Feb. 21, 1939. H. T. LYMAN 2,148,167

ROOFING OR SIDING MATERIAL

Filed Aug. 19, 1938

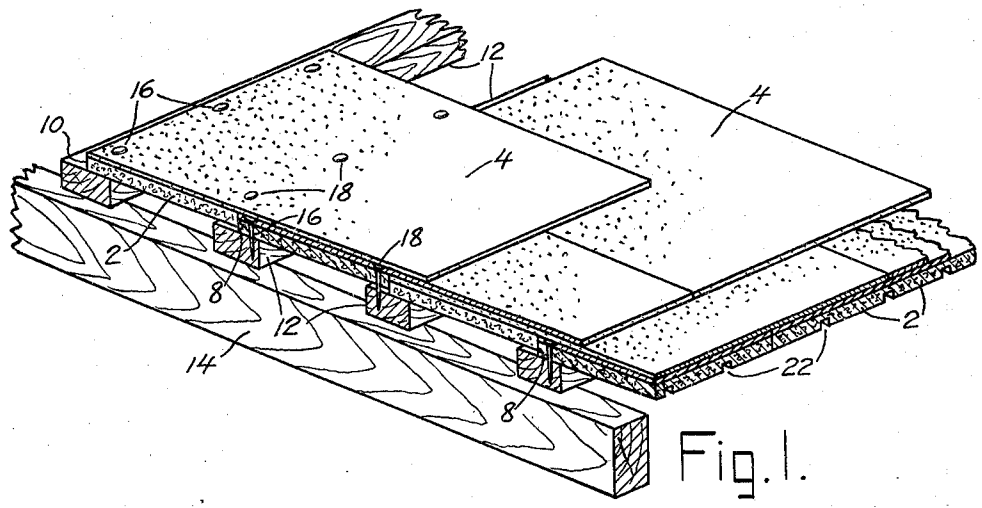

Fig. 1.

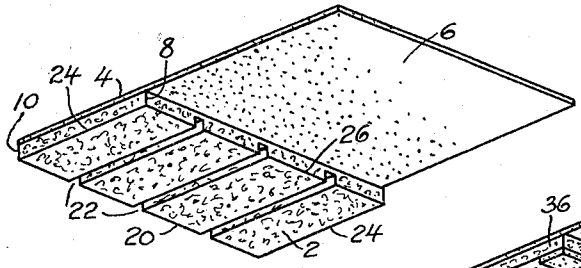

Fig. 2.

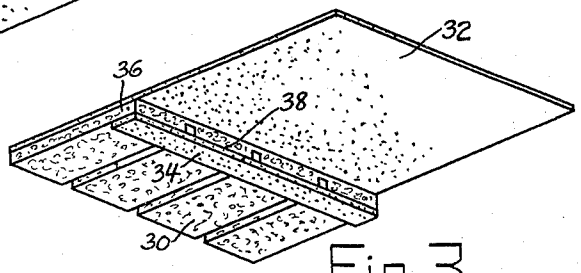

Fig. 3.

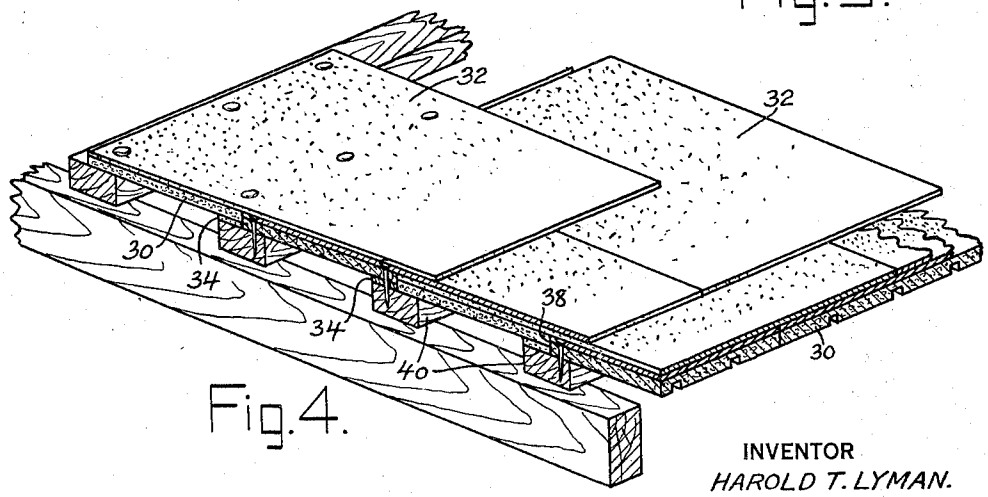

Fig. 4.

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ROOFING OR SIDING MATERIAL

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11 Claims. (Cl. 108—8)

This invention relates to roofing and siding materials and particularly to constructions possessing both heat insulating and weatherproofing properties.

Roofing and siding materials as heretofore made have possessed weatherproofing properties but have not been good heat insulators with the result that buildings to which they are applied and particularly the upper floors and attics of such buildings are usually hot in summer and difficult to heat in winter. In some instances separate heat insulating material has to be applied to the structure to overcome this objection but this remedy is expensive and not always satisfactory.

It has also been usual heretofore, when using flexible shingles or weatherproofing material to form the roof with a wooden deck or sheathing to provide adequate support for the shingles and a suitable surface to which they may be nailed. However the cost of such sheathing increases the cost of the roof or siding without increasing its heat insulating characteristics.

In accordance with the present invention these objections to constructions of the prior art are overcome and roofing and siding material provided which possesses both heat insulating and weatherproofing properties and which is less expensive to produce and lay than are conventional constructions having comparable heat insulation and weatherproofing characteristics.

These results may be attained by the use of roofing or siding elements formed of various materials and in different forms but as shown in the drawing and hereinafter described it is preferred to provide elements embodying the present invention with a base formed of heat insulating material to which a layer of weatherproofing material is secured and arranged to overlap an adjacent element in substantially the same manner as when laying ordinary shingles. The heat insulating material is formed so that the edges thereof are supported by spaced furring strips and are positioned so as to be in abutment with the edges of heat insulating material on adjacent elements whereby they cooperate to provide a substantially continuous layer of heat insulating material extending over the entire area of the roof or structure upon the outside of the furring strips and directly beneath the waterproofing material. In this way effective heat insulation may be provided for the walls and roofs of buildings at less cost for materials and installation than has been possible heretofore.

An important feature of the present invention resides in the provision of heat insulation material so constructed as to allow for lateral expansion and contraction of the insulating material or the furring strips and structure by which the elements are supported without causing curling of the flexible waterproofing material at the edges thereof. Thus the waterproofing material is caused to lie flat and even under all weather conditions and with all changes in temperature.

Another important feature of the present invention resides in the elimination of tapered members such as the tapered shingles or tapered furring strips which have been suggested by the prior art, and in the provision of a structure which may be employed to utilize relatively small pieces of heat insulating material usually considered as waste material or scrap from the production of insulating sheets or boards.

These and other features and objects of the present invention will appear from the following description thereof in which reference is made to the accompanying figures of the drawing, wherein:

Fig. 1 is a view partly in section and partly in perspective of a portion of a roof having a plurality of elements embodying the present invention applied thereto,

Fig. 2 is a perspective of a single roofing element embodying the present invention,

Fig. 3 is a view partly in section and partly in perspective of a portion of a roof embodying an alternative form of roofing element embodying the present invention, and

Fig. 4 is a sectional view of a roof having a plurality of elements of the type illustrated in Fig. 3 applied thereto.

In that form of my invention illustrated in Figs. 1 and 2 an element designed as a shingle is formed with a base of substantially rigid insulating material 2 to the upper surface of which is secured a sheet 4 of flexible weather-proofing and water-proofing material such as coated and surfaced asphalt, saturated felt or other suitable or preferred material. The sheet 4 covers the upper surface of the body 2 and has a portion 6 projecting beyond the lower edge 8 of the heat insulating base to overlap a portion of an element laid in an adjacent lower course.

The length of the heat insulating base from the lower edge 8 to the upper edge 10 thereof is equal in length to that portion of the projecting portion 6 of the waterproofing material which is to be exposed when laid and is equal to the distance from center to center of the furring

strips 12 upon which the elements are laid when assembled as shown in Fig. 1.

The furring strips 12 are supported on rafters or studs 14 and when the elements are to have six inches thereof exposed to the weather the furring strips are spaced six inches apart and the heat insulating body 2 is formed six inches in length from the lower edge 8 to the upper edge 10 thereof. In this way the upper and lower edges of the base may be supported by adjacent furring strips and the elements positioned with the edges of the heat insulating base of one element abutting the edges of the heat insulating bases of elements in adjacent upper and lower courses and at either side thereof in the same course so that they cooperate to produce a substantially continuous layer of heat insulating material on the outside of the furring strips and directly beneath the weatherproofing material.

Preferably the projecting portion 6 of the weatherproofing sheet 4 is greater in length than the distance between the furring strips so that when layed as shown in Fig. 1 it will overlap a plurality of lower elements and cover and conceal the means by which the elements are secured in place. As shown in Fig. 1 the elements may be secured to the furring strips by means of nails 16 driven through the elements adjacent the upper edge thereof. This is usually sufficient to prevent raising of the elements after being layed and under the action of high winds or other weather conditions, but if desired, the elements may also be nailed at 18 to the furring strip upon which the lower edge of the base 2 rests particularly when the projecting portions 6 of the upper elements are long enough to cover the nails 18 and prevent leakage about the same.

In order to prevent curling of the elements at the lateral edges thereof due to expansion and contraction of the heat insulating material or to expansion and contraction of the furring strips or other elements of the structure to which the elements are applied, the base 2 of the elements preferably are formed with areas 20 having expansion spaces 22 therebetween for allowing expansion and contraction of the material between the expansion spaces without producing strains in the waterproofing material which will cause curling of the lateral edges thereof. The expansion spaces 22 may be provided in any suitable way, but in practice it has been found that a very convenient and effective manner of providing such spaces is to form slots in the material of the heat insulating base extending parallel to the lateral edges 24 of the element and extending more than half way through the material of the heat insulating base from the lower face 26 of the material toward the upper face thereof to which the weatherproofing sheet 4 is secured. In this way the ends of each of the areas 20 of the heat insulating base is supported by the furring strips giving the necessary strength to the element so that the roof or siding can withstand shocks and may be walked or even jumped upon if necessary. Furthermore, the various areas of the heat insulating base are connected one to the other so as to facilitate construction of the elements and handling of all the spaced areas thereof making up the base of the element. With this construction the elements, when secured in place on the structure with the heat insulating material secured to the furring strips or structure, are capable of limited lateral expansion and contraction sufficient to take up all normal movements thereof without causing curling of the lateral edges of the weatherproofing material of the elements. Moreover, the base may be produced from material heretofore rejected as scrap in the manufacture of insulating sheets or boards, particularly when the areas of the base are entirely separated from each other instead of being connected together as in the present form of the invention illustrated.

In some instances and especially when using weatherproofing material which is relatively thick it may be desired to position the elements in laying the same so that the lower surface of the projecting portion of the weatherproofing material will lie in the same plane as the upper surface of the weatherproofing material carried by an element in an adjacent lower course. At the same time it is desired to utilize heat insulating material which is substantially uniform in thickness so that the heat insulating properties thereof may be uniform and the elements may be formed from small pieces of heat insulating material produced in the manufacture of insulating sheets or boards. In such cases the elements may be formed, as illustrated in Figs. 3 and 4, with a heat insulating base 30 of substantially uniform thickness to which a sheet 32 of weatherproofing material is secured as in the construction shown in Figs. 1 and 2. However, the base of each element is provided with a member 34 located on the lower face 36 thereof and extending along the lower edge 38 of the base so as to rest upon the furring strips 40 and hold the lower edge of the base in spaced relation with respect thereto. The member 34 is substantially equal in thickness to the thickness of the weatherproofing sheet so that the sheet will lay substantially in the same plane as the upper surface of the sheet of weatherproofing material carried by an element of an adjacent lower course.

The member 34 preferably is formed separate from the material of the heat insulating base and may consist of a strip of weatherproofing material similar to that from which the sheet 32 is formed. In this way the projecting portion of the weatherproofing sheet of each of the elements is caused to lay flat upon the upper surface of the weatherprofing material of elements in lower courses and flexing of the weatherproofing material does not occur even when the lower edges 38 of the heat insulating bases of the elements are nailed or otherwise secured to the furring strips above which they are located.

The weatherproofing material may be secured to the heat insulating material by any suitable means such as cement, pitch, glue or other adhesive material and the elements themselves may be secured to the furring strips by means of nails or glue, adhesive or the like.

The form and shape of the elements will depend largely on the purpose for which they are to be employed, the shape of the sheet of weatherproofing material and the shape of the heat insulating base used when the elements are employed as shingles being quite different from that used when the elements are employed as siding material or other purposes. The material of which the weather-proofing material is formed and the material employed as the heat insulating base of the elements also may vary considerably and will be determined in part at least by the purpose for which the elements are to be used. In view of these facts it will be apparent that numerous changes and variations may be

made in the form and construction of the parts of which the elements are formed without departing from the spirit and scope of the invention. It should therefore be understood that the forms of the invention illustrated in the drawing and herein described are intended to be illustrative of the invention and are not intended to limit the scope thereof.

I claim:

1. An element adapted for use as roofing or siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like, comprising a base formed of substantially rigid heat insulating material having a sheet of flexible weather-proofing material secured thereto on one face thereof with a portion of the weather-proofing material projecting beyond an edge of said base to overlap an element in an adjacent lower course, said base being formed with areas having expansion spaces therebetween serving to allow expansion and contraction of the intervening material without producing strains in the waterproofing material which will cause curling of the edges thereof.

2. An element adapted for use as roofing or siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like comprising a base formed of substantially rigid heat insulating material having a sheet of flexible weather-proofing material secured thereto on one face thereof with a portion of the weather-proofing material projecting beyond an edge of said base to overlap an element in an adjacent lower course, said base having laterally spaced slots in a face thereof permitting expansion and contraction of the intervening material without producing strains in the waterproofing material which will cause curling of the lateral edges thereof.

3. An element adapted for use as roofing or siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like comprising a base formed of substantially rigid heat insulating material having a sheet of flexible weather-proofing material secured thereto to one face thereof with a portion of the weather-proofing material projecting beyond an edge of said base to overlap an element in an adjacent lower course, said base having parallel slots in a face thereof permitting expansion and contraction of the intervening material without producing strains in the waterproofing material which will cause curling of the lateral edges thereof.

4. An element adapted for use as roofing or siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like comprising a base formed of substantially rigid heat insulating material having a sheet of flexible water-proofing material secured thereto on one face thereof with a portion of the weather-proofing material projecting beyond an edge of said base to overlap an element in an adjacent lower course said base having a plurality of slots formed in a face thereof parallel to the lateral edges of the base and extending more than half way through material of the base permitting expansion and contraction of the intervening material without producing strains in the water-proofing material which will cause curling of the lateral edges thereof.

5. An element adapted for use as roofing and siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like comprising a base formed of substantially rigid heat insulating material provided with laterally spaced slots in one surface thereof permitting limited expansion and contraction of the material of which the base is formed and flexible weather-proofing material secured to the opposite surface of said base and projecting beyond an edge thereof to overlap an element of an adjacent lower course.

6. An element adapted for use as roofing and siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like comprising a base formed of substantially rigid heat insulating material provided with slots in one face thereof parallel to the lateral edges of the base and extending more than half way through the material of which the base is formed, permitting limited lateral expansion and contraction of the material of the base, and flexible weather-proofing material secured to the opposite face of said base and projecting beyond an edge thereof to overlap an element in an adjacent lower course.

7. A structure having members with furring strips applied thereto and elements secured to the furring strips in adjacent courses, said elements each having a base formed of substantially rigid heat insulating material and arranged with the upper and lower edges of the base resting upon adjacent furring strips and with all of the edges of the base in abutment with the edges of the heat insulating bases of adjacent elements whereby said heat insulating bases cooperate to form a substantially continuous flat layer of heat insulating material overlying said furring strips, each element also being provided with an outer layer of weather-proofing material projecting therefrom beyond an edge of said base and overlapping an element in an adjacent lower course, the body of heat insulating material of each of said elements being formed with areas having expansion spaces therebetween serving to permit limited lateral expansion and contraction of the body of heat insulating material without causing curling of the lateral edges of the water-proofing material.

8. A structure having members with furring strips applied thereto and elements secured to the furring strips in adjacent courses, said elements each having a base formed of substantially rigid heat insulating material and arranged with the upper and lower edges of the base resting upon adjacent furring strips and with all of the edges of the base in abutment with the edges of the heat insulating bases of adjacent elements whereby said heat insulating bases cooperate to form a substantially continuous flat layer of heat insulating material overlying said furring strips, each element also being provided with an outer layer of weather-proofing material projecting therefrom beyond an edge of said base and overlapping an element in an adjacent lower course, the body of heat insulating material of each of said elements being formed with slots extending parallel to the lateral edges of the element to permit lateral expansion and contraction of the heat insulating material without causing curling of the lateral edges of the water-proofing material.

9. A structure having members with furring strips applied thereto and spaced substantially uniform distances apart and elements secured to said furring strips in adjacent courses each of said elements having a base formed of substantially rigid heat insulating material arranged with the upper and lower edges thereof resting upon adja-

cent furring strips and in abutment with the edges of the heat insulating bases of adjacent elements whereby said heat insulating bases cooperate to form a substantially continuous layer of heat insulating material of uniform thickness overlying said furring strips, said bases being formed with slots extending parallel to the lateral edges thereof to allow limited lateral expansion and contraction of the material of which said base is formed without causing curling of the lateral edges of the water-proofing material, each element also being provided with a layer of weather-proofing material projected from the lower edge of the heat insulating body and overlapping the upper edge of an element in an adjacent lower course.

10. An element adapted for use as roofing or siding material and designed to be laid with other similar elements in adjacent courses on a roof or the like, comprising a base formed of substantially rigid heat insulating material of uniform thickness with a layer of flexible water-proofing material secured to one face thereof, and means substantially equal in thickness to said water-proofing material located on the opposite face of the heat insulating material along that edge thereof from which the water-proofing material projects so that when layed in courses on a roof the lower surface of the overlapping water-proofing material of an element in one course will be substantially even with the upper surface of the waterproofing material overlying the base of an element in an adjacent lower course.

11. A structure having members with furring strips applied thereto and spaced substantially uniform distances apart and elements secured to the furring strips in adjacent courses, each of said elements being formed with a base of substantially rigid heat insulating material of uniform thickness with the upper and lower edges thereof located above adjacent furring strips, said bases each having flexible water-proofing material applied to the upper face thereof and projecting from the lower edge thereof and means substantially equal in thickness to said water-proofing material located on the opposite face of the base and extending along the lower edge thereof and resting upon a furring strip whereby the water-proofing material carried by each element lays flat upon the upper surface of the waterproofing material covering the base of an element in an adjacent lower course.

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