

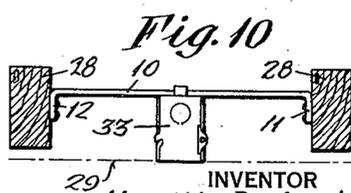
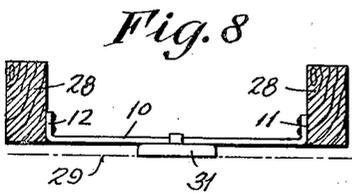
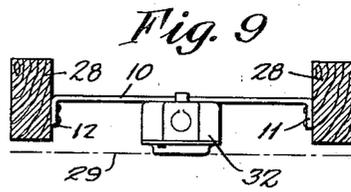
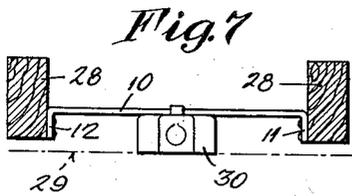
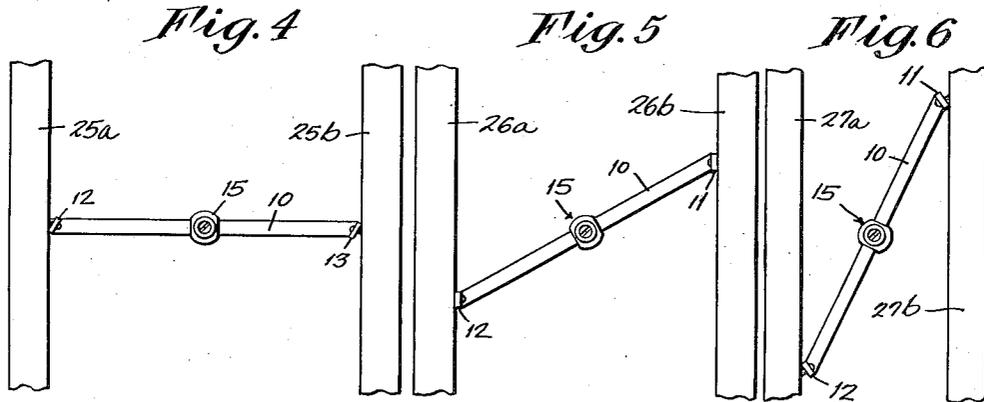
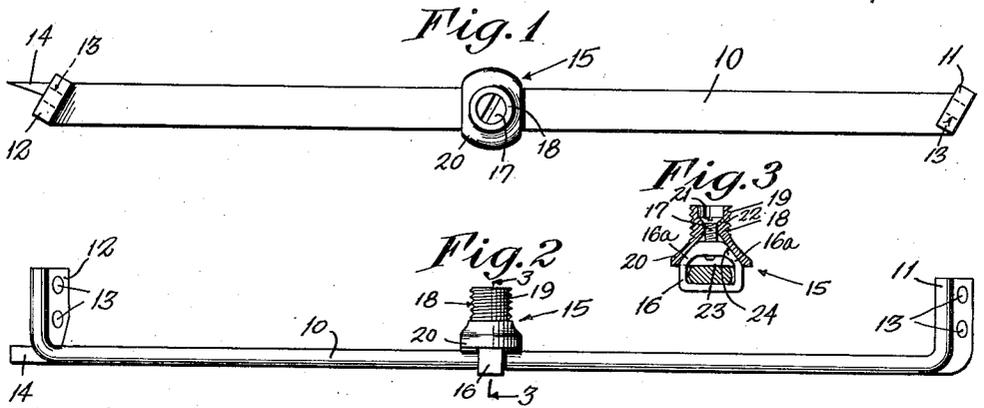
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M. B. AUSTIN, JR

2,233,334

SUPPORT FOR ELECTRIC FIXTURES AND THE LIKE

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INVENTOR  
Merritt B. Austin, Jr  
BY  
Johnson, Klein and Smyth  
ATTORNEYS

# UNITED STATES PATENT OFFICE

2,233,334

## SUPPORT FOR ELECTRIC FIXTURES AND THE LIKE

Merritt B. Austin, Jr., Winnetka, Ill.

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7 Claims. (Cl. 248—57)

This invention relates to an improved support for fixtures in building construction.

More specifically, the present invention relates to an improved bar hanger universally adapted to be fastened between variably spaced joists to support fixtures, such as electric outlet boxes, switch boxes and lighting fixtures, on the interior walls and ceilings of a building.

Heretofore, it was customary to fasten bar hangers for the aforesaid purpose across the face of joists in building construction, a coupling member being carried by an inwardly offset portion of said bar to permit a fixture carried thereby to be mounted at the desired depth with respect to the face of the joists, for instance, in order to bring the fixture flush with plaster covering the wall or ceiling. Various forms of bar hangers were provided, adapted to accommodate fixtures of different standard depths, assuming a standard thickness for the plaster covering the wall. The thickness of the bar hanger protruding from the face of the joists was taken up within the thickness of the plaster.

In modern construction, however, prefabricated continuous wall coverings, such as plasterboard, wallboard, metal lath and the like are in general use and vary to a considerable degree as to thickness. Consequently, the use of bar hangers having an offset of standard depth has become unsatisfactory. Furthermore, protrusion of the bar hangers from the face of the joists causes unsightly bulges in continuous wall coverings, sometimes causing plasterboard or similar materials to crack. In order to avoid this difficulty, it is necessary to accurately notch the face of the joists in order to bring the surface of the bar hanger flush with the joists, provision of such notches constituting a time-consuming and uneconomical operation.

Various types of bar hangers have been proposed, adapted to be fastened between rather than across the faces of joists whereby the necessity of providing offset portions of standard depths is eliminated. Such bar hangers usually include coupling means for supporting electrical fixtures, adjustably mounted on the bar and adapted to be locked in any desired spaced position with reference to the ends thereof or with reference to the supporting joists.

The principal difficulty in the latter constructions is the problem of adapting the bar hanger to variations in the spacing of the joists. Attempts have been made to solve this problem by providing a two-piece bar, the length of which is adjustable, or a bar hanger, the ends of which

are bendable to decrease its length as desired. Means for adjusting the length of the bar are relatively cumbersome, complicated and expensive, and the provision of bendable bar hangers limits the strength of the bar to relatively flimsy types.

It is an object of the present invention to provide a bar hanger of relatively simple, rugged and inexpensive construction adapted to be fastened between the joists of buildings to support fixtures at any desired depths and also universally adapted, without changing the length thereof, to fit a wide range of variably spaced joists.

It is also an object of the present invention to provide a bar hanger of the type described having means for temporarily holding the bar in the desired position in order to render permanent fastening thereof more convenient.

A further object of the present invention is to provide an improved and simplified coupling means carried by the bar hanger, adapted to be locked in any desired spaced position with reference to the ends of the bar for supporting fixtures of the aforesaid type.

The objects of the present invention are attained by providing a bar hanger, the ends of which include means for fastening them to the sides of adjacent joists at any angle required by the spacing thereof. This is accomplished by providing a bar hanger comprising a flattened bar of substantially oblong rectangular cross-section, the ends of which are bent in the same direction at right angles to a flattened surface of the bar and then twisted in the same direction about their axes through an acute angle. The bent ends of the bar are provided with means, such as perforations for receiving nails or screws, adapted to permit their being fastened to the sides of joists.

The bar hanger is further provided with a spur, protruding from an end thereof, which may be jammed into the side of a joist to hold the bar hanger temporarily in position until a workman is able to nail it or screw it into place.

The attaching or coupling means for fixtures comprise a clamp member through which the bar extends, clearance between the bar and the clamp member being sufficient to permit the clamp to turn about the bar for reversing its position thereon. The clamp member is provided with a tapped hole to engage a set screw, the axis of which is disposed perpendicular to the bar. The set screw engages a stud or coupling provided with means for attaching a fixture of the aforesaid type thereto, a portion of which stud extends over the clamp member, and the edge of

said extended portion being adapted to engage the surface of the bar opposite the bar-engaging portion of the clamp member.

The invention will be more clearly understood from the accompanying drawing, which shows one form of the bar hanger of the present invention, that at present preferred, and means for its application between variously spaced joists for supporting fixtures at various depths.

In the accompanying drawing:

Figure 1 is a plan view of the bar hanger of the present invention.

Fig. 2 is a side elevation of the bar hanger shown in Fig. 1.

Fig. 3 is a view partially in cross-section along the line 3—3' in Fig. 2, showing the construction of the coupling or stud.

Fig. 4 shows the application of the bar hanger of Fig. 1 between joists spaced apart by the maximum distance for which the bar hanger is adapted.

Fig. 5 is similar to Fig. 4, but shows the application of the bar hanger between joists spaced apart by a standard distance.

Fig. 6 shows the application of the bar hanger of Fig. 1 between joists more narrowly spaced than in Fig. 1.

Fig. 7 shows the application of the bar hanger for supporting a fixture, for instance, an outlet box of medium depth.

Fig. 8 shows the application of the bar hanger for supporting a fixture of shallow depth.

Fig. 9 shows the application of the bar hanger for supporting a fixture, for instance, an outlet box, of greater depth than in Fig. 7.

Fig. 10 shows the application of the bar hanger for supporting relatively deep fixtures, for instance, a switch box.

Referring to Figs. 1 to 3 inclusive, the bar hanger comprises a rigid metal bar 10, preferably of oblong cross-section. The ends 11 and 12 of the bar are bent in the same direction at right angles as shown in Fig. 2, preferably perpendicular to the flat surface of the bar 10. The bent ends 11 and 12 are twisted about their axes in the same direction through an acute angle, for instance, an angle of about 30°, as indicated in Fig. 2.

A number of holes or perforations 13 are provided in each of the bent ends, said holes being adapted to receive nails or screws. As shown, the holes are preferably normal to the flat surface of the bent portions 11 and 12 of the bar, the axes of said holes thus forming an obtuse angle with the axis of the straight midportion of the bar 10.

Protruding from one end of the bar hanger, a spur 14 is provided to hold the bar hanger temporarily in the desired position between joists until the workman is able to secure the bent ends to the joists by nailing or screwing them in said position. The said spur may be conveniently formed before bending the end 12, by making a diagonal cut at one edge of the bar extending inwardly approximately to the location of the angle of the bend. Thus, upon bending the end 12 at right angles, spur 14 remains protruding from the end of the straight midportion of the bar 10.

The said spur may be formed, however, in any other desired manner, for instance, by providing an outwardly bent projection on the end of the upwardly bent portion 12, or protruding from any other portion of said bent end. If desired,

a similar spur may be provided at the opposite end of the bar hanger.

Coupling means 15 for fastening a fixture to the bar comprises an apertured clamp member 16 surrounding the straight midportion of the bar 10, the inner surface of one side of the aperture in said member being adapted to engage one side of said bar. The aperture in the clamp member 16 is so shaped as to provide sufficient clearance to allow the clamp to be turned about the bar in order that its position thereon may be reversed. Opposite the bar-engaging portion of said clamp member, a tapped hole is provided to accommodate a set screw 17, the axis of which is normal to the transverse portion of the clamp 16.

A locking member is provided comprising a hollow stud 18 having an externally threaded portion 19 to engage a correspondingly threaded part of a fixture to be attached thereto, and an inwardly extending flared skirt 20. The inwardly extending bore of the threaded portion 19 is adapted to receive the head 21 of the set screw 17, but terminates in an annular shoulder 22 adapted to engage the head of said screw. Said stud or coupling 18 is secured to the clamp member 16 by inserting the set screw into the bore of the threaded portion 19 and screwing it into the tapped hole of the clamp member 16 until the edges 23 of the skirt portion 20 engage the bar 10. The bar is thus clamped between the edges of said skirt and the bar-engaging portion of the clamp member 16. The inner surface 24 of the skirt portion 22 is fitted approximately to the outer surfaces of the bridge portions 16a of the clamp member with sufficient clearance to permit the locking member to be drawn tightly against the surface of the bar upon tightening the screw 17.

Thus the coupling or fastener 15 may be secured in any desired position on the bar 10, and if necessary it may be reversed, removed or replaced upon the bar. The construction of said stud or coupling is simple and inexpensive, and its adjustment requires the manipulation of only a single draft means, resulting in a material saving of time in its installation and rendering its use highly convenient.

In fastening the bar hanger between adjacent joists, it is held in the desired position and the spur 14 at one end thereof is jammed into the side of one joist, anchoring the bar hanger temporarily until it can be permanently fastened. Nails or screws are then driven through the holes 13 in each of the bent ends 11 and 12 of the bar hanger, fastening it permanently into position. The stud or coupling member 15 is secured in any desired position by releasing the set screw, adjusting the stud in the proper spacing with reference to the joists, and then tightening the set screw to lock the said member to the bar.

As a result of the provision of the twisted ends 11 and 12, the bar hanger may be fastened between adjacent joists spaced apart by any distance up to the full length of the bar hanger.

Fig. 4 shows the position of the bar hanger between joists 25a and 25b, spaced apart by the maximum distance for which the bar hanger is adapted. The straight portion of the bar 10 is substantially perpendicular to the joists. The twisted ends 11 and 12 form an angle of about 30° with the sides of the joists which does not interfere with the nailing thereof to the joists.

Fig. 5 shows the positioning of the bar hanger

between joists 26a, 26b spaced somewhat closer together. In this case, the twisted ends 11 and 12 lie flat against the sides of the joists, the straight portion of the bar 10 forming an angle of about 60° with said joists. Preferably, the bar is constructed of such length as to assume this position between joists spaced apart by a standard distance. Thus, in the most frequent applications, the ends of the bar hanger are adapted to assume the position as shown, whereby they may be more conveniently nailed or otherwise secured to the sides of the joists.

In Fig. 6, the bar hanger is shown fastened between joists 27a and 27b spaced materially closer together than the joists shown in Fig. 5. Again, the twisted ends 11 and 12 form an acute angle with the lateral surfaces of the joists, but as a result of the twist therein, the angle is not sufficient to prevent the use of nails or other means engaging the holes in the said ends to secure the bar in position.

Thus, it will be seen that the bar hanger of the present invention is adapted for application between joists of any spacing up to the full length of the said bar hanger.

Figs. 7 to 10 inclusive show the application of the bar hanger of the present invention for supporting various fixtures between two joists 28, the fixtures in each case being flush with a wall covering surface or plaster line 29. Fig. 7 shows the use of the bar hanger for supporting a fixture 30, shown as an outlet box of medium dimensions. The bent ends 11 and 12 of the bar hanger extend outward flush with the faces of the joists.

In Fig. 8, the use of the bar hanger is shown for supporting an extremely shallow fixture 31. In this case, the position of the bar hanger is reversed, the straight midportion thereof being substantially flush with the faces of the joists 28, and the bent ends 11 and 12 extending inwardly from the said faces. In order that the bar hanger may be used in the manner shown in Fig. 8, as well as in the manner shown in Fig. 7, the coupling or fastening stud 15 is adjusted in one or the other position by turning it about the bar after releasing the set screw 17.

In Fig. 9, the application of the bar hanger is shown for supporting a fixture 32, for instance, an outlet box of somewhat greater depth than that shown in Fig. 7. In this case, the bent ends 11 and 12 of the bar hanger are spaced inwardly from the faces of the joists 28.

Similarly, in Fig. 10, the application of the bar hanger is shown for supporting a relatively deep fixture 33, shown as a switch box, the ends 11 and 12 of the bar hanger being spaced inwardly from the faces of the joists 28 to a greater distance than in the case of the fixture shown in Fig. 9.

Variation and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. In a device of the type described, the combination of a supporting bar; a clamp member surrounding said bar, a portion of the inner surface of which engages one side of said bar, and the clearance between the clamping member and the bar being sufficient to permit rotation of the clamp member around said bar for reversing the position of said member; a single draft means threaded into said clamp member opposite the bar-engaging portion of the latter and movable

in a direction perpendicular to said bar; a locking member supported by said draft means and engaging the surface of said bar opposite the bar-engaging portion of the clamp member; and coupling means carried by said locking member for engaging a fixture to be supported thereby.

2. In a device of the type described, the combination of a supporting bar; a clamp member surrounding said bar, a portion of the inner surface of which engages one side of said bar, and the clearance between the clamping member and the bar being sufficient to permit rotation thereof around said bar, said clamping member having a threaded hole adapted to engage a set screw extending inwardly toward the said bar opposite the bar-engaging portion of said member; a set screw carried in said threaded hole of the clamp; and a locking member supported by said set screw comprising a skirt extending over the clamp member, the edge of which skirt engages the surface of said bar opposite the bar-engaging portion of the clamp member, said locking member having a threaded cylindrical portion adapted to engage a fixture to be supported thereby.

3. A support for electric fixtures comprising a supporting bar having both ends thereof bent at an angle thereto to form attaching means whereby the bar can be permanently secured to the sides of a pair of adjacent joists, and an integral spur forming an extension of the bar projecting beyond one of the bent ends of the bar, said spur being sharp and adapted to pierce the joist, upon a longitudinal thrust being applied to the bar in the direction of the joist, and hold the bar in position while the bar is being permanently secured; and means mounted upon the bar for supporting a fixture.

4. A support for electrical fixtures comprising an elongate bar, the ends of which are bent in the same direction at right angles to the bar and are provided with nail-receiving apertures extending through the ends at the same angle with respect to the axis of the bar, said bar, without any change in length or other alteration, being adapted to be secured respectively to the adjacent sides of a pair of joists irrespective of the spacing thereof to support the bar at varying angular positions with respect to the joists to compensate for the varying spacing of the joists, said bar being adapted to support a fixture in any desired position therealong with reference to the ends of the bar.

5. A support for electrical fixtures comprising an elongate flat bar, the ends of which are bent in the same direction at right angles to a flat surface thereof, and twisted through an acute angle in the same direction about their longitudinal axes, said bent ends being adapted to be secured to the adjacent sides of a pair of spaced joists to support the bar at the required angle with respect to the joist as determined by the spacing between the joists, said bar being adapted to support a fixture in any desired position therealong with reference to the ends of the bar.

6. A support for electrical fixtures comprising a flat supporting bar, the ends of which are bent in the same direction at right angles to a flat surface of the bar and twisted through an acute angle in the same direction about their longitudinal axes, said bent end being adapted to be secured to the adjacent sides of a pair of spaced joists; an integral spur extending from an end of the straight portion of the bar at one corner thereof formed by a diagonally sliced portion of

the bent end of the bar and adapted to bite into the side of the joist upon a substantially longitudinal thrust being applied to the bar in the direction of the joist; and a coupling member adjustably mounted on the bar to support a fixture, including means for clamping said coupling member in any desired position thereon.

7. A support for electrical fixtures comprising an elongate flat bar, the ends of which are bent in the same direction at right angles to a flat surface thereof, and twisted through an acute angle in the same direction about their longitudinal axes, said bent ends being adapted to be permanently secured respectively to the adjacent sides of a pair of spaced joists to support the bar

at the required angle with respect to the joist as determined by the spacing between the joists, and an integral sharp spur projecting beyond the end of the bar and adapted to pierce the joists upon a longitudinal thrust being applied to the bar in the direction of the joist and temporarily hold the bar in position while the ends of the bar are being permanently secured to the joist, the spur being sufficiently long to pierce the side of the joist for all angular positions of the bar, said bar being adapted to support a fixture in any desired position therealong with reference to the ends of the bar.

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