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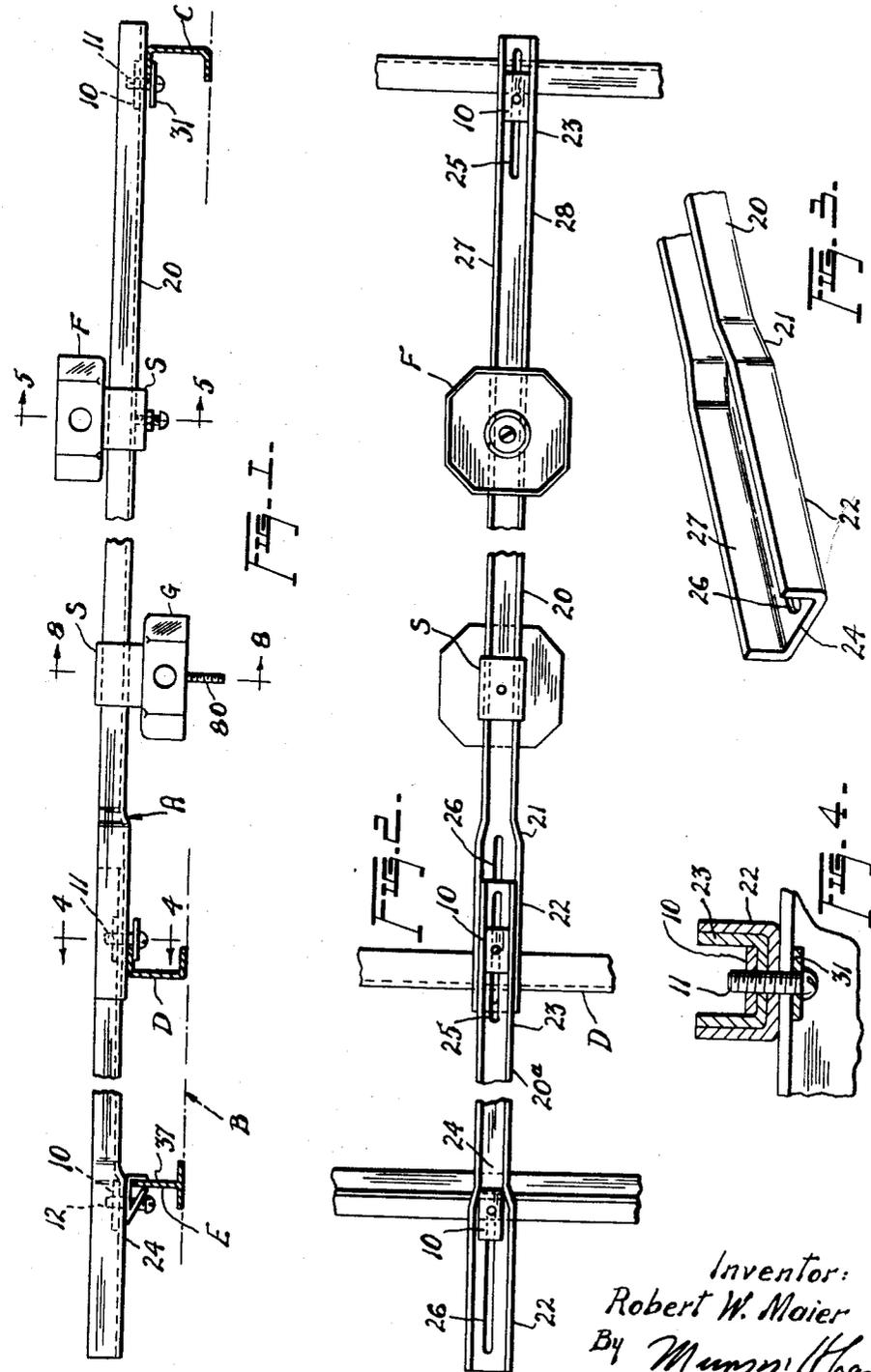
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FIXTURE SUPPORT FOR HUNG CEILINGS

Filed Nov. 13, 1956

2 Sheets-Sheet 1



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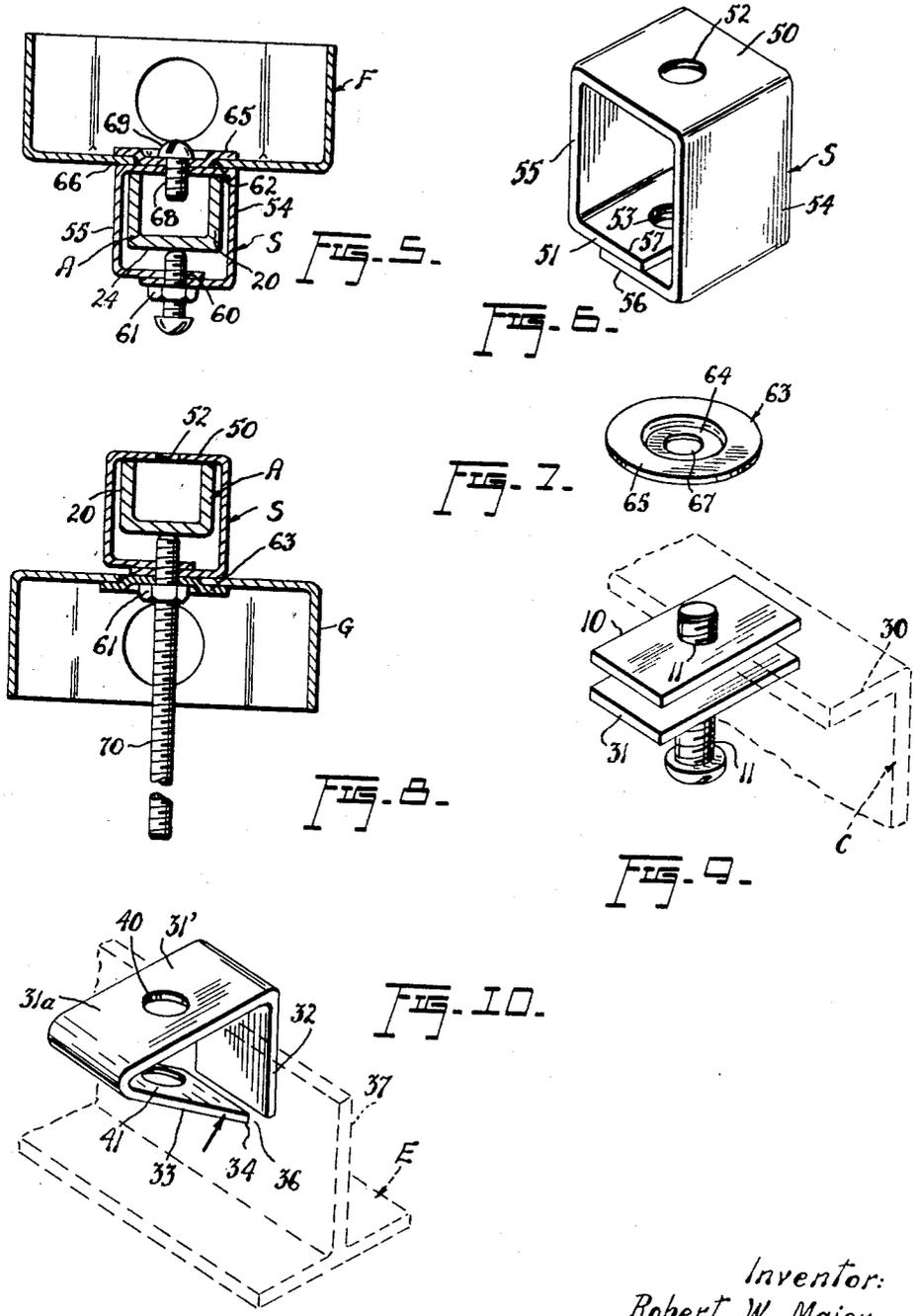
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FIXTURE SUPPORT FOR HUNG CEILINGS

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2 Sheets-Sheet 2



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FIXTURE SUPPORT FOR HUNG CEILINGS

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3 Claims. (Cl. 248—228)

The invention relates to elongated fixture supports for hung ceilings, and more particularly to an adjustable long-span fixture support requiring a minimum of accessories for its fullest use, and which is capable of being locked to the top of various types of hung-ceiling carrying bars such as channel bars, T bars or angle irons, and which is adapted to support various fixtures such as junction boxes, fixture boxes, light fixtures, conduits and other elements of wiring. The fixture support does not interfere with any known type of ceiling suspension system and provides complete flexibility in positioning all components of a lighting installation. A screw-driver is the only installation tool required.

My improved fixture support combines the advantages of versatility, strength and convenience in installation, and is adapted to receive all types of fixtures.

More specifically, my improved elongated high ceiling fixture support comprises two or more telescopic and relatively adjustable bar units each of substantially U-shape in cross-section, and each being flared at one end to receive the unflared end of the adjacent unit and both ends of each unit being slotted in the base of the U to receive the locking plates and screws that join them. Attaching parts are available for use with T bars, angle irons, channels, fixtures, and outlet boxes. Units are conveniently 54" long, although the length may be varied without departing from the invention. A 40-pound load applied to a high ceiling support on 48" centers will cause a deflection of only 0.020".

The invention is characterized by ease of installation and complete freedom of adjustment of all parts permitting unrestricted positioning of the support itself and of all fixture units mounted on the support. Fixtures are automatically aligned, fixture boxes may be located in the most convenient spot relative to the conduit and to fixtures, and every component locks easily, completely and securely merely by the use of a screwdriver.

Only five items in addition to the fixture support provide complete utility, namely, (1) saddles which slide freely the full length of a complete high ceiling installation, including across joints, to which are attached outlet boxes and fixtures; (2) locking plates or clamps by which end-to-end joints of high ceiling supports are made and boxes are locked to the support; (3) special clamps for locking supports to T bars or angles; (4) screws of suitable lengths, and (5) threaded or studs fixture rods of any length and diameter required. All of these accessories may be supplied with the high ceiling support as specified to meet job requirements.

The invention will be more readily understood by reference to the accompanying drawings and the following detailed description in which a specific embodiment of the invention is set forth by way of illustration rather than by way of limitation.

In the drawings:

Figure 1 is a side elevation showing on a reduced scale an elongated hung fixture support embodying my invention, mounted on carrying bars above the level of

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the ceiling, and showing two fixture boxes adjustably mounted on the support, one fixture box being shown depending from the support and the other projecting upwardly therefrom, a part of the fixture support being broken away, and part of the ceiling being indicated in dot and dash lines.

Figure 2 is a top plan view of the fixture support and accessories shown in Figure 1.

Figure 3 is a fragmentary perspective view on a larger scale than in Figures 1 and 2, showing the enlarged end of one of the fixture support bar units.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a section on line 5—5 of Figure 1.

Figure 6 is a perspective view of one of the accessory supporting saddles shown in Figures 1, 2, 5, and 8.

Figure 7 is a detail view of one of the fixture supporting washers shown in fixture supporting position in Figures 5 and 8.

Figure 8 is a section on line 8—8 of Figure 1, parts being shown in elevation.

Figure 9 is a perspective view showing a pair of locking plates or clamping members and a screw in their relation to one of the supporting channel bars which is indicated in dotted lines.

Figure 10 is a perspective view of a special lower clamp used in connection with an upper locking plate or clamp and screw for screwing the elongated fixture support to an upright member of a T or angle carrying bar.

Referring to the drawings, A designates generally an elongated adjustable fixture support for hung ceilings embodying my invention, the ceiling being indicated in dot and dash lines at B. The fixture support A is shown mounted on spaced carrying bars C, D, and E, the bars C and D being shown as channel bars and the support E as a T bar. The fixture support A is shown as of substantially U shape in cross section to receive rectangular upper locking plates or clamping members 10, 10, 10 which are employed for securing the support A to the various carrying bars C, D, and E, and the base portion of the fixture support is slotted at intervals to receive locking screws which cooperate with the upper locking plates 10, 10, 10 and with lower locking plates or clamping members 11, 11, 12 to secure the fixture support to the clamping bars C, D, and E, as will be more fully set forth hereinafter.

Intermediate the various carrying bars any suitable fixtures F and G, here shown as conventional fixture boxes, may be mounted in any desired adjusted position through the medium of suitable saddles S, S which may be secured to the fixture box and to the fixture support A through suitable screws, plates, clamps and/or washers, as will be more fully described hereinafter.

As previously set forth, my improved hung ceiling long-span support A comprises two or more like bar units 20, 20a, one end of each of one of which, as best shown in Figure 3, is flared as indicated at 21, forming an enlarged portion 22 at one end which is adapted to receive the unflared or reduced end 23 of the adjacent unit as best indicated in Figures 1 and 2.

At each end of the bar units 20, 20a, the base portion 24 of the channel-shaped member or bar of which the units are formed is slotted as indicated at 25 and 26, the slots extending a substantial distance so as to permit mounting the supports upon carrying bars spaced apart varying distances. Sides 27 and 28 extend upwardly from the base portion 24 and are so spaced that the locking plates 10 are prevented from turning around whether the plates are located in the enlarged portion 24 or in the reduced portion 23. Since the bar units are open at the top, the locking plates are readily insertable therein.

As shown, the carrying bars C and D are of channel

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shape with horizontally disposed flanges and the bar E is of inverted T shape, these being representative of various types of carrying bars to be found in building structures, and being illustrative of supporting bars having horizontal and vertical flange members respectively to which the long-span supports are to be secured. Different types of securing means or clamps are required for the channel bars C and D on the one hand and for the T shaped carrying bar E on the other. Since the channel bars C and D are alike except that the horizontal flanges are oppositely directed, a description of the fastening means for one will apply to the other, and such means will accordingly be described with particular reference to the channel bar C.

As shown, such bar includes a horizontally disposed upper flange 30 upon which one slotted end of the bar unit 20 of support A rests and to which the support is to be clamped. This is readily accomplished by the use of the upper locking or clamping plate or member 10 which fits between the vertical sides 27 and 28 and when secured in place engages the base 24 of the support with a part thereof projecting over the flange 30 of the carrying bar C as illustrated in Figures 1 and 9. The lower clamping member or locking plate 31 is then positioned directly below the locking plate or clamping member 10 with a part engaging the upper surface of the flange 30. Plates 10 and 31 are each provided with centrally disposed apertures which are aligned with each other and with the slot 25 in the bar unit 20 to permit insertion of a threaded screw of stud 11 which, when tightened with a screwdriver or the like, results in aligning the end of the bar unit securely to the horizontal upper flange 30 of the carrying bar C, the apertures in the upper plates only being threaded. Similar means may be provided for clamping the other end of the bar unit 20 to the carrying bar D, but in this instance it will be noted that the clamping operation takes place at a position where the two ends of the bar units 20 and 20a are overlapped as best shown in Figure 4.

Where the support is to be clamped to an upright or vertical flange, a slightly different form of lower locking plate is required from the plate 31 used for clamping the bar unit to a horizontal flange. As shown at the left of Figure 1 and in Figure 10, a lower clamping member 31' is employed having a horizontal plate part 31a corresponding to the plate 31 of the previously described clamp, which is positioned directly beneath the upper clamping member 10 and engaging the lower part of the enlarged slotted end 22 of the bar unit 20a. The lower clamping member 31' includes also, in addition to the clamping plate 31a, a vertical flange 32 depending on one end of plate 31a and a diagonal flange 33 depending from the other end of the plate 31a, inclined towards the flange 32 and forming an acute angle with the plate portion 31a. The lower edge 34 of the flange 33 is spaced from the lower edge 35 of the flange 32 a sufficient distance to provide a slot 36 of sufficient width to permit the vertical flange 37 of the T carrying bar E to pass therethrough. As shown, the plate portion 31a of the clamp 31' is apertured at 40 and when the parts are in clamping position, the aperture in the upper clamping or locking plate 10 is aligned with the aperture 40 and with the slot 26. The diagonally extending flange 33 is also provided with an aperture 41 in substantial alignment with aperture 40 in the plate 31a. To clamp the end 22 of bar 20a to the upright flange 37 of carrying bar E a threaded screw or stud 12, preferably slightly longer than the screw 11, is inserted through the apertures 41 and 40 of the clamping member 31, then through the slot 26 in bar unit 20a and then into the threaded aperture in the upper locking plate 10. It will be apparent that the apertures 40 and 41 and the slot 26 are large enough to readily pass the shank of the screw 12 therethrough and are not threaded, the same being true of the aperture in the lower locking plate 31 and the slot 25, where-

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as the apertures in all the upper locking plates 10 are screw-threaded to receive the threaded shank of screws 11 and 12. In tightening the screw 12 not only is the bottom 24 of the bar unit 20a clamped between the upper locking plate 10 and the plate portion 31a of the lower clamping member 31', but at the same time the lower edge 34 of the inclined flange 33 of the clamping member, being slightly flexible, is forced against the side of the upright flange of carrying bar E thus clamping the long-span fixture support to the carrying bar at this point.

Various components of a lighting installation such as junction boxes, fixture boxes, fixtures and the like may be mounted on the support A by means of the saddles S. These saddles are adapted to slide freely the full length of each bar unit 20 or 20a, and such saddles and the fixtures may be readily secured in any desired adjusted position by the use of screws or studs, a screwdriver being the only tool required for installation and adjustment.

As shown, each saddle S is hollow and of generally rectangular cross section, and comprises an upper portion 50 and a lower or base portion 51, having threaded apertures 53 and 52 therein, and vertical side portions or legs 54 and 55. The saddles may be formed from a single piece of metal with its ends overlapped as at 56, 57, or may be otherwise formed in any suitable manner. The legs 54 and 55 are substantially longer than the flanges 27 and 28 of the fixture support A and the upper and lower portions 50 and 51 are substantially wider than the base portion 24 of the fixture support, at least at the unflared portion thereof. Thus the saddles slide freely on the support and may be clamped thereto by any suitable screw extending through either of the screw-threaded apertures 52 and 53 and engaging the base portion of the fixture support A.

Any suitable means may be employed for clamping the saddle S to the bar units 20 or 20a of the support A. As shown in Figure 5, a threaded screw or stud 60 is inserted through the threaded aperture 53 in the bottom of the saddle and by turning the stud by means of a screwdriver or the like the end of its shank is caused to engage the upper side of the base 24 of the bar unit 20 thereby drawing the upper part 50 of the saddle tightly against the upper part of the sides 27 and 28 of the U-shaped bar unit and clamping the parts in fixed relation to one another. Obviously, the saddle S could be reversed and the stud 60 inserted through the threaded opening 52 instead of through the aperture 53. A suitable locking nut 61 may be employed if desired to hold the parts in clamping position.

Any suitable device, as the fixture box F shown in Figure 5, may be readily secured to the saddle S and may be slid with the saddle along the fixture support A and may be clamped therewith to the support at any desired position. As shown in Figure 7, a conventional fixture box having an opening 62 in the bottom thereof is secured to the top 50 of the saddle by means of the clamping washer 63, having a depressed portion 64 adapted to fit in the aperture 62 and having another flange 65 which engages the inside of the base 66 of the fixture box F. The depressed portion 64 of the washer is apertured at 67 to permit passage of the shank 68 of a suitable stud threaded to fit threads in aperture 52 in the top 50 of the saddle S. By turning the screw head 69 of the stud 69 by means of a screwdriver or the like, the fixture box F is tightly clamped to the saddle S.

In Figure 8, a fixture box G similar to box F is shown mounted in a depending position from the fixture support A. In this case, a single elongated threaded stud or fixture rod 70 may serve the multiple purposes of (1) clamping the saddles to the bar 20; (2) securing the fixture box G to the saddle through the medium of washer 63 and locking unit 61; and (3) providing a threaded means extending below the ceiling as indicated at 80 in Figure 1, to which lighting fixtures and the like

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(not shown) may be secured. Obviously, the elongated threaded shank or fixture rod 70 could be employed to engage the inside of the U-shaped fixture support A if inserted through the aperture 52 on the top of the saddle to thereby clamp the saddle to the fixture support, although this arrangement will not ordinarily be employed. For convenience of illustration, the boxes F and G have been shown adjustably mounted on the bar unit 20 but it is contemplated that they will be mounted at suitable intervals all along the length of the composite elongated support A. The support A is shown as comprising only two bar units 20 and 20a, but it will be obvious that any desired number of such telescopic units may be employed within the scope of my invention.

The invention has been described in detail for the purpose of illustration, but it will be obvious that numerous modifications and variations may be resorted to within the scope of the invention as set forth in the accompanying claims.

I claim:

1. A long-span fixture support for hung ceilings, comprising a plurality of slidably telescoped similar bar units disposed in longitudinal alignment, each of said bar units being U-shaped in cross section and having one end portion thereof outwardly flared to slidably receive an unflared end portion of an adjacent bar unit, each bar unit being provided in the base of each of its end portions with a longitudinally extending slot and the slots in the slidably telescoped end portions of adjacent bar units being in register at least along a portion of their length, a threaded stud extending through the registering slots of the adjacent bar units, and a pair of clamping members provided on said stud, the clamping members in each pair being disposed respectively at the inside and outside of the associated bar units and one of the clamping members in each pair being formed with a screw threaded aperture to receive said stud, whereby the bar units may be secured to a flanged transversely extending carrying bar by clamping a flange of the stated carrying bar between the bar units and the clamping member disposed at the outside of the latter.

2. A long-span fixture support for hung ceilings, comprising in combination, a plurality of slidably telescoped similar bar units disposed in longitudinal alignment, each of said bar units being U-shaped in cross section and having one end portion thereof outwardly flared to slidably receive an unflared end portion of an adjacent bar unit, each bar unit being provided in the base of each of its end portions with a longitudinally extending slot and the slots in the slidably telescoped end portions of adja-

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cent bar units being in register at least along a portion of their length, a threaded stud extending through the registering slots of the adjacent bar units, a pair of clamping members provided on said stud, the clamping members in each pair being disposed respectively at the inside and outside of the associated bar units, the clamping member at the inside of the bar units being provided with a screw threaded aperture to receive said stud and being of a polygonal configuration whereby to prevent rotation thereof within the bar units, and flanged carrying bars extending transversely of the telescoped end portions of the bar units, said carrying bars having flanges thereof clamped between the bar units and the clamping members disposed at the outside of the latter, whereby to secure said bar units to said carrying bars.

3. A long-span fixture support for hung ceilings, comprising in combination, a plurality of slidably telescoped similar bar units disposed in longitudinal alignment, each of said bar units being U-shaped in cross section and having one end portion thereof outwardly flared to slidably receive an unflared end portion of an adjacent bar unit, each bar unit being provided in the base of its end portions with a longitudinally extending slot and the slots in the slidably telescoped end portions of adjacent bar units being in register at least along a portion of their length, a threaded stud extending through the registering slots of the adjacent bar units, and a pair of clamping members provided on said stud, the clamping members in each pair being disposed respectively at the inside and outside of the associated bar units, the clamping members at the inside of the bar units being of a polygonal configuration whereby to prevent rotation thereof within the bar units and being provided with a screw threaded aperture receiving said stud, whereby to secure the slidably telescoped end portions of the adjacent bar units adjustably together.

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