This invention relates to building materials, particularly to improvements in siding constructions.

An object of my invention is to provide a composite siding unit comprising a substantially stiff base, preferably of considerable thickness and possessed of good insulating properties, and an outer cover member separable or permanently attached thereto, which may be of flexible weather-resistant composition material such as is generally used and is well known to those skilled in the art.

A further object of the invention is the creation of novel weather-tight joints between adjacent courses of composite units.

An additional object of the invention is the provision of novel means to effect rapid assembly of adjacent courses of units.

A further object of the invention is to provide a novel siding simulating clapboard siding, wherein the uniformity of the surface is broken by joints created by the cover pieces of my invention.

A particular feature of the invention comprises the combination of a stiff base of fibrous insulation material, which may also be treated to be weather-resistant, and a loose cover piece having a hook-like marginal edge lip, and which cover piece may comprise rigid material or be of pliable material treated over the formed portion with a rigidifying coating, for instance, a hydraulic cement.

With these and related purposes in view, many of which will appear from the following description, I show in the accompanying drawings such instances of adaptation as will disclose the broad underlying features of the invention without limiting myself to the specific details shown and described herein.

Figure 1 is a face view of assembled composite units of my invention.

Figure 2 is a sectional view taken at 2—2 of Figure 1.

Figure 3 is a cross sectional view showing a modified form of construction at the juncture of two adjacent courses of composite units.

Figures 4, 5, 6, 7, 8 and 9 are further modifications of my invention.

Figure 10 is a face view of assembled composite units of my invention showing a modified form of joint protection.

Figure 11 is a cross sectional view taken at 11—11 of Figure 10.

Figure 12 is a cross sectional view taken at 12—12 of Figure 1.

Figure 13 is a cross sectional view taken at 13—13 of Figure 1.

Referring to the figures of the drawings wherein similar numerals indicate the same parts of the structure, 10 is a base of stiff or rigid characteristics, to be covered and preferably comprising a body of compressed or cemented vegetable and/or mineral fibrous material, for instance, bagasse, wood, substantially pure cellulose fiber, paper, asbestos, mineral wool, animal hair, and others, usually used either alone or in combination, or adapted to be used in the making of products generally known to those skilled in the art, as wallboard or insulating board. One form of commercial product of this character which I may use, is marketed under the name "Celotex." The fibrous base may be of the same structure throughout or may comprise a plurality of separate sheet-like plies bonded face to face by suitable cements to form an integral base structure.

The base may be rendered waterproof and/or fire-resistant by treatment with suitable agents, such as silicates or bitumens, for instance, asphalt, tar or pitch, but preferably with a synthetic resin composition, comprising a phenol aldehyde resin or other known synthetic materials adapted to produce water insoluble and impervious films after evaporation of suitable solvents combined therewith. Such treatment may extend into one or more faces and edges of the base or throughout the base structure as by coating, saturating or impregnating. Where the base is a laminated one, one or more plies only, preferably the outer ply, may be treated, particularly where a structure with greatest porosity, with its advantages of heat and sound insulation, as well as lightness of mass, are desirable characteristics. The treatment may also be confined to certain sections of the base, particularly where said bases are to back-up weather joints of further covering material of the invention. Furthermore, the base may be rendered weather-resistant by incorporating a water emulsion of bitumen or synthetic resin with the fibrous material prior to forming the same into sheet form.

The base may also be of well known asphalt composition roofing and may be a plurality of such layers bonded together to form a layer of substantial thickness. Also, it may be further desirable to employ a base of a hydraulic cement fiber composition made into sheet form by low or high pressure, but I prefer those made by low pressure and which are light in mass. Bases of other cementitious and other fibrous compositions are also contemplated, as well as bases of
the aforesaid types where the ingredients comprising the same have been processed or treated with foams or gasifying substances to render them more porous and lighter in weight, and to improve their insulating characteristics. In addition, I contemplate a base of bitumen mastic employing scrap materials as fillers. It will also be understood that the base 10 may be further treated with any of the materials previously described to convey to the same additional protective coatings or surfacing.

The base covering member 12 preferably comprises a foundation layer of a surface layer comprising a rigidifying composition. The foundation layer may be a layer of composition roofing comprising a flexible felted fibrous layer of any of the fibrous materials here-tofore mentioned, preferably impregnated or saturated with a low melting point asphalt and coated with a further bituminous and resinous layer also of the types here-tofore mentioned. Such material is also generally surfaced with a layer of individual granules such as of slate, brick, tile or pebble material, which are partially embedded and bonded to the adhesive layer. Composition material of this type may be made in the manner described in the Harshberger Patent No. 1,913,607, granted June 15, 1933. The surface rigidifying layer preferably comprises a hydraulic cement, of which Portland and oxycelride cements are examples, but more preferably comprises a high aluminate cement composition. The cover member also may be rigidified by a coating layer of a stiff film or layer. It will be understood that the rigidifying coatings referred to may extend over the whole or part of the cover piece, dependent upon the rigidifying features required.

The base 10 in Figure 2 is preferably a tapered section, with the thickened portion thereof at the butt edge. The butt edge face of the base is formed with a lip or projection 14 and the inner face 16 of said edge face portion is provided with a bead or projection 18. The upper edge portion 20 of the base is formed with a recess or rabbot 22 complementary to the bead 18 so that in assembly it may receive the base of an adjacent overlying course and produce proper registration and interlocking of said adjacent bases.

Furthermore, this manner of interlocking produces a weather and wind type sealing and a continuous covering of the base material. It will be understood that as shown in Figures 12 and 13 of the drawings, a similar bead and recess construction may be provided at the ends of the base 10.

The cover member 12 has a body portion that is substantially the depth of the base 10 and the butt portion of said cover piece is formed with a hook-like extension 22, which fits over the lip or projection 14 of the base 10. In this manner it will be seen that the lip 14 serves to anchor the cover member. Preferably, the cover piece 12 includes the rigidifying coating here-tofore described over its face portion 21, as well as the bent portion 22, thus lending rigidity to each and facilitating handling an assembly of the units. The retracted or lip of the hook 22 is preferably made slightly less in depth than that of the lip 14.

In assembling the units of Figure 2, a lower course of bases is mounted to the supporting surface which may be a stud wall 23 as illustrated in Figure 2, although it will be understood that any foundation suitable for mounting my base elements may be employed. The bases may be of any desired length suitable for handling, but it will be understood that by reason of the thickness they may be of considerable size. The bases 10 are laid as shown in Figure 1, with their ends substantially abutting. When the first course of bases has been mounted, cover pieces 12 are hooked over the lip portions 14 and pushed upwardly as far as they can be made to go, the lower end of the lip 14 serving as a stop for the cover piece. The cover piece 12 is then fastened as by nails 24 at the upper edge thereof in a portion which will be covered by the next course of units. Subsequently, the next course of bases will be positioned but it is now merely necessary to sary to drop the head or tongue 18 into the recess 20 of the previously laid bases, and thereby secure self alignment of the adjacent members, as well as a weather seal. A feature of the head and recess construction disclosed is to permit a swivel action between adjacent bases to compensate for any misalignment of the supporting surface. It will be noted that the upper edge of the base is spaced slightly from the face 16 at the butt edge thereof to permit such swivel action.

It will be understood that except for the start of the base and, where desired, they may be tacked thereto by suitable fasteners or liquid cement of the types here-tofore mentioned. I prefer, however, that the pieces be left separable and in assembly that the two be slipped together and handled as a single unit.

A further feature of the structure disclosed in Figures 1 and 2 is the manner of protecting the joint between adjacent cover pieces from the weather. This comprises a joint or batten strip 26 recessed into the base 10. It will be understood that such recessing may occur at any location on the base, it being merely necessary to cause the joint between cover pieces to occur over said batten strips. In Figure 1, I have shown the strip 26 to be recessed into the base 10 at one end thereof. The batten pieces may be of any suitable weather-resistant material, generally a piece of fabric or felted material treated with a weather-resistant compound, such as bitumen or synthetic resin of the types here-tofore mentioned. It is preferred for purposes of handling, that these pieces be relatively stiff where they are to be separately handled, but it is to be understood that they may be cemented in place or secured to the base by other fastening means, for instance, a nail 27, during factory fabrication or during application. More than one nail may be used when desired.

A feature of the batten strips here disclosed comprises its shaping into a hook-like member to extend weather protection to the edge and under face of the base lip 14. In this respect, it will be noted in Figure 2 that the batten 26 has a lower hook portion 28, and that the base is suitably recessed to receive the same. Obviously, the recessing may be omitted where desired, but such is preferred to avoid bulging of the covering where these pieces occur. Moreover, it will be understood or lip of the hook 22 is preferably omitted where the base has been treated with a weather-resistant or inherently has these characteristics, it being merely necessary to have the joints between adjacent cover pieces occur within the body of the base portion. A further feature forming a part of the batten or joint member is the creation of a slight depression in the outer.
face thereof forming edges 29, which act as side dams for any water accumulating at the joint. In Figures 1 and 2, I have disclosed an additional feature whereby rapid and secure mounting of adjacent bases may be obtained, and which also eliminates the use of extraneous fastening means such as nails. To accomplish this, I provide suitable projecting fingers or tongues 30 attached to the butt edge portion of the base and embedded or recessed into the rear face thereof to produce a flush surface. While I have shown the members 30 as a finger-like construction, it will be understood that they may be of considerable length where desired. However, where the finger construction is employed, at least two such pieces should be used. Obviously, the spacing thereof will be determined by the length of the base unit. The pieces 30 may be made of metal, for instance, sheet metal, or may be of any composite material, for instance, a strong fabric strip treated as by a saturant or coating, for instance, a synthetic resin, to be shape-retaining. The members 30 will preferably have some slight flexibility to assist in assembling the adjacent base units. It will be noted from Figure 2 that these tongues project beyond the lip 14 of the base. In other words, they provide a leading edge portion so that they may guide the base into position in application. The tongues 30 may be secured to the base by rivets or other fastening means 31 which extend through or only partially into said base. It will be understood that the tongue feature here described may be employed with units where no cover piece is used, for example, where the base is a siding unit of asbestos cement or the like. In such instances, it will be preferred that the fastening means be embedded in the composition material or that the tongue itself be so embedded.

In order to permit flush mounting of the base, as well as to obtain a means of registration of units in adjacent courses, the rear face of the base at the upper edge portion is recessed as shown in Figure 13 to receive the projecting portion 32 of the tongues 30, these recesses being made of sufficient length and width to provide some freedom of action in assembly. The recess in the plane of the base will, however, be made to produce a snug fit with the tongue portion 32. In assembly, after the first course of units have been assembled, it is merely necessary to hook the next overlying base behind the previously applied section in the course below. It will be understood this feature avoids the necessity of further fastenings such as nails in the same manner as the bead interlock previously described. Moreover, the tongue feature may be used in conjunction with the bead interlock or separately without said bead interlock, in which case the face 16 of the base will be flat and will abut the upper face of the base portion of an adjacent unit.

In Figures 3 through 9 inclusive, I have illustrated various modifications of my invention, including novel features of joint construction between two adjacent courses of composite units, and involving a modification of the basic base 10 and cover piece 12 construction. The differences only will be pointed out in the following description but it will be understood that all other features of construction of these parts as described with respect to the units of Figures 1 and 2, may be one or more included therein, particularly as relates to the materials and treatment thereof. Moreover, the figures referred to, each indicate cross sectional views showing the lower part of composite units in one course and the upper portion of similar composite units in the adjacent underlying course. Accordingly, it will be understood that the portion omitted with respect to any composite unit will be the same as that shown for the adjacent composite unit lapped therewith.

A feature of the structure in Figure 3 is the simple base piece 10 required. It will be observed that this may be of uniform thickness throughout or may be tapered but no recessing is required. The lower end of the cover piece 12 will have the same construction as that previously described but will fit over the entire butt edge of 15 the base 10. With respect to the cover piece 12, an upper marginal portion 34 is bent back to increase the thickness of said piece at said edge, the additional layer acting as a spacer to provide clearance for the retroverted portion 38 of the hook. Where additional spacing is required, as where extra joint cover pieces are employed over the cover pieces 12 in place of battens strips, the spacing of the adjacent bases may be increased by the use of a filler piece 35, 36 which is preferably placed beneath the folded marginal portion.

Another feature of this construction is the use of the folded marginal portion as an abutment for the portion 36 of the hook in assembly, thereby by determining proper laying of the adjacent units. In application, the cover pieces and bases may be laid as individual units or together. Preferably, the base 10 will be fastened as by nails 40, which pass through the marginal portion of the next lower cover piece, as well as through the next lower base 10. The cover piece will then be hooked in position and may be secured to the base as by short nails 42 or may be tacked there to by a plastic cement in amount sufficient to hold the cover piece until the next nail 40 is positioned, which will be seen prevents any displacement of the cover piece thereafter. Obviously, the tacking of the cover piece referred to may be omitted where desired. It will also be noted that the marginal portion of the cover piece forms a definite weather-seal at the joint. In the structure of Figure 4, the spacing of adjacent bases described with respect to Figure 3 is accomplished by a raised ledge 44, preferably forming a part of the base. It will be noted in this instance the cover piece is made shorter than the depth of the base piece by the amount of the ledge, so that the upper end of the cover piece will extend no further than the shoulder 55. The lip 38 of the cover piece will, as before, abut the raised portion at the upper edge of the base to enable proper registration and positioning of the units. It will be noted that in this construction it is essential to fasten, as by nails 48, the two base pieces to the foundation and after assembly of the cover piece to either secure the same to the base or through the base to the foundation as by fasteners 50.

The construction of Figure 5 is somewhat similar to that of Figure 4, the distinction being that the ledge 48 is formed with a bead 82 and the rear face of the base with a recess 54 substantially complementary to said bead at the position where it contacts said bead in assembly. The feature of this bead construction in its ability to produce registration and alignment of adjacent units, but particularly in its acting to prevent vertical displacement of the assembled units. Moreover, it produces a definite weather-
seal between adjacent units to prevent the seepage of wind into the dead air spaces created behind each base. Furthermore, the bead construction permits rocking of the outer unit to compensate for any misalignment of the supporting surface.

In Figure 6, the structures of Figures 4 and 5 are obtained without the necessity of forming a ledge on the base, such being accomplished by means of an insert 58, which may be a circular dowel of any suitable mate material, or may be a strip of other metal provided with suitable protrusions or beads, to accomplish the features disclosed. It will be noted that the base 10 in this construction is recessed at the rear face of the butt edge and the outer face of the upper edge portion thereof to receive the insert and to create the rocker feature. While the nail 48 is shown as passing through the insert, it will be understood that this is not entirely necessary.

In the construction of Figure 7, I have shown a base 16 of uniform section having a chamfered lower edge, over which is hooked the cover piece 12. It will be noted that the hook of the cover piece in this construction comprises a solitary lip 58. The upper edge portion of the cover piece has a folded marginal portion 50 somewhat similar to that in Figure 3, such serves as a seal and alignment or registration means for the overlapping base 10 rather than to space the upper base away from the lower one as in Figure 3. Obviously, the portion 50 in Figure 7 will also serve the function of a seal. Moreover, the recess 62 in the rear face of the base, which receives the portion 50, will also serve to prevent displacement of the cover piece. Accordingly, no separate nailing or fastening thereof will be necessary.

A further feature of the structure in Figure 7 is the provision of a raised rib 64 on the cover piece immediately adjacent the lip 58, this serving to prevent displacement of the lip after application, particularly where the cover piece material has not been treated with the rigidifying coating heretofore described as the preferred structure thereof. Another advantage of this construction is the simple bend provided for the cover piece.

In Figure 8, a construction somewhat similar to that in Figure 2 is disclosed. The base in this figure is of tapered construction and has a lip 65 and a lower edge face 66, which abuts the upper face of a similar base in application. It will be noted that according to this construction the adjacent bases are interlocked by means of an insert 70, which may be of similar materials to that described with respect to the tongues 30 of Figures 1 and 2 and which serve the purpose here of a key between the adjacent bases. Preferably, the keys will run the full length of the adjacent bases and will thereby produce a definite seal for the adjoining units. Moreover, the key 70 is preferably of waterproof fibrous material.

In Figure 9, I have shown a novel construction 65 of cover pieces in connection with a siding construction somewhat similar to that in Figure 2. The cover pieces here disclosed are of the usual construction comprising a felt layer 72 and adhesive bituminous layer 74, a granular layer 76 and a hydraulic cement rigidifying layer 78. It will be noted that the hook portion of the cover piece consists of an edge portion or lip 80 sloping downwardly away from the main face portion of the cover piece, and a second lip portion 82 substantially paralleling the main face portion of the cover piece. It will be noted that the granule and cement coatings 76 and 78 respectively, do not cover the lip 82 and, moreover, do not cover the upper marginal portion 84 of the cover piece where it abuts the lip 82. However, each of these faces will have a hydraulic cement coating 74 in order that they may seal to each other, i.e. following application. It will also be seen that the fastening means 86 will have its head sealed in the adhesive layer.

A further feature of this construction consists in the ability to secure the 1/2 inch face and lip 80 of the cover piece with hydraulic cement in a single application by means of the apparatus shown and described in the application of Thomas Brady, Serial No. 114,099, filed December 9, 1916.

It will be understood that assembly of the cover pieces and bases described with respect to the previous Figures 3 to 9 inclusive, may be made separately or as combined by any suitable means of attachment to the base pieces. It will likewise be understood that any of the joint or batten strip pieces described with respect to Figures 1 and 2 may be employed with the constructions 25 in these figures to provide weather protection between the cover pieces in the several courses. Moreover, the cover pieces described with respect to the Figures 3 through 9, may be employed with respect to any type of foundation support.

In Figures 10 and 11, I have illustrated a novel construction particularly adapted for providing an insulating and weather covering for a clapboard or wood shingle siding construction and which will require no joint or batten strip of the type heretofore described. The composite unit comprises a base 88 and a cover piece 90. The base 88 has an edge recess 92 to receive the underturned lip 84 of the cover piece. The outer face 86 of the cover piece is of greater depth than the base and extends up behind the next overlying base unit in assembly. In fact, it preferably extends a distance substantially bringing it in line with the ends of the next overlying base unit. In this manner, the exposed portion of the cover piece and its extension will lie substantially in the same plane. In assembly, the base pieces will be secured as by nails 98 to the foundation and the cover pieces after assembly, as by nails 100. Obviously, other methods of fastening may be employed. It is preferred that the base pieces have their ends treated with a weatherproofing material or they may be sealed with the cover pieces. It will be observed that a novel arrangement is obtained by the described construction wherein deep slots may be obtained between adjacent units where the bases do not extend beyond the ends of the cover pieces and where the bases shield the joint between cover pieces and additional weather backing is obtained by the extension 91.

From a consideration of the foregoing description of my invention, it will be seen that I have produced novel surface covering products and siding constructions thereof; also I have taught...
many new methods of assembly. It will be understood that many changes in the exemplified forms will suggest themselves to those skilled in the art without departing from the scope and spirit of my invention. Accordingly, I desire my invention to be construed as including all equivalents and as broadly as the claims may allow.

I claim:
1. In a building structure comprising courses of siding units comprising heat and cold insulating bases, and cover pieces thereof, a weather protection member for the joints between adjacent cover pieces of the same course comprising a sheet of water-repellent fibrous material having a body portion interposed between said adjacent cover pieces and a base and having a bent edge portion engaged with the butt edge of said base.
2. A joint weather protection member as claimed in claim 1, wherein the outer face of said body portion has a depression to serve as a water dam.
3. A siding unit comprising a base of heat and cold insulating material having upper and lower edges, and front and rear faces, a longitudinal recess in the upper edge face spaced from said front and rear faces of the base, a lip along the lower edge face spaced from said front face and substantially parallel to said body portion, comprising an extension of said lower edge face being less than the distance between the mid-point of said complementary lower edge face lip and the juxtaposed face of said second lower edge face lip measured on the lower edge face.
4. A surface covering comprising a plurality of overlapping siding units as claimed in claim 3, including cover pieces for each having a lower bent edge portion engaged with the front lips of said units.
5. A siding unit comprising a base of heat and cold insulating material, said base having a longitudinal bead projecting at its front face adjacent its upper edge and a recess in its rear face, adjacent its lower edge, substantially complementary in shape to said bead but of less depth than the amount of protection of said bead whereby the front and rear faces of adjacent units will be separated when the bead of one unit is assembled with the recess of the other unit.
6. In a siding construction comprising adjacent lapping courses of weather-resistant units, rocker means extending longitudinally of said units at the joiner of said adjacent courses positioning means in a face of at least one of the lapping units to locate said rocker means in predetermined position and spaced lapping faces to permit rocking adjustment between said units of the adjacent courses.

7. In a building construction comprising overlapping courses of units, said units each comprising a base of insulating material and a cover piece having a lower underturned lip engaged with the face of said base, spacing means at the lap of adjacent courses of said units to separate the butt edge of each base from the face of the unit in lapping relation therewith to provide space for assembly of said cover piece lip after mounting of said base and provide a water drip, said spacing means engaged with recesses in said units to also provide a weather seal.
8. In a building construction as claimed in claim 7, wherein said spacing means comprises a marginal strip adjacent the upper edge of the cover piece.
9. In a building construction as claimed in claim 7, wherein said spacing means comprises a base projection adjacent the upper edge thereof.
10. In a building construction as claimed in claim 7, wherein said spacing means comprises a bead normal to the face of the overlapped unit and said bead is substantially sealed in a recess in the adjacent face of the overlapping unit.
11. In a building construction as claimed in claim 7, wherein said spacing means comprises an insert, substantially a sealing fit with recesses in the adjacent faces of the lapping units.
12. In a building construction comprising overlapping units, the combination comprising a stiff heat and cold insulating base, and a weather-resistant cover piece therefor, comprising a body portion, a butt edge face portion connected to said body portion by a bend and a lip substantially parallel to said body portion, comprising an extension of said butt edge face portion, said butt edge face portion of said cover piece flaring downwardly away from said body portion and there being a continuous coating of rigidifying material over the exposed face of said body portion and said butt edge face portion.
13. In a building construction, the combination as claimed in claim 12, wherein the lip of said bent portion and the overlapped portion of said cover piece body portion are faced with water-repellent thermoplastic material to create a marginal seal.
14. A surface covering element comprising a pliable base, said base having a body portion, a butt edge face portion connected to said body portion, and outwardly and downwardly flaring from said body portion and a lip portion upwardly directed, comprising an extension of said butt edge face portion, said base having a coating of water-repellent adhesive, and a layer of granular particles upon its outer side and there being a continuous coating of rigidifying material over said granular particles on the body and butt edge face portions of said base to be exposed when laid.
15. A surface covering unit comprising a base of heat and cold insulating material having upper and lower edge faces and front and rear faces, a longitudinal recess in one of said edge faces and spaced from said front and rear faces of the base, a lip along the other of said edge faces and spaced from said front face of the base, and a second lip of greater depth than said first lip forming an extension of said front face at its lower edge, said first named lip having a curved surface adapting it to function as a rocker when engaged with the edge face recess of another similar unit and with said second lip overlapping the front face of said other unit.
16. A surface-covering formed of courses of core members arranged in overlapping relation with the lower edge of one core member overlapping the upper edge of the lower core member, a cover sheet for each core member having
2,231,008

a lower underturned lip engaged with the butt thereof and a spacing bar extending longitudi-
nally of the courses at the lap thereof and out of contact with said cover sheets; said spacing bar adapted to separate the adjacent lapping faces of the core members whereby to provide space for said cover piece lip and provide a water drip and moisture seal for the lap.

17. A surface covering construction as claimed in claim 16, wherein said spacing bar is a member having a cylindrical surface engaged with recesses in the juxtaposed faces of the core members.

18. A surface covering comprising courses of core members having front and rear faces and upper and lower edge faces, a projecting lip at the lower edge face of each core member overlapping the front face of its adjacent lower core member but being spaced therefrom, and a cover sheet for each core member having a lower underturned lip engaged with the projecting lip thereof and having a body portion overlying the front face of said core member and extending into the overlap between said core member and its adjacent overlapping core member; the ad-

jacent upper and lower edge faces of the core members at the overlap between courses being substantially abutted and there being a projecting bead in one of said edge faces engaged with a recess in the other to register the core members of the adjacent courses with a predetermined spacing of said projecting lips of the core members from the front faces of the core members they overlap, whereby to provide free engagement of the underturned lip of the cover pieces with said projecting lips of the core members and provide sufficient space for said underturned lip and the body portion of the adjacent lower cover piece.

19. In a surface covering construction, the combination comprising a relatively stiff base member and a weather-resistant cover piece secured thereto comprising a body portion and a downward flaring butt edge face portion connected to said body portion by a bend and a continuous coating of rigidifying material over the exposed face of said body portion and said butt edge face portion of the cover piece.

SIDNEY A. OCHS.

25