COMPOSITE WALL CONSTRUCTION

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8 Claims

ABSTRACT OF THE DISCLOSURE

A composite wall construction, generally comprised of a puncturable wallboard, a length of perforated lath and a one-piece generally U-shaped clip of resilient material fastenable to the wallboard in order to hold the lath adjacent to at least one side of the wallboard. One spaced leg of the clip is indexed with one or more indents at its outer end while the second spaced leg thereof is adapted to be forcefully driven through the wallboard at a preselected location to form a punctured opening. The aforesaid clip, upon formation of the opening, is inserted therein in such a fashion that the second leg is disposed in abutment with the other side of the wallboard while the one leg is disposed in abutment at least at its indented outer end thereof with the one side of the wallboard whereby the clip is in resilient contact with opposed sides of the wallboard and whereby a part of the lath is hookingly engaged by the one leg of the clip inwardly of the indented end thereof during insertion of the other leg into and through the opening for effectively holding the lath adjacent one side of the wallboard prior to placement of a later applied coating of a cementitious material to the lath and the associated side of the wallboard.

BACKGROUND OF THE INVENTION

This invention relates to a composite wall construction for a building structure or the like. More particularly, it is concerned with an improved composite wall construction having a puncturable wallboard and a perforated lath held adjacent to at least one side of the wallboard whereby in a novel one-piece U-shaped clip of resilient material is provided for not only effectively puncturing the wallboard at a preselected location, but for resilient engagement with the opposite sides of the wallboard in a unique manner adjacent the puncture thereof so as to engage a part of the lath for effectively holding same adjacent said one side of the wallboard for a later applied coating of a cementitious material to the lath and the associated side of the wallboard.

Although a composite wall construction analogous to that under consideration is disclosed and described in U.S. patent to Venzie 1,801,400 and a furring construction in U.S. patent to Menninger 1,816,387, none of the composite constructions in the aforesaid patents contemplated a novel one-piece, generally U-shaped clip of resilient material in the unique manner suggested by the instant application. Even though in prior construction clips punctured or penetrated an underlying support so as to engage a part of a lath or the like in order to hold same to one side of the support, there was no suggestion for the clip to resiliently engage opposed sides of a puncturable support such as a wallboard for the advantageous purpose of not only positively fastening the clip to the support but at the same time for engaging a part of the lath to hold same adjacent one side of the support. The clip, as taught by applicant, can be resiliently fastened in any number to the puncturable wallboard at preselected separate locations thereof in order to effectively hold the lath adjacent the one side of the support and further will not interfere with the subsequent application of a coating of cementitious material to the lath and the associated side of the support.

SUMMARY OF THE INVENTION

Accordingly, it is the primary purpose of the instant invention to provide an improved composite wall construction wherein a novel one-piece, generally U-shaped clip of resilient material includes means for effecting not only puncture of a puncturable wallboard from one side thereof at a preselected location but also adapted to extend through such puncture in order to resiliently engage opposite sides of the wallboard adjacent the puncture while at the same time hookingly engaging a part of the lath so as to hold same adjacent at least one side of the wallboard prior to the application of a coating of cementitious material to the lath and the associated side thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmented perspective view on a reduced scale of a suitable building construction embodying the details of the instant invention;

FIG. 2 is an enlarged view generally taken along line 2 — 2 of FIG. 1 with parts removed and other parts broken away and illustrates details of the composite wall construction of the instant invention;

FIG. 3 is an enlarged sectional view taken along line 3 — 3 of FIG. 2 and illustrates details of one embodiment of the novel one-piece clip of the composite wall construction;

FIG. 3A is an enlarged sectional view similar to FIG. 3 but with the outer end of one leg of the clip illustrated in a position in contact with one side of the wall construction prior to effecting puncture of the wallboard thereof;

FIG. 4 is a further enlarged view of FIG. 3 with parts removed and other parts shown in dotted and solid lines;

FIG. 5 is a view similar to FIG. 3 with parts removed and illustrates details of a modified form of the clip of the instant invention; and

FIG. 6 is a view of another modified form of the clip. With further reference to the drawings, a suitable embodiment of the building structure or the like 10 advantageously incorporates the composite wall construction 12 of the instant invention wherein the composite wall construction generally comprises a puncturable wallboard 14, a perforated lath 18 disposed adjacent at least one side of the wallboard 14 and at least one novel one-piece, generally U-shaped clip 20 of resilient material that can be fastened in a unique manner to the wallboard 14 so as to hookingly engage a part of the lath 18 for the purpose of holding same adjacent at least one side of the wallboard 16. After holding the lath in position adjacent the associated side, as will be further described, a coating 22 of cementitious material can be applied to the associated side of the wallboard 14 whereby the lath 18 and part of the clip 20 are embedded in the cementitious material upon the setting and adherence thereof against the one side of the wallboard 18. It is to be understood that the building structure 10 can be of any suitable construction, for instance such as disclosed in our prior copending application entitled, "Structure" to Paul W. Tillisch et al., having Ser. No. 503,057 and filed on Oct. 23, 1965. Although the building structure 10 is only partially shown, the exterior intersecting walls 12 thereof are comprised of the composite wall construction of the instant invention. The lower edges of the walls 12 are disposed against the base 24 while the upper edges thereof are covered by the roof assembly made up of a roof 26 carried by support beams generally indicated at 28 in which the ends thereof

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are only illustrated. Furthermore, the walls 12 include provisions for the customary window openings 30 and a door 32 disposed in one of the walls 12 for access to the interior of the structure 10. As will become more apparent hereinafter, the composite wall construction 12 of the instant invention can be used for exterior walls as illustrated in FIG. 1 as well as for interior walls.

The puncturable wallboard 14 can be erected in any suitable manner to the building structure 10. As indicated in FIG. 2, the lower edge of the wallboard 14 is in nesting engagement with the outer edge portion of the base 24 while its upper and lower edges are also nested against the outer flanges of channel-shaped elements 34 and 36 shown in dotted and solid lines. The channel-shaped elements 34 and 36 are appropriately anchored to the base 24 and the underside of the roof 26 between the ceiling beams 28 thereof whereby inwardly facing surface portions of the wallboard 14 can be fastened such as by adhesives to the underly ing vertically spaced studs 16. Although not heretofore mentioned, the wallboard 14 for any length of wall 12 are usually made up of a series of panels wherein the adjoining side edges of adjacent panels are spliced together in a suitable manner so that any given length of wall such as 12 in FIG. 1 has the appearance of one continuous length. Just as much as the splicing together of wallboard panels does not constitute an important part of the instant invention, the splicing of such panels to form the length of the wallboard 14 for the walls 12 in FIG. 1 has been omitted for the sake of brevity. The puncturable wallboard 14 can be comprised of a series of panels or splices thereof of any suitable material capable of being readily punctured by the forcibly driven clip 20 of the instant invention. The wallboard 14 is preferably of laminated construction comprising a gypsum core and a pair of paper liners or layers bonded to opposed sides thereof. Alternatively, the wallboard 14 can be comprised of paper, wood, Masonite, wood fibers, glass or mineral fibers.

The novel one-piece, generally U-shaped clip 20 of the instant invention generally comprises spaced leg sections 40 and 42 having inner and outer ends and an intermediate section 44 joining together the inner ends thereof. As best shown in FIG. 4, one spaced leg section 42 is relatively shorter than the other leg section 40 and at the outer end thereof is bent inwardly and then outwardly so as to form an indent 46. The distance between the spaced leg sections 40 and 42 at the inwardmost point of the indent indicated at 48 in FIG. 4 is somewhat less than the thickness of the puncturable wallboard in order to enable resilient engagement of the clip 20 to the wallboard 14 as will be subsequently described. On the other hand, the outer end of the other leg section 40 is formed to a point 50 as best shown in FIG. 4 so as to facilitate puncture of the wallboard 14 at a preselected location thereof upon the clip 20 being forcibly driven by an appropriate tool not shown as further set forth hereinafter.

With particular reference to FIGS. 3A-4 and in order to effect puncture of the wallboard 14 at any preselected location thereof, the clip 20 can be positioned with its pointed end 50 against the outer or one side of the wallboard 14. After the operator has forcibly driven the pointed end 50 of the other leg section 40 through the wallboard 14 to form the punctured opening 52 by forcibly striking the intermediate portion 44 of the clip 20 in a knuckledriver or the like, the clip 20 is fastened to the wallboard 14 by inserting the clip in the opening 52 in such a fashion that the intermediate portion 44 is seated and substantially disposed within the opening 52 while the other leg section projects laterally from the inner end of the opening 52 for abutment with the outer side of the wallboard 14 and at the same time, the outer leg section 42 projects laterally from the outer end of the opening for abutment at its indented point 48 with the one side of the wallboard 14, whereby the clip is in resilient engagement with opposed sides of the wallboard 14. By virtue of the clip being initially disposed obliquely to the one side of the wallboard 14 in FIG. 3A and upon driving the clip 20 with a hammer, the punctured opening 52 on the upper part of the one side thereof is usually flared upwardly and outwardly as indicated at 52a in FIG. 4 while the opening 52 at the lower part of the inner end thereof is flared downwardly and outwardly as indicated at 52b in FIG. 4. Furthermore, to facilitate driving the clip 20 through the wallboard 14, the intermediate portion 44 of the clip 20 can be partially flattened, not shown.

Although not heretofore mentioned, the clip 20 can be formed from a length of a suitable size of wire-like material normally composed of a metal, for instance, ferrous metal or aluminum, capable of being formed in an appropriate manner into the configuration of the U-shaped clip in accordance with the teachings of the instant invention. Furthermore, the clip 20 has a characteristic of sufficient resilient strength for not only resisting deformation during forcible driving of the clip 20 to effect puncture of the wallboard 14 at a preselected location but also for resiliently engaging with the spaced legs 40 and 42 thereof, opposed sides of the wallboard adjacent the puncture 52 in fastening the clip 20 inserted through the opening 52 in the manner aforedescribed.

The perforated lath 18 is made up of a series of spaced strands of a given length wherein the strands are arranged in an crisscross pattern and interconnected together in a known manner at the points of intersection of the crisscrossed strands so as to form a screen of desired mesh size. The perforated lath 18 is preferably composed of a suitable grade of metal or an alloy thereof exhibiting a characteristic of sufficient strength in conjunction with the preselected mesh size of the lath 18 to adequately support an applied coating of cementitious material 22 to one side of the wallboard 14. The clip 20 during the insertion through the opening 52 of the wallboard 14 preferably hookingly engages inwardly of the indent 46 of the one leg 42, a part of a strand of the perforated lath 18 between adjacent cross strands thereof of as best illustrated in FIG. 4 so as to effectively hold the perforated lath 18 adjacent the one side of the wallboard 14. It is further noted here, if the user of the clip 20 neglects to hookingly engage a part of the lath 18 during fastening of the clip 20 to the wallboard the indent end 46 of the clip 20 can be manipulated by the user to hookingly engage a part of the lath 18 without adversely affecting the resilient engagement of the clip 20 to the opposed sides of the wallboard 14. Even though the strands of the lath 18 are illustrated in FIG. 2 as extending lengthwise and crosswise of the wallboard 14, it is to be understood that the clips 20 are still effective for holding the lath 18 adjacent to the wallboard 14 even if the strands of the lath 18 extend obliquely relative to the length and width thereof.

The cross sectional size of the strand hookingly engaged by the one leg 42 of the clip 20 is relatively less than the inward extent of the indented outer end 46 of the clip 20. Such cross sectional size of the strand of the lath 18 assures limited freedom of movement of the hookingly engaged part of the strand of the lath 18 between the one side of the wallboard 14 and the inner end of the one leg 42 of the fastened clip. Thus movement of the hookingly engaged part of the lath 18 relative to the associated clip 20 is important to assure embodiment of the lath 18 within the coating of cementitious material during the application and setting thereof to the one side of the wallboard 14. In view of the foregoing, the intermediate or web portion 44 of the clip 20 is of a length somewhat greater than the summation of the thickness of the wallboard 14 and the cross sectional size of the lath 18 hookingly engaged by the clip 20 as aforedescribed.
As is evident in FIG. 2, any number of clips 20 can be driven through the wallboard 14 in any desired pattern for the purpose of being fastened thereto and at the same time to effectively engage the wallboard parts of the lath 18 so as to effectively hold same in position for the subsequent applied coating of cementitious material.

In the event the operator drives a clip 20 into the wallboard 14 at a location in alignment with the underlying stud 16, the clip 20 can be readily removed and driven into the wallboard 14 adjacent the stud 16. Furthermore, it is to be understood that one or more clips 20 can be first fastened to the wallboard 14 followed by hookingly engaging one or more parts of the lath 18 to the fastened clips 20, rather than hookingly engaging a part of the lath 18 during the course of puncturing the wallboard 14 with the clip 20.

A modified form of the clip 20', as illustrated in FIG. 5, corresponds to the configuration of the aforesaid clip 20 except that the shorter leg section 42 of the outer end thereof is bent inwardly and then outwardly more than once so as to form the two successive indent 54 and 56 whereby the innermost portion 57 of at least one of the indent 54 and 56 spaced at a distance relative to the other leg section 40 that is somewhat less than the thickness of the wallboard 14. In providing more than one indent for the clip 20', it not only increases the resilient engagement of the clip 20' with the wallboard 14 but enables the operator, if desired, to hookingly engage more than one strap of the perforated lath 18. If, during the fastening of the clip 20' to the wallboard 14 upon insertion through the opening 13, the operator neglects to hookingly engage a strap of the lath 18, a portion of a strap of the lath can readily be hookingly engaged between the indent 54 and 56 of the clip 20' by the operator merely manipulating the outermost indent 56 from abutting engagement with the one side of the wallboard 14 without deleteriously affecting the resilient engagement of the clip 20' with opposed sides of the wallboard 14.

In addition, if the clip 20' hookingly engages adjacent strap portions of the lath 18, as depicted in FIG. 5, it more effectively holds the lath 18 in position adjacent the one side of the wallboard 14 without interfering with the subsequent application of a coating of cementitious material to the lath and the associated side of the wallboard 14.

Another modified form of the clip 20'' is illustrated in FIG. 6 where in the clip 20'' is provided with a web portion 44' substantially corresponding to that portion of the clip 20 in FIGS. 3 and 3A. Further, the shorter leg 42 of the clip 20'' is formed with successive indent 58 and 60 reversely disposed relative to each other wherein the outer indent 60 is indented in a direction toward the longer leg 40. The distance between the spaced legs 40 and 42 is somewhat less than the thickness of the wallboard 14 at the inner end of the leg 42 above the inner indent 58 and also at the innermost point 62 of the outer indent 60. Thus, during insertion of the clip 20'' through the punctured opening 52 of the wallboard 18, a part of the lath 18 is not hookingly engaged underneath the inner indent 58. If, for some reason, a part of the latch 18 is not hookingly engaged, during fastening of the clip 20'' to the wallboard 14, the outer indent 60 can be manipulated by the user for hookingly engaging a part of the lath 18 between the inner indent 58 and the associated side of the wallboard 14. It is further noted that because the outermost end of a clip, as described herein, is spaced away from or is bent outwardly from the board surface, it can be easily grasped by the operator during installation or use of the clip.

Irrespective of the clip 20, 20', or 20'' of the instant invention is used to hookingly engage a preseleced part of the perforated lath 18 for the beneficial purpose of holding the lath 18 adjacent the one side of wallboard 14, a coating of cementious material can be applied to the latch 18 and the associated side of the wallboard 14 in a suitable manner. The cementitious material can be a stucco usually comprised of a mixture of preselected amounts of lime, Portland cement and a suitable grade of a filler aggregate such as sand to which is added a preselected amount of water for effecting hydration of the mixture into a solidified mass upon evaporation of the excess water. Other suitable coatings can be plaster, cement or even plastic such as an ABS resin. Depending upon the chemical elements and compounds making up the wallboard 14 and the coating, an impermeable barrier may have to be interposed between the wallboard 14 and the coating 22 to prevent adverse chemical reaction therewithin such as during the setting of the applied coating 22. One suitable barrier is a length of asphaltic paper not shown attached in any desired fashion to the one side of the wallboard 14 prior to holding the lath 18 adjacent the one side thereof in the manner aforesaid.

Depending upon the requirements of the wall construction 12, it can be generally comprised of only the stud 16 and wallboard 14 as indicated in FIGS. 3, 3A. However, wall construction is desired, then another wallboard 14' as illustrated in FIGS. 3 and 3A can be attached to the exposed side of the stud 16. Inasmuch as both lath 18 and a given clip 20, 20' and 20'' can be embedded within an applied cementitious material, coatings of the one side of the wallboard 14, coatings of cementitious material can be also applied to opposed sides of the wallboard 14, if desired. If a hollow wall construction is intended, then a coating of cementitious material can be applied to the interior or exposed side of wallboard 14' in accordance with the teachings of the instant invention.

Advantageous embodiments of the invention have been disclosed and described. It is obvious that various changes and modifications may be made therein without departing from the spirit and scope thereof as defined in the appended claims, wherein:

What is claimed is:

1. In a wall construction for a building or the like comprising the combination of a puncturable wallboard, a length of perforated lath and a one-piece generally U-shaped clip of resilient material for holding said perforated lath to at least one side of said puncturable wallboard so as to enable adherence of a later applied coating of cementitious material to said one side of said wallboard, said clip including spaced leg sections having inner and outer ends and defining intermediate opening therein, said inner ends thereof, one of the leg sections adjacent the outer end thereof being bent in such a manner so as to form at least one indent, the other leg section at the outer end thereof being adapted to be forceably driven through said wallboard from the one side thereof at a preselected location so as to form a punctured opening in order to effectuate fastening of said clip to said wallboard; the distance between the leg sections of said clip at the indent of the one leg section being somewhat less than the thickness of the puncturable wallboard for effecting resilient engagement of the one leg section at the other side thereof, said clip after forming of the punctured opening being fastened to said wallboard upon insertion of said clip in the punctured opening in such a fashion that the intermediate leg section is seated and substantially disposed within the punctured opening, while the other leg section projects laterally from the inner end of the opening for abutment with the other side of said wallboard at the same time the one leg section projects laterally from the outer end of the punctured opening for abutment at the indent with the one side of said wallboard whereby said clip resiliently engages the wallboard, the one leg section being adapted to hookingly engage a part of said lath inwardly of the indent during insertion of the other leg section through the punctured opening so as to effectively hold the lath adjacent the one side of said wallboard.
2. In a wall construction for a building or the like comprising the combination of a puncturable wallboard, a length of perforated lath and a one-piece generally U-shaped clip of resilient material for holding said perforated lath to at least one side of said puncturable wallboard so as to enable adherence of a later applied coating of cementitious material to said one side of said wallboard, said clip including spaced leg sections having inner and outer ends and an intermediate section joining the outer ends thereof, one of the leg sections adjacent the outer end thereof being bent in such a manner as to form a plurality of indents, the other leg section at the outer end thereof being adapted to be forcibly driven through said wallboard from the one side thereof at a preselected location so as to form a punctured opening in order to effectuate fastening of said clip to said wallboard; the distance between the leg sections of said clip at least at one of the indents of the one leg section being somewhat less than the thickness of the puncturable wallboard for effecting resilient engagement of the leg sections to opposed sides thereof, said clip after forming of the punctured opening being fastened to said wallboard upon insertion of said clip in the punctured opening in such a fashion that the intermediate leg section is seated and substantially disposed within the punctured opening while the other leg section projects laterally from the other end of the opening for abutment with the other side of said wallboard at the same time the one leg section projects laterally from the outer end of the punctured opening for abutment at least at one of the indents with the one side of said wallboard whereby said clip resiliently engages the wallboard, the one leg section being adapted to hookingly engage a part of said lath inwardly of one of the indents during insertion of the other leg section through the punctured opening so as to effectively hold the lath adjacent the one side of said wallboard.

3. In a wall construction including a puncturable wallboard a one-piece generally U-shaped clip of resilient material for holding a length of perforated lath to one side of the puncturable wallboard, said clip comprising spaced leg sections in axial alignment and an intermediate section joining the inner ends thereof, one of the leg sections at the outer end thereof being bent in such a manner so as to form a plurality of indents, the other leg section being relatively unbent so that it can be easily and forcibly driven through said wallboard from the one side thereof so as to form a punctured opening in order to effectuate fastening of said clip to said wallboard; the distance between the leg sections of said clip at least at one of the indents of the one indented leg section being slightly less than the thickness of the puncturable wallboard for effecting resilient engagement of the leg sections to opposed sides of said wallboard upon insertion of said clip in a punctured opening in such fashion that the intermediate leg section is seated within the punctured opening while the unbent leg section projects laterally from an end of the punctured opening for abutment with the one side of said wallboard while at the same time the bent leg section projects laterally from the other end of the punctured opening for abutment at least at one of the indents thereof with the other side of said wallboard whereby said clip resiliently engages the wallboard, the bent leg section being adapted to hookingly engage a part of said lath inwardly of one of the indents thereof during insertion of the unbent leg section through the punctured opening.

4. In a wall construction as set forth in claim 3 wherein a part of said perforated lath is engaged by a portion of said indented leg located intermediate the indents thereof.

5. In a wall construction as set forth in claim 3 wherein a part of said perforated lath is engaged by a portion of said one indented leg in the area of the juncture of said one indented leg section and the intermediate section of the clip.

6. In a wall construction as set forth in claim 3 wherein the intermediate section of the clip has an overall length which is at least greater than the thickness of the wallboard.

7. In a wall construction as set forth in claim 3 wherein the indents of the bent leg section of said clip have a relatively sinuous-shaped configuration.

8. In a wall construction as set forth in claim 3 wherein the indents of the bent leg section of said clip normally project in a direction toward said other leg section.

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