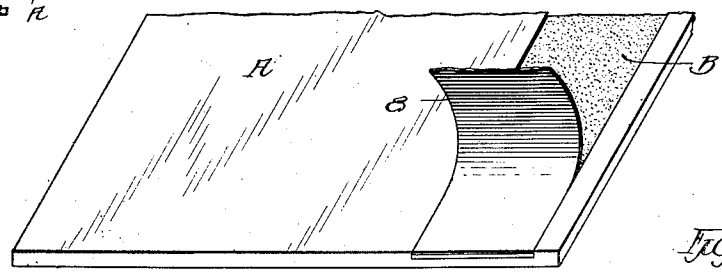


Fig. 14.



Fig. 17

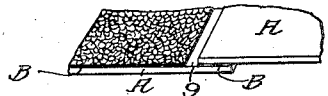
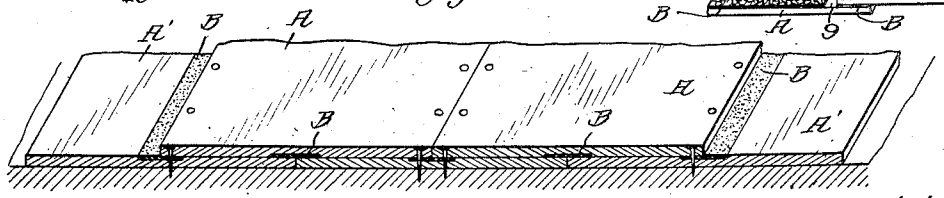


Fig. 12.



Witness:
A. Burkhardt.

Inventor:
Albert C. Fischer,
By Witherspoon Hurley Byron & Knight
Attys.

Patented July 13, 1926. 1,592,760

UNITED STATES PATENT OFFICE.

ALBERT C. FISCHER, OF CHICAGO, ILLINOIS.

ROOFING MATERIAL.

Application filed March 15, 1920. Serial No. 365,901.

The object of the present invention is to provide roofing material which will carry upon it as it issues from the producing plant means for insuring an effective water-tight joint between such material and a building structure, or between two or more pieces of such material when subsequently put into use.

In my application Serial No. 273,868, filed January 29th, 1919, is described and broadly claimed roofing which goes upon the building structure in such condition that it automatically adheres to the building structure, or to an overlapped section of roofing, by reason of the presence upon the roofing material of a substance having the inherent quality of remaining sticky or adhesive during the period that is ample to cover the normal length of time required to pass the goods from the producer to the consumer; the embodiments of the invention selected for illustration in said application consisting in the application of the adhesive or weatherproofing substance in the form of a surfacing material.

According to the present invention the weatherproofing material is applied with a sufficient body to insure the inherent qualities of a pliable, ductile, or plastic packing so that when a roofing sheet, strip, or the like, bearing such packing material is applied to a surface of a building structure, or to another sheet of roofing material, the pressing of the packing against the coacting surface will intimately fill all unevenness, cavities, spaces, or the like, and effect a weatherproof union between the roofing members. The packing material may have in addition to the quality of plasticity the quality of adhesiveness, either immediate or slowly developing, and it may be applied to the roofing material either in restricted zones or throughout the surface of the roofing material. It may also be applied to specially prepared portions of the roofing material, as, for instance, to areas that have been scored or roughened or perforated, so that the packing material may enter into more intimate gripping relation to the vehicle or roofing piece which carries it, or it may be applied to restricted areas which have been countersunk as by forming depressions under pressure or by removing a portion of the material of the sheet so that the packing material, while maintaining a substantial body that adapts it to serve the purposes intended, will present its outer surface approximately flush with the main surface of the sheet of roofing material. The restricted area may also be prepared to receive and insure adhesion of an applied packing material by merely protecting such area from the application of the talc, broken slate, grit, or other surfacing material that is usually applied over the surface of roofing sheets previous to rolling. If the final mastic coating usually applied to roof sheets be of proper consistency, such mastic coating itself may be made to serve as the packing material of the present invention by applying a removable covering strip over the zone or area thereof while the talc or other usual non-adhesive, or the broken stone or other usual weathering material is being applied, so that when such covering strip is thereafter removed it will expose the mastic surfacing substance in desired position and condition to serve the purposes of the present invention. This area of the packing material may, if desired, be defined by beads, ledges, or other surface definition upon the vehicle sheet, serving the combined purpose of defining the limits of the packing area and preventing the surfacing substance, such as talc, slate, grit, or the like, from working off the main surface of the sheet over on to the surface of the packing while the roofing material is being handled or shipped in rolls or packages. Again, the packing material may have a readily adhering, immediately available adhesiveness in its surface with or without a protecting sheet to be removed when the roofing is put into use; or it may be of such nature that it is readily rendered adhesive by the coaction of a complementary substance carried upon that portion of an overlapping sheet which comes in contact with the packing material when the roofing is laid.

Various embodiments of the several features of the present invention are disclosed by way of illustration in the accompanying drawings, in which—

Figure 1 is a view showing the two overlapped sheets, each of which carries the packing material along one edge so that it serves as a pliable filler between the overlapped portions of the sheets; the packing being laid upon the surface of the sheet.

Figure 2 shows a fragment of the sheet similar to those employed in Figure 1 but having the packing material partially countersunk in the sheet.

Figure 3 suggests a means for securing more intimate adhesion between the packing and the sheet as by roughening that portion of the surface to which the packing is applied.

Figure 4 is a fragmentary view illustrating the bonding of the packing material and sheet by providing the latter with perforations into which the packing material may flow.

Figure 5 is a view showing the application of the packing material to multiple ply roofing in which the packing material is used over the entire area of the meeting surfaces.

Figure 6 is an end view and Figure 7 an axial section of a portion of a roll or package into which the material may be formed for marketing, and which illustrate one advantage of countersinking the packing in the material.

Figure 8 is a perspective view of a fragment of a roofing sheet having a weather surface covered with grit or fragments of mineral matter, and a marginal bead or swell which forms a barrier between the surfacing material and the packing when the roofing is rolled.

Figure 9 shows a modification of the countersinking feature according to which defining walls are provided at both edges of the packing material.

Figures 10 and 11 are views suggesting the method of protecting, during shipment, the surface of the packing material when produced in condition for immediate adhesion when exposed to the overlapped sheet.

Figure 12 is a perspective view showing a multiple ply roofing of lapped sheets with the edges breaking joints, and with the packing and sealing substance applied to areas which correspond to the edges of overlapped sheets.

Figures 13 and 14 suggest the method of rendering adhesive the packing along one edge of a roofing sheet by the reaction of a substance carried along the overlapping portion of another sheet.

Figures 15 and 16 show modifications in the location of the packing material; and

Figure 17 shows a modified form of sealing margin.

Referring to all the views, A represents a sheet of roofing material, and B represents the packing and sealing substance having some or all of the inherent qualities herein described, and which is applied along the edge of the sheet at the time of production so that it will be in position to serve its several functions when the sheets are overlapped upon the roof or other building structure and brought into intimate contact by means of nails or by applying suitable pressure over the joint.

As suggested in Figures 6 and 7, the packing and sealing substance B will be of flexible pliant nature so that it may be rolled up with the roofing material and packaged for sale substantially as roofing material of known varieties.

In Figure 2, the sheet A is formed with a countersink 1 which provides a defining wall 2 for the packing B and reduces the projection on the surface of the sheet so that less bulk is developed in packaging, and the overlapped portions of the sheets are in use. The countersink 1 may be developed by pressing the sheet between rolls properly formed for the purpose, or it may be developed by restricting a portion of the material of the sheet during the flexing process, or by removal of a ply or layer, or a portion thereof, after the sheet is formed.

As shown in Figure 3, the sheet A may be provided with disruptions or other roughness 4 in its surface to insure better adhesion of the packing B.

In Figure 4 is shown the use of perforations 4^a serving the purpose of the roughened area 4 of Figure 3.

Obviously, the packing is not limited to use between the lapped edges of roofing sheets, but, as shown in Figure 5, may be used generally over the surface between outer sheets A and under sheets A′ of a multiple ply roofing, and when so used will develop a softer, more yielding body to the roofing which will greatly save the roofing from fracture or injury from external influences.

When the roofing material A is to be provided with weathering material 5, such as that obtained by spreading on and pressing in gravel, flint, slate, or the like, while the impregnating asphalt of the roofing sheet is hot, I prefer to employ a limiting bead 6 which not only establishes a definite demarcation between the weather surface 5 and the packing material B, but forms a barrier to prevent dislodged fragments of the surface 5 from getting down and becoming embedded in the packing material B when the material is rolled up and is being shipped. The bead 6 may well be provided by applying, during the manufacture of the sheet, a thickened pencil of asphaltic material, or the like. As further shown in Figure 8, it may be desirable in many cases to have the additional defining wall 7 to prevent lateral flowing of the packing and sealing material B during shipment, or while the roofing is in stock.

As shown in Figure 9, the recess 1 for receiving the packing and sealing material B may be of such depth relatively to the thickness of the packing as to leave the outer surface of the latter below the general surface of the sheet and thus protect the surface of the packing from pressure or contact when the sheet is rolled.

As shown in Figure 10, the surface of the packing B may be protected by a removable strip 8 of impregnated paper or other substance to be removed prior to applying the roofing material, and this in turn permits the packing material B to be compounded with the inherent quality of immediate adhesiveness. If desired, the defining walls 2^a, 7^a of the countersink 1 may be developed partly from a depression in the roofing sheet and partly by building up beads 6^a, and in this embodiment, as in Figure 10, a peeling sheet 8 may be used for protection of the packing material B.

According to Figures 13 and 14, the packing material B may be applied in part, as a coacting body B′ of packing material on the overlapping edge of an adjacent sheet, and the substances B and B′ may be of such nature that they will act chemically or as a solvent one upon the other to develop adhesiveness when the substances come together.

A sheet applied with packing material on its opposite edges has the advantage of developing a uniformly rolling package even though the packing material protrudes above the surface of the sheet. However, the reacting substance on one edge need not have a sufficient body to contribute to the pliability of the material, but may be merely in the form of a solvent or reagent of sufficient fluidity to attack the packing and sealing.

In Figure 12 the substance B is used in a multiple ply roof, but instead of being spread over the entire surface it is localized in bands which adapt it to serve for sealing the meeting edges of sheets when the sheets are applied in break joint fashion. A convenient way to accomplish this is to simply have each strip of packing and sealing material B located along the middle of the sheets A and A′.

For producing a packing and sealing material which will have the inherent qualities of pliability and ductility and immediate or eventual adhesiveness, I have obtained good results by impregnating ordinary bituminous liquid into a body of fuller's-earth or kieselguhr in such proportions as will develop a body and stop the flow of the cementitious material and enable the packing or cementing material to retain its form and position on the sheet. But the present invention is not to be understood as limited to the use of any particular material for this purpose.

As an effective protective peeling sheet 8 such as suggested in Figures 10 and 11, I find that paper impregnated with silicate of soda will serve well the purpose, and will be readily removable when it is desired to put the roofing into use. This strip will serve to protect either the separately applied packing substance or the restricted area of outer surfacing mastic to be preempted from the talcing or weathering process and left available for joint packing purposes.

In order to develop reaction between two substances meeting in the area of sealing or packing, one combination of substances found to be effective is the above-described impregnated substance on one member and a relatively thin adhesive on the other member, or a solvent on the other member, either applied to the surface or carried in the packing substance as a vehicle, which will flow into the packing substance just named when the two are brought together, and gradually reduce it to an adhesive state. Or rosinous varnish might be applied to one of the overlapping members and a comparatively dry sticky mastic on the other; or a strip of silicate of soda on one member and a gelatinous substance with glycerine and a moisture which reacts upon the silicate of soda, on the other member.

As shown in Figure 15, the packing material B may be located on both sides of each sheet A and along opposite edges thereof. It may be applied to transverse or end margins as well as to longitudinal margins. As shown in Figure 16, the packing material may be on opposite sides of the same marginal portions of the sheet, whether longitudinal or transverse.

In practice, the packing material will be applied upon the raw or unweathered surface of the fibrous roofing sheet, a suitable shed or covering in the nature of the herein described removable strip being employed, during production, over that marginal or other portion of the sheet which is to be left exposed to serve for weatherproofing the joint, or over the surface of the sheet that is to be left receptive for the separately applied weatherproof packing.

As shown in Figure 17, the sheet will preferably have a marginal portion 9 left free from weathering material to insure adhesion between the sheet and the body of packing material B carried by the overlapping sheet, and this free margin may be of greater width than the overlap.

As is well known in the manufacture of so-called paper roofing or roofing sheets of fibrous material, it is customary to not only impregnate the body of the material with asphaltic or equivalent waterproofing substance, but to apply a coating of such surface, usually of greater consistency, over the outer surface of the material, and then to sift on talc or the like to prevent adhesion of different portions of the sheet in the roll. The present invention in its broader aspect contemplates utilizing this outer surfacing material as the packing material in some cases, to which end, desired areas of this

outer surfacing mastic is preempted from the final or finishing substance, and either left sticky or in condition to readily develop stickiness by application of a solvent thereto.

I claim:

1. A sheet of fibrous roofing material adapted to be rolled for shipment having along a margin thereof, which extends in the direction of rolling, an area of reduced thickness, and having upon such marginal area a body of plastic material rolling with the sheet.

2. A roofing sheet surfaced with weathering material and having upon a restricted area thereof the herein described packing material constituting in itself a plastic body, and having a wall confining the packing material to the area to which it is applied; said wall protruding above the general surface of the sheet and providing a barrier when the sheet is rolled to prevent weathering material reaching the packing material.

3. Flexible sheet roofing material having located upon and, within overlapping areas of the respective sheets, a packing material adapted to be rendered adhesive, and a material which in the presence of the packing material renders the latter adhesive.

4. The herein described package of prepared sheet roofing material, comprising a roll having along a restricted portion thereof a substantial body of plastic packing material rolled with the sheet; said packing material comprising a continuous strip extending over said restricted portion of the sheet and terminating at opposite extremities thereof.

5. The herein described package of flexible sheet roofing material, comprising a roll having along restricted portions thereof, a substantial body of plastic packing material rolled with the sheet; said packing material being countersunk in the sheet to permit of uniform rolling of the material.

6. A roofing member of fibrous material having weathering material upon its surface except at restricted areas where it is left free, and having upon said restricted areas ridges and in the space between such ridges a plastic mass of packing material.

7. A roofing member of flexible material carrying upon it a substantial body of plastic weatherproofing and joint packing material having the inherent quality of reacting under a solvent to render it adhesive, and an overlapping roofing member having such solvent applied to in position to meet said plastic material.

Signed at Chicago, Illinois, this 12th day of March, 1920.

ALBERT C. FISCHER.