US 20130247498A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2013/0247498 A1**

(43) **Pub. Date: Sep. 26, 2013**

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(54) **L-SHAPED SHEETMETAL ANCHOR WITH TUBULAR LEG AND ANCHORING ASSEMBLY**

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(21) Appl. No.: **13/426,002**

(22) Filed: **Mar. 21, 2012**

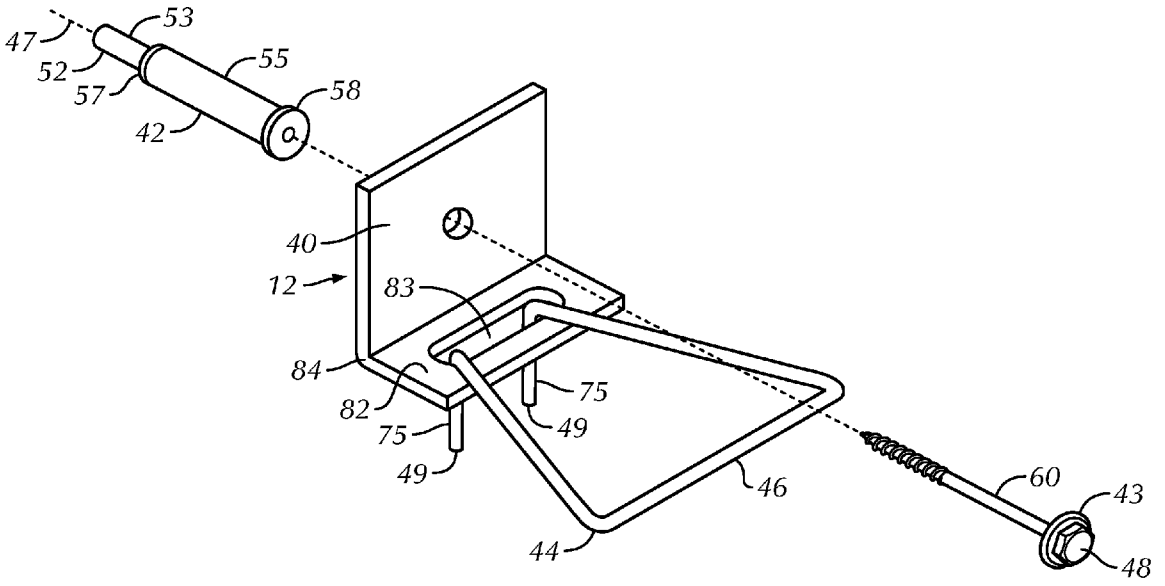
Publication Classification

(51) **Int. Cl.**
E04B 1/38 (2006.01)

(52) **U.S. Cl.**
USPC **52/582.1**; 52/712; 52/707

(57) **ABSTRACT**

An L-shaped sheetmetal anchor with tubular leg and an anchoring assembly employing the same are disclosed. The assembly is adaptable to varied anchoring structures and for use with interlocking veneer ties and reinforcement wires to provide a high-strength surface mounted anchoring system for cavity walls. The stepped cylinders sheath the mounting hardware to limit insulation tearing and resultant loss of insulation integrity. The assembly is thermally-isolated through the use of a series of strategically placed compressible non-conductive fittings. The assemblies are vertically or horizontally surface mounted on the inner wythe.



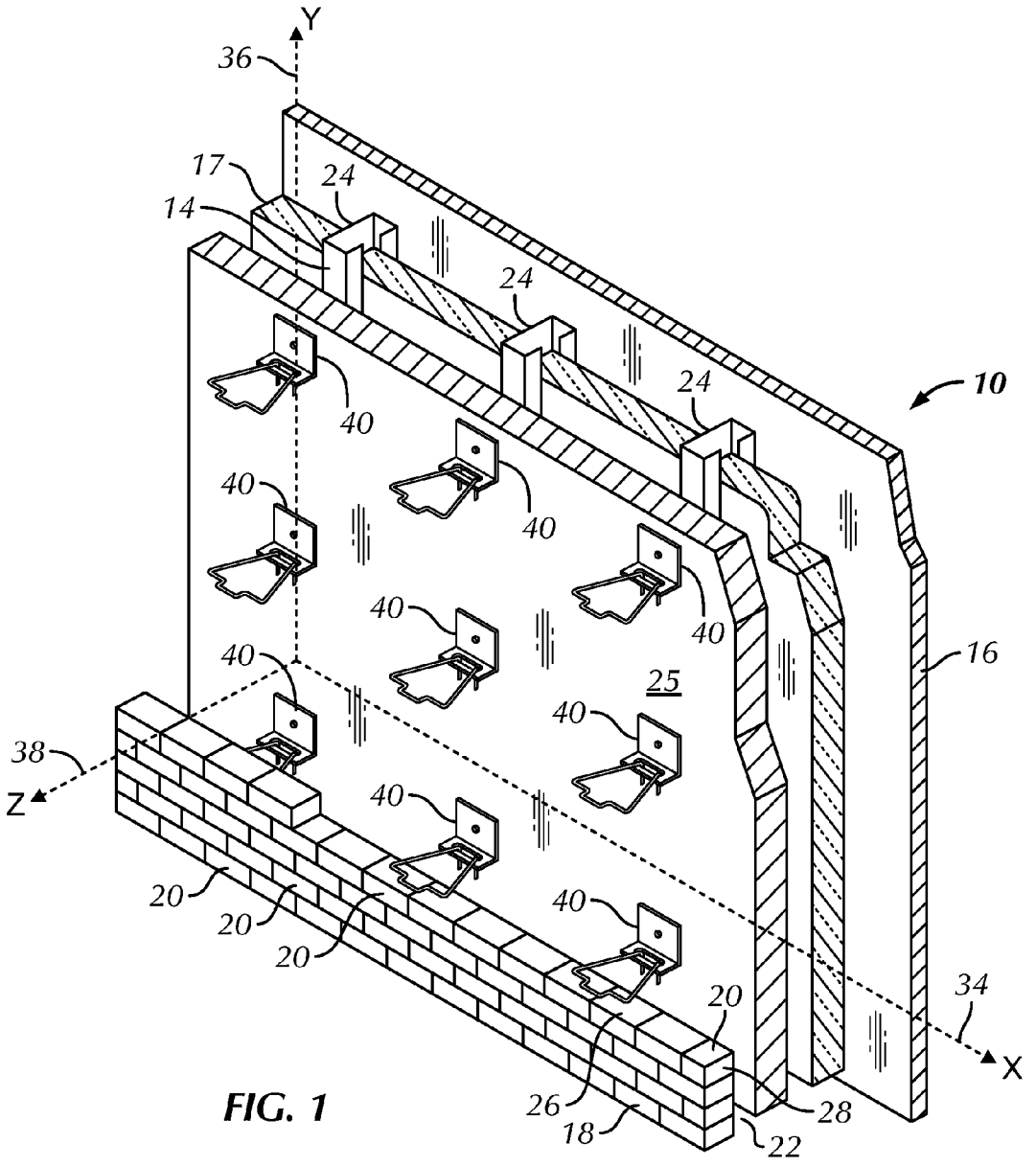

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FIG. 1

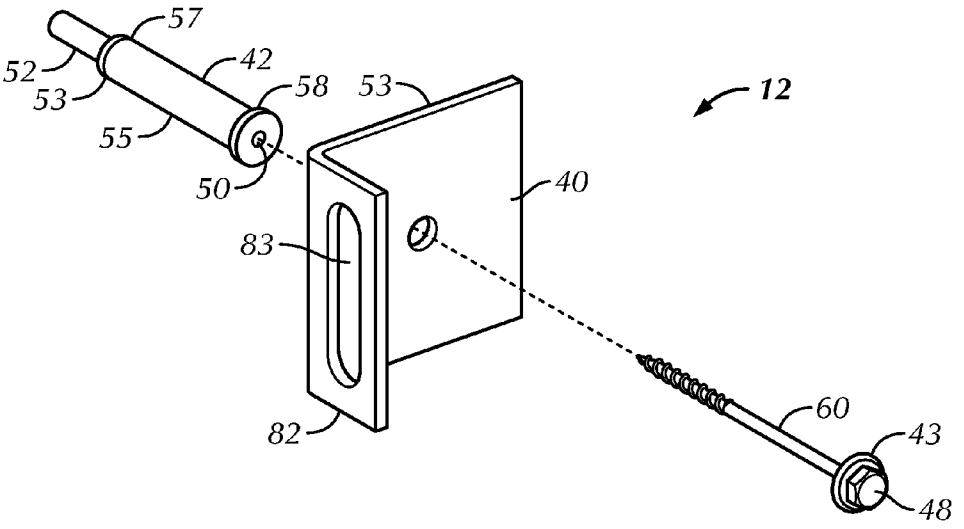
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FIG. 2

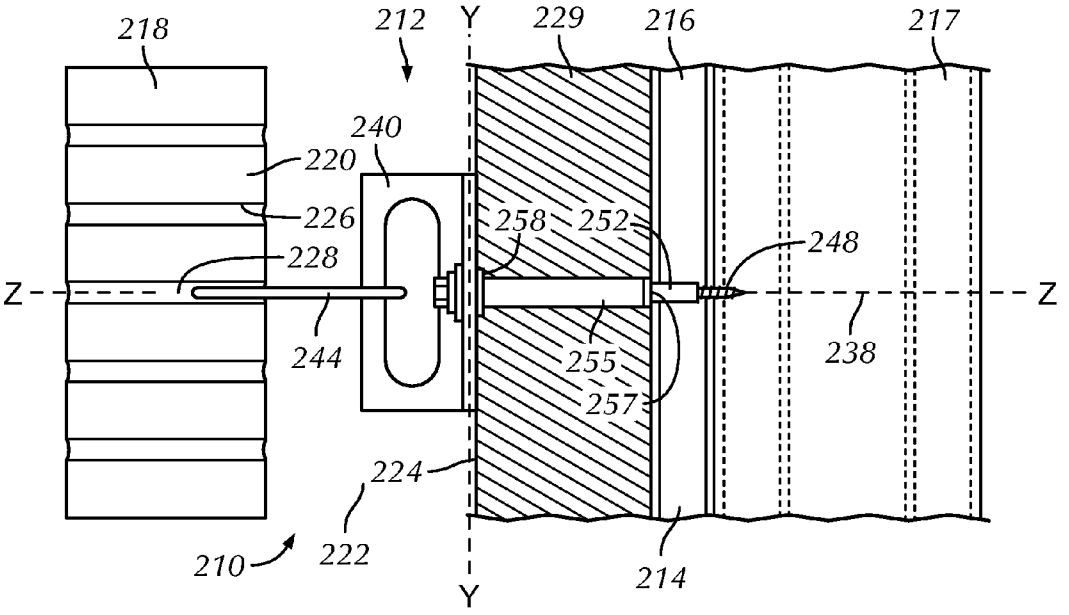
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FIG. 7

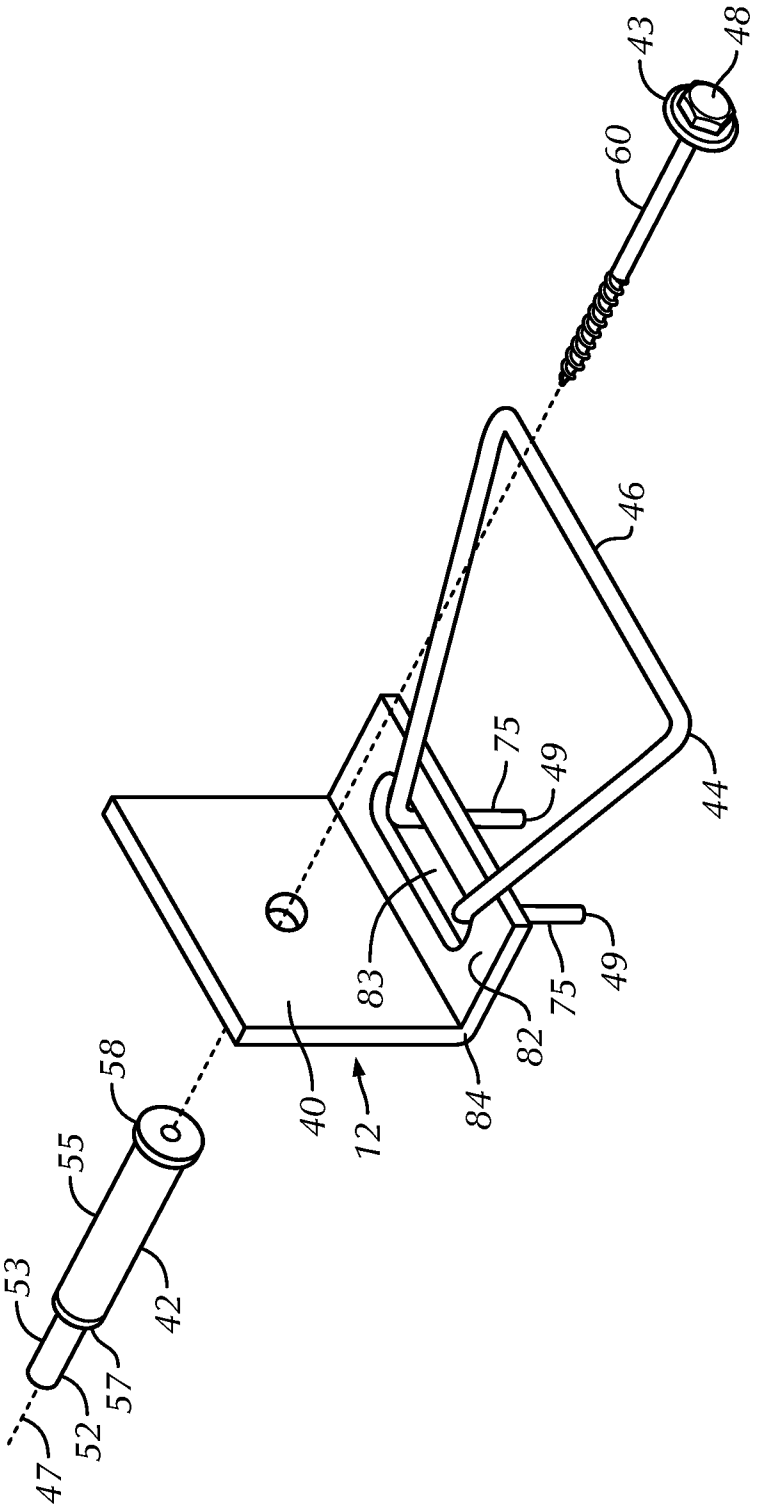

FIG. 3

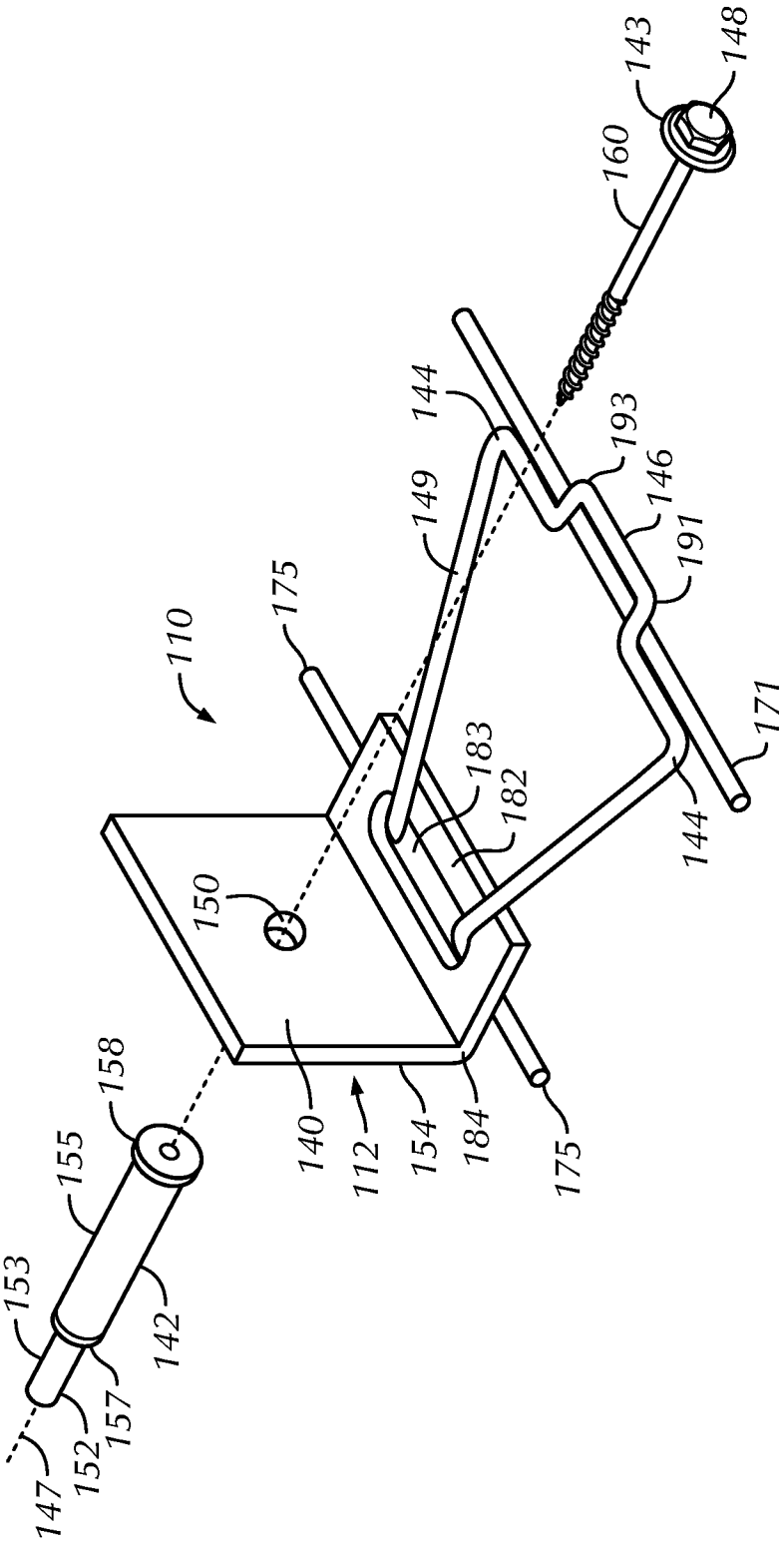
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FIG. 4

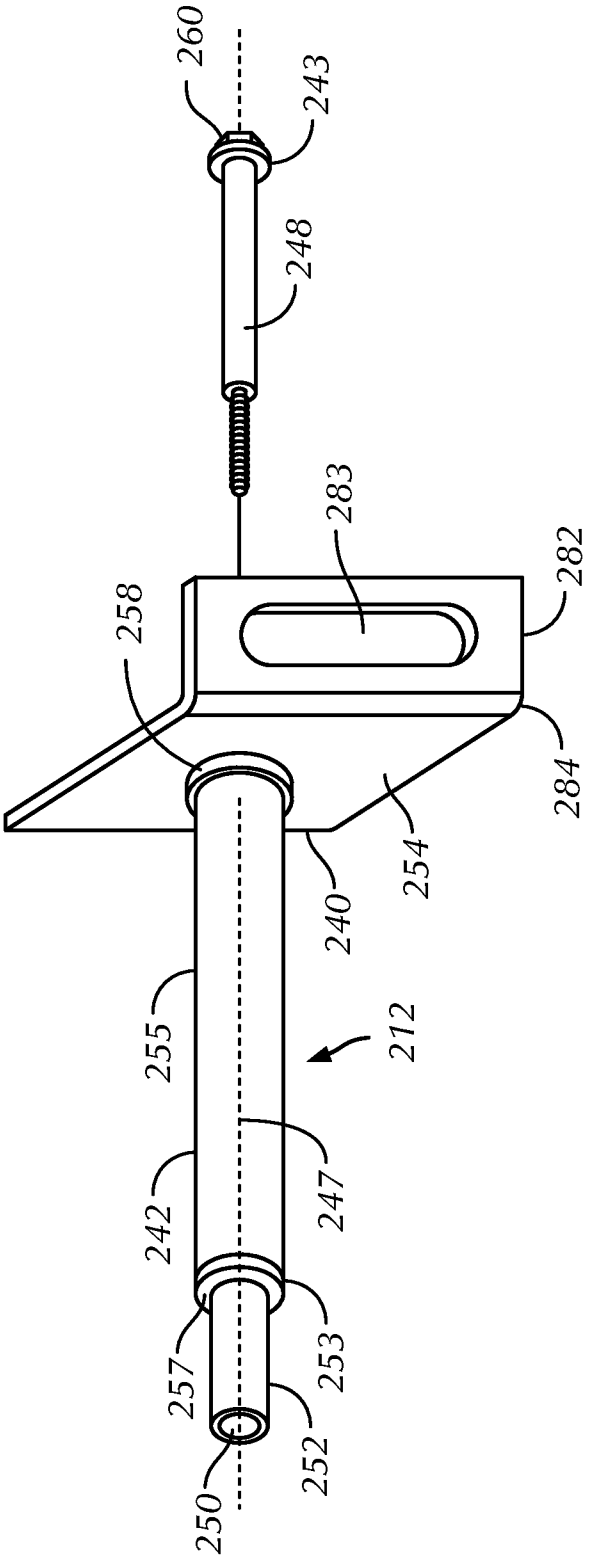
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FIG. 5

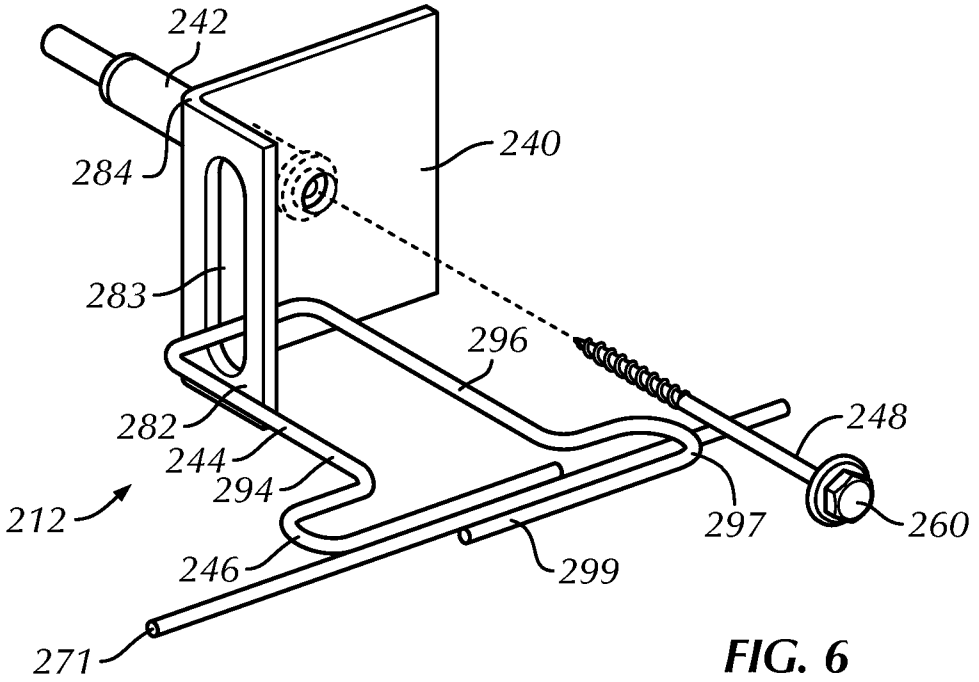

FIG. 6

L-SHAPED SHEETMETAL ANCHOR WITH TUBULAR LEG AND ANCHORING ASSEMBLY

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention provides an L-shaped sheet metal anchor and anchoring assembly having a sealing, protective, and thermally-isolating tubular leg for surface mounting on the inner wythe of a cavity wall and an interengaging veneer tie to positively interconnect the inner and outer wythes. The assembly has application to seismic-resistant structures and to cavity walls having special requirements. The latter include high-strength requirements for both insulated and non-insulated cavities, namely, a structural performance characteristic capable of withstanding a 100 lbf, in both tension and compression.

[0003] 2. Description of the Prior Art

[0004] In the late 1980's, surface-mounted wall anchors were developed by Hohmann & Barnard, Inc., now a unit of MiTEK-Berkshire Hathaway Corporation, and patented under U.S. Pat. No. 4,598,518. The invention was commercialized under trademarks DW-10®, DW-10-X®, and DW-10-HS®. These widely accepted building specialty products were designed primarily for dry-wall construction, but were also used with masonry backup walls. For seismic applications, it was common practice to use these wall anchors as part of the DW-10® Seismiclip® interlock system which added a Byna-Tie® wire formative, a Seismiclip® snap-in device—described in U.S. Pat. No. 4,875,319 ('319), and a continuous wire reinforcement.

[0005] In an insulated dry wall application, the surface-mounted wall anchor of the above-described system has pronged legs that pierce the insulation and the wallboard and rest against the metal stud to provide mechanical stability in a four-point landing arrangement. The vertical slot of the wall anchor enables the mason to have the wire tie adjustably positioned along a pathway of up to 3.625-inch (max.). The interlock system served well and received high scores in testing and engineering evaluations which examined effects of various forces, particularly lateral forces, upon brick veneer masonry construction. However, under certain conditions, the system did not sufficiently maintain the integrity of the insulation. Also, upon the promulgation of more rigorous specifications by which tension and compression characteristics were raised, a different structure—such as one of those described in detail below—was required.

[0006] The engineering evaluations further described the advantages of having a continuous wire embedded in the mortar joint of anchored veneer wythes. The seismic aspects of these investigations were reported in the inventor's '319 patent. Besides earthquake protection, the failure of several high-rise buildings to withstand wind and other lateral forces resulted in the incorporation of a continuous wire reinforcement requirement in the Uniform Building Code provisions. The use of a continuous wire in masonry veneer walls has also been found to provide protection against problems arising from thermal expansion and contraction and to improve the uniformity of the distribution of lateral forces in the structure.

[0007] Shortly after the introduction of the pronged wall anchor, a seismic veneer anchor, which incorporated an L-shaped backplate, was introduced. This was formed from either 12- or 14-gauge sheetmetal and provided horizontally disposed openings in the arms thereof for pintle legs of the veneer anchor. In general, the pintle-receiving sheetmetal version of the Seismiclip® interlock system served well, but in addition to the insulation integrity problem, installations were hampered by mortar buildup interfering with pintle leg insertion.

[0008] In the 1980's, an anchor for masonry veneer walls was developed and described in U.S. Pat. No. 4,764,069 by Reinwall et al., which patent is an improvement of the masonry veneer anchor of Lopez, U.S. Pat. No. 4,473,984. Here the anchors are keyed to elements that are installed using power-rotated drivers to deposit a mounting stud in a cementitious or masonry backup wall. Fittings are then attached to the stud which includes an elongated eye and a wire tie therethrough for disposition in a bed joint of the outer wythe. It is instructive to note that pin-point loading—that is forces concentrated at substantially a single point—developed from this design configuration. This resulted, upon experiencing lateral forces over time, in the loosening of the stud.

[0009] Exemplary of the public sector building specification is that of the Energy Code Requirement, Boston, Mass. (see Chapter 13 of 780 CMR, Seventh Edition). This Code sets forth insulation R-values well in excess of prior editions and evokes an engineering response opting for thicker insulation and correspondingly larger cavities. Here, the emphasis is upon creating a building envelope that is designed and constructed with a continuous air barrier to control air leakage into or out of conditioned space adjacent the inner wythe.

[0010] As insulation became thicker, the tearing of insulation during installation of the pronged DW10X® wall anchor, see supra, became more prevalent. This occurred as the installer would fully insert one side of the wall anchor before seating the other side. The tearing would occur at two times, namely, during the arcuate path of the insertion of the second leg and separately upon installation of the attaching hardware. The gapping caused in the insulation permitted air and moisture to infiltrate through the insulation along the pathway formed by the tear. While the gapping was largely resolved by placing a self-sealing, dual-barrier polymeric membrane at the site of the legs and the mounting hardware, with increasing thickness in insulation, this patchwork became less desirable. The improvements hereinbelow in surface mounted wall anchors look toward greater insulation integrity and less reliance on a patch.

[0011] Another prior art development occurred shortly after that of Reinwall/Lopez when Hatzinikolas and Pacholok of Fero Holding Ltd. introduced their sheetmetal masonry connector for a cavity wall. This device is described in U.S. Pat. Nos. 5,392,581 and 4,869,043. Here a sheetmetal plate connects to the side of a dry wall column and protrudes through the insulation into the cavity. A wire tie is threaded through a slot in the leading edge of the plate capturing an insulative plate thereunder and extending into a bed joint of the veneer. The underlying sheetmetal plate is highly thermally conductive, and the '581 patent describes lowering the thermal conductivity by foraminously structuring the plate. However, as there is no thermal break, a concomitant loss of the insulative integrity results.

[0012] Focus on the thermal characteristics of cavity wall construction is important to ensuring minimized heat transfer through the walls, both for comfort and for energy efficiency of heating and air conditioning. When the exterior is cold relative to the interior of a heated structure, heat from the interior should be prevented from passing through to the outside. Similarly, when the exterior is hot relative to the

interior of an air conditioned structure, heat from the exterior should be prevented from passing through to the interior. Providing thermally-isolating seals at the insertion points of the different layers of the inner wythe assists in controlling heat transfer.

[0013] Another application for high-span anchoring systems is in the evolving technology of self-cooling buildings. Here, the cavity wall serves additionally as a plenum for delivering air from one area to another. While this technology has not seen wide application in the United States, the ability to size cavities to match air moving requirements for naturally ventilated buildings enable the architectural engineer to now consider cavity walls when designing structures in this environmentally favorable form.

[0014] In the past, the use of wire formatives have been limited by the mortar layer thicknesses which, in turn are dictated either by the new building specifications or by pre-existing conditions, e.g. matching during renovations or additions in the existing mortar layer thickness. While arguments have been made for increasing the number of the fine-wire anchors per unit area of the facing layer, architects and architectural engineers have favored wire formative anchors of sturdier wire. On the other hand, contractors find that heavy wire anchors, with diameters approaching the mortar layer height specification, frequently result in misalignment. This led to the low-profile wall anchors of the inventors as described in U.S. Pat. No. 6,279,283. However, the above-described technology did not address the adaption thereof to surface mounted devices or stud-type devices. Nor does it address the need to thermally-isolate the wall anchor.

[0015] In the course of preparing this application, several patents, became known to the inventors hereof and are acknowledged hereby:

Patent	Inventor	Issue Date
2,058,148	Hard	Oct. 20, 1936
2,966,705	Massey	Jan. 3, 1961
3,377,764	Storch	Apr. 16, 1968
4,021,990	Schwalberg	May 10, 1977
4,305,239	Geraghty	Dec. 15, 1981
4,373,314	Allan	Feb. 15, 1983
4,438,611	Bryant	Mar. 27, 1984
4,473,984	Lopez	Oct. 02, 1984
4,598,518	Hohmann	Jul. 08, 1986
4,869,038	Catani	Sep. 26, 1989
4,875,319	Hohmann	Oct. 24, 1989
5,063,722	Hohmann	Nov. 12, 1991
5,392,581	Hatzinikolas et al	Feb. 28, 1995
5,408,798	Hohmann	Apr. 25, 1995
5,456,052	Anderson et al.	Oct. 10, 1995
5,816,008	Hohmann	Oct. 15, 1998
6,209,281	Rice	Apr. 03, 2001
6,279,283	Hohmann et al.	Aug. 28, 2001
7,415,803	Bronner	Aug. 26, 2008
7,562,506	Hohmann, Jr.	Jul. 21, 2009
7,845,137	Hohmann, Jr.	Dec. 07, 2010

Patent App.	Inventor	Publication Date
2008/0141605	Hohmann	Jun. 19, 2008
2010/0037552	Bronner	Feb. 18, 2010
2011/0047919	Hohmann, Jr.	Mar. 03, 2011

Foreign Patent Documents

279209	CH	52/714	March 1952
2069024	GB	52/714	August 1981

[0016] It is noted that with some exceptions these devices are generally descriptive of wire-to-wire anchors and wall ties and have various cooperative functional relationships with straight wire runs embedded in the inner and/or outer wythe.

[0017] U.S. Pat. No. 3,377,764—D. Storch—Issued Apr. 16, 1968 Discloses a bent wire, tie-type anchor for embedment in a facing exterior wythe engaging with a loop attached to a straight wire run in a backup interior wythe.

[0018] U.S. Pat. No. 4,021,990—B. J. Schwalberg—Issued May 10, 1977 Discloses a dry wall construction system for anchoring a facing veneer to wallboard/metal stud construction with a pronged sheetmetal anchor. Like Storch '764, the wall tie is embedded in the exterior wythe and is not attached to a straight wire run.

[0019] U.S. Pat. No. 4,373,314—J. A. Allan—Issued Feb. 15, 1983 Discloses a vertical angle iron with one leg adapted for attachment to a stud; and the other having elongated slots to accommodate wall ties. Insulation is applied between projecting vertical legs of adjacent angle irons with slots being spaced away from the stud to avoid the insulation.

[0020] U.S. Pat. No. 4,473,984—Lopez—Issued Oct. 2, 1984 Discloses a curtain-wall masonry anchor system wherein a wall tie is attached to the inner wythe by a self-tapping screw to a metal stud and to the outer wythe by embedment in a corresponding bed joint. The stud is applied through a hole cut into the insulation.

[0021] U.S. Pat. No. 4,869,038—M. J. Catani—Issued 091/26/89 Discloses a veneer wall anchor system having in the interior wythe a truss-type anchor, similar to Hala et al. '226, supra, but with horizontal sheetmetal extensions. The extensions are interlocked with bent wire pintle-type wall ties that are embedded within the exterior wythe.

[0022] U.S. Pat. No. 4.879.319—R. Hohmann—Issued Oct. 24, 1989 Discloses a seismic construction system for anchoring a facing veneer to wallboard/metal stud construction with a pronged sheetmetal anchor. The wall tie is distinguished over that of Schwalberg '990 and is clipped onto a straight wire run.

[0023] U.S. Pat. No. 5,392,581—Hatzinikolas et al—Issued Feb. 28, 1995 Discloses a cavity wall anchor having a conventional tie wire for mounting in the brick veneer and an L-shaped sheetmetal bracket for mounting vertically between side-by-side blocks and horizontally atop a course of blocks. The bracket has a slit which is vertically disposed and protrudes into the cavity. The slit provides for a vertically adjustable anchor.

[0024] U.S. Pat. No. 5,408,798—Hohmann—Issued Apr. 25, 1995 Discloses a seismic construction system for a cavity wall having a masonry anchor, a wall tie, and a facing anchor. Sealed eye wires extend into the cavity and wire wall ties are threaded therethrough with the open ends thereof embedded with a Hohmann '319 (see supra) clip in the mortar layer of the brick veneer.

[0025] U.S. Pat. No. 5,456,052—Anderson et at.—Issued Oct. 10, 1995 Discloses a two-part masonry brick tie, the first part being designed to be installed in the inner wythe and then, later when the brick veneer is erected to be interconnected by the second part. Both parts are constructed from sheetmetal and are arranged on substantially the same horizontal plane.

[0026] U.S. Pat. No. 5,816,008—Hohmann—Issued Oct. 15, 1998 Discloses a brick veneer anchor primarily for use with a cavity wall with a drywall inner wythe. The device combines an L-shaped plate for mounting on the metal stud of

the drywall and extending into the cavity with a T-head bent stay. After interengagement with the L-shaped plate the free end of the bent stay is embedded in the corresponding bed joint of the veneer.

[0027] U.S. Pat. No. 6,209,281—Rice—Issued Apr. 3, 2001 Discloses a masonry anchor having a conventional tie wire for mounting in the brick veneer and sheetmetal bracket for mounting on the metal-stud-supported dry wall. The bracket has a slit which is vertically disposed when the bracket is mounted on the metal stud and, in application, protrudes through the dry wall into the cavity. The slit provides for a vertically adjustable anchor.

[0028] U.S. Pat. No. 6,279,283—Hohmann et at.—Issued Aug. 28, 2001 Discloses a low-profile wall lie primarily for use in renovation construction where in order to match existing mortar height in the facing wythe a compressed wall tie is embedded in the bed joint of the brick veneer.

[0029] U.S. Pat. No. 7,415,803—Bronner—Issued Aug. 26, 2008 Discloses a wing nut wall anchoring system for use with a two legged wire tie. The wing nut is rotatable in all directions to allow angular adjustment of the wire tie.

[0030] U.S. Pat. No. 7,562,506—Hohmann, Jr.—Issued Jul. 21, 2009 Discloses a notched surface-mounted wall anchor and anchoring system for use with various wire formative veneer ties. The notches, upon surface mounting of the anchor, form small wells which entrain fluids and inhibit entry of same into the wallboard.

[0031] U.S. Pat. No. 7,845,137—Hohmann, Jr.—Issued Dec. 7, 2010 Discloses a folded wall anchor and anchoring system for use with various wire formative veneer ties. The folded wall anchor enables sheathing of the hardware and sealing of the insertion points.

[0032] U.S. Pub. No. 2008/0141605—Hohmann—Filed Dec. 14, 2006 Discloses a dual seal anchoring system for use with insulated cavity walls. The stud-type wall anchor seals the insertion points and stabilizes the wall anchor.

[0033] U.S. Pub. No. 2010/0037552—Bronner—Filed June 1, 2009 Discloses a side-mounted anchoring system for veneer wall tie connection. The system transfers horizontal loads between a backup wall and a veneer wall.

[0034] U.S. Pub. No. 2011/0047919—Hohmann. Jr.—Filed Mar. 3, 2011 Discloses a thermally isolated anchoring system for cavity walls. The stud-type wall anchor operates with various veneer ties.

[0035] None of the above provide a high-strength, surface-mounted wall anchor having an L-shaped sheetmetal anchor with a tubular leg of this invention. The tubule, L-shaped bracket and fastener and seal assembly of the present invention provide wall anchors with a thermally-isolating and protective shaftway that sheaths the fastener and seals the insertion points. The assemblies provide high-strength, sealed interconnections between the inner and outer wythes. The anchoring assembly is modifiable for installation horizontally or vertically and for use with various style veneer ties in varied cavity wall structures.

[0036] As will become clear in reviewing the disclosure which follows, the cavity wall structures benefit from the recent developments described herein that lead to solving the problems of insulation integrity, sealed anchoring systems, veneer tie adjustability and of high-span applications.

SUMMARY

[0037] In general terms, the invention disclosed hereby is a tubule-type anchoring system for surface mounting in a cavity wall structure. The anchoring system includes a tubule and bracket assembly for mounting on the inner wythe. The tubule and bracket assembly is horizontally or vertically oriented and contains a stepped cylinder portion with a first and second external diameter and a shaftway to sheath a fastener. The stepped cylinder portion is attached to an L-shaped plate that is surface mounted on the inner wythe and extends into the cavity. The L-shaped plate includes a receptor aperture for interengagement with a veneer tie. The veneer tie is partially disposed in the outer wythe to limit movement and takes various forms including a wire formative V-shaped body and pintles. The tubule and bracket assembly is affixed to the inner wythe by a fastener and seal assembly that is sheathed by the shaftway and sealed upon installation. The assembly is mounted either vertically or horizontally.

[0038] The invention further provides for a tubule-type anchoring system with similar attributes and includes a tubule and bracket assembly, veneer tie, fastener and seal assembly and an insulation seal. The anchoring system is thermally-isolating and includes a specialized wallboard seal and insulation seal at the insulation and wallboard insertion points. The anchoring system also includes an adjustable veneer tie.

[0039] Another embodiment of the anchoring system includes a tubule and bracket assembly with a stepped cylinder portion containing a shaftway for sheathing a fastener, an L-shaped plate for surface mounting, and a receptor aperture. The tubule and bracket assembly is surface mounted with a fastener and seal assembly and interengages with a veneer tie. The veneer tie accommodates a reinforcement wire for insertion in the outer wythe. The anchoring system is thermally-isolated through the use of insulating seals. The use of this innovative surface-mounted wall anchor in various applications addresses the problems of insulation integrity, veneer tie adjustability and thermal conductivity.

[0040] It is the primary object of the present invention to provide a new and novel L-shaped sheetmetal anchor with a tubular leg for use in a cavity wall anchoring system.

[0041] It is another object of the present invention to provide a tubule assembly which fully supports the wall anchor and is affixed to the inner wythe with a fastener and seal assembly.

[0042] It is yet another object of the present invention to provide a thermally-isolating anchoring system which is resistive to high levels of tension and compression and, further, is detailed to prevent disengagement under seismic or other severe environmental conditions.

[0043] It is still yet another object of the present invention to provide an anchoring system which is constructed to be surface mounted vertically or horizontally on the inner wythe.

[0044] It is a feature of the present invention that the tubule and bracket assembly contains a shaftway that is constructed to sheathe a fastener that limits tearing of the insulation upon installation.

[0045] It is another feature of the present invention that the anchoring system utilizes seals and has only point contact with the metal studs thereby restricting thermal conductivity.

[0046] It is yet another feature of the present invention that the tubule and bracket assemblies are utilizable with a variety of veneer allowing for site specific construction.

[0047] Other objects and features of the invention will become apparent upon review of the drawings and the detailed description which follows.

BRIEF DESCRIPTION OF THE DRAWINGS

[0048] In the following drawings, the same parts in the various views are afforded the same reference designators.

[0049] FIG. **1** shows a first embodiment of this invention and is a perspective view of an L-shaped sheetmetal anchor with tubular leg and anchoring assembly horizontally surface-mounted to a cavity wall with an inner wythe of dry wall construction having insulation disposed on the cavity-side thereof;

[0050] FIG. **2** is an exploded perspective view of the L-shaped sheetmetal anchor with tubular leg and the fastener and seal assembly of FIG. **1**;

[0051] FIG. **3** is a perspective view showing the anchoring system of FIG. **1** with the fastener and seal assembly and veneer tie with a pair of pintles interengaging the tubule and bracket assembly;

[0052] FIG. **4** is a perspective view of a second embodiment of this invention showing a horizontally surface-mounted L-shaped sheetmetal anchor with tubular leg and anchoring system with a veneer tie having a pair of pintles spring mounted within the tubule and bracket assembly and a reinforcement wire disposed within the veneer tie;

[0053] FIG. **5** is a perspective of a third embodiment of this invention showing a vertically surface-mounted L-shaped sheetmetal anchor with tubular leg and anchoring system with the fastener and seal assembly;

[0054] FIG. **6** is a perspective view showing the anchoring system of FIG. **5** with the fastener and seal assembly and veneer tie interengaged with the tubule and bracket assembly and a reinforcement wire disposed within the veneer tie; and

[0055] FIG. **7** is a side view of the anchoring system of FIG. **5** with the anchoring system surfaced mounted in the inner wythe and the veneer tie disposed within the bed joint of the outer wythe.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0056] Before entering into the detailed Description of the Preferred Embodiments, several terms which will be revisited later are defined. These terms are relevant to discussions of innovations introduced by the improvements of this disclosure that overcome the technical shortcomings of the prior art devices.

[0057] In the embodiments described hereinbelow, the inner wythe is provided with insulation. In the dry wall or wallboard construction, this takes the form of exterior insulation disposed on the outer surface of the inner wythe. Recently, building codes have required that after the anchoring system is installed and, prior to the inner wythe being closed up, that an inspection be made for insulation integrity to ensure that the insulation prevents thermal transfer from the exterior to the interior and from the interior to the exterior. Here the term insulation integrity is used in the same sense as the building code in that, after the installation of the anchoring system, there is no change or interference with the insulative properties and concomitantly substantially no change in the air and moisture infiltration characteristics and substantially no loss of heat or air conditioned air from the interior. The present invention is designed to minimize invasiveness into the insulative layer.

[0058] In a related sense, prior art sheetmetal anchors have formed a conductive bridge between the wall cavity and the metal studs of columns of the interior of the building. Here the terms thermal conductivity, thermally-isolated and -isolating, and thermal conductivity analysis are used to examine this phenomenon and the metal-to-metal contacts across the inner wythe.

[0059] The term stepped cylinder as used hereinafter refers to a cylinder having cylindrical portions with differing diameters about a common longitudinal axis and having shoulders between adjacent portions or steps. The term thermally-isolated tubule or tubule and bracket assembly for thermally isolating a surface-mounted wall anchor as used hereinafter refers to a stepped cylinder that is joined to a metal base, where the base is positioned substantially at right angles (normal) to the longitudinal axis of the stepped cylinder and where at the location that the stepped cylinder joins to the base, the base surrounds the latitudinal (cross-sectional) perimeter of the stepped cylinder with some area of cylinder material extending on all sides of this joint forming a press-fit relationship. The base has two major faces, identified by the orientation presented when the veneer anchor is installed. The face oriented towards the inner wythe is identified as the base surface, mounting surface, or the surface mounted portion and the face oriented towards the outer wythe is the outer surface. The stepped cylinder sheaths the mounting hardware or fastener and is thermally-isolated through the use of a series of neoprene or similar washers.

[0060] In addition to that which occurs at the facing wythe, attention is further drawn to the construction at the exterior surface of the inner or backup wythe. Here there are two concerns: namely, maximizing the strength of the securement of the surface-mounted wall anchor to the backup wall and, as previously discussed minimizing the interference of the anchoring system with the insulation. The first concern is addressed using appropriate fasteners such as, for mounting to masonry block, the properly sized concrete threaded anchors with expansion sleeves or concrete expansion bolts and for mounting to metal, dry-wall studs, self-tapping, self-drilling screws. The latter concern is addressed by the thermally-isolating fittings affixed to the stepped cylinder. The fittings seal any openings made in the insulation during installation and inhibit thermal transfer.

[0061] In the detailed description, the L-shaped sheetmetal anchor with tubular leg and anchoring assembly is oriented vertically or horizontally and paired with a variety of veneer ties. The anchor is secured to the inner wythe through the use of a fastener and seal assembly.

[0062] Referring now to FIG. **1** through **3**, the first embodiment shows an L-shaped sheetmetal anchor with tubular leg and anchoring assembly for horizontal surface mounting in a cavity wall. This anchor and anchoring assembly are suitable for recently promulgated standards with more rigorous tension and compression characteristics. The system discussed in detail hereinbelow, is a high-strength wall anchor for connection with an interengaging veneer tie. The wall anchor is horizontally surface mounted onto an externally insulated dry wall inner wythe. A cavity wall having dry wall and insulation mounted on metal studs or columns is chosen as exemplary.

[0063] The L-shaped sheetmetal anchor with tubular leg and anchoring assembly for surface mounting in a cavity wall is referred to generally by the numeral **10**. An inner wythe or dry wall backup **14** with sheetrock or wallboard **16** and insulation **17** mounted on metal studs or columns **24** is shown. The outer wythe or veneer wall **18** is constructed of facing brick,

block or stone **20**. Between the backup wall **14** and the veneer wall **18**, a cavity **22** extends outwardly from the surface **25** of the backup wall **14**.

[0064] In this embodiment, successive bed joints **26** and **28** are formed between courses of blocks **20** and the joints are substantially planar and horizontally disposed. For each structure, the bed joints **26** and **28** are specified as to the height or thickness of the mortar layer and such thickness specification is rigorously adhered to so as to provide the uniformity inherent in quality construction.

[0065] For purposes of discussion, the exterior surface **25** of the backup wall **14** contains a horizontal line or x-axis **34** and an intersecting vertical line or y-axis **36**. A horizontal line or z-axis **38**, normal to the xy-plane, also passes through the coordinate origin formed by the intersecting x- and y-axes. In the discussion which follows, it will be seen that the various anchor structures are constructed to restrict movement interfacially—wythe vs. wythe—along the z-axis and, in this embodiment, along the x-axis. The assembly **10** includes a tubule and bracket assembly or wall anchor **40** and with a veneer tie **44** constructed for embedment in bed joint **26**.

[0066] The tubule-type anchoring system **12** is shown having a tubule and bracket assembly or anchor **40** with a stepped cylinder portion **42** which penetrates the wallboard **16** and insulation **17**. The stepped cylinder **42** has at least a first external diameter or wallboard step **52** and a second external diameter or insulation step **55** arrayed about a common longitudinal axis **47** which is substantially normal to the surface mounted portion **53** of the anchor **40**. The stepped cylinder **42** has a shaftway or aperture therethrough **50** to sheath a fastener **48** and is affixed to the anchor **40**, which is an L-shaped plate with a surface mounted portion **53** and a receptor portion **82** which form a juncture **84** therebetween. The receptor portion **82** extends into the cavity **22** and contains a receptor aperture **83** which is substantially parallel to the juncture **84**.

[0067] The stepped cylinder **42** is a metal leg constructed from sheet metal such as hot dipped galvanized, stainless and bright basic steel and contains a wallboard step **52** that forms a shoulder **53** between the first external diameter **52** and the second external diameter **55**. A wallboard seal **57** is disposed on the shoulder **53** and is thermally isolating and constructed of compressible nonconductive material which precludes the passage of fluids through the inner wythe **14**. A substantially similarly constructed insulation seal **58** is disposed on the surface mounted portion **53** surround the stepped cylinder portion **42**.

[0068] At intervals along the outer wythe surface, the anchors **40** are surface-mounted using fastener and seal assemblies **60** which consist of a fastener **48** and a seal **43**. The fastener **48** extends though the shaftway **50** for attachment to the inner wythe **14**. The seal **43** seals the surface mounted portion **53**. The fasteners or self-tapping or self-drilling screws **48** are inserted through the stepped cylinders **42**. In this structure, the stepped cylinders **42** sheath the exterior of mounting hardware **48**. The fasteners **48** are thermally-isolated from the anchor **40** through the use of the seal **43** which is composed of compressible nonconductive material such as neoprene. The seal **43** is disposed about the fastener **48** and seals the shaftway **50**. The fastener **48** is sheathed by the stepped cylinder **42** upon insertion to limit insulation **17** tearing.

[0069] The stepped cylinder **42** is cylindrical and constructed of sheet metal. An aperture or shaftway **50** runs the length of the cylinder **42** allowing for the insertion and sheathing of the fastener **48**. The cylinder **42** contains a wallboard step **52** which is optimally located, when inserted within the outer wythe **14**, at the intersection of the dry wall **16** and the insulation **17** to provide a seal at such intersection. A thermally-isolating wallboard seal **57** is disposed on the stepped cylinder **42** at the shoulder **53** thereby minimizing thermal transfer. The stepped cylinder **42** has an insulation step **55** which is affixed to the anchor **40** through a welding, compression or similar process, thereby forming a high-strength bond. An insulation seal **58** is disposed on the insulation step **55** adjacent to the juncture of the insulation step **55** and the surface mounted portion **53**. Upon insertion of the assembly **12** into the layers of the inner wythe **14**, the anchor **40** rests snugly against the opening formed by the insertion of the stepped cylinder **42** and serves to provide further sealing of the stepped cylinder **42** insertion opening in the insulation **17** precluding the passage of air and moisture therethrough. This construct maintains the insulation integrity.

[0070] The anchor **40** contains a receptor aperture **83** formed in the receptor portion **82** adapted to engage a veneer tie **44** and to limit displacement of the outer wythe toward and away from the inner wythe **14**. The veneer tie **44** has an insertion **46** end for disposition in the outer wythe **18** and an interengaging end **49** for disposition in the receptor aperture **83**. In this embodiment the interengaging end **49** is a pair of pintles **75** which are spaced to restrain lateral movement of the outer wythe **18**. The diameter of each pintle **75** is dimensioned to restrain movement of the outer wythe **18** toward and away from the inner wythe **14**.

[0071] The description which follows is a second embodiment of the L-shaped sheetmetal anchor with tubular leg and anchoring assembly for horizontal surface mounting in a cavity wall. For ease of comprehension, wherever possible similar parts use reference designators 100 units higher than those above. Thus, the stepped cylinder **142** of the second embodiment is analogous to the stepped cylinder **42** of the first embodiment. Referring now to FIG. **4**, the second embodiment of the assembly is shown and is referred to generally by the numeral **110**. As in the first embodiment, a wall structure similar to that shown in FIG. **1** is used herein.

[0072] The assembly **112** is surface mounted to the exterior surface **24** of the inner wythe **14**. In this embodiment like the previous one, insulation **17** is disposed on wallboard **16** and, in turn, on columns **17**. Successive bed joints **26** and **28** are substantially planar and horizontally disposed and formed between courses of bricks **20** forming the outer wythe **18**, and are constructed to receive therewithin the insertion portion **146** of the veneer tie **144**. Being surface mounted onto the inner wythe **14**, the assembly **110** is constructed cooperatively therewith, and as described in greater detail below, is configured to penetrate through the wallboard **16** at a covered insertion point.

[0073] The tubule-type anchoring system **112** is shown having a tubule and bracket assembly or anchor **140** with a stepped cylinder portion **142** which penetrates the wallboard **16** and insulation **17**. The stepped cylinder **142** has at least a first external diameter or wallboard step **152** and a second external diameter or insulation step **155** arrayed about a common longitudinal axis **147** which is substantially normal to the surface mounted portion **154** of the anchor **140**. The stepped cylinder **142** has a shaftway or aperture therethrough **150** to sheath a fastener **148** and is affixed to the anchor **140**, which is an L-shaped plate with a surface mounted portion **154** and a receptor portion **182** which form a juncture **184**

therebetween. The receptor portion **182** extends into the cavity **22** and contains a receptor aperture **183** which is substantially parallel to the juncture **184**.

[0074] The stepped cylinder **142** is a metal leg constructed from sheet metal such as hot dipped galvanized, stainless and bright basic steel and contains a wallboard step **152** that forms a shoulder **153** between the first external diameter **152** and the second external diameter **155**. A wallboard seal **157** is disposed on the shoulder **153** and is thermally isolating and constructed of compressible nonconductive material which precludes the passage of fluids through the inner wythe **14**. A substantially similarly constructed insulation seal **158** is disposed on the surface mounted portion **154** and surrounds the stepped cylinder portion **142**.

[0075] At intervals along the outer wythe surface, the anchors **140** are surface-mounted using fastener and seal assemblies **160** which consist of a fastener **148** and a seal **143**. The fastener **148** extends though the shaftway **150** for attachment to the inner wythe **14**. The seal **143** seals the surface mounted portion **154**. The fasteners or self-tapping or self-drilling screws **148** are inserted through the stepped cylinders **142**. In this structure, the stepped cylinders **142** sheath the exterior of mounting hardware **148**. The fasteners **148** are thermally-isolated from the anchor **140** through the use of the seal **143** which is composed of compressible nonconductive material such as neoprene. The seal **143** is disposed about the fastener **148** and seals the shaftway **150**. The fastener **148** is sheathed by the stepped cylinder **142** upon insertion to limit insulation **17** tearing.

[0076] The stepped cylinder **142** is cylindrical and constructed of sheet metal. An aperture or shaftway **150** runs the length of the cylinder **142** allowing for the insertion and sheathing of the fastener **148**. The cylinder **142** contains a wallboard step **152** which is optimally located, when inserted within the outer wythe **14**, at the intersection of the dry wall **16** and the insulation **17** to provide a seal at such intersection. A thermally-isolating wallboard seal **157** is disposed on stepped cylinder **142** at the shoulder **153** thereby minimizing thermal transfer. The stepped cylinder **142** has an insulation step **155** which is affixed to the anchor **140** through a welding, compression or similar process, thereby forming a high-strength bond. An insulation seal **158** is disposed on the insulation step **155** adjacent to the juncture of the insulation step **155** and the surface mounted portion **154**. Upon insertion of the assembly **112** into the layers of the inner wythe **14**, the anchor **140** rests snugly against the opening formed by the insertion of the stepped cylinder **142** and serves to provide further sealing of the stepped cylinder **142** insertion opening in the insulation **17** precluding the passage of air and moisture therethrough. This construct maintains the insulation integrity. It is within the contemplation of this invention that a coating of sealant or a layer of a polymeric compound—such as a closed-cell foam (not shown) be placed on mounting surface **154** for additional sealing.

[0077] The anchor **140** contains a receptor aperture **183** formed in the receptor portion **182** adapted to engage a veneer tie **144** and to limit displacement of the outer wythe toward and away from the inner wythe **14**. The veneer tie **144** has an insertion **146** end for disposition in the outer wythe **18** and an interengaging end **149** for disposition in the receptor aperture **183**. In this embodiment the interengaging end **149** is a pair of pintles **175** which are spaced to restrain lateral movement of the outer wythe **18**. The diameter of each pintle **175** is dimensioned to restrain movement of the outer wythe **18** toward and away from the inner wythe **14**. The pair of pintles **175** are spring mounted with each one of the pair of pintles **175** urged by spring loading against one end of the receptor aperture **183**. The insertion portion **146** of the veneer tie **144** is swaged in one or more places **191** and **193** to accommodate a reinforcement wire **171** to form a seismic construct upon insertion within the outer wythe **18**.

[0078] The description which follows is a third embodiment of the L-shaped sheetmetal anchor with tubular leg and anchoring assembly for vertical surface mounting in a cavity wall. For ease of comprehension, wherever possible similar parts use reference designators 200 units higher than those above. Thus, the stepped cylinder **242** of the third embodiment is analogous to the stepped cylinder **42** of the first embodiment. Referring now to FIG. **5** through **7**, the third embodiment of the assembly is shown and is referred to generally by the numeral **210**. As in the first embodiment, a wall structure similar to that shown in FIG. **1** is used herein.

[0079] The assembly **212** is surface mounted to the exterior surface **224** of the inner wythe **214**. In this embodiment like the previous one, insulation **229** is disposed on wallboard **216** and, in turn, on columns **217**. Successive bed joints **226** and **228** are substantially planar to the z-axis **238** and horizontally disposed and formed between courses of bricks **220** forming the outer wythe **218**, and are constructed to receive therewithin the insertion portion **246** of the veneer tie **244**. Being surface mounted onto the inner wythe **214**, the assembly **210** is constructed cooperatively therewith, and as described in greater detail below, is configured to penetrate through the wallboard **216** at a covered insertion point.

[0080] The tubule-type anchoring system **212** is shown having a tubule and bracket assembly **240** with a stepped cylinder portion **242** which penetrates the wallboard **216** and insulation **229**. The stepped cylinder **242** has at least a first external diameter or wallboard step **252** and a second external diameter or insulation step **255** arrayed about a common longitudinal axis **247** which is substantially normal to the surface mounted portion **254** of the assembly **240**. The stepped cylinder **242** has a shaftway or aperture therethrough **250** to sheath a fastener **248** and is affixed to the anchor or assembly **240**, which is an L-shaped plate with a surface mounted portion **254** and a receptor portion **282** which form a juncture **284** therebetween. The receptor portion **282** extends into the cavity **222** and contains a receptor aperture **283** which is disposed in a substantially vertical plan in the cavity **222** and is substantially parallel to the juncture **284**.

[0081] The stepped cylinder **242** is a metal leg constructed from sheet metal such as hot dipped galvanized, stainless and bright basic steel and contains a wallboard step **252** that forms a shoulder **253** between the first external diameter **252** and the second external diameter **255**. A wallboard seal **257** is disposed on the shoulder **253** and is thermally isolating and constructed of compressible nonconductive material which precludes the passage of fluids through the inner wythe **214**. A substantially similarly constructed insulation seal **258** is disposed on the surface mounted portion **254** surround the stepped cylinder portion **242**.

[0082] At intervals along the outer wythe surface, the anchors **240** are surface-mounted using fastener and seal assemblies **260** which each consist of a fastener **248** and a seal **243**. The fastener **248** extends though the shaftway **250** for attachment to the inner wythe **214**. The seal **243** seals the surface mounted portion **254**. The fasteners or self-tapping or self-drilling screws **248** are inserted through the stepped cyl-

inders **242**. In this structure, the stepped cylinders **242** sheath the exterior of mounting hardware **248**. The fasteners **248** are thermally-isolated from the anchor **240** through the use of the seal **243** which is composed of compressible nonconductive material such as neoprene. The seal **243** is disposed about the fastener **248** and seals the shaftway **250**. The fastener **248** is sheathed by the stepped cylinder **242** upon insertion to limit insulation **229** tearing.

[0083] The stepped cylinder **242** is cylindrical and constructed of sheet metal. An aperture or shaftway **250** runs the length of the cylinder **242** allowing for the insertion and sheathing of the fastener **248**. The cylinder **242** contains a wallboard step **252** which is optimally located, when inserted within the outer wythe **214**, at the intersection of the dry wall **216** and the insulation **229** to provide a seal at such intersection. A thermally-isolating wallboard seal **257** is disposed on the stepped cylinder **242** at the shoulder **253** thereby minimizing thermal transfer. The stepped cylinder **242** has an insulation step **255** which is affixed to the anchor **240** through a welding, compression or similar process, thereby forming a high-strength bond. An insulation seal **258** is disposed on the insulation step **255** adjacent to the juncture of the insulation step **255** and the surface mounted portion **254**. Upon insertion of the assembly **212** into the layers of the inner wythe **214**, the anchor **240** rests snugly against the opening formed by the insertion of the stepped cylinder **242** and serves to provide further sealing of the stepped cylinder **242** insertion opening in the insulation **229** precluding the passage of air and moisture therethrough. This construct maintains the insulation integrity. It is within the contemplation of this invention that a coating of sealant or a layer of a polymeric compound—such as a closed-cell foam (not shown) be placed on mounting surface **254** for additional sealing.

[0084] The anchor **240** contains a receptor aperture **283** formed in the receptor portion **282** adapted to engage a veneer tie **244** and to limit displacement of the outer wythe toward and away from the inner wythe **214**. The veneer tie **244** is a V-shaped body having side portions **294** and **296** disposed through the receptor aperture **283**. The veneer tie is adjustably mounted upwardly and downwardly and the insertion insertion end or insertion portion **246** is substantially horizontally disposed in the outer wythe **218**. For interconnection with a reinforcement wire **271**, the insertion portion **246** has two arms **298** and **299** which lie on each side of the reinforcement wire **271**. For further interconnection with the reinforcement wire **271** one arm **298** is optionally swaged **297** to accommodate the reinforcement wire **271** and forms a seismic construct upon insertion within the outer wythe **218**.

[0085] In the above description of the L-shaped sheetmetal anchor with tubular leg and anchoring assembly for surface mounting in a cavity wall of this invention sets forth various described configurations and applications thereof in corresponding anchoring systems. Because many varying and different embodiments may be made within the scope of the inventive concept herein taught, and because many modifications may be made in the embodiments herein detailed in accordance with the descriptive requirement of the law, it is to be understood that the details herein are to be interpreted as illustrative and not in a limiting sense.

[0086] The L-shaped sheetmetal anchor with tubular leg and anchoring assembly for surface mounting in a cavity wall of this invention is a new and novel invention which improves on the prior art anchoring systems. The assemblies are adaptable to varied anchor structures for use with interlocking veneer ties and reinforcement wires to provide a high-strength surface mounted anchoring system for cavity walls. The stepped cylinders sheath the mounting hardware to limit insulation tearing and resultant loss of insulation integrity. Further, the assemblies are specially configured and thermally-isolated through the use of a series of strategically placed neoprene fittings which serve to disrupt thermal conductivity between the anchoring system and the inner wythe.

1. A tubule-type anchoring system for surface mounting in a cavity wall, said cavity wall having an inner wythe and an outer wythe spaced apart from said inner wythe forming a cavity therebetween, said anchoring system comprising:

a tubule and bracket assembly for disposition on the surface of said inner wythe in said cavity, said tubule and bracket assembly further comprising:

a stepped cylinder portion with the steps thereof arrayed about a common longitudinal axis and having at least a first external diameter and a second external diameter, said stepped cylinder having a shaftway therethrough with an open end for disposition in said cavity, said shaftway dimensioned to sheath a fastener;

an L-shaped plate having a surface mounted portion and a receptor portion with a juncture therebetween, said receptor portion for extending into said cavity, said surface mounted portion having said stepped cylinder portion fixedly attached thereto with the longitudinal axis substantially normal to the face of said surface mounted portion; and

a receptor aperture in said receptor portion of said L-shaped plate, said receptor aperture being an elongated slot with the longitudinal axis thereof substantially parallel to said juncture of said surface mounted portion and said receptor portion;

a veneer tie having an insertion end for disposition into said outer wythe and an interengaging end for disposition in said receptor aperture of said L-shaped plate, said interengaging end of said veneer tie dimensioned to limit movement of the outer wythe; and,

a fastener and seal assembly for attaching said tubule and bracket assembly to said inner wythe and for sealing said surface mounted portion of said L-shaped plate, said fastener and seal assembly for extending through said shaftway of said stepped cylinder and sealing against said open end of said shaftway.

2. A tubule-type anchoring system as described in claim **1** wherein said inner wythe is a drywall construct of wallboard mounted on metal columns, said stepped cylinder further comprising:

a wallboard step portion having said first external diameter and forming a shoulder at the juncture with said second external diameter; and

a wallboard seal disposed on said stepped cylinder at said shoulder.

3. A tubule-type anchoring system as described in claim **2** wherein said receptor aperture of said L-shaped plate is disposed in a substantially horizontal plane in said cavity and said interengaging end of said veneer tie is a pair of pintles with the spacing therebetween dimensioned to restrain lateral movement of said outer wythe.

4. A tubule-type anchoring system as described in claim **3** wherein the diameter of each of said pair of pintles is dimensioned to restrain the movement of said outer wythe toward and away from said inner wythe.

5. A tubule-type anchoring system as described in claim 3 wherein said pair of pintles is spring mounted with each one of said pair of pintles being urged by spring loading against one end of said elongated slot.

6. A tubule-type anchoring system as described in claim 5 wherein the diameter of each of said pair of pintles is dimensioned to restrain the movement of said veneer toward and away from said inner wythe.

7. A tubule-type anchoring system as described in claim 2 wherein said receptor aperture of said L-shaped plate is disposed in a substantially vertical plane in said cavity and said veneer tie is a V-shaped body with the juncture of side portions thereof disposed at said elongated slot.

8. A tubule-type anchoring system as described in claim 7 wherein said veneer tie is adjustably mounted upwardly and downwardly with said insertion portion being substantially horizontally disposed in said outer wythe.

9. A tubule-type anchoring system for surface mounting in a cavity wall, said cavity wall having an inner wythe and an outer wythe spaced apart from said inner wythe forming a cavity therebetween and having insulation disposed in said cavity on said inner wythe, said anchoring system comprising:

a tubule and bracket assembly for disposition on the surface of said inner wythe in said cavity, said tubule and bracket assembly further comprising:

a stepped cylinder portion with the steps thereof arrayed about a common longitudinal axis and having at least a first external diameter and a second external diameter, said stepped cylinder having a shaftway therethrough with an open end for disposition in said cavity, said shaftway dimensioned to sheath a fastener;

an L-shaped plate having a surface mounted portion and a receptor portion with a juncture therebetween, said receptor portion for extending into said cavity, said surface mounted portion having said stepped cylinder portion fixedly attached thereto with the longitudinal axis substantially normal to the face of said surface mounted portion; and

a receptor aperture in said receptor portion of said L-shaped plate, said receptor aperture being an elongated slot with the longitudinal axis thereof substantially parallel to said juncture of said surface mounted portion and said receptor portion;

a veneer tie having an insertion end for disposition into said outer wythe and an interengaging end for disposition in said receptor aperture of said L-shaped plate, said interengaging end of said veneer tie dimensioned to limit movement of the outer wythe;

a fastener and seal assembly for attaching said tubule and bracket assembly to said inner wythe and for sealing said surface mounted portion of said L-shaped plate, said fastener and seal assembly for extending through said shaftway of said stepped cylinder and sealing against said open end of said shaftway; and,

an insulation seal disposed on said surface mounted portion of said L-shaped bracket and surrounding said stepped cylinder portion of said tubule and bracket assembly.

10. A tubule-type anchoring system as described in claim 9 wherein said inner wythe is a drywall construct of wallboard mounted on metal columns, said stepped cylinder further comprising:

a wallboard step portion having said first external diameter and forming a shoulder at the juncture with said second external diameter; and

a wallboard seal disposed on said stepped cylinder at said shoulder.

11. A tubule-type anchoring system as described in claim 10 wherein said receptor aperture of said L-shaped plate is disposed in a substantially horizontal plane in said cavity and said interengaging end of said veneer tie is a pair of pintles with the spacing therebetween dimensioned to restrain lateral movement of said outer wythe.

12. A tubule-type anchoring system as described in claim 11 wherein the diameter of each of said pair of pintles is dimensioned to restrain the movement of said veneer toward and away from said inner wythe.

13. A tubule-type anchoring system as described in claim 11 wherein said pair of pintles is spring mounted with each one of said pair of pintles being urged by spring loading against one end of said elongated slot.

14. A tubule-type anchoring system as described in claim 13 wherein the diameter of each of said pair of pintles is dimensioned to restrain the movement of said veneer toward and away from said inner wythe.

15. A tubule-type anchoring system as described in claim 10 wherein said receptor aperture of said L-shaped plate is disposed in a substantially vertical plane in said cavity and said veneer tie is a V-shaped body with the juncture of side portions thereof disposed at said elongated slot.

16. A tubule-type anchoring system as described in claim 15 wherein said veneer tie is adjustably mounted upwardly and downwardly with said insertion portion being substantially horizontally disposed in said outer wythe.

17-20. (canceled)

21. A tubule-type anchoring system for surface mounting in a cavity wall, said cavity wall having a wallboard inner wythe and insulation thereon, channels for wall anchors therethrough, and an outer wythe spaced apart from said inner wythe and said outer wythe in a spaced apart relationship the one with the other forming a cavity therebetween, said anchoring system comprising:

a tubule and bracket assembly for disposition on the surface of said inner wythe in said cavity, said tubule and bracket assembly further comprising:

a stepped cylinder portion with the steps thereof arrayed about a common longitudinal axis having at least a first external diameter and a second external diameter, said stepped cylinder having a shaftway therethrough with an open end for disposition in said cavity, said shaftway dimensioned to sheath a fastener, said stepped cylinder further comprising:

a wallboard step portion having said first external diameter and forming a shoulder at the juncture with said second external diameter;

an L-shaped plate having a surface mounted portion and a receptor portion with a juncture therebetween, said receptor portion for extending into said cavity, said surface mounted portion having said stepped cylinder portion fixedly attached thereto with the longitudinal axis substantially normal to the face of said surface mounted portion;

a receptor aperture in said receptor portion of said L-shaped plate, said receptor aperture being an elon-

gated slot with the longitudinal axis thereof substantially parallel to said juncture of said surface mounted portion and said receptor portion;

a wallboard seal disposed on said stepped cylinder at said shoulder;

an insulation seal disposed on said surface mounted portion of said L-shaped plate and surrounding said stepped cylinder portion of said tubule and bracket assembly; and,

a fastener and seal assembly for attaching said tubule and bracket assembly to said inner wythe and for sealing said surface mounted portion of said L-shaped plate, said fastener and seal assembly for extending through said shaftway of said stepped cylinder and sealing against said open end of said shaftway.

22. A tubule-type anchoring system as described in claim **21** wherein said anchoring system further comprises a veneer tie having an insertion end for disposition into said outer wythe and an interengaging end for disposition in said receptor aperture of said L-shaped plate, said interengaging end of said veneer tie dimensioned to limit movement of the outer wythe.

23. A tubule-type anchoring system as described in claim **22** wherein said insulation seal and said wallboard seal are thermally isolating and constructed of compressible nonconductive material precluding the passage of fluids through said inner wythe.

24. A tubule-type anchoring system as described in claim **23** wherein said receptor aperture of said L-shaped plate is disposed in a substantially horizontal plane in said cavity and said interengaging end of said veneer tie is a pair of pintles with the spacing therebetween dimensioned to restrain lateral movement of said outer wythe.

25. A tubule-type anchoring system as described in claim **24** wherein the diameter of each of said pair of pintles is dimensioned to restrain the movement of said outer wythe toward and away from said inner wythe.

26. A tubule-type anchoring system as described in claim **24** wherein said pair of pintles is spring mounted with each one of said pair of pintles being urged by spring loading against one end of said elongated slot.

27. A tubule-type anchoring system as described in claim **26** wherein the diameter of each of said pair of pintles is dimensioned to restrain the movement of said veneer toward and away from said inner wythe.

28. A tubule-type anchoring system as described in claim **22** wherein said receptor aperture of said L-shaped plate is disposed in a substantially vertical plane in said cavity and said veneer tie is a V-shaped body with the juncture of said portions thereof disposed at said elongated slot.

29. A tubule-type anchoring system as described in claim **28** wherein said veneer tie is adjustable mounted upwardly and downwardly enabling the substantially horizontal disposition of said insertion portion of said veneer tie in said outer wythe.

30-34. (canceled)

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