SUPPORT BRACKET FOR USE WITH WALL

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ABSTRACT
The invention is a system for mounting an object to a wall, the system including a bracket. The bracket is configured to mount to a wall stud and includes an elongated flat member mounted to an elongated arm member. The elongated flat member has a length, a width, a thickness, opposite first and second ends, opposite first and second sides and opposite and parallel first and second edges extending along the length of the elongated flat member. The width of the first member is selected to span one of the wall studs such that the opposite first and second edges of the elongated flat member are substantially flush with the wall stud when the first side of the elongated flat member is positioned flat against the wall stud. The elongated arm member has a length, opposite first and second ends, a rectangular cross section and opposite first and second sides, the length of the elongated arm member being substantially longer than the width of the elongated flat member. The elongated arm member and elongated flat member are both made of a steel alloy. The elongated arm member is welded to one side of the elongated flat member between the first and second ends of the elongated flat member by a pair of parallel elongated welds such that the elongated arm extends perpendicularly from the elongated flat member, the first end of the elongated arm being aligned with the first edge of the elongated flat member, the first side of the elongated arm member lying flat against the second side of the elongated flat member. The elongated welds extending parallel from the first end of the elongated arm member to the second edge of the elongated flat member. A plurality of apertures are formed on the elongated flat member extending through the thickness of the elongated flat member. The flat member is secured to the wall stud by a plurality of bolts.
SUPPORT BRACKET FOR USE WITH WALL

FIELD OF THE INVENTION

[0001] The invention relates generally to support brackets for use with a wall for mounting and supporting heavy objects on a wall.

BACKGROUND OF THE INVENTION

[0002] Modern home fashion trends incorporate clean design. One of the most popular design trends includes the use of “floating” fixtures such as sinks which are mounted directly to the wall and appear to float without legs or other visible means of support. Such wall mounted fixtures generally require anchor bolts driven into the wall or other brackets which can be mounted to the walls surface. While these anchor bolts and surface mounted brackets are suitable for smaller items such as small sinks, large and or heavy items such as stoves are more difficult to mount because they require several anchor bolts and/or surface mounted brackets. Unfortunately, if the item extends some distance from the wall, the torque created at the wall connection can cause the item to sag over time, particularly is weight is applied to the end of the item furthest away from the wall. An improved bracket which permits larger items to be mounted to a wall without the risk of the item sagging or falling is therefore required.

SUMMARY OF THE INVENTION

[0003] In accordance with one aspect of the present invention, there is provided a bracket for mounting an item to a wall having wall studs, the bracket including an elongated flat member mounted to an elongated arm member. The elongated flat member has a length, a width, a thickness, opposite first and second ends, opposite first and second sides and opposite parallel first and second edges extending along the length of the elongated flat member. The width of the first member is selected to span one of the wall studs such that the opposite first and second edges of the elongated flat member are substantially flush with the wall stud when the first side of the elongated flat member is positioned flat against the wall stud. The elongated arm member has a length, opposite first and second ends, a rectangular cross section and opposite first and second sides, the length of the elongated arm member being substantially longer than the width of the elongated flat member. The elongated arm member and elongated flat member are both made of a steel alloy. The elongated arm member is welded to one side of the elongated flat member between the first and second ends of the elongated flat member by a pair of parallel elongated welds such that the elongated arm extends perpendicularly from the elongated flat member, the first end of the elongated arm being aligned with the first edge of the elongated flat member, the first side of the elongated arm member lying flat against the second side of the elongated flat member. The elongated welds extending parallel from the first end of the elongated arm member to the second edge of the elongated flat member. A plurality of apertures are formed on the elongated flat member extending through the thickness of the elongated flat member.

[0004] With the foregoing in view, and other advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, the invention is herein described by reference to the accompanying drawings forming a part hereof, which includes a description of the preferred typical embodiment of the principles of the present invention.

DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is a side view of an object mounted to a wall using the system of the present invention.

[0006] FIG. 2 is a front view of the bracket portion of the system of the present invention mounted to a wall stud.

[0007] FIG. 3 is a perspective view of the bracket portion of the system of the present invention.

[0008] FIG. 4 is a close up view of the welds joining the arm portion of the bracket to the flat portion of the bracket.

[0009] In the drawings like characters of reference indicate corresponding parts in the different figures.

DETAILED DESCRIPTION OF THE INVENTION

[0010] Referring firstly to FIG. 1, the present invention is a system for mounting large objects such as object 60 to wall 55. Wall 55 is formed from standard wooden wall studs 48 having side faces 50, front side 52 and back side 54. Wall board 56 is mounted to front face 52 of wall studs 48 by means known generally in the art. Item 60 is mounted to wall stud 48 in a cantilever fashion by means of bracket 10 such that the weight of item 60 is spread across the length of wall stud 48. As best seen in FIG. 3, bracket 10 comprises a strong T shaped bracket made of a strong steel alloy from elongated flat member 12 welded to elongated arm member 14. Elongated flat member 12 is preferably a substantially rectangular flat plate of steel having opposite ends 16 and 18, opposite sides 24 and 26 and opposite side edges 20 and 22 extending along the length of the elongated flat member. Elongated arm member 14 comprises an elongated member having opposite ends 36 and 38 and a rectangular profile having opposite sides 42 and 40. Preferably, elongated arm member 14 comprises a length of steel square tube.

[0011] Elongated arm 14 is welded to elongated flat member 12 by a pair of parallel welds 44 and 46 such that flat side 42 of elongated arm 14 is laid against side 24 of the elongated flat member and end 36 is flush against edge 20. Welds 44 and 46 extend between side edges 20 and 22. The elongated arm is welded to the elongated flat member such that the elongated arm is perpendicular to the flat member, with end 38 projected well away from the flat member. Elongated arm member 14 is mounted at point 31 on the elongated flat member 12 between ends 16 and 18 such that the arm is closer to end 18 than 16 to divide the elongated flat member into a short portion 28 and a long portion 30.

[0012] Elongated flat member 12 has two rows of apertures 32 and 34 which pass through the thickness of the flat member. Row of apertures 32 is adjacent edge 20 and row of apertures 34 is adjacent edge 22 and both rows of apertures extend between ends 16 and 18 and are present on both portions 28 and 30 of the elongated flat member.

[0013] Referring now to FIG. 2, bracket 10 is securely mounted to wall stud 48 by means of bolts 60. Apertures 58 are formed in wall stud 48 such that apertures 58 align with the apertures formed in elongated flat member 12 of bracket 10. In the case shown, apertures 32 are aligned with apertures 58. Bolts 60 are then passed through the aligned apertures in the bracket and the wall stud and the bolts are secured by nuts 62 which are tightened to ensure that surface 26 of the elongated flat member 12 is secured against side 50 of the wall.
stud. Preferably bracket 10 is secured to wall stud 48 by bolts 60 in both portions 28 and 30 of the bracket. To ensure an efficient transfer of forces from the bracket 10 to the wall stud 48, the wall stud should be bolted to the wall studs along both rows of the apertures 32 and 34 (not shown in FIG. 2) between ends 16 and 18.

[0015] Referring now to FIG. 4, arm 14 and elongated flat member 12 are welded together by parallel welds 44 and 46. Welds 44 and 46 form an integral connection between arm 14 and flat member 12 at corners 66 and 64 of arm 14, respectively. Far more that being a strong coupling, welds 44 and 46 turn the sharp angles where corners 66 and 64 meet side 24 into curved angles. The curved angles where the corners of arm 14 meet flat member 12 permit forces flowing between the arm and the flat member to flow around the corners in a wide arch as indicated by arrow 68. If the welds were not present and the arm member was secured to the flat member by some other means, then the sharp angle where the corners of the arm member meet the flat member would result in the concentration of forces right at the corners, thereby greatly increasing the likelihood of failure. It has been discovered that elongated welds are so efficient in transferring forces between the arm member and the flat member that literary hundreds of pounds of weight can be supported by the bracket.

[0016] Referring now to FIG. 1, again, arm 14 is dimensioned to extend about one foot from wall 55 mounted to wall stud 48. Object 60 can be mounted to arm 14 by a secondary support bracket 6. Since arm 14 has a rectangular cross section, secondary bracket 6 can be formed such that object 60 will not twist or turn when mounted to the arm member. The thickness of flat member 12 and arm 14 is selected such that the arm can support hundreds of pounds of weight. Since welds 44 and 46 efficiently transfer the forces from arm 14 to flat member 12, and since flat member 12 is mounted directly to wall stud 48 by a plurality of mounting bolts along the length of the flat member, the weight of object 60 is efficiently transferred to wall stud 48. The weight of flat member 12 is preferably selected such that the flat member spans the width of wall stud 48 when mounted to the wall stud and edges 20 and 22 are flush with sides 54 and 52 of the stud. This permits bracket 10 to be installed onto the wall stud while still permitting the wall board 56 to be mounted to the wall studs. Aperture 58 is formed in the wall board to permit the elongated arm to project through the wall board. The length of flat member 12 is preferably between about 1 to about 2 feet, and most preferably about 18 inches. It has been discovered that if the flat member has a thickness of about ¼ inch, there is no practical addition of structural strength gained by making the flat member longer than about 18 inches.

[0017] A specific embodiment of the present invention has been disclosed; however, several variations of the disclosed embodiment could be envisioned as within the scope of this invention. It is to be understood that the present invention is not limited to the embodiments described above, but encompasses any and all embodiments within the scope of the following claims.

Therefore, what is claimed is:

1. A bracket for mounting an item to a wall having wall studs, the bracket comprising:
   a an elongated flat member having a length, a width, a thickness, opposite first and second ends, opposite first and second sides and opposite and parallel first and second edges extending along the length of the elongated flat member, the width of the first member being selected to span one of the wall studs such that the opposite first and second edges of the elongated flat member are substantially flush with the wall stud when the first side of the elongated flat member is positioned flat against the wall stud;
   b an elongated arm member having a length, opposite first and second ends, a rectangular cross section and opposite first and second sides, the length of the elongated arm member being substantially longer than the width of the elongated flat member;
   c the elongated arm member and elongated flat member both being made of a steel alloy;
   d the elongated arm member being welded to one side of the elongated flat member between the first and second ends of the elongated flat member by a pair of parallel elongated welds such that the elongated arm extends perpendicularly from the elongated flat member, the first end of the elongated arm being aligned with the first edge of the elongated flat member, the first side of the elongated arm member lying flat against the second side of the elongated flat member;
   e the elongated welds extending parallel from the first end of the elongated arm member to the second edge of the elongated flat member, and
   f a plurality of apertures formed on the elongated flat member extending through the thickness of the elongated flat member.

2. The bracket of claim 1 wherein the apertures comprise first and second substantially parallel rows of apertures extending along the length of the elongated flat member between the opposite ends of the elongated flat member, the first row of apertures being adjacent the first edge of the elongated flat member and the second row of apertures being adjacent the second edge of the elongated flat member.

3. The bracket of claim 2 wherein the elongated arm is welded to the elongated flat member at a position on the elongated flat member closer to one end of the elongated flat member.

4. The bracket of claim 3 wherein the elongated arm is a hollow tube.

5. The bracket of claim 4 wherein each of the parallel welds joins a corner of the elongated arm member to the second side of the elongated flat member.

6. The bracket of claim 4 wherein the length of the elongated flat member is between about one foot to about two feet.

7. A system for mounting an object to a wall having a wall surface mounted to wall studs, the system comprising:
   a a bracket formed from an elongated arm member welded perpendicularly to an elongated flat member, the elongated flat member having a length, a width, a thickness, opposite first and second ends, opposite first and second sides and opposite and parallel first and second edges extending along the length of the elongated flat member, the width of the elongated flat member being selected to span one of the wall studs when the first side of the elongated flat member is positioned flat against the wall stud;
   b the elongated arm member having a length, opposite first and second ends, a rectangular cross section and opposite first and second sides, the length of the elongated arm member being substantially longer than the width of the elongated flat member;
c the elongated arm member and elongated flat member both being made of a steel alloy;
d the first end of the elongated arm being aligned with the first edge of the elongated flat member, the first side of the elongated arm member lying flat against the second side of the elongated flat member;
e a plurality of apertures formed on the elongated flat member extending through the thickness of the elongated flat member, the first plurality of apertures aligning with a corresponding plurality of apertures formed in the wall stud, the apertures in the elongated flat member aligning with the corresponding apertures in the wall stud when the elongated flat member is laid against the wall stud, the elongated flat member being secured to the wall stud by a plurality of mounting bolts passing through the apertures;
f the length of the elongated arm selected to project substantially from the wall surface mounted to the wall stud when the bracket is mounted to the wall stud, and
g the item being mounted to the elongated arm.

8. The system of claim 7 wherein the elongated arm is welded to the elongated flat member by a pair of substantially parallel welds extending from the first to the second edges of the elongated flat member.

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