Aug. 6, 1929. R. S. REYNOLDS 1,723,076

ROOFING

Filed March 20, 1926

Fig. 1.

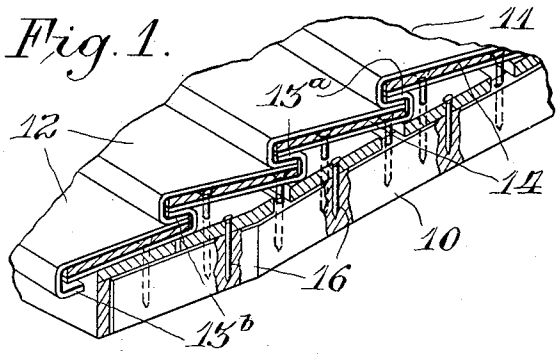


Fig. 5.

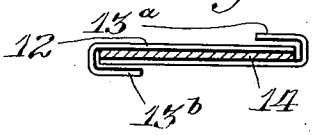


Fig. 6.

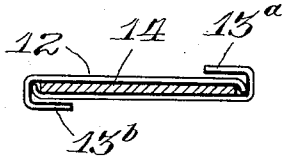


Fig. 2.

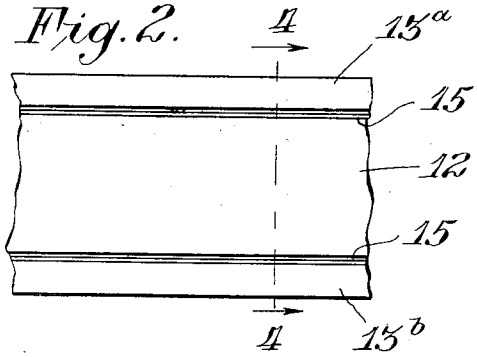


Fig. 7.

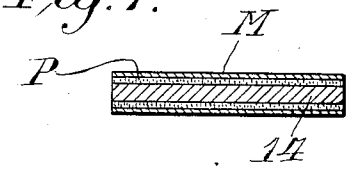


Fig. 3.

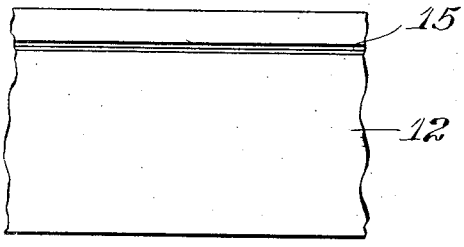


Fig. 8.

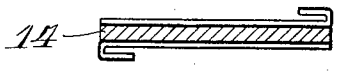
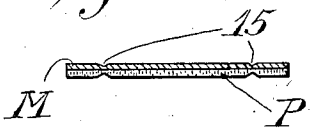


Fig. 4.



Inventor:
R. S. Reynolds,
By Clemens Hoss,
Atty.

Patented Aug. 6, 1929. 1,723,076

UNITED STATES PATENT OFFICE.

RICHARD S. REYNOLDS, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO UNITED STATES FOIL COMPANY, OF LOUISVILLE, KENTUCKY.

ROOFING.

Application filed March 20, 1926. Serial No. 96,131.

The present invention relates to roofing materials such as shingles, roofing strips and the like, and is a continuation-in-part of my copending application, Serial No. 64,887, filed October 26, 1925. The object of the invention is the provision of a roofing element of an improved structure and composition, which is unaffected by climatic or weather conditions and which will not warp appreciably when subjected to the weather.

A roofing element produced in accordance with my invention is substantially fire and vermin-proof, light in weight, possesses excellent heat insulating properties, may be economically manufactured from inexpensive materials, and may be inexpensively installed.

The object above set forth is obtained by the provision of a roofing element comprising a base of a heat insulating body such as wood or a moldable compound and a metallic coating upon this body adhering thereto, the body to be applied to the base in a novel manner to completely cover the same as hereinafter described.

The base employed may be of a composition which may be molded into form and hardened; it may be wood; it may be a laminated structure; in fact, it may be of any sheet material which should be thoroughly dry so that it will not warp, and which may be sawed as may be necessary for laying and which has body sufficient to be nailed in position.

A body particularly suitable for the present invention is one comprising relatively thin boards which do not make good lumber because of the presence of knots or knot holes, or both. Such a base is not expensive to obtain and if thoroughly dry when prepared, is substantially non-warping. Wood tends to make a roof more desirable by conserving in cold weather the heat within the building on which used, and resisting the radiation of heat in hot weather. It will not deteriorate to any great extent should defects in the metallic coating exist; and the fact that it will not readily warp when employed in this manner increases the endurance and life of the roof under the most severe exposure.

The coating for the base is a combination, in suitable proportions, of paper and asphalt covered with a thin layer of metal. The paper is saturated with asphalt and is particularly suitable as a body for a metal roofing sheet to be applied to wood, because its coefficient of expansion with variations in temperature and moisture is practically zero.

In a roofing element of the character hereinafter described and consitituting the present invention, a metallic coating is applied directly to the surface of the body, or vice versa. It is quite important that the coefficient of expansion of the body or backing with changes of temperature be low so as to eliminate the danger of detaching the metal coating from such body as a result of expansion and contraction of the metal with changes of temperature. The body employed has this characteristic, while the expansion of the wood base is practically nil, also.

The base may be of any form suitable for application of the body and metal covering to a roof; preferably, the base is shaped into the form of a rectangular shingle of decreasing thickness as its top is approached. This is not a necessary requirement to the success of the invention, however.

The body of saturated paper has the coating of metal applied to it in such a manner as to cause it to adhere directly to the surface of the body. A most efficient metal is zinc, rolled into sheets. For the purpose of applying such a body to the sheet zinc, the surface of the metal is brought into intimate contact with the saturated paper. Heat and pressure, or both, may be applied. The asphalt possesses an adhesiveness sufficient to hold the body and sheet metal together.

The metal first applied to the body, and the body subsequently applied to the base, allows for the irregularities of the base, and becomes, for the closely adherent thin metallic coating, a protection as well as a reinforcement for the base.

Several modifications of the invention are shown in the attached drawing, in which—

Figure 1 illustrates the roofing element applied in its preferred form to a roof;

Figures 2 and 3 are plan views showing the strip portion of the roof;

Figure 4 is a section on the line 4—4 through the type of strip shown in Figure 2;

Figure 5 is a sectional view of the roofing element shown in Figure 1, and Figures 6 to 8 are modifications thereof.

Like reference characters are used to designate similar parts in the drawing and in the description which follows:

Reference should be had to the details of

the drawings. The numeral 10 designates the section of a roof of a building over the gable and upon which roof my improved roofing has been placed. The roofing is designated generally by the reference character 11 (Figure 1) and comprises a middle or wide section 12, and upper edge section 13^a, and a corresponding lower section 13^b. A base 14 of wood is disposed between the strips. The metal portion of the strip 11 is designated M and the paper-asphalt body or backing by the letter P. The edge or the lower section 13^b of strip 11 is turned under, while the upper edge section 13^a is turned over and back in the manner shown.

Strip 11 may be made in rolls of material having longitudinal scores 15 like those shown in Figure 2, and having a cross section substantially as illustrated in Figure 4. The scoring 15 at the lower edge of the material is to permit ready folding under of section 13^b, and that, at the upper edge permits the turning of the section 13^a upwardly and over. When the strip is so made, cuts of proper length are removed from a roll thereof and laid with the base 14 in the manner shown in Figure 1, the articulations in the material being made subsequent to cutting it to a proper length.

Obviously, the strip portion of the roofing element may be cut in predetermined lengths during the process of manufacture, and such predetermined lengths may be secured, by adhesion or otherwise, to the wooden or other base before being laid, or even at the factory if considered desirable.

In Figure 1, the preferred method of joining the strips, after the inclusion of the base, is illustrated. For example, section 13^a of an upper strip 11 is secured to section 13^b of the contiguous lower strip 11, so that the sections 13^a and 13^b interlock and prevent leakage in the jointure therebetween. Nails 16 may be driven through sections 13^a and 13^b before the upper strip is articulated upon the score 15.

The precise physical operation of laying is unimportant, but no matter how laid, there is economy of operation in employing the material illustrated, and when the material is supplied in rolls, there is not only a marked saving in freight and in production costs, but also in the labor for laying, for there is nothing for the mechanic to do but cut the material to proper length and nail. Nails 16 disposed as they are illustrated avoid leakages and present upon the roof an unbroken oblique surface of strips which are free from exposed punctures.

The body P permits of making a very tight seam between strips. This material P is compressible, being paper saturated with asphaltum, and therefore lends itself to sealing the joint. The asphaltum in the paper provides cohesiveness which will cause the abutting sections of the paper to eventually unite from mere contact. The application of heat to the metal will tend to hasten such unison of adjacent or abutting portions of the backing P, while auxiliary sealing means such as glue or cement may also be used.

As a modification in the practice of the invention the backing P may be omitted, and the metal strip M used without such material. A highly serviceable roof comprises a plurality of strips M united at their joints by a low melting solder. In fact, a thin sheet of solder may be used as a backing in place of the paper P, making it possible to seal the seams between interlocking sections by mere external application of heat by blow torch or otherwise.

As mentioned in the introductory portion of the present specification, this application is a division of the prior application showing a different form of the roofing element. The distinguishing characteristic of the roofing element described in the present application is the utilization of a base preferably made of wood or a similar non-warping material and the covering of the sides of the base in the manner described.

As indicated in the description of the Figures, the preferred form of structure is shown in Figures 1 to 4 inclusive.

A slight modification of the structure shown in Figure 5 is illustrated in Figure 6, where the inner edge of the strip is bent near the extremity thereof to form a tight enclosure for the base 14. Where this practice is resorted to, it may be possible to obtain a slightly improved roof, but for most practical purposes the structure shown in Figure 5 will be found equally practicable.

Figure 7 shows a modification of the invention which has the same feature as the modification shown in Figures 5 and 6 and which modification is also included in the general definition of the invention embraced in the scope of the appended claims. In this form the two portions of strip on each side of the base may be a single strip having a longitudinal central score to permit bending so as to completely cover both sides and one edge, leaving only one edge of the roofing base exposed.

Where a single strip without flaps or articulated portions is employed as shown in this figure, the strip may be secured to the base by adhesion or in any manner which may be preferred. When securing this type of strip to a roof, the strips may be overlapped and nails or other fastening means driven directly through the entire strip. Additional fastening means such as solder or the like may be employed between the superimposed strips to seal overlapping joints where this modification is employed. The articulations 15 in the strip may be dispensed with.

Still another modification is shown in Fig-

ure 8. In this form the strip is secured to the base in the manner employed with Figure 7, since the direction of the articulation is not such as to promote the adherence of the two portions of the element. The presence of this type of articulation, however, permits this element to be laid in substantially the same manner as the preferred form shown in Figure 1.

A roof produced in accordance with the present invention is economical in every sense of the word, since the materials that go into it are cheap and easily obtained and the lasting qualities are excellent, due to the protective quality of the zinc, which is itself almost everlasting.

I claim:

1. As an article of manufacture, a strip of wood or like material, and a complete covering for the sides thereof of sheet metal having a backing of paper adhesively associated with both the strip and metal, said sheet metal covering terminating in articulated extremities projecting beyond the strip to constitute interengaging means between adjacent strips.

2. In a shingle, a core of material having a low coefficient of expansion, a covering for the opposite sides of zinc in the form of a very thin sheet, and an intermediate body of pulpous material adhesively associated with said core and sheet, said zinc covering projecting beyond the core to constitute an interlock between adjacent shingles.

RICHARD S. REYNOLDS.