July 31, 1945. O. WACK 2,380,885

BUILDING ELEMENT

Filed Dec. 22, 1941 2 Sheets-Sheet 1

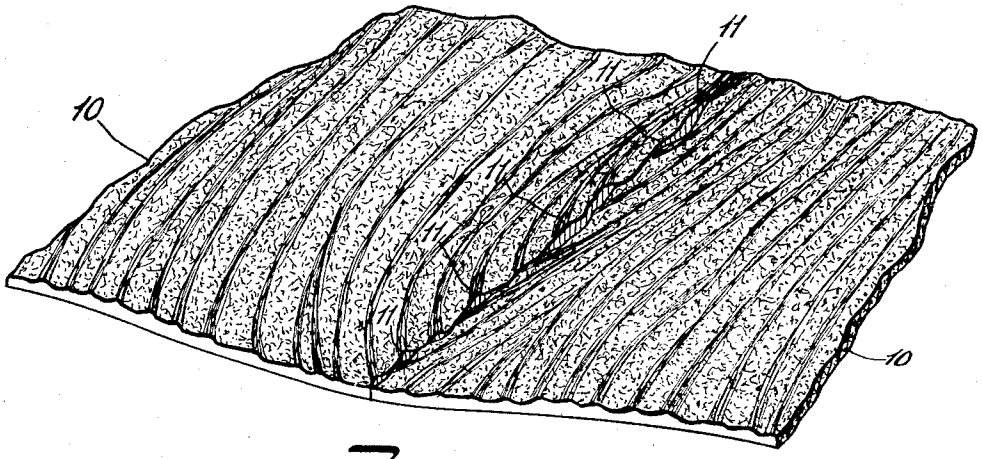


Fig. 1.

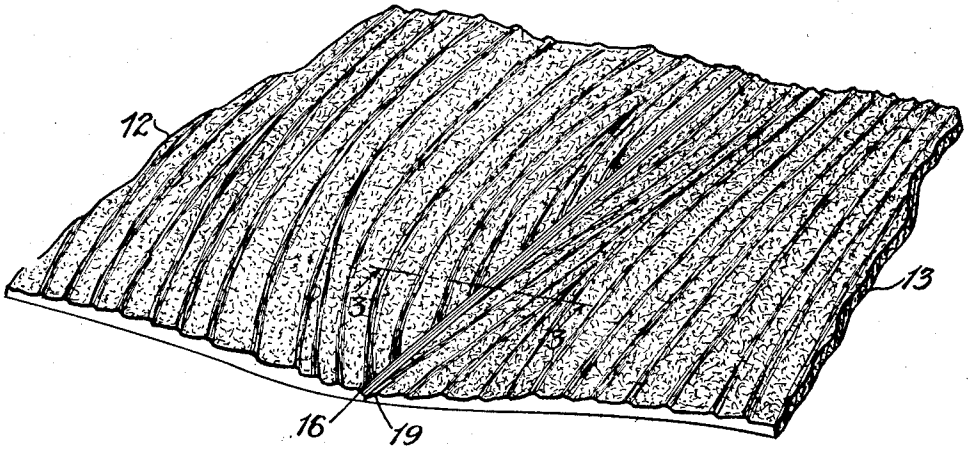


Fig. 2.

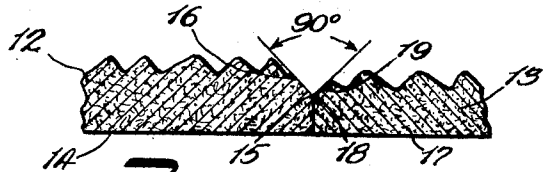


Fig. 3.

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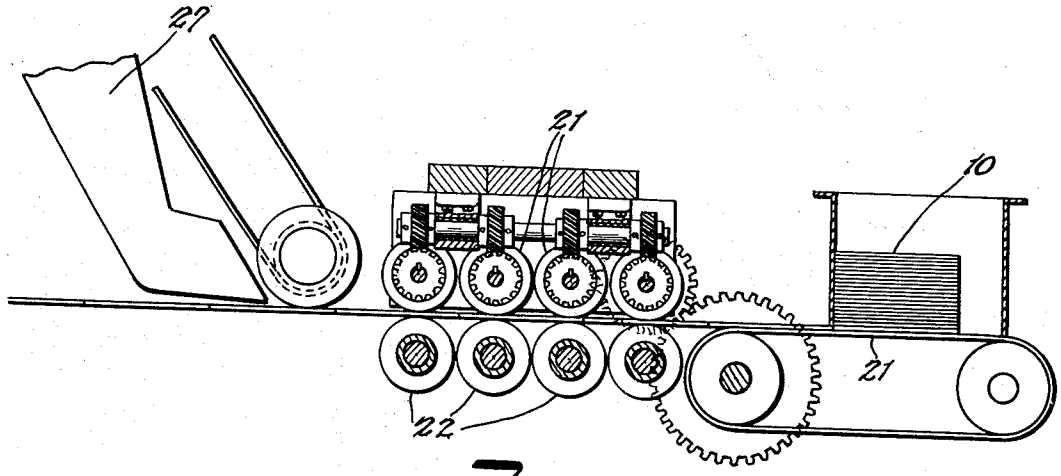


Fig. 4.

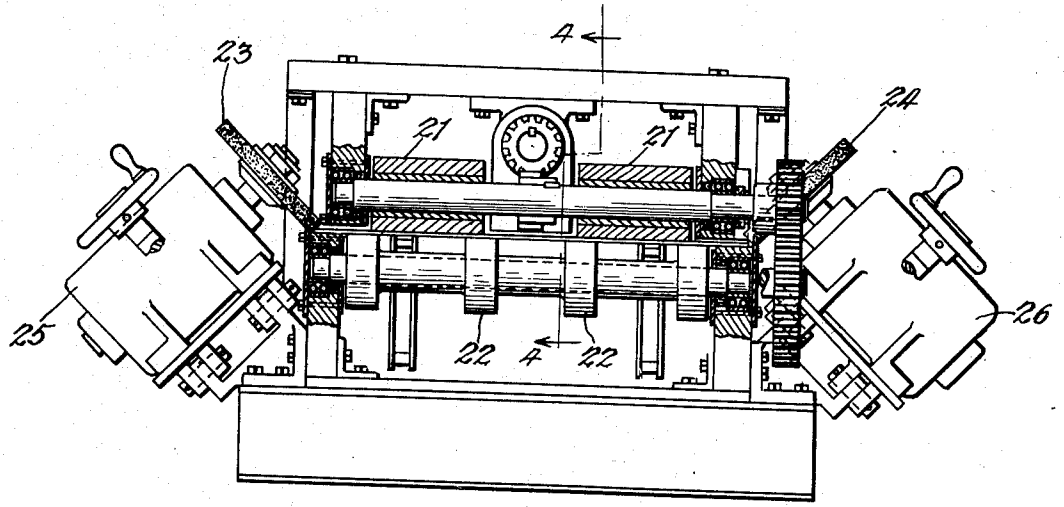


Fig. 5.

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UNITED STATES PATENT OFFICE

2,380,885

BUILDING ELEMENT

Otis Wack, Evanston, Ill., assignor to United States Gypsum Company, Chicago, Ill., a corporation of Illinois

Application December 22, 1941, Serial No. 423,947

1 Claim. (Cl. 108—8)

This invention relates to roofing and siding materials and a method and apparatus for manufacturing the same, and has particular relation to materials in the form of shingle or siding elements which are applied in side-by-side and overlapping relation to comprise a roof or wall structure.

One popular type of such material now sold is provided with an irregularly contoured hill-and-valley top surface, which surface is formed by treatment of the material while it is in moldable or pressable condition and the design of which surface is usually applied to large sheets of material, whereafter these large sheets are then cut into individual elements. Such process of formation of such contoured elements results in irregular protrusions or high and low spots along the upper boundaries at the side edges of the elements, these protrusions being caused by cutting across the contour lines. During the handling of elements having such protruding upper side edge portions, the latter portions many times break, chip or flake off to produce an undesirable crumbling appearance at the side edges of the shingle or siding elements, thereby accentuating the initially formed ragged appearing edges. Moreover, the thus formed irregularities at the sides of the elements produce an undesirable appearance of the wall or roof along the vertically extending lines where the two sidewise abutting edges of two elements contact when the latter are laid to form a roof or side wall covering.

Accordingly, the herein described invention relates to improved elements and to a method of, and an apparatus for, so forming such elements along their side edges that the undesirable concomitants and/or the heretofore accepted inevitable results of the indicated present method of manufacture shall be eliminated. The invention will best be understood from a consideration of the accompanying drawings, in which—

Figure 1 illustrates in perspective and in laid-up relationship two side edge abutting wall or roof covering elements as the latter have heretofore been manufactured, the protruding upper side edge parts or high and low spots caused by cutting across the hill-and-valley upper surface contour being somewhat exaggerated to emphasize the problem presented;

Fig. 2 is a view of two similarly contoured and cross-cut elements but to the edges of which the here described invention has been applied;

Fig. 3 is an enlarged elevational sectional view on the line 3—3 of Fig. 2;

Fig. 4 is an end elevational view, partly in section and with some details omitted, of an apparatus for utilizing the method and producing the product of the herein described invention; and

Fig. 5 is a somewhat schematic partially sectioned side elevational view taken on line 5—5 of Fig. 4, some of the details again having been omitted and the parts being slightly reduced in size (as compared to the Figure 4 showing of the same parts) to permit illustrating the machine in the longitudinal dimensions indicated.

The elements shown in Figure 1 may be used either as shingles or for side wall covering purposes. Such elements may be formed from an asbestos cement mixture and pressed in an apparatus having the die or upper-surface design-forming member so incorporated therein that an irregularly contoured hill-and-valley design is produced in the top surfaces of fairly large sheets. The thus-formed sheets, after being dried, are then cut into a number of smaller elements 10 such as shown in Fig. 1. It follows that such a process of maufacture wherein the cutting extends across the contour of the hills and dales will produce rough upper edge protrusions 11 as high and low spots at each side of the elements. As indicated in Fig. 1, these may be quite pronounced in some instances and therefore readily responsive to even slight blows with consequent breaking off and mutilation of the side portions of the shingle. Such mutilation, breaking or flaking off at the side edges renders the shingle somewhat unusable and is of great disadvantage. Moreover, while these spots are sometimes not noticeable under the paint or glaze which is applied to the elements, the slightest chipping at the edges reveals the unsightly condition of the edge. Such rough side upper edges cause particular complaint when, during erection, the material chips off along the shingle edge, thereby causing the glaze to flake off, which condition is not noticed until after the roof or side wall is completed. These high spots also catch on the workmen's clothing with consequent production of a ragged looking joint.

However, even though the resulting roughness at the side edges of the elements were not objectionable from the foregoing standpoints, it does produce an undesirable appearance at the joint when the elements are laid side by side to form a roof or wall, a distinct line sometimes seeming to exist between the adjacent elements in a roof or wall by reason of the aforedescribed irregularity. As an example of the undesirable

appearance produced at the joint between two shingles having such side edges, Fig. 1 should be studied.

The present invention therefore has as its object to eliminate the rough edges unavoidably formed at the upper side portions of the elements by the present method of initially forming the same and so to accomplish this that a desirable dimensional uniformity shall exist between the side edges thereof irrespective of where the cutting of the first formed large sheet has taken place. The above-indicated method comprises removing the roughened portions or ragged high spots by beveling these side edges in particular predetermined manner and with due regard to the dimensional characteristics involved. It is not sufficient merely to bevel off the high spots of the roughened portions. Care must be taken that the bevel itself will not complicate the problem by forming a shadow or line portion along the vertical contact line of two abutting elements. Accordingly, one definite provision is that the bottom edge or boundary of the bevel with respect to all of the elements treated and to be conjointly used shall be the same distance above the bottom surface of the elements. When this procedure is adopted as an initial step, the actual angle of bevel imparted to the upper side edges of the shingle is unimportant and may vary as dictated by other considerations, it being always necessary, however, that one-half of the total angular opening at the contact line of the shingle sides shall be produced by the bevel on each shingle or, to put it another way, the beveling angle must be the same on all to-be-conjointly used shingles.

The elements 12—12 shown in Fig. 2 have been treated by beveling the upper side edges thereof in a predetermined dimensional manner, i. e., a bevel is ground so that the edges of all shingles which are to be conjointly used are chamfered at the same angle, the bevel starting on a line near the top of the corrugations and having its bottom boundary in the body of the shingle below the bottom of the lowest valley or indented corrugation, this construction being insured by making the thickness of the body of the shingle at the edge slightly less than equal to the distance between the back of the shingle and the bottom of the deepest corrugation. Thus the distance between the bottom surface 14 of shingle or siding 12 (see Fig. 3) and the bottom edge 15 of the bevel portion 16 is the same as the distance from the bottom surface 17 of shingle or siding 13 and the bottom edge 18 of the bevel portion 19, this being accomplished despite the irregularities of the high spots on the two adjoining elements. When, therefore, the two elements are laid in close side-by-side relation, the adjacent vertical side edges will always be of the same thickness so that the bottom edges of the two bevel portions substantially coincide to form an apex of the angular opening between the shingles, wherefrom a neat joint will be produced despite unavoidable irregularities between the high and lower contours of adjacent shingles.

Moreover, in the beveling operation, any loose, cracked or clinging flakes existing along the shingle edge will be dislodged and removed and a true even edge will be formed which can be more satisfactorily painted or otherwise surface treated. Accordingly, by thus beveling the elements, the potential breaking of the edges due to the unavoidable rough portions formed by cutting across the contours is eliminated and at the same time a desirable appearance-enhancing factor is imparted to the shingles.

A machine in which the method hereinbefore described may be practiced and by the use of which the novel shingle or siding element hereinbefore discussed may be produced is shown in Figs. 4 and 5. The elements after having been formed to size by cutting of the hereinbefore indicated first-formed or pressed large sheets of material are fed from a stack of such elements 10 onto a moving belt 21 and then between rollers 21—21 and 22—22, it being understood that the machine is here illustrated in schematic form and not more than the present description thereof is necessary since it is within the skill of those in the art to supply the driving means and other machine elements which may be necessary. Rollers 21—21 and 22—22 progress the elements between two grinding elements 23 and 24 arranged at the sides of the conveying rolls in such manner as to grind or form the bevel hereinbefore described and best shown in Fig. 3. The grinding elements 23 and 24 are operated by instrumentalities 25 and 26, respectively, which are shown in sufficiently illustrative detail to acquaint those mechanically skilled with their structure. A dust-gathering device 27 is diagrammatically illustrated at the left-hand end of the apparatus.

It is not intended that the description herein given of the invention or the showing thereof set forth in the drawings is limiting in any respect of the monopoly herein claimed by applicant. It is on the contrary intended that all claims hereafter allowed, whether made initially herein or hereinafter added (assuming that they are properly supportable by the drawings or the specification or the claims originally made herein) shall measure the scope of the invention herein set forth. Accordingly, and with the foregoing in mind, what is claimed to be secured by Letters Patent is:

Roofing and siding elements formed with irregular hill-and-valley contours on their upper surfaces and adapted to be assembled with their side edges abutting to form weatherproofing surfaces, said abuttable edges being provided with complementary beveled portions formed by angularly beveling the edges to a depth at least as deep as the bottom of the deepest valley contour in any of the elements which are to be conjointly used to form said surface, thereby to insure that said element-abutting edges form even, self-effacing uniform joints irrespective of which thus treated elements are conjointly used and to eliminate chipping or flaking of said element side edges.

OTIS WACK.