Feb. 3, 1942. W. W. BAINBRIDGE 2,271,728

ROOFING ELEMENT

Filed Sept. 19, 1940

Fig. 1.

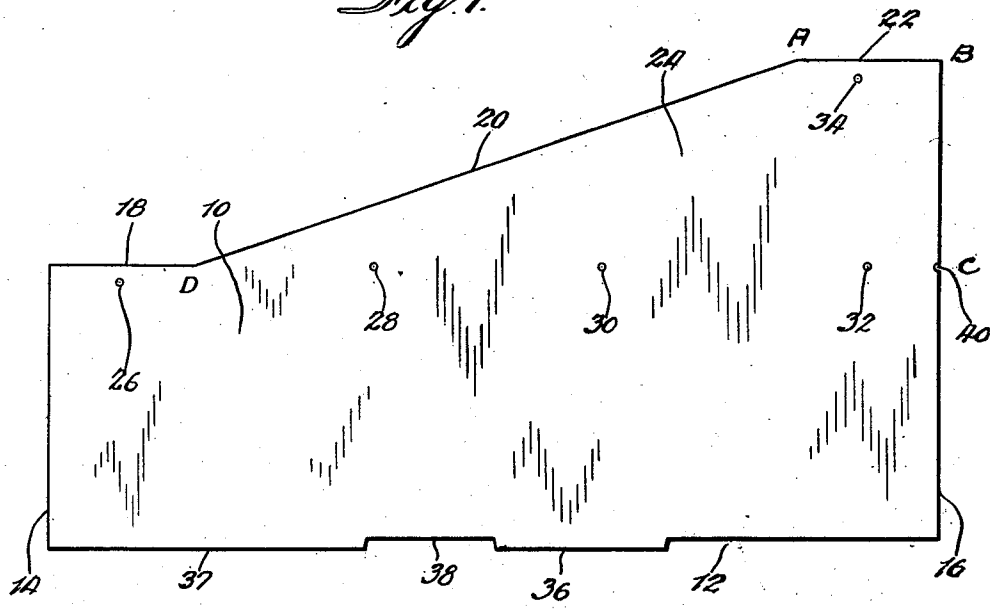
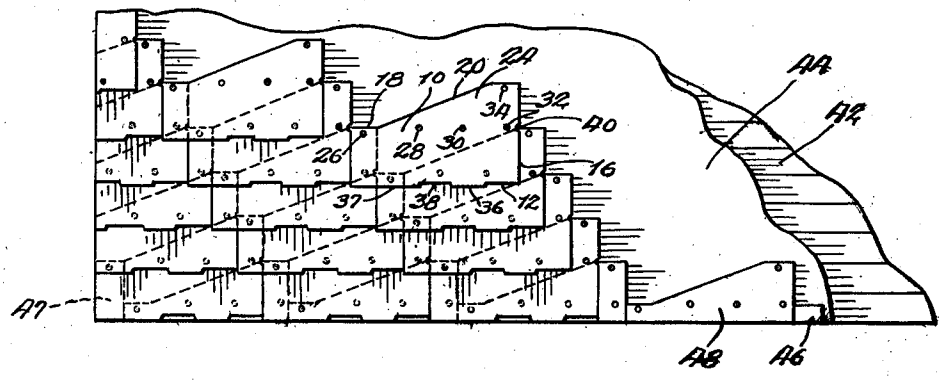


Fig. 2.



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ROOFING ELEMENT

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8 Claims. (Cl. 108—8)

This invention relates to a roofing shingle and has for an object the provision of a rigid roofing element which may be readily applied to the roof of a building structure.

A particular object of this invention is the provision of a rigid roofing element of the asbestos-cement shingle type which may be economically and readily installed on a roof to provide an extremely weather-resistant covering which will not warp or leak over prolonged periods of time.

Weather-resistant and fireproof shingles of the asbestos-cement type are well-known in the art and have been used in recent years as a substitute for slate shingles. These asbestos-cement building elements are rigid and have, in the past, been somewhat more difficult to install than more flexible roofing elements such as wooden shingles or asphalt-impregnated felt strips. It is necessary, for the most part, that rigid building elements of the rigid type be cut and provided with nailing apertures at the factory so that they may be readily installed on the construction job. It has been a problem readily to install these rigid building elements to provide a roof having a pleasing appearance and to provide a leakproof roofing surface in which the heads of the securing nails are completely covered by the shingles in successive upper courses.

Accordingly, it is an object of this invention to provide a shingle of the rigid type which is designed to be readily installed upon the roof of a building structure.

A further object of this invention is the provision of a rigid shingle of the asbestos-cement type which provides a pleasing appearance to the roof upon which a plurality of the shingles are installed.

A further object of this invention is the provision of a rigid shingle element provided with apertures for nailing which are normally covered by an overlapping shingle positioned in a superimposed course.

A further object of this invention is the provision of a rigid shingle having apertures so spaced that the registry of one aperture of one shingle with another aperture of a similar shingle provides a means for definitely spacing the shingles in successive courses.

A still further object of this invention is the provision of a shingle having a notched edge which serves as a guide for positioning a shingle with respect to a lower course of shingles.

Further and additional objects will appear from the following description, the accompanying drawing, and the appended claims.

In accordance with one embodiment of this invention, a rigid shingle of the asbestos-cement type is provided having an elongated main body portion defined by a longitudinal lower edge, which may be cut to simulate the ends of tabs, two end edges extending substantially perpendicular to the longitudinal lower edge, one of said end edges being somewhat longer than the other, and an upper edge between the upper ends of the end edges extending generally obliquely to said lower edge, the end portions of said upper edge being parallel to said lower edge, whereby a shingle is provided having a somewhat wedge-like shape, being wider at one end than at the other. A plurality of apertures are provided in the upper portion of the main body of the shingle which serve to secure the shingle to any desired surface. These apertures are located in an area normally overlapped by a corresponding shingle in an upper course, and certain of them are positioned to provide a means for automatically spacing the shingles in adjacent courses when one aperture of one shingle is placed in registry with another aperture of another similar shingle and the two shingles are secured to the roof by means of a nail or other securing means passing through the registering apertures. The positioning of these apertures to obtain the desired spacing in accordance with this invention will be hereinafter more fully described. One end edge of the shingle may also be provided with a notch or notches which may also serve as a guide for further positioning a shingle in respect to a lower course of similar shingles.

The shingle constructed in accordance with this invention may be applied with a minimum of effort and a minimum of measuring, since each shingle is provided with a means for correctly spacing it in relation to the shingles previously installed in the lower courses.

For more complete understanding of this invention, reference will now be had to the drawing, in which:

Fig. 1 is a plan view of a shingle formed in accordance with one embodiment of this invention, and

Fig. 2 is a plan view taken partially in section of a portion of a roof, partially covered with the shingles shown in Fig. 1.

Referring now particularly to Fig. 1, a shingle element formed in accordance with one embodiment of this invention is there shown. The shingle comprises a main body portion indicated

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generally at 10, which is defined by a longitudinally extending lower butt edge 12, a short end edge 14, and a long end edge 16 (both of which are substantially perpendicular to edge 12), and an upper irregular edge portion 18, 20, and 22. The end edges 14 and 16 are unequal in length and, as shown, the upper edge portions 18 and 22 extend inwardly from each for substantially equal distances in directions parallel to the longitudinal butt edge 12. The upper edge portion 20 extends obliquely to the butt edge 12 between the ends of the upper edge portions 18 and 22. The shingle shown in Fig. 1 may also be described as one comprising a substantially rectangularly shaped main body portion, one longitudinal edge 12 of which defines the butt and another parallel longitudinal edge of which defines the head of said shingle, said head having an integral extension which is generally the shape of a right angle trapezoid, the trapezoid being defined by the area ABCD. Considered in this light, the trapezoidal extension 24 (ABCD) extends from the head edge of the main body portion of the shingle proper, which edge may be defined by the edge 18 and the imaginary edge taken along the line DC. The term "right angle trapezoid" used in this connection refers to a quadrangle in which the two opposite sides AB and DC are parallel, in which one of the sides BC is perpendicular to the two parallel sides, and in which the side AD extends at an angle obliquely to the sides AB and DC.

The upper edge portions 18 and 22 are preferably of equal length. Such being the case, a pair of complementary shingles may be cut from a single rectangular blank just two times the size of the element shown in Fig. 1, by cutting the blank (not shown) along the lines indicated by the edges 18, 20 and 22.

A plurality of shingle elements having the shape described above may be stacked and conveniently bound together in any desired manner. The binding may be effected by a plurality of metal straps extending around a stack of shingles at either end. The parallel relationship of the edge portions 18 and 22 with the lower edge portion 12 provides a stack having uniform cross-sections in those end areas, thus providing a suitable accommodation for a flat binding strap. Also the configuration of the shingle is such that the angle between the edge 18 and the edge 20 is minimized, thus lessening the danger of breaking the shingle at this point.

The shingle element shown in Fig. 1 is provided with a plurality of nailing apertures 26, 28, 30, 32, and 34, the apertures 28, 30, and 32 being spaced along the imaginary line CD in the main body portion of the shingle. As shown, the aperture 26 is positioned near the left-hand edge of the element below the upper edge portion 18, and the aperture 34 is positioned near the opposite end edge 16 immediately below the upper end portion 22. The apertures 26 and 34 are also positioned so that, when the aperture 26 of one shingle is brought into registry with the aperture 34 of another shingle, the upper edge portions 18 and 22 of the two shingles coincide and the main body portion of one shingle is placed in a predetermined position in respect to the other. The two shingles may be nailed to the roof through the registering apertures. A notch 40 is provided in the end edge 16. As shown in the drawing, the notch is positioned in the line formed by the upper edge portion 18 and the apertures 28, 30, and 32. This notch serves as a guide for further positioning the shingle when applied over a lower course after the shingle has been nailed to the roof through aperture 26 and prior to the time that the shingle is nailed into place through the apertures 28, 30, and 32, as will be hereinafter more fully described.

The width of the main body portion of the shingle element (represented by the narrow edge 14) is sufficient to cover all of the apertures in the main body portion of a corresponding shingle in a lower course when the shingles are placed in position, as will hereinafter more clearly appear. As shown in Fig. 1, the longitudinally extending butt edge portion 12 of the shingle is provided with short extensions 36 and 37 and cut-in portions 38 to simulate tabs which serve to impart a pleasing appearance to the roof when the shingles are laid in courses. This is known in the trade as the American Method appearance. The tab portion or extension 37 positioned adjacent the narrow edge 14 is preferably wider than upper edge portion 18 to afford maximum head lap when the shingles are laid in courses.

Reference will now be had to Fig. 2, wherein a portion of a roof is shown upon which shingles have been placed in courses in accordance with this invention. The roof comprises a suitable sheathing 42, which preferably consists of tight-fitting boards and a layer of asphalt-impregnated felt 44 laid thereover upon which the shingles are directly applied. It will be understood, however, that the shingles of this invention may be applied to other surfaces and may even be installed directly over a wooden shingled roof without the necessity of interposing a layer of felt material.

However, referring back to Fig. 2, a cant strip 46 is applied along the lower edge of the roof to be covered, in order to provide a proper pitch for the shingles being laid thereon. A small rectangular piece 47 of shingle material is nailed adjacent the lower left-hand corner of the roof to serve as a means for spacing a first starter shingle 48 from the edge of the roof. The width of this piece 47 is equal to the horizontal offset of shingles in successive courses, and the length is equal to the maximum width of the starter shingles 48. A row of starter shingles 48 is then applied to the bottom edge of the roofing over the cant strip 46 and to the right of the piece 47, as shown. These starter shingles are narrower than the other shingles applied to the roof, and are formed by longitudinally cutting the shingle element shown in Fig. 1 along a line parallel to the longitudinal edge 12. The width of the strip cut off of the lower edge of the shingle shown in Fig. 1 to form a starter shingle is equal to the vertical distance between apertures 26 and 34, or to the width of the normally exposed area of the shingle.

After the starter shingles have been cut and nailed in position through the apertures 26, 28, 30, and 32, a row of full-sized shingles is applied directly thereover, the lower edges of shingles being flush with the lower cut edges of the starter shingles. The aperture 26 of each of these upper shingles is brought into registry with the aperture 34 of a corresponding starter shingle, and a nail is driven through said registering apertures in order to secure the corresponding edges of the starter shingle and the full shingle to the roof in overlapping relationship. As indicated above, the starter shingle is initially cut along a line which would make the butt edge of the full shingle substantially coincident there-

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with when the holes 26 and 34 of the respective shingles are brought into registry. After a single full shingle has been nailed through the aperture 26 to the starter shingle and the sheathing, it is then pivoted on the nail extending through the aperture 26 until the notch 40 in the end edge 16 is superimposed directly over the juncture of the upper end portions 20 and 22 (represented by the letter A in Fig. 1) of the next starter shingle. When the full shingle has been thus positioned, it is firmly secured to the sheathing by nails driven through the apertures 28, 30, and 32. It is to be noted that these apertures are not obstructed by the starter shingle, and the nails may be passed directly therethrough into the felt 44 and the sheathing 42. This entire course may be finished by applying further full shingles to the starter shingles in the same manner.

The second course is applied over the first course of shingles in the same manner as the shingles of the first course were applied over the starter shingles. To properly position each shingle, the aperture 26 is brought into registry with the aperture 34 of a lower course shingle, and a nail is driven through the apertures into the sheathing 42 to secure the corresponding edges of the shingles to the roof. Desired vertical adjustment and alignment of the shingle is provided by pivoting it on the nail inserted through the aperture 26 so that the notch 40 is superimposed over the upper edge portions 20 and 22 of a shingle in the preceding course. Each of the shingles of the second course is offset from the corresponding shingle of the first course because of the overlapping of the end edges 14 and 16. Consequently the shingle adjacent the edge of the roof in the second course is cut off at its narrow end and in an amount equal to the lateral overlap of the shingles which is equal to the length of the edge portion 18 or the width of the rectangular piece 47.

The third course of shingles is applied in the same manner, and a correspondingly greater amount of the roof edge shingle is cut off to further offset the tabs of the shingles from those in the second course and to prevent that shingle from projecting out over the edge of the roof. In this manner, successive shingles may be laid down in the successive courses until the entire roof is covered.

Asbestos-cement shingles may be readily cut by a saw or by scoring with a sharp instrument and breaking in accordance with well recognized methods in order to produce the aforementioned starter shingles and roof edge shingles.

It is clear from the above-indicated description that the shingles of this invention may be readily and accurately applied to a desired roofing surface. They are designed to give a maximum coverage with a minimum number of shingles. Each of the nailing apertures is fully covered by a superimposed course, and there is no danger of leakage due to faulty nailing. Furthermore, a tight securing of the shingles is obtained due to the fact that they are in part secured to the roofing by a means extending through registering apertures in a pair of the shingles. They may be readily packaged by strapping into bundles and they do not have any points of excessive weakness which might render them liable to breakage during shipment.

The shingle design described in this invention is particularly useful in connection with shingles of the asbestos-cement type. However, it is not intended that this invention be limited thereto since other rigid shingles are suitable for construction in accordance with the disclosure herein. Any suitable design may be imparted to the surface of the shingle; for example, if desired, a design simulating the grain of natural wood may be impressed upon the surface in accordance with well-known processes.

While a particular embodiment of this invention is shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A rigid shingle of the character described adapted to be laid with similar shingles in overlapping courses which comprises an elongated main body portion defined by a longitudinally extending edge forming the lowermost portion of said shingle when laid in courses, a pair of substantially parallel, end-defining edges extending substantially perpendicular to said longitudinal edge, one of said end-defining edges being longer than the other, a pair of upper edge portions extending for a short distance inwardly from each of said end-defining edges and substantially perpendicular thereto, and an oblique upper edge portion extending between the inner ends of said first mentioned upper edge portions, said main body portion being provided with a plurality of nailing apertures above the normal line of overlap of a similar shingle superimposed thereover, one of said apertures being offset from another of said apertures whereby a predetermined spacing of the shingles is accomplished when one of said apertures of one shingle is registered in registry with the offset aperture of an underlying shingle.

2. A rigid shingle of the character described adapted to be laid with similar shingles in overlapping courses which comprises an elongated main body portion defined by a longitudinally extending edge forming the lowermost portion of said shingle when laid in courses, a pair of substantially parallel, end-defining edges extending substantially perpendicular to said longitudinal edge, one of said end-defining edges being longer than the other but both being of sufficient length to extend into the area normally overlapped by a superimposed similar shingle, a first upper edge portion extending inwardly for a short distance from the end of the longer end-defining edge and perpendicular thereto, a second upper edge portion extending inwardly for a short distance from the end of the shorter end-defining edge and perpendicular thereto, and a third upper edge portion extending obliquely between the inner ends of said first and said second upper edge portions, said main body portion being provided with a row of nailing apertures within said overlapped area, one of said apertures being positioned adjacent said first upper edge portion and another of said apertures being offset from said first mentioned aperture and positioned adjacent said second upper edge portion whereby a predetermined spacing of said shingles is accomplished when one of said apertures of one shingle is in registry with the offset aperture of an underlying shingle.

3. A rigid asbestos-cement shingle of the character described adapted to be laid with similar shingles in overlapping courses which comprises an elongated main body portion having the butt

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edge of the shingle extending longitudinally thereof and having end edges substantially perpendicular to said butt edge, said shingle having a generally tapered shape being wider at one end edge than at the other end edge, said main body portion being provided with a plurality of nailing apertures above the normal line of overlap of a similar shingle superimposed thereover, one of said apertures being offset from another of said apertures whereby a predetermined spacing of the shingles is accomplished when one of said apertures of one shingle is in registry with the offset aperture of an underlying shingle, said main body portion also being provided with a notch in the wide end edge adapted to further line up said shingle with reference to a lower course of underlying shingles.

4. A rigid asbestos-cement shingle of the character described adapted to be laid with similar shingles in overlapping courses which comprises an elongated main body portion having a lower butt edge extending longitudinally of said body portion and having end edges substantially perpendicular to said butt edge, said shingle also having a generally tapered shape being wider at one end edge than at the other end edge, said main body portion being provided with a plurality of nailing apertures above the normal line of overlap of a similar shingle superimposed thereover, one of said apertures being positioned near the top of said shingle near the wider edge and another of said apertures being offset from said first mentioned aperture and positioned near the top of said shingle near the narrower edge whereby a predetermined horizontal and vertical spacing of the shingles is accomplished when one of said apertures of one shingle is in registry with the offset aperture of an underlying shingle.

5. A rigid asbestos-cement shingle of the character described adapted to be laid with similar shingles in overlapping courses which comprises an elongated main body portion having a lower butt edge extending longitudinally of said body portion and having end edges substantially perpendicular to said butt edge, said shingle also having a generally tapered shape wider at one end edge than at the other end edge, said main body portion being provided with a plurality of nailing apertures above the normal line of overlap of a similar shingle superimposed thereover, one of said apertures being positioned near the top of said shingle near the wider end edge and another of said apertures being positioned near the top of said shingle near the narrower end edge whereby a predetermined horizontal and vertical spacing of a shingle superimposed over a course of shingles already laid is accomplished when the other of said apertures in said shingle is registered with the one said aperture in a similar shingle positioned in said course, said wider end edge also being provided with a notch for further lining up said shingle with the upper edges of a shingle in said lower course.

6. A plurality of rigid shingles assembled in courses to form a roof covering, each of said shingles comprising an elongated main body portion having one longitudinal edge serving as the lower butt of said shingle, a pair of end edges extending substantially perpendicular thereto, one of said end edges being longer than the other, and a generally obliquely extending upper edge between said end edges whereby a shingle is formed which is wider at one end edge than at the other end edge, said body portion also having a plurality of nailing apertures positioned above the normal overlap area of a shingle laid in a superimposed course, a first one of said apertures being positioned adjacent the upper portion of the narrow edge and a second one of said apertures being positioned adjacent the upper portion of the wide edge, each course of shingles on the roof being positioned to overlap that immediately underneath by fastening means extending through said first mentioned aperture of each shingle of an upper course in registry with said second mentioned aperture of each shingle in a lower course.

7. A rigid shingle of the character described adapted to be laid with similar shingles in overlapping courses which comprises an elongated main body portion defined by a longitudinally extending lateral edge forming the lowermost portion of said shingle when laid in courses, a pair of substantially parallel, end defining edges extending substantially perpendicular to said longitudinal edge, one of said end defining edges being longer than the other, but both being of sufficient length to extend into the area normally overlapped by a superimposed course of shingles, a first upper edge portion extending inwardly for a short distance from the end of the longer end defining edge and perpendicular thereto, a second upper edge portion extending inwardly for a short distance from the end of the shorter end defining edge and perpendicular thereto, and a third upper edge portion extending obliquely between the inner ends of said first and said second upper edge portions.

8. The shingle recited in claim 7 in which the main body portion is provided with a plurality of nailing apertures in the overlapped area thereof.

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