Jan. 16, 1940. W. L. ROWE 2,187,139

INTERLOCKING ROOFING UNIT

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Fig. 1.

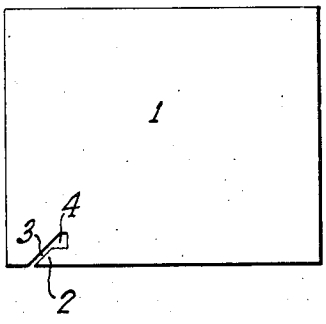


Fig. 2.

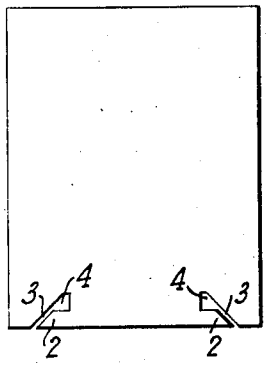


Fig. 3.

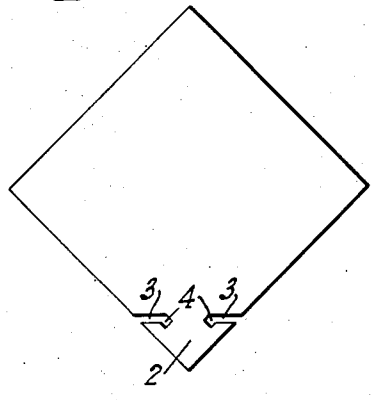


Fig. 4.

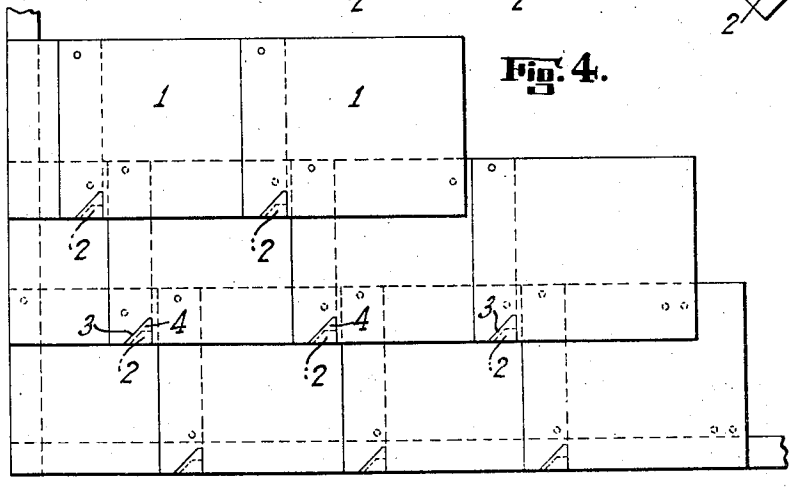
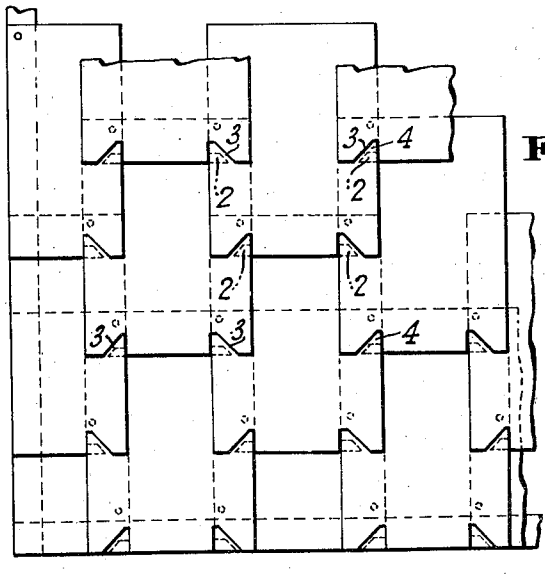


Fig. 5.



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Fig. 6.

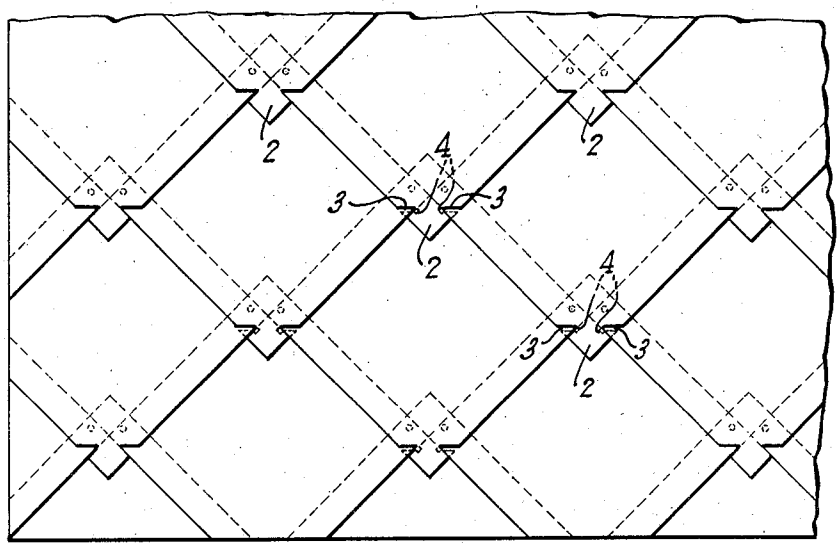


Fig. 7.

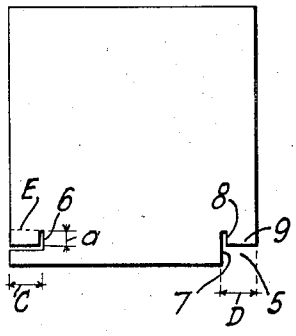


Fig. 8.

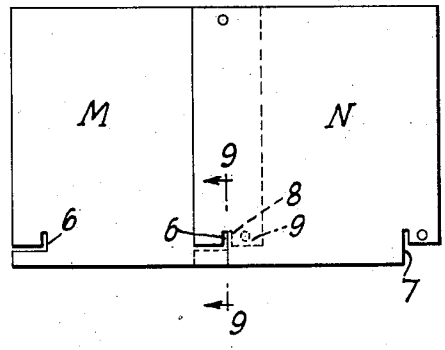
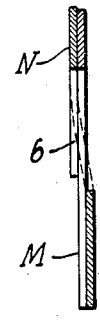


Fig. 9.



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Fig. 10.

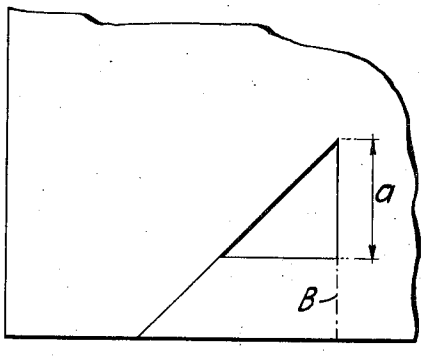


Fig. 11.

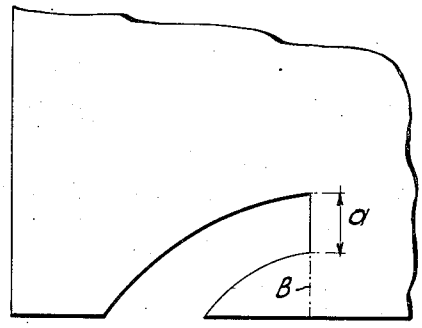


Fig. 12.

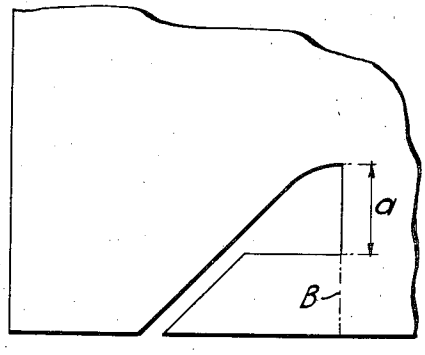


Fig. 13.

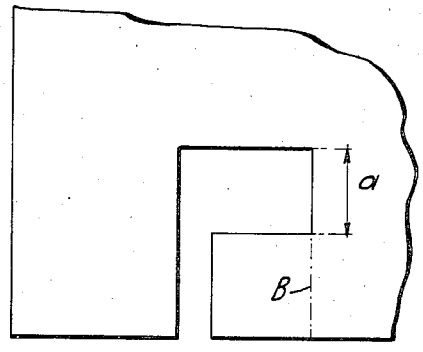


Fig. 14.

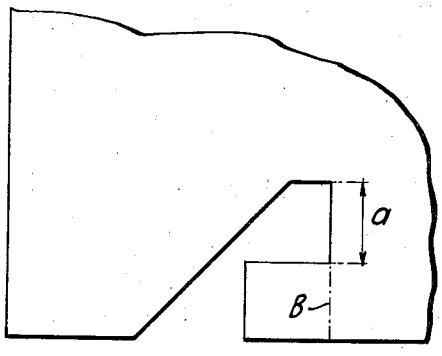
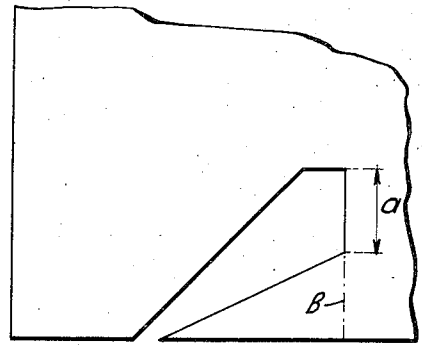


Fig. 15.



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Patented Jan. 16, 1940 2,187,139

UNITED STATES PATENT OFFICE

2,187,139

INTERLOCKING ROOFING UNIT

William L. Rowe, New Rochelle, N. Y., assignor to Johns-Manville Corporation, New York, N. Y., a corporation of New York

Application October 1, 1937, Serial No. 166,757

2 Claims. (Cl. 108—8)

My invention relates to improvements in shingles and siding units, and particularly to shingles and siding units which may be applied so as to interlock with adjacent units to provide a durable and weatherproof covering.

Various forms of interlocking means such as tongues and notches forming an integral part of the shingle unit have been proposed heretofore for conventional types of shingle units formed from a base of asphalt saturated felt. Shingles of this type exhibit a relatively high degree of resiliency and flexibility, and integral interlocking means proposed heretofore which require pronounced flexing of the shingle material have been employed with satisfactory results in connection with such products.

Roofing units made from asbestos-cement compositions compared with saturated felt products have certain distinct advantages particularly with respect to durability and fireproofness. However, due to the relative inflexibility and tendency to rupture when flexed exhibited by asbestos-cement sheets, it has not been considered feasible heretofore to provide shingles of this type with integral interlocking means.

I have ascertained that shingles may be made from certain types of asbestos-cement sheets, and that such shingles, while capable of being only relatively slightly flexed without rupture and hence incapable of use with conventional forms of integral interlocking means employed on flexible saturated felt shingles, do have a limited degree of flexibility and may be readily and satisfactorily applied in an interlocked relation by providing the shingle units with an interlocking tongue having a particular configuration.

My invention has been found to be especially applicable to shingles formed from semi-flexible asbestos-cement sheet material such as that produced as described in United States MacIldowie Patent 2,080,285. Such semi-flexible sheets are further characterized by having the fibre content thereof oriented in predominant proportions in a direction generally parallel to the surface of the sheet, as distinguished from the heterogeneous arrangement of fibre in the conventional types of asbestos-cement shingles which are characterized by relatively extreme rigidity. Compared to asbestos-cement shingles of the usual type, the semi-flexible asbestos-cement shingles of the type to which my invention is especially applicable are relatively flexible, but are relatively rigid compared to shingles made from a base consisting of asphalt saturated felt.

The primary object of my invention is the provision of a shingle of the semi-flexible type such as semi-flexible asbestos-cement shingles with integral interlocking means whereby such shingles may be readily and satisfactorily assembled in an interlocked relation in the formation of a roof covering.

Further objects and advantages of my invention will be apparent from the following detailed description thereof taken in connection with the drawings, wherein

Figs. 1, 2, and 3 are plan views of three types of semi-flexible shingle units, each being adapted for a specific type of application.

Fig. 4 illustrates a roof covering formed of units shown in Fig. 1 applied in a side-lap or "Dutch Lap" style.

Fig. 5 illustrates a roof covering formed of units shown in Fig. 2 applied in the so-called "wide space" style.

Fig. 6 illustrates a roof covering formed of units as shown in Fig. 3 applied in "Diamond" style.

Fig. 7 illustrates a modified form of the unit shown in Fig. 1, and

Fig. 8 shows two such units in an assembled relation.

Fig. 9 is a detailed sectional view taken along 9—9 of Fig. 8.

Figs. 10–15, inclusive, illustrate modified forms of the interlocking tongue.

The shingle units are formed of a dense sheet material capable of a relatively limited degree of flexing without breaking. Preferably, this material consists of a thin, semi-flexible sheet of a densified asbestos-cement composition wherein the asbesto fibres extend in a direction generally parallel to the surface of the sheet such as is described in U. S. Patent No. 2,080,285 to MacIldowie.

Referring to Fig. 1, a rectangular shaped shingle unit 1, cut from a thin sheet of the above described asbestos-cement composition, is provided in its lower marginal portion adjacent one corner with an integral locking tongue 2. This tongue is formed in the body of the shingle by providing an opening therein consisting of an angular slot 3 leading from the lower edge of the shingle and terminating in a cut-out portion 4. This type of unit is adapted to be applied in a side-lap relation as shown in Fig. 4, the tongue being depressed sufficiently to engage beneath the edge of the lower corner of the adjacent shingle in the same course and the shingle then being brought into alignment by abutting the side edge of the overlapped shingle

against the right-hand edge of the cut-out and then nailed at opposite corners as shown. In order to interlock the units, the interlocking tongue must be depressed from the plane of the body of the shingle a distance at least equal to the thickness of the shingle and this deflection may be accomplished readily and without rupture of the sheet material by reason of the cut-out portion 4. Referring to the detail views showing different modifications of the locking tongue Figs. 10–15, the depth *a* of this cut-out is preferably considerably greater than the thickness of the shingle, for example, for a shingle $\frac{1}{8}$'' in thickness, this dimension should preferably be not less than $\frac{5}{16}$ of an inch and suitably about 1''.

In the unit illustrated in Fig. 2, a locking tongue similar to that employed in unit 1 is provided adjacent each of the lower corners, and this unit is therefore adapted to be applied in the wide space style with each of the lower corners interlocked with the side edge of an adjacent shingle as illustrated in Fig. 5.

The unit illustrated in Fig. 3 is also provided with two similar interlocking tongues opposed to each other and adjacent a corner of the unit and is adapted to be applied in Diamond style as illustrated in Fig. 6.

The modified forms of the interlocking tongue, illustrated in Fig. 7 and Figs. 10–15, inclusive, all function and embody the same principle as that illustrated in Fig. 1. In each instance the locking tongue is formed by an opening extending into the body of the shingle from an edge thereof and is integrally connected thereto along a line of integral connection B, and an opening is provided in the body of the shingle extending from the point of intersection of the upper boundary of the tongue and the line of integral connection, the depth of this opening *a* being of sufficient length to permit the required deflection of the locking tongue without breaking the sheet material. In general the dimension *a* should be not less than about eight times the thickness of the shingle and suitably about 16 times the thickness in the case of semi-flexible asbestos-cement shingles. One edge of this opening is preferably a prolongation of the line of integral connection and perpendicular to the lower edge of the shingle, thereby serving as a means for aligning a side edge of the adjacent interlocked shingle.

In the modification shown in Fig. 7 a recess 5 is provided in the lower marginal portion of the shingle opposite the locking tongue. In interlocking this shingle, as shown in Figs. 8 and 9, the locking tongue of shingle N is deflected downwardly and pushed underneath the edge portion 7 of the recess 5 of a previously applied shingle M until edge 6 is brought into abutting contact with edge 7, the extent of the overlap being determined by the distance of edge 6 and edge 7 from the adjacent lateral edge and being constituted by the sum of the dimensions C and D. A slot or opening 8 is preferably provided opening into the inner corner of the recess 5 for the purpose of permitting lip portion 9 of the overlapped portion of the shingle to also flex slightly when the shingles are interlocked, thereby further reducing any tendency towards breaking of the sheet material. Various other modifications may be made in the shingle shown in Fig. 7, for example, the shingle may be cut along dotted line E so as to provide a cut-out of substantial width above the locking tongue and, also, recess 5 may be spaced a suitable distance from the adjacent lateral edge of the shingle in place of opening directly into said edge. Also, in place of employing the locking tongue illustrated, any of the other modified forms of locking tongues shown may be substituted therefor.

What I claim is:

1. A semi-rigid asbestos-cement shingle capable of only slight flexing without fracture, to be laid with similarly shaped shingles, said shingle having a locking tongue formed in and integrally connected to the body portion thereof, said tongue being defined by an opening extending inwardly from an edge of the shingle, said opening having an edge projecting substantially perpendicularly with respect to said shingle edge and inwardly from the intersection of the upper boundary of said tongue with the line of integral connection of the tongue to the shingle a distance not less than substantially eight times the thickness of the shingle to permit deflection of the tongue without rupture of the material.

2. A semi-rigid asbestos-cement shingle capable of only slight flexing without fracture, to be laid in interlocking relationship with an adjacent similar covering element, said shingle having a locking tongue capable of being deflected from the plane of the shingle a sufficient distance to permit its engagement under an edge of said adjacent similar covering element, said tongue being defined by an opening extending inwardly from an edge of the shingle, said opening having an edge projecting substantially perpendicularly to said shingle edge and inwardly from the intersection of the upper boundary of said tongue with the line of integral connection of said tongue to said shingle a distance not less than substantially eight times the thickness of the shingle to permit the required deflection of the tongue without rupture of the material, said projecting edge of said opening serving as means for alinement of the shingle in a predetermined position by its abutment against the edge of the interlocked portion of said adjacent similar covering element.

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