INTERLOCKING ROOF DECK AND WALL CONSTRUCTION

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ABSTRACT OF THE DISCLOSURE

A corrugated roof deck and wall construction formed from identical interlocked extrusions. Each extrusion is provided with a flat base member which is attached to the roof or wall of the structure. A leg upstanding from the base carries a female locking member. An inverted channel attaches to one end of the base and terminates in a foreshortened downwardly extending portion which carries a male locking member which interlocks with the female locking member to provide a joint free from capillary action located a substantial distance from the base.

The present invention relates generally to roof deck and wall construction and more particularly to structural members for such use and provided with means whereby they may be interlocked.

Heretofore it has been known to manufacture roofing or siding members from various materials, including asphalt, vinyl and metal, such as aluminum. A major difficulty has been encountered in the manner in which rainwater and other forms of precipitation are handled so as to prevent moisture from getting beneath the roofing and siding material. Direct penetration of the joints of shingled or siding material, adverse capillary action through the joints, and seepage around the metal or screw fastening devices have been particularly troublesome.

In accordance with the present invention, these problems are solved in a unique joint construction capable of being used as a roofing or siding material formed from interlocking metallic extrusions such as aluminum extrusions. The joint is designed so as to resist direct heavy onslaught by all forms of precipitation and is provided with means to prevent capillary action. In addition a runoff channel is provided to handle any seepage which may accidentally pass through the interlocked members at the point of interlock.

The inherent advantages and improvements of the present invention will become more readily apparent upon considering the following detailed description of the invention and by reference to the drawings in which:

FIGURE 1 is an end view of a plurality of interlocked structural members according to the invention;
FIGURES 2 and 3 are enlarged views, in perspective, of interlocking elements of the members; and
FIGURE 4 is an enlarged cross-sectional view taken through these elements when interlocked.

Several structural members or panels 10 are shown in FIGURE 1, two at the left secured by nails or other fasteners 11 to a beam or other structural element 12 of a roof or a wall, and a third member partially interlocked with a secured member. The final or locked position of the third member is shown in dot and dash lines.

The structural members 10 may be of metal, plastic, or other suitable material. Preferably the members are aluminum extrusions of suitable lengths.

Each of the members 10 comprises a substantially flat base 15, an upstanding wall 16 extending upwardly from the base intermediate its sides, and an inverted channel section 17, higher than said upstanding wall. The base 15 extends to the right (FIGURE 1) of wall 16 to provide a fastening flange which may terminate in an upturned lip 19, thus forming a shallow channel between the wall and lip.

While other formations are contemplated within the scope of the invention, the inverted channel section 17 is shown as generally rectangular, having a vertical wall 20 of a horizontal wall 21, and a short vertical depending wall 22.

Panel interlocking members 24, 25 are formed, respectively, at the upper end of the upstanding wall 16 and at the lower end of the depending wall 22. Each member is substantially a counterpart of the other and, when interlocked, they form a high level joint close to the horizontal wall 21, which keeps the joint well above water normally draining along the trough formed by the base 15 and walls 16 and 20, thus substantially eliminating seepage of water into the joint. However, as will be explained more fully below, provision is made for draining any possible seepage from the joint itself, thus adding to the protective qualities of the interlocked panels.

The interlocking member 24 comprises a lock channel 27 formed in the upper portion of the wall 16, with its open side facing laterally toward the inverted channel 17, and a tongue 28 extending upwardly from the lower side wall 29 toward the upper side wall 30 of the lock channel 27.

The counterpart locking member 25 comprises an inwardly projecting rib or flange portion 32 formed in the depending wall 22 of the inverted channel, and a ridge or flange portion 33 projecting inwardly from the lower end of the depending wall 22. A rabbet 35 formed in the lower and outer side of the ridge 33 is the counterpart of tongue 28 of the interlocking member 24. As shown in FIGURE 1, initial engagement of the interlocking members 24 and 25 is made by inserting the ridge 33 in lock channel 27 with the rabbet 35 hooking over tongue 28. Then, clockwise rotation of the upper member 10, to the position shown in dot and dash lines (FIG. 1), causes the rib 32 of locking member 25 to engage the underside of channel wall 30 of locking member 24 to complete the interlock between the panels 10.

The lower portion of ridge 33 is curved at 36 and the ridge is substantially as thick as the depth of the lock channel 27, so that while the parts are being assembled, there is no interference between the ridge and the channel walls; and when the parts are fully assembled, the high part of ridge 33 engages the base of the lock channel 27 thereby forcing a close and tight engagement between tongue 28 and rabbet 35.

When thus installed, the panels present a corrugated surface, with the troughs between the walls 16 and 20, which can receive rain water and conduct it to and from the lower end of the assembled panels. As explained above, each joint between interlocked members 24, 25 is elevated above the normal high level of water in the troughs to avoid seepage. However, if there is any slight seepage of water through joint 24, 25, it will gravitate into a groove or auxiliary drain channel within member 17 defined by lip 19, base 15 and interlocked member 24, 25.

In this connection, air space present in joint 24, 25 at channel 27 or the lower, smaller channel 37, tends to serve as a suction or siphon break to prevent any capillary action which might cause joint leakage.

Accordingly, with the simple and effective construction thus set forth, an attractive ribbed or corrugated facing is provided wherein there is substantially no possibility of rainwater or other leakage internally of the exterior face thereof. Further, while the present joint construction...
along with the auxiliary or secondary drain channel inwardly of channel 17 will prevent any possible seepage onto the structural elements 12, the presence of any moisture whatever can be said completely eliminated if desired by providing packing or sealant material in the lock channel 27.

It is thought to be obvious that numerous variations may be made in the form and arrangement of the parts without departing from the spirit and scope of the invention. Thus, the disclosed S-extrusion 10 may be employed as a starter strip along building or panel edges by the simplest expedient of severing the same along the line 40, as seen in FIGURE 1, thereby obviating need for a separately formed or shaped member.

What is claimed is:

1. In a corrugated roof deck and wall construction comprising at least two sections which interlock along lateral portions thereof, the combination of a pair of said sections, each section being elongated and having a substantially uniform cross section comprising:
   a substantially flat base;
   an upstanding wall extending upwardly from said base and intermediate the sides thereof;
   an inverted channel section higher than said upstanding wall and defined by a wall extending upwardly and downwardly from one side of said base and terminating downwardly in a short depending portion;
   a first locking member formed at the upper end of said upstanding wall;
   a second locking member formed at the lower end of said short depending wall;
   said first locking member on one section and second locking member on the other section being counterpart, one of the other, and interlockable to unite the sections throughout their coextensive length;
   each of said first and second locking members extending throughout the length of their sections;
   each of said first locking members comprising in cross section:
   a lock channel formed in said upstanding wall and having its open side facing laterally toward said inverted channel;
   a tongue extending upwardly from the lower side of said lock channel and across a portion of the open side thereof, thus setting off a secondary channel at the lower end of said lock channel; and
   each of said second locking members comprising in cross section:
   an inwardly projecting rib formed on said short depending wall portion of the inverted channel;
   an inwardly projecting ridge at the lower end of said depending wall portion, said ridge having a rabbet formed in the outer portion of its lower end;
   whereby said first and second members are interlockable by interfitting said tongue on the first member with the rabbet of the second member, and the upper surface of the rib on the first member with the underside of the upper wall on the lock channel.

2. A roof deck and wall construction as set forth in claim 1 wherein the lower portion of said ridge is reduced in section to facilitate initial engagement of the interlocking members.

3. A roof deck and wall construction as set forth in claim 1 wherein said ridge is substantially as thick as said lock channel is deep so that, when assembled, the high surface of said ridge bears against the base of said lock channel and forces said tongue and rabbet into a close and tight contact.

4. In a corrugated roof deck and wall construction comprising at least two sections which interlock along lateral portions thereof, the combination of:
   a pair of sections, each section being elongated and having substantially uniform cross section comprising:
   a substantially flat base;
   an upstanding wall extending upwardly from said base and intermediate the sides thereof;
   an inverted channel section higher than said upstanding wall and defined by a wall extending upwardly and outwardly from one side of said base and terminating downwardly in a short depending portion substantially shorter than said upstanding wall;
   a first locking member formed at the upper end of said upstanding wall;
   a second locking member formed at the lower end of said long depending wall portion;
   said first locking member on one section and second locking member on the other section being counterparts, one of the other, and interlockable to unite the sections throughout their coextensive lengths;
   said first locking member on the upper end of said upstanding wall comprising a female locking channel having its open side facing laterally toward said inverted channel;
   and said second locking member formed at the lower end of said short depending wall portion comprising a male locking member having two vertically spaced inwardly projecting flange portions engaging opposite walls of said female locking channel and defining an air space between said flange portions, whereby capillary action through said interlocked locking members is prevented.

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