CONTROL JOINT FOR BUILDING CONSTRUCTION

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Claims.

This invention relates to control joints for exterior and interior building construction. Said control joints are often referred to in the building construction art as expansion joints.

Moisture, thermal, and/or constitutional changes in building materials, as well as settling or deflecting of supporting structures, may cause cracks to appear in materials such as plaster and the like used to construct interior walls or ceilings, and, in materials such as Portland cement stucco used to construct exterior walls. Periodic breaks or spaces may be provided in the walls or ceilings, particularly where large surface areas are involved, to allow segments thereof to expand or contract and thereby minimize the tendency for cracks to appear therein, i.e., the spaces provide means for expending forces that tend to cause cracks. It is conventional practice to place control joints at the spaces which coat with ends of said segments when the ends move toward or away from each other, and, it is a general object of this invention to provide an improved control joint that coats with ends of wall or ceiling segments.

It is another object of this invention to provide a control joint with means to minimize the tendency of ends of wall or ceiling segments to separate from portions thereof.

It is another object of this invention to provide a control joint which freely coasts with said ends.

It is another object to provide means to facilitate application of construction material such as plaster, Portland cement and the like against portions of a control joint whereby a uniform depth of the material may be effected resulting in a uniform wall or ceiling thickness.

It is yet another object of this invention to provide means preventing construction materials from rendering a control joint inoperative during application of the materials against said control joint, said means also enabling an attractive appearance at a position in a wall or ceiling wherein said control joint is operatively placed.

Other objects and advantages will appear from the description, accompanying drawings, and the appended claims.

In the drawings:

FIG. 1 is a perspective view of a fragmentary interior wall showing a control joint and other wall components.

FIG. 2 is a cross sectional view of a symmetrical joint otherwise similar to that shown in FIG. 1.

FIG. 3 is a perspective view of the control joint in FIG. 1.

FIGS. 4, 5, and 6 illustrate, respectively, other embodiments of the control joint.

Referring to FIGS. 1 and 2, panel supporting wood studs 20 and 22 are spaced apart. Lath panels 24, such as gypsum lath having a paper covering 25 surrounding a plaster core 26, are spaced by nails 27 (other type fasteners may be used) to the studs leaving a space between opposing ends of the panels sufficient to allow for an anticipated expansion or contraction of wall segments.

Control joint 26 is then secured to stud 22 by driving nails 27 through base portion or flange 30, then through edges of the panels underlying flange 30, and into the stud. Cementitious material 32, for example, is applied over the panels and against the control joint, and surface material 34, gauged lime as an example, is applied over the cementitious material. Alternately, stud 22 can be spaced further from stud 30 than is illustrated, and, flange 30 can be secured to panels 24 by staples or otherwise without securing the control joint to stud 22. As illustrated in FIG. 2, another angle member having a flange 30a and upright 50a and another linking member 60a may be provided and connected to key member 50, thereby effecting a symmetrical control joint.

It is to be understood that the control joint is not limited for use with materials in the wall construction thus described. Other materials may be used, and as examples, metal studs may be used in place of wood studs, an open metal material such as expanded metal lath may be substituted for the lath panels, and screw fasteners or staples may be used in place of the nails. Moreover, for ceilings, a grid of channels, wire hung from an overlying floor or ceiling, may be used to support expanded metal lath, and, gypsum plaster with a gauged lime coat thereon can be applied to the metal lath. For exterior use, concrete blocks may be spaced apart and the control joints placed at spaces thus provided. Portland cement stucco may be applied to the blocks and against the control joints.

Control joint 28, best seen in FIG. 3, comprises control member 36 adapted for placement in a space between ends of opposing wall segments and adapted for movement of control elements 38 and 40 toward or away from each other in response to movement of said ends toward or away from each other. Control member 36 can be of any trough shaped configuration, examples in cross section of which include a V-shaped configuration as in FIGS. 1, 2, and 3, one that is U-shaped (FIG. 5), and one that is W-shaped (FIG. 6).

Cover members 42 and 44, adapted to cover edges of opposing ends of wall or ceiling segments, extend outwardly and generally in opposite directions from control elements 38 and 40, respectively. Tape 46, masking tape having a pressure sensitive adhesive applied to one surface as an example, is adapted for adherence to said cover members and spans over the control member thereby preventing entrance of the cementitious material and the surface material between the control elements during application of the materials to the control joint which would tend to render the control member inoperative.

The tape are stripped from the cover members after the application thereby unveiling a clean and neat appearing wall whereat control joints are installed.

Of importance are a pair of key members 48 and 50 associated with cover members 42 and 44, respectively. Said key members may be disposed slightly inwardly toward the cover members thereby disposing scoured portions 52 and 54 outwardly from the cover members thus preventing underruns between the scoured portions and the cover members tending to hinder the placement and stripping of a tape 46. However, the key members should be substantially perpendicularly disposed to the cover members to thereby allow the key members to extend into the cementitious material in preventing separation of the material from control element 48 and upright portion 58 as wall or ceiling segments contact.

The key members are provided with scoured portions 52 and 54 which extend above surfaces of the cover members 42 and 44, respectively, the remaining portions of the key members extending below said surface layers. Said scoured portions provide gauges or grounds enabling an artisan to apply a uniform depth of cementitious and surface materials over panels 30. The artisan will firstly trowel cementitious material 32 over the panels, and will then trowel a thin layer of surface material 34 thereon by moving the trowel against the scoured portions.

To secure the control joint through a panel to wood stud 22, or alternately to a panel edge solely, the control
joint is provided with angle member 56. Said angle member includes upright portion or flange 58 disposed substantially base portion or flange 30. When stud attachment is desirable, the control joint is secured to wood stud 22 by driving nails 27 through flange 30, through edges of panels 24 underlying the flange, and into the stud. Nail holes 69 facilitate entrance of the nails through flange 30, and, apertures 62 together with scoops 64 allow the cementitious material to enter through the flange and adhere to the underlying edges of the lath panels. The scoop elements 64 face the upright portion 58 of the angle member and when embedded in the set cementitious material 32 to prevent separation of the material 32 from the joint during normal contraction and expansion of the wall and ceiling surfaces. As illustrated in FIG. 2, the scoops 64 are preferably located substantially opposite the key members 48 so that they cooperate to maintain the control element in intimate contact with the material 32. Stiffeners 65 may comprise ridge elements extending across the junction of the upright portion 58 and the base portion 20 to effect rigidity of angle member 56 especially important during movement of a troweling against the screed portions during application of the materials 32 and 34 which thereby aids in effecting a uniform depth of the materials over the panels. Alternately, the angle member may be provided with an extended flange 30 providing openings similar in function to apertures 62 and scoops 64 (not illustrated).

Upright portion 58 is connected to key member 48 by means of linking member 60, excepting in the case of the embodiment in FIG. 4. Said upright portion is disposed angularly from said linking member and may make an acute angle therewith (FIGS. 1, 2, and 3), or may form a right angle therewith (FIGS. 5 and 6). Referring particularly to FIG. 2, said linking members extend inwardly from terminus 70 of key member 48 toward control element 38 thereby allowing cementitious material 32 to extend inwardly toward upright portion 58, past terminus 70, and upwardly to the linking member thereby preventing separation of the material from the upright portion as the wall segments contract. Similarly, cementitious material 32 extends inwardly toward control element 49, past terminus 72 of key member 50, and upwardly to the cover member 44 thereby preventing separation of the material from control element 40 as the wall segments contract.

FIG. 4 illustrates an embodiment of a control joint that may be made from plastics or other extrudable material. Upright portion 58 is illustrated as connected substantially at the juncture of control element 38 with cover member 42 thereby obviating the need for a linking member. Fillet portion 74 provides rigidity to the control joint similarly to the rigidity imparted by stiffeners 66 in other embodiments.

The size of the control joints thus described will depend on the use intended. For the use illustrated in FIGS. 1 and 2, lath panels 24 can be about $\frac{3}{8}''$ in thickness and cementitious material 32 can be about $\frac{3}{4}$$''$. The height of control joint 28 measured from base portion 30 to screed portion 52 and measured parallel to the upright portion can be about $\frac{1}{2}''$ since said height is the ground size of the materials applied over the panels. Other heights are possible and include $\frac{3}{4}$$'', 76$$'', and 1$$'', and for these sizes, a width, measured from screed portion to screed portion, can be about 76$$''. Moreover, the control joints can be made from any suitable resilient material such as plastics and sheet metal as examples. Alloayed zinc in about a thickness of .014$$''$ is suitable for the aforementioned dimensions.

While several embodiments of this invention are described and illustrated, it will be understood, of course, that the invention is not to be limited thereto, since 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.

1. An integral elongated control joint which comprises:
   (1) A centrally disposed portion of generally trough shape defined by a pair of control elements extending divergently from a common apex,
   (2) A pair of cover members intermediate located along said control elements, each diverging outwardly from its control element,
   (3) Each of said control elements terminating in a scooped portion connected to the outer edge of said cover member and located further from the apex of said trough than are said cover members,
   (4) A pair of key members whose first termini are said scooped portions and whose other termini lie outwardly of said control elements and intermediate the termini thereof,
   (5) At least one linking member connecting a key member to an angle member, the latter consisting of an upright portion located inwardly of said key member and attached to said linking member and a base portion attached to the other margin of said upright portion and forming therewith an angle of approximately 90$^\circ$.

2. An integral elongated control joint having a portion with a cross section generally approximating at least the letters VC in which the letters are joined at their tops, which comprises:
   (1) A pair of control elements extending divergently from an apex to form the V,
   (2) A pair of cover members located intermediate said control elements, each diverging outwardly from its control element from an upper portion of each leg of the V,
   (3) A C shaped plaster receiving recess defined by a flange, a leg member upturned therefrom and a link member at an acute angle to said leg, said recess being connected to the control element by,
     (a) A key member substantially parallel to said leg and extending from said link to the end of the V and
     (b) A scooped portion at the end of the control element at its junction with the key member.

3. An integral elongated control joint which comprises:
   (1) A centrally disposed portion of generally trough shape defined by a pair of control elements extending divergently from a common apex,
   (2) A pair of cover members intermediate located along said control elements, each diverging outwardly from its control element,
   (3) Each of said control elements terminating in a scooped portion connected to the outer edge of said cover member and located further from the apex of said trough than are said cover members,
   (4) A pair of key members whose first termini are said scooped portions and whose other termini lie outwardly of said control elements and intermediate the termini thereof,
   (5) A pair of linking members each connecting a key member to a respective angle member, the latter consisting of an upright portion located inwardly of said key member and attached to said linking member and a base portion attached to the other margin of said upright portion and forming therewith an angle of approximately 90 degrees.

4. An integral elongated control joint formed from resilient material which comprises:
   (1) A centrally disposed portion of generally trough shape defined by a pair of control elements extending divergently from a common apex,
   (2) A pair of key members extending from the control elements generally toward said apex and whose termini lie outwardly of said control elements and intermediate the termini thereof,
   (3) At least one angle member consisting of an up-
right portion located inwardly of said key member and having a first margin adjacent thereto and a base portion attached to the other margin of said upright portion and forming therewith an angle of approximately 90°, and,

(4) At least one linking member connecting said first margin of said upright portion to the terminus of a key member forming acute angles with said first margin and said key member whereby to define a keying recess for cementitious material.

5. An integral elongated control joint formed from resilient material having a portion with a cross section generally approximating at least the letters VC in which the letters are joined at their tops, which comprises:

(1) A pair of control elements extending divergently from an apex to form the V,

(2) A C shaped plaster receiving recess defined by a flange, a leg member upturned therefrom and a link member at an acute angle to said leg, and

(3) A key member substantially parallel to said leg and extending from said link to the end of the control element to join the V to the C and forming with said link an acute angle.

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