Oct. 12, 1937. N. P. HARSHBERGER 2,095,248

ROOFING AND SIDING ELEMENT

Filed June 12, 1933

Fig. 1.

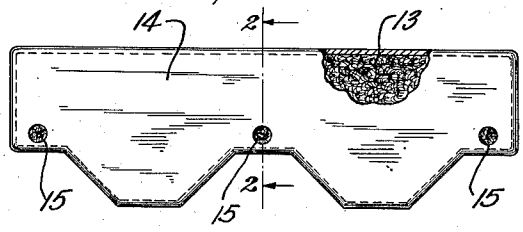


Fig. 2.

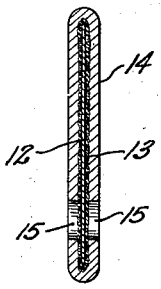


Fig. 3.

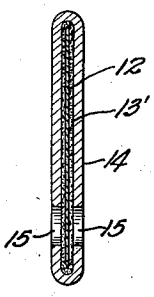


Fig. 5.

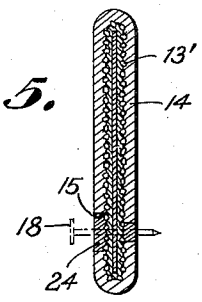


Fig. 4.

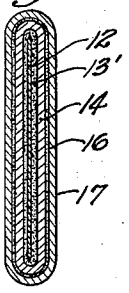


Fig. 7.

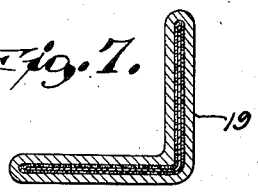


Fig. 6.

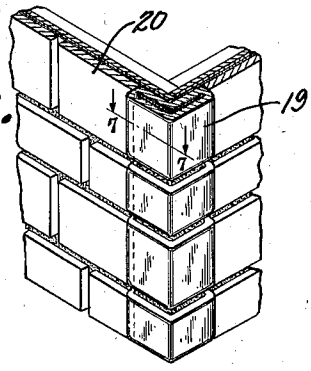


Fig. 8.

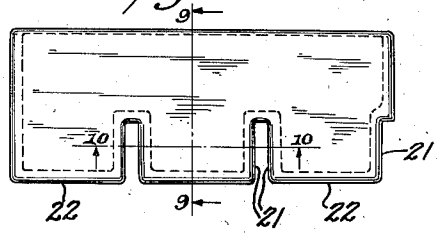


Fig. 9.

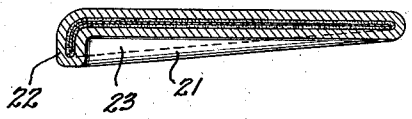
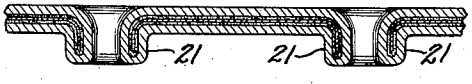


Fig. 10.



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UNITED STATES PATENT OFFICE

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ROOFING AND SIDING ELEMENT

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Application June 12, 1933, Serial No. 675,452

9 Claims. (Cl. 91—68)

This invention relates to improvements in roofing and siding elements of a rigid, weather and fire resistant character that may be easily and rapidly applied to a surface to produce attractive designs and which will enhance the insulating characteristics of the building to which applied.

It is one of the objects of this invention to provide as a new article of manufacture, roofing and siding formed of a plurality of superimposed layers of material of varying composition which are effectively bonded to one another to produce a rigid element which is relatively massive in appearance, fireproof, weatherproof and durable.

A more specific object of this invention is to provide roofing and siding wherein a relatively inexpensive base of fibrous material or the like is coated with hydraulic cement through the use of an intermediate layer of bonding material of novel character including a matted filamentous substance.

A further object of this invention is to provide roofing and siding which may be shaped during manufacture to produce rigid elements of a desired form for particular purposes.

With the above and other objects in view the invention consists of the improved roofing and siding and all its parts and combinations as set forth in the claims, and all equivalents thereof.

Referring to the drawing in which the same reference numerals designate the same parts in all of the views;

Fig. 1 is a plan view of an improved element, part of one of the layers being broken away to expose material beneath;

Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 2 showing a slightly varied form of construction;

Fig. 4 is an enlarged cross-sectional view taken through a roofing or siding element and illustrating another variation;

Fig. 5 shows a variation of the forms of Figs. 2 and 3;

Fig. 6 is a fragmentary perspective view of the corner of a building showing material for use in siding;

Fig. 7 is an enlarged sectional view taken on line 7—7 of Fig. 6;

Fig. 8 is a plan view of another type of rigid element showing an additional variation;

Fig. 9 is an enlarged sectional view taken on line 9—9 of Fig. 8; and

Fig. 10 is an enlarged sectional view taken on line 10—10 of Fig. 8.

Referring to the drawing, particularly Figs. 1 and 2, the improved element consists of a base 12 that may be cut from a moving web of relatively inexpensive fibrous material. This base may be ordinary commercial paper, a reinforced paper comprising a plurality of layers with fibers and adhesive therebetween, felt made from vegetable fibres, wool, hair, asbestos, alone, in combination or with other materials, or any other suitable inexpensive medium. The base is preferably treated with a bituminous substance, for instance, a low melting point asphalt, or it may be resinous or silicate of soda or the like. Further, the base may be provided with additional coatings of similar or other agglutinous materials. Thereafter to one or both sides of the base is applied a layer 13 of a loosely matted filamentous substance. This may be animal hair, mineral hair, or matted vegetable fibres. If desired granulated mineral material such as crushed slate, sawdust, crushed brick, gravel, crushed slag, pebbles, crushed glass, coke or granulated petrified materials may be mixed with the loosely matted filamentous substance. The agglutinous saturant or coating of the base will serve as an adhesive to hold the filamentous layer and/or said layer and mineral particles thereto.

In general I prefer to use for my coating 14 a material that is capable of lending rigidity to the product after it has set, such as a hydraulic cement. Those I have found most suitable for my purpose are such distinct types, as for instance, high alumina cements, for instance, Ciment Fondu or Lumnite, ordinary Portland cement. such as Lehigh, high early strength Portland cements, Incor, white cements such as Ferrocrete, Medusa and White Portland, magnesium cements such as magnesium oxychloride, and ore cements (Erz Zement).

The coating may be a natural colored cement, a colored cement, a cement mixed with coloring pigments or it may be any of these in combination, or any mixed with an aggregate of other materials, for instance, clay, diatomaceous earth, marble dust, hair or asbestos fibres. The coating is applied to one or both sides of the prepared base as at 14 and pressure is preferably utilized to aid in bonding the cement to the base. It is preferred that the coating at the time of application be in a semi-liquid state, as it will better intermingle with the filamentous layer, and when it sets it will, therefore, be firmly anchored in place. It is also preferred to permit the cementitious coating, before it has set, to

flow around the edges of the base so as to completely protect said edges.

In order to facilitate the application of elements of this type to a building, portions of the cementitious coating may be omitted at desired points as at 15, so that nailing of the article in place is simplified. These depressions 15 may be of such size as to receive the head of a hammer. The depressions are preferably located at points on the elements which will be covered over in assembly.

As a variation, the paper base 12 may be saturated and coated with any of the previously mentioned agglutinants and may then have crushed mineral of the kind above described applied to the surface thereof as at 13' in Fig. 3, this structure forming a base for the element of Fig. 4.

The article shown in Fig. 3 may be built up to form a still more massive product by utilizing an alternation of layers as illustrated in Fig. 4. In this form of the invention the base 12 is saturated and coated with a bituminous substance and is provided with a layer of crushed mineral or the like as at 13'. Next, the layer 14 of cementitious material is applied, then another layer of bituminous material and crushed mineral 16 of any of the aforementioned types and then an outer layer of cementitious material 17, also of any of the aforementioned types.

Fig. 5 shows a variation of the structure of the elements in Figs. 2 and 3. In this form the depression 15 on one face is larger than the head of a hammer and that on the other face is large enough to permit easy passage of a nail 18 without shattering the cementitious coating. Whether the large depressions are on one or both sides, after the coating has set and hardened, they are filled with a material 24 that may be a non-hardening cement, a wood filler, or any other material that can be readily pierced by a nail. This filling will provide a resistance when driving the nail in assembly and will avoid any danger of tearing or ripping through the fibrous material of the core. Further, this material seals the nail hole against leakage as in driving the nail home the head compresses and forces the filling material tightly about its shank. It may also cover the nail head to prevent rusting.

Elements produced in any of the manners above described may be folded, or bent before final setting, to any desired shape. In Figs. 6 and 7 are shown corner pieces 19 for use in connection with the facing of a building which are made so as to be L-shaped in cross section. These corner pieces may be made to cooperate with rectangular sections of the improved material indicated at 20 to produce a brick-like effect.

It is sometimes desirable when the edges of roofing elements are to be rendered prominent, to have the elements tapering in cross section. As shown in Figs. 8 and 9 this may be accomplished by having the elements formed with tapering edge flanges 21 and with front flanges 22. These flanges tend to space the major portion of the element from an element below as at 23 and thus an air pocket is formed which improves the insulating value of the roofing or siding.

Any of these desired shapes may be produced by molding of the product while the hydraulic cement is in a formative condition or by applying pressure to desired portions of the element before the cementitious coating has completely set. Also the base may be formed before applying the cementitious coating.

Where bituminous material is employed in saturating and coating the base it is preferred to utilize an emulsified asphalt as this type of material forms a better bond with a wet substance such as hydraulic cement than a hot asphalt.

By having the hydraulic cement extend in rounded form around the edges of the base material the latter is thoroughly protected as before mentioned. Thus the asphalt or bituminous material used in connection with the base cannot be affected by hot weather and cannot therefore be dried out by sun, or excessive heat and has a much longer life.

By utilizing a matter filamentous substance such as animal hair as a precoating for the base, the insulating qualities of the entire product are increased, and the use of this material will make it possible to form a relatively massive product of minimum weight, serving as an excellent bond for the hydraulic cement.

A product has thus been formed which utilizes a base and an intermediate layer of very inexpensive material but which nevertheless is fireproof, durable, rigid and capable of being shaped for particular purposes. Other shapes than those described and illustrated may be used and it is obvious that numerous changes may be made for specific purposes. It is therefore desired that the invention be construed as broadly as the claims taken in conjunction with the prior art, may allow.

I claim:

1. A rigid roofing and siding element comprising a fibrous base, a waterproof adhesive on said base, a precoating of loosely matted filamentous substance secured in said adhesive, and a hardened and rigidifying coating comprising hydraulic cement secured to said filamentous substance.

2. A rigid roofing and siding element comprising a fibrous base, a precoating of loosely matted filamentous substance adhesively secured to the opposite sides of said base, and a hardened and rigidifying coating comprising hydraulic cement secured to said filamentous substance.

3. A rigid roofing and siding element comprising a sheet paper base, a precoating of loosely matted filamentous substance adhesively secured to said base, and a hardened and rigidifying coating comprising hydraulic cement anchored to said filamentous substance.

4. A rigid roofing and siding element comprising a fibrous base, a mixed precoating of loosely matted filaments and individual granular mineral particles secured to said base by an agglutinous material, and a hardened and rigidifying coating comprising hydraulic cement over and bonded to said precoating.

5. A rigid roofing and siding element comprising a flexible fibrous base, a mixed precoating of loosely matted filaments and granular particles consisting of a member of the group consisting of slate, sawdust, brick, gravel, slag, pebbles, glass, coke, and petrified material secured to said base by an agglutinous material, and a hardened and rigidifying coating comprising hydraulic cement over and bonded to said precoating.

6. A method of making rigid roofing and siding material comprising the steps of forming a base, mixing loosely matted filaments and granular particles, applying to the base an agglutinous material, applying said filamentous and granular mixture to said agglutinant, and coating the filaments and granular particles with a hardened and rigidifying coating comprising hydraulic cement.

7. A rigid building element having an exterior tapered outline comprising a substantially flat

base of pliable fibrous material having a downwardly formed uniform front flange, and downwardly formed edge flanges tapering from front to rear of the element, and a hardened and rigidifying coating comprising hydraulic cement over said base and formed flanges and retaining said flanges in the formed position.

8. A substantially rigid composite building element comprising a composition base, an agglutinous coating on said base, and a plurality of granular mineral layers and a plurality of hardened and rigidifying layers, over said agglutinous coating, said rigidifying layers comprising hydraulic cement, and the hydraulic cement layers and granular mineral layers alternating with each other.

9. A substantially rigid composite building element comprising a composition base, a bituminous coating on said base, a granular mineral layer bonded to said bituminous coating, a hardened and rigidifying coating comprising hydraulic cement over said mineral layer, and additional layers comprising bituminous coating, granular material and cement in the order given over said last named layer.

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