JOIST HANGING APPARATUS, AND ASSOCIATED METHOD FOR MOUNTING JOISTS

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ABSTRACT

A joist hanging apparatus includes a rigid body forming a support region, a joist contact region and a first pair of opposing flanges. The flanges and joist contact region form a first U-shaped region for positioning a joist therebetween, wherein an edge of the joist coupled to the contact region is level with a support beam when the support region rests on the support beam. In a related method for mounting joists, a top edge of a joist is mounted within a U-shaped region formed by a monolithic rigid body. An end of the rigid body rests upon a support beam, the top edge of the joist level with the top of the support beam, and an end of the joist flush with a side of the beam. A joist hanger is mounted with the support beam, around a bottom edge of the joist, and the rigid body is removed from the joist and the support beam.
Mount Joist Edge within U-shaped Region Formed by Rigid Body 602

Secure Joist to Rigid Body 604

Position Joist and Apparatus on a Support Beam 606

Rest End of Rigid Body on Support Beam 608

Mount Joist Hanger with the Support Beam, Around Bottom Edge of Joist 610

Removing Rigid Body from Joist and Support Beam 612

FIG. 6
JOIST HANGING APPARATUS, AND ASSOCIATED METHOD FOR MOUNTING JOISTS

BACKGROUND

[0001] Hanging joists is an integral and important step in constructing a floor, ceiling, roof or deck. As the joists are load-carrying members, they must be hung straight and level in order to properly support the overlying floor, ceiling, roof or deck. Crooked, twisted or non-level joists may lead to problems such as squeaky floors, uneven ceilings, a wavy appearance of composite decking, sagging roofs and even structural instability.

[0002] The process of hanging joists includes the installation of joist hangers. Builders frequently draw one or more lines on a ledger or rim joist (hereinafter, “ledger” or “rim”) to mark the desired position of the hanger, and the hanger may be installed directly. A builder installing hangers in this manner must take care to insure that the hanger is installed accurately—at the proper level on the ledger or rim—or the surfaces of the joist and the ledger or rim will not be level. The builder must further insure that joist hangers are installed at the accurate width, to provide a snug fit for the joist hung therein. If opposing flanges of a joist hanger are too closely spaced, the joist will not fit, and the builder must either remove and re-install the hangers, or chisel the joist, which may weaken it. If the flanges are too far apart, they will not offer the necessary support to the joist, as the joist may shift or tilt in the hangers. A hanger that is too wide should also be removed and re-installed.

[0003] In an effort to reduce the incidence of improperly installed hangers, builders may temporarily insert a block of joist material into a hanger, hold the hanger and the joist material up to the ledger or rim, such that the applicable surfaces of the joist material and the ledger or rim are flush, and then nail the joist hanger into position. While this method may reduce the need to remove and re-install hangers, it is nonetheless awkward and inaccurate, given that one hand must support both the hanger and the joist while the other must wield a nail gun or hammer. Where a hammer is used, the hand supporting the hanger and the joist must also hold a nail in its proper place. A builder’s hands may easily shift while attempting to install hangers in this manner, thus resulting in crooked or non-level joists.

[0004] A further method for installing joists is to hold a joist in its proper position and drive a temporary nail diagonally through the top or side of the joist into the ledger or rim. The nail is then removed after the joist hanger is installed around the joist, or is hammered home prior to installation of the hanger. This method is also problematic and prone to failure, since the builder (or builders) must both hold the joist in place and drive in a nail. The joist may easily shift during this process, resulting in inaccurately installed hangers. In addition, the builder must take care to drive the nail far enough into the ledger or rim to securely fasten the joist thereto. Further, removing the nail often results in splitting of the joist end.

SUMMARY

[0005] The system and method for mounting joists and joist hangers disclosed herein may increase the accuracy and efficiency of joist installation.

[0006] In one embodiment, a joist hanging apparatus has a rigid body forming a support region, a joist contact region, and a first pair of opposing flanges. The flanges and the joist contact region form a first U-shaped region, for positioning a joist therebetwen. An edge of the joist coupled to the contact region is level with a support beam, when the support region rests on the support beam.

[0007] In one embodiment, an apparatus for coupling a joist to a joist hanger and a support beam includes: a rigid body forming a support region, a joist contact region, and a first pair of opposing flanges. The flanges and the joist contact region form a first U-shaped region for positioning a joist therebetwen. When the support region rests on the support beam, an edge of the joist that is coupled to the contact region is level with the support beam.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of one joist hanging apparatus, in accord with an embodiment.

[0010] FIG. 2 is a top view of the apparatus of FIG. 1.

[0011] FIG. 3 is a side view of the apparatus of FIG. 1, with exemplary dimensions

[0012] FIG. 4 is a front view of the apparatus of FIG. 1, with exemplary dimensions.

[0013] FIG. 5 is a perspective view of the apparatus of FIG. 1, coupled with a joist and positioned on a support beam

[0014] FIG. 6 is a flow chart illustrating one method for mounting a joist, in accord with an embodiment.

DETAILED DESCRIPTION

[0015] Before proceeding with the detailed description, it is to be appreciated that the present teaching is by way of example, not limitation. The illustrations herein are not limited to use or application with a specific type of system for mounting joists and joist hangers. Thus, although the instrumentality described herein are for the convenience of explanation, shown and described with respect to exemplary embodiments, it will be appreciated that the principals herein may be equally applied in other systems for mounting joists and joist hangers.

[0016] FIG. 1 is a perspective view of a joist hanging apparatus 100 having a rigid body 102. Rigid body 102 is for example a metal or durable plastic body forming a joist contact region 104A, a first pair of opposing flanges 106A and a support region 104B. Joist contact region 104A and support region 104B for example form opposing first and second flat surfaces 105A, 105B of rigid body 102, with
opposing flanges 106A extending away from first flat surface 105A and forming a U-shaped region 108A (see also FIG. 4) with the joist contact region 104A. U-shaped region 108A is sized to fit a joist therein (see, e.g., FIG. 5). Opposing flanges 106A for example facilitate mounting of a joist to joist contact region 104A by preventing side-to-side movement once the joist is fit within U-shaped region 108A. At least one attachment point 110A is provided with rigid body 102, for attaching an edge of the joist within U-shaped region 108A to joist contact region 104A. Attachment point 110A is for example a hole, sized to accommodate a fastener 112A, which couples a top edge of a joist (e.g., joist 500, FIG. 5) to joist contact region 104B. Fastener 112A is shown in FIG. 1 as a screw 112A; however, it is to be understood that other fasteners such as clamps, nails and the like, may be employed to attach apparatus 100 to a joist. Attachment point 110A may thus be a marking to indicate a proper point for such an alternate fastener. Apparatus 100 may alternately incorporate a clamp, for example formed by opposing flanges 106A, to secure a joist within U-shaped region 108A via a pressure fit.

[0017] As further described with respect to FIG. 5, herein below, one or more support region markings 114 facilitate alignment of the joist with body 102, for mounting with a support beam. Markings 114 are for example disposed upon one or both of opposing flanges 106A, and indicative of distance to a first end 116 of rigid body 102. A user for example aligns an end of the joist with the desired support region marking 114, and an edge of the joist within U-shaped region 108A. A fastener such as screw 112A is aligned with attachment point 110A and screwed into the joist until the joist is securely fastened against joist contact region 104A.

[0018] Apparatus 100 may be functionally reversible; in this embodiment a second pair of opposing flanges 106B extends from body 102 to form a second U-shaped region 108B (see FIG. 4) with support region 104B. Second pair of opposing flanges 106B extends from rigid body 102 in a direction opposite to the direction in which first pair of opposing flanges 106A extend from rigid body 102. Opposing flanges 106B for example point up when opposing flanges 106A point down.

[0019] As shown in the top, construction view of FIG. 2, rigid body 102 may be a monolithic rigid body 102. First pair of opposing flanges 106A are for example formed by bending flanges 106A downwards, where indicated by dotted lines 200, and second pair of opposing flanges 106B are for example formed by bending flanges 106B upwards along dotted line 200. Alternately, monolithic rigid body 102 is poured or otherwise molded to form apparatus 100 in its intended shape.

[0020] One or both of opposing flanges 106A for example include one or more joist contact region markings 118, indicating a distance or distances to a second end 120 of rigid body 102. FIG. 2 shows support and contact region markings 114, 118 as single extrusions; however, markings 114, 118 may also be notches, indentations. Optionally, laser-cut or painted markings 114, 118 may be provided.

[0021] Where apparatus 100 is functionally reversible, support region 104B includes at least one attachment point, for example a hole 110B, sized to accommodate a screw 112B. In this embodiment therefore apparatus 100 may be turned over and positioned with an edge of a joist between opposing flanges 106B (within second U-shaped region 108B) and against support region 104B. An end of the joist may be aligned with a joist contact region marking 118, at a desired distance from second end 120 of rigid body 102, prior to attaching the joist to rigid body 102 via one or both attachment points 110A, 110B and respective fasteners 12A, 112B. Markings 114, 118 may indicate a length to end (l1) 116, 120, respectively, for example about one inch; however, additional markings 114, 118 provide additional measurements to ends 116, 120.

[0022] FIG. 3 is a simplified side view, showing exemplary dimensions of apparatus 100. In one embodiment, apparatus 100 has a total length (l1) of about 12 inches (about 305 mm), with joist contact and support regions 104A, 104B having equal lengths (l1A) and (l1B), respectively, of about six inches (about 153 mm). First and second pairs of opposing flanges 106A, 106B may have equal heights (hA) and (hB), each extending about 5/8 inch (about 16 mm) from first and second flat surfaces 105A, 105B of rigid body 102 (see also FIG. 4). For example, as shown in FIG. 4, first pair of opposing flanges 106A extends from first flat surface 105A, to height hA, and second pair of opposing flanges 106B extend from second flat surface 105B to height hB.

[0023] As shown in the simplified front view of FIG. 4, U-shaped regions 108A, 108B thus have depths (dA) and (dB) of about 1/4 inch (about 25 mm). Rigid body 102 has a thickness (tA) of for example 1/8 inch (about 6 mm), lending to a total height (hA) of about 1 1/2 inch, or about 35 mm, for apparatus 100. However, hA, hB, and thus h1 may vary as a matter of design preference, for example to vary the weight, size and/or load-bearing capacity of apparatus 102. Widths wA, wB of respective U-shaped regions 108A, 108B are sized at about two inches, to securely fit an edge of most joists, regardless of joist length or height.

[0024] FIG. 5 shows a perspective view of apparatus 100 coupled with a joist 500. Joist 500 is shown with an edge 502 positioned within U-shaped region 108A and between first pair of opposing flanges 106A. Since joist contact region 104A and support region 104B form flat surfaces, joist 500 coupled to apparatus 100 is flush with the entirety of first flat surface 105A (see FIG. 4) and joist contact region 104A. An end 506 of joist 500 is aligned with a support region markings 114. Joist contact region 104A and support region 104B for example form a flat surface, such that joist 500 is also flush with support region 104B, when fastened to joist contact region 104A. Screws 112A, 112B fasten rigid body 102 to joist 500, via attachment points 110A, 110B.

[0025] Apparatus 100 and joist 500 are for example positioned upon a support beam 508, with support region 104B resting on a top surface 510 of beam 508, and end 506 flush with a side 512 of the support beam. Edge 502 is level with top surface 510 when support region 104B rests upon support beam 508. Support beam 508 is for example a ledger, rim joist, header or a previously-installed standard joist (e.g., where joist 500 is a piece of blocking).

[0026] Once positioned upon support beam 508, joist hangers 514 are for example positioned about a second edge 516 of joist 500 and attached to support beam 508. Apparatus 100 thus allows joist 500 to be positioned in place prior to installing joist hangers 514, for example facilitating one-time placement of hangers 514 at the correct width and
height. When a second apparatus 100 is attached to an opposite end (not shown) of joist 500 and positioned in its place on a second support beam (not shown) that is parallel to support beam 508, a user is free of the need to support the joist while placing hangers. Wobbling or shifting of the joist during hanger installation may thus be eliminated, and level installation of the joist insured.

[0027] Once hanger 514 is installed, screws 112A and/or 112B may be unscrewed and apparatus 100 removed from joist 500. Apparatus 100 is durable and reusable with multiple joists, and may thus be attached to the next joist to be hung. As previously noted, apparatus 100 may be functionally reversible; thus, a joist may also be positioned within second U-shaped region 1083, between opposing flanges 106B, and in contact with support region 104B. When apparatus 100 is functionally reversible, it may be flipped over such that first and second pairs of opposing flanges 106A, 106B, first and second U-shaped regions 108A, 108B, attachment points 110 and joist contact region 104A and support region 104B are interchangeable.

[0028] FIG. 6 illustrates a method of mounting joists. Method 600 commences in step 602 with the mounting of a top edge of a joist within a U-shaped region formed by a rigid body. The rigid body is for example a monolithic rigid body having at least a first pair of opposing flanges forming the u-shaped region, e.g., rigid body 102, first pair of opposing flanges 106A, U-shaped region 108A. The joist, e.g., joist 500, is secured to the rigid body, in step 604. For example, one or both of screws 112A, 112B secure the joist to the rigid body.

[0029] The joist and rigid body are positioned on a support beam such as a header beam, ledger or rim joist, in step 606. The joist is for example positioned with its top level with the top of the support beam, and with a first end flush against a side of the header beam. The monolithic body is then rested on the support beam, in step 608. The monolithic body for example extends beyond the end of the joist to provide a support region for resting on the support beam.

[0030] A joist hanger is mounted with the support beam, around a bottom edge of the joist, in step 610. Advantageously, the joist is already in its optimal, level position relative to the support beam. The joist hanger may thus be secured in the correct position while the joist is in place, eliminating the need for re-placement of crooked hangers, or chiseling or shimming a joist to fit incorrectly spaced hangers. When the joist hangers have been secured in place, the rigid body is removed from the joist, in step 612.

[0031] When two workers are installing joists together, mounting joists may be facilitated if the two workers perform steps 606, 608 at more or the same time, at opposite ends of the joist. Steps 602-604 and 610-612 may likewise be performed substantially simultaneously, or at different times. Where one person is hanging joists alone, straight and level mounting of joists may be further facilitated by performing steps 602-608 with one rigid body, e.g., apparatus 100, at a first end of a joist, and then performing steps 602-608 with a second rigid body (e.g., apparatus 100) at a second end of the joist. Once the joist is resting upon two support beams (one at either end of the joist), hangers may be quickly and easily secured in their proper position. Joist installation is for example expedited because a single user can hang joists of any dimension at their optimal position, on the first attempt.

[0032] It will be appreciated that apparatus 100 may be formed with a composite or metal joist, for example during manufacture. When a metal or composite joist is formed with an apparatus 100, steps 602, 604 are unnecessary, and joist installation may commence with step 606.

[0033] Upon completion of step 612, the rigid body, is for example re-used with another joist. Utilizing the same steps 602-612 with subsequent joists may insure that the joists are not only hung level with the support beam, but also with one another. This may eliminate problems such as squeaky floors, popped nails, raised screw heads and “wavy” appearance of composite decking, all of which are associated with crooked or non-level joists.

[0034] Changes may be made in the above systems and structures without departing from the scope thereof. It should thus be noted that the matter contained in the above description and/or shown in the accompanying drawings should be interpreted as illustrative and not in a limiting sense. The following claims are intended to cover all generic and specific features described herein, as well as all statements of the scope of the present method, system and structure, which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. Joist hanger apparatus, comprising: a rigid body forming a support region, a joist contact region, and a first pair of opposing flanges, the flanges and joist contact region forming a first U-shaped region for positioning a joist therebetween, wherein an edge of the joist coupled to the contact region is level with a support beam when the support region rests on the support beam.

2. Apparatus of claim 1, the joist contact region forming at least one hole for coupling the edge with the joist contact region.

3. Apparatus of claim 1, the flanges facilitating mounting of the joist to the joist contact region by preventing side-to-side movement of the joist within the U-shaped region.

4. Apparatus of claim 1, wherein the support region and joist contact region form a flat surface.

5. Apparatus of claim 1, the support region comprising one or more support region markings for aligning the end of the joist for mounting with the support beam.

6. Apparatus of claim 5, wherein the support region markings indicate a distance to an end of the rigid body.

7. Apparatus of claim 1, the support beam comprising a header, a ledger or a rim joist.

8. Apparatus of claim 1, the rigid body being reusable with multiple joists.

9. Apparatus of claim 1, the rigid body comprising metal.

10. Apparatus of claim 1, further comprising a second pair of opposing flanges forming a second U-shaped region with the support region, the second pair of flanges extending away from the rigid body in a direction that is opposite extension of the first pair of flanges away from the rigid body.

11. Apparatus of claim 10, wherein the rigid body is functionally reversible.

12. Apparatus of claim 10, the support region forming at least one hole for mounting an edge of the joist within the second U-shaped region.

13. Apparatus of claim 10, wherein the rigid body is a monolithic rigid body.
14. Apparatus of claim 10, the joist contact region comprising one or more contact region markings for aligning an end of the joist for mounting with a support beam.

15. Apparatus of claim 14, wherein the contact region markings indicate a distance to a second end of the rigid body.

16. Apparatus of claim 14, wherein one or both of the support region markings and the joist contact markings are disposed on the first or second pair of flanges.

17. Apparatus for coupling a joist to a joist hanger and a support beam, comprising a rigid body forming a support region, a joist contact region, and a first pair of opposing flanges, the flanges and joist contact region forming a first U-shaped region for positioning a joist therebetween, wherein an edge of the joist coupled to the contact region is level with a support beam when the support region rests on the support beam.

18. Apparatus of claim 17, further comprising a second pair of opposing flanges forming a second U-shaped region, for positioning a joist therebetween, with the support region, the second pair of flanges extending away from the rigid body in a direction that is opposite extension of the first pair of flanges away from the rigid body.

19. Apparatus of claim 18, wherein the rigid body is functionally reversible.

20. Apparatus of claim 19, the rigid body forming at least one hole for mounting the joist within the first or the second U-shaped region.

21. Apparatus of claim 18, one or both of the support region and the joist contact region comprising at least one marking for aligning an end of the joist for mounting with the support beam.

22. The apparatus of claim 17, wherein the apparatus is reusable.

23. A method for mounting joists, comprising:
mounting a top edge of a joist within a U-shaped region formed by a monolithic rigid body;
resting an end of the monolithic rigid body on top of a support beam, with the top edge of the joist level with a top of the support beam and a first end of the joist flush with a side of the support beam;
mounting a joist hanger with the support beam and around a bottom edge of the joist, at the first end; and
removing the monolithic rigid body from the joist and the support beam.

24. The method of claim 23, the monolithic rigid body comprising:
a support region comprising the end of the monolithic body;
a joist contact region; and
a first pair of opposing flanges, the flanges and joist contact region forming the U-shaped region for positioning the joist therebetween.

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