

Oct. 19, 1965

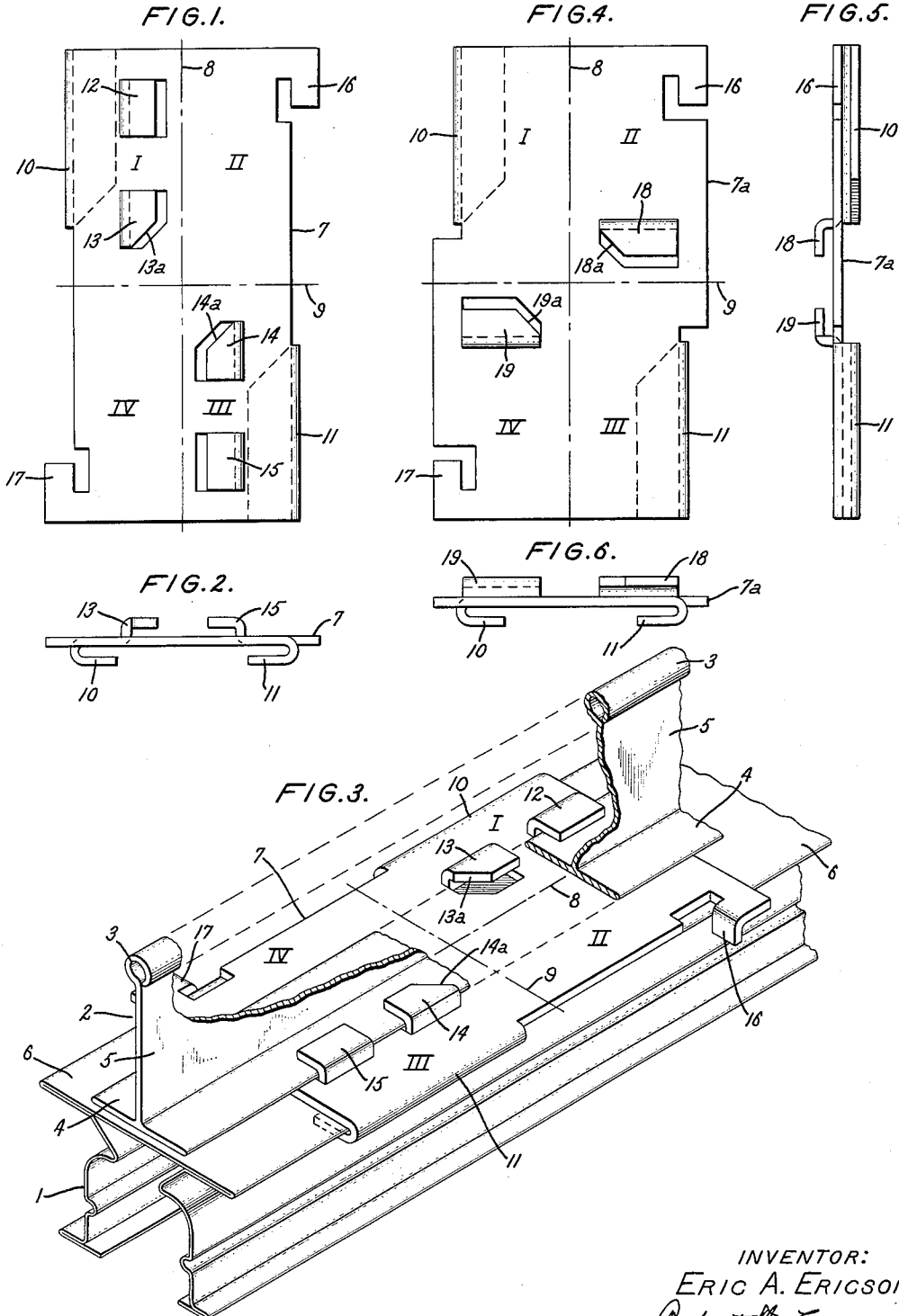
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3,212,741

MOUNTING DEVICES FOR BUSWAY

Filed Aug. 27, 1964

3 Sheets-Sheet 1



BY

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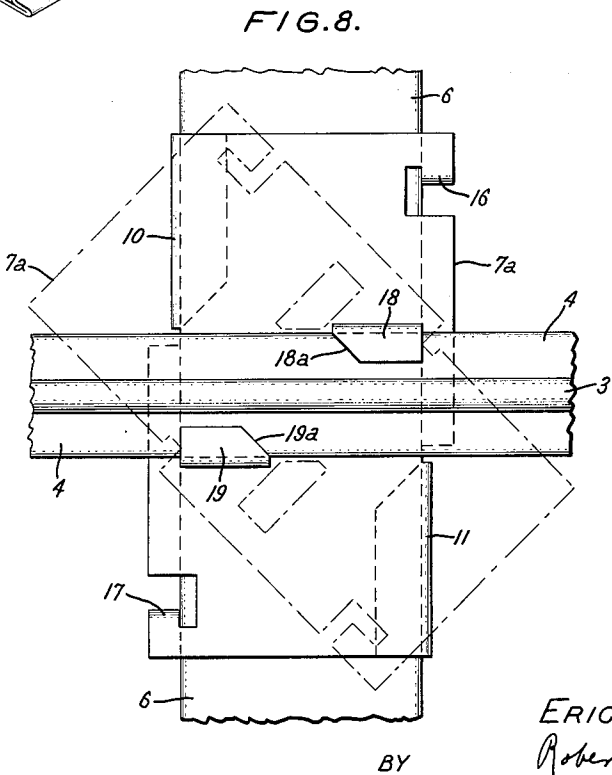
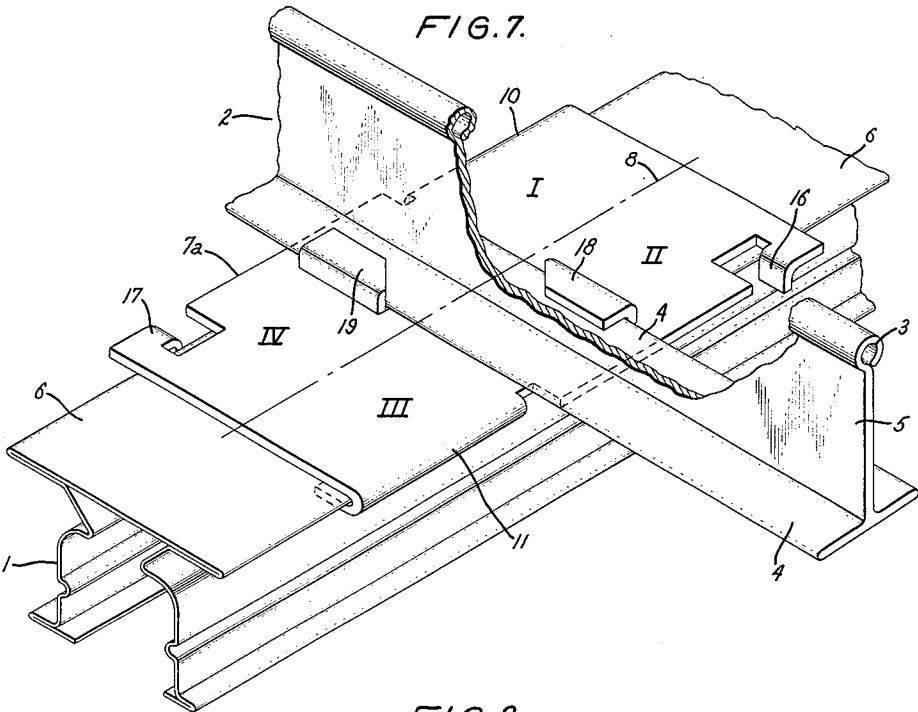
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FIG. 9.

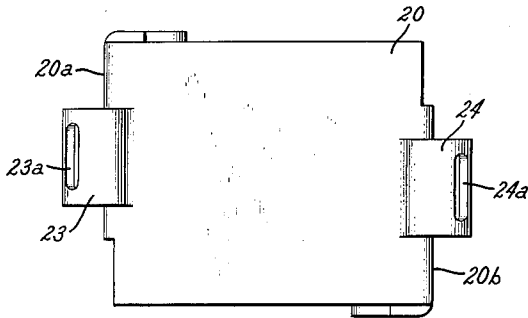


FIG. 10.

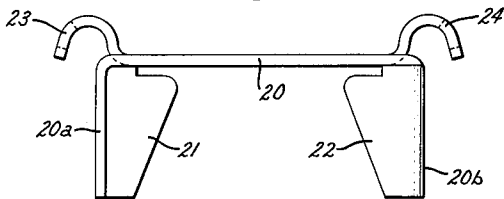


FIG. 11.

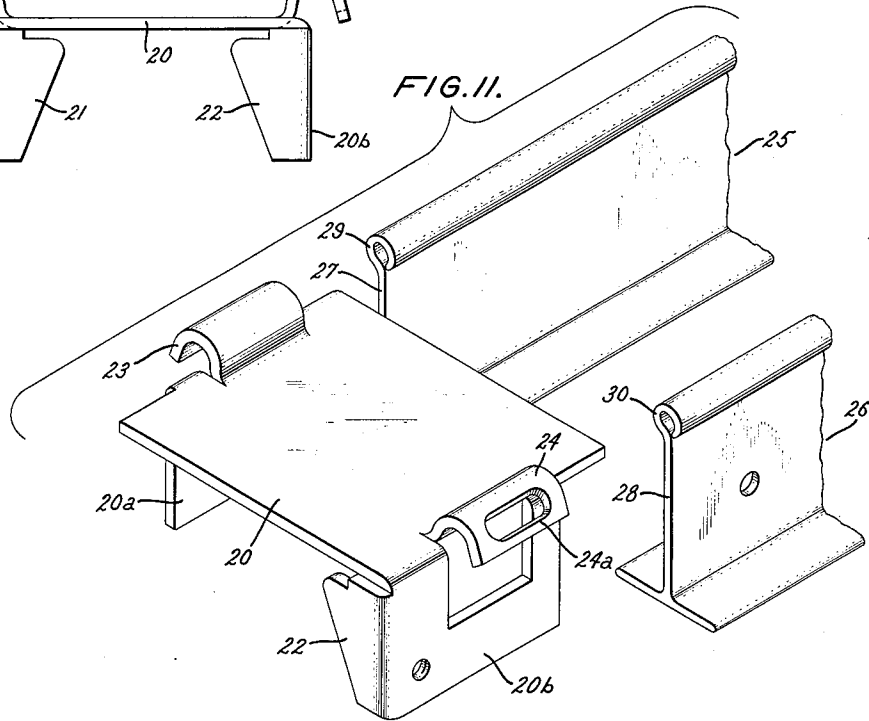
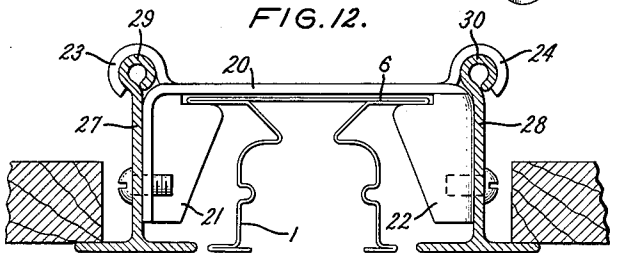


FIG. 12.



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3,212,741

MOUNTING DEVICES FOR BUSWAY
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Electric Company, a corporation of New York
Filed Aug. 27, 1964, Ser. No. 392,474
11 Claims. (Cl. 248—58)

This invention relates to devices for fastening a busway housing having a longitudinally extending flange to a beam having a longitudinally extending strengthening member and it has for an object the provision of an improved fastening device of this character.

A more specific object of the invention is the provision of a fastening device of the above character which is simple and inexpensive.

Still another object of the invention is the provision of a fastening device which makes it possible for installation personnel to fasten a busway housing to a beam without the exercise of special skills and using only simple tools.

In carrying the invention into effect in one form thereof, a plate member is provided which is adapted to be disposed in a plane between the longitudinally extending flange of a busway housing and the longitudinally extending strengthening member of a beam to which the busway is to be attached. The plate member is provided with a tab that is adapted to engage the strengthening member of the beam and is provided with a second tab adapted to engage the flange of the busway housing. In one form of the invention, the plate member is adapted to be rotated in its own plane about a perpendicular axis from an initial position to a second position in which the tabs engage the strengthening member of the beam and the flange of the busway housing.

For a better and more complete understanding of the invention, reference should now be had to the following specification and to the accompanying drawings of which:

FIG. 1 is a top plan view of a fastening device embodying the invention,

FIG. 2 is an end view of the fastening device of FIG. 1.

FIG. 3 is a view in perspective of an application of the fastening device of FIGS. 1 and 2,

FIG. 4 is a top plan view of a modification of the fastening device of FIGS. 1, 2 and 3,

FIG. 5 is a side view of the modification illustrated in FIG. 4,

FIG. 6 is an end view of the modification illustrated in FIGS. 4 and 5,

FIG. 7 is a view in perspective of an application of the modification illustrated in FIGS. 4, 5 and 6,

FIG. 8 is a top plan view illustrating the manner of fastening a busway to a beam by means of the modified fastening device of FIGS. 4, 5, 6 and 7,

FIG. 9 is a top plan view of another modification,

FIG. 10 is an end view of the modification of FIG. 9,

FIG. 11 is a view in perspective of an application of the modification of FIG. 9 and

FIG. 12 is an end view of the modification of FIG. 9 illustrating an application in which the busway is mounted flush with the ceiling.

Referring now to the drawings and particularly to FIGS. 1, 2 and 3 the invention is shown as incorporated in a mounting device suitable for supporting a busway of the type disclosed in prior application S.N. 263,169—Joseph A. Fehr, filed March 6, 1963 now abandoned, and superseded by continuation-in-part application Serial Number 375,996, filed June 8, 1964, now Patent Number 3,181,102 issued April 27, 1965 and assigned to the same assignee as the present invention. Such a busway includes an elongated metallic duct or housing 1 and a plurality of bus bar conductors, not shown, supported in the housing

by suitable insulating means, not shown. The mounting device of the invention is used to support members or beams 2 of the type employed in building construction for hanging ceiling panels which make up a "false" or lowered ceiling. The beam 2 comprises a pair of longitudinally extending strengthening members 3 and 4 joined by a longitudinally extending web member 5. The strengthening member 3 is illustrated as being a tubular member and the strengthening member 4 is illustrated as a flange perpendicularly disposed with respect to the web. Busway housing 1 is provided with a longitudinally extending flange 6.

In certain installations it is desired to fasten the busway 1 to the beam 2 so that the busway extends parallel to the beam as illustrated in FIG. 3. For this type of installation, the fastening device illustrated in FIGS. 1, 2 and 3 is employed. It comprises a plate member 7 of generally oblong configuration. Its longitudinal axis 8 intersects its transverse axis 9 to divide the plate into successive quadrants I, II, III, and IV. In quadrants I and III the plate is provided with tabs 10 and 11 respectively which are spaced from the lower face of the plate. These tabs are formed by bending edge portions of the plate out of the plane thereof and returning them so that they extend inwardly toward the longitudinal axis as clearly shown in FIG. 2.

In quadrant I the plate member 7 is provided with two lanced tabs 12 and 13 which are spaced from the upper face of the plate member and extend inwardly toward the longitudinal axis 8. Similar lanced tabs 14 and 15 are provided in quadrant III. As shown in FIGS. 1 and 3, adjacent corners of tabs 13 and 14 are chamfered at 45° angles to present parallel edges 13a and 14a respectively which extend at an angle of 45° with respect to the longitudinal axis 8.

At opposite corners in quadrants II and IV the plate member 7 is provided with locking tabs 16 and 17 which prior to final fastening assembly are disposed in the plane of the plate member 7.

For fastening a busway housing to a beam in cross-wise relationship, i.e., the busway at right angles to the beam instead of being parallel thereto, the modified fastening device illustrated in FIGS. 4, 5, 6, 7 and 8 is employed. It differs from the fastening device illustrated in FIGS. 1, 2 and 3 only in that the lanced tabs 18 and 19 are disposed in quadrants II and IV and extend inwardly toward the transverse axis 9. Their adjacent corners are chamfered at an angle of 45° so that they present parallel edges 18a and 19a.

To assemble a fastening plate 7 to the busway and beam in the relationship illustrated in FIG. 3, the plate is positioned at a 45° angle with the longitudinal axis of the housing 1 and beam 2. The busway is then raised to its final position with the plate sandwiched in a plane between the flange 4 of the beam and the flange 6 of the housing 1. The plate is then rotated in its own plane in a clockwise direction about a perpendicular axis into the locked position illustrated in FIG. 3. As the plate approaches the lock position near the end of its rotation, the lanced tabs 12, 13, 14 and 15 slide over and embrace the opposite edge portions of the flange 4 of the beam and the lower bent tabs 10 and 11 embrace the top flange 6 of the busway housing. The two holding tabs 16 and 17 are then bent down past the lateral edges of the busway housing flange 6. In this position they interfere with and prevent counterclockwise rotation of the plate to release the lanced tabs 12, 13, 14 and 15 and the bent tabs 10 and 11. Although only one fastening plate is illustrated in FIG. 3, a number of such plates, depending on the length of the busway run, are employed to fasten the busway to the beam.

The manner of fastening the busway to a beam in cross-wise relationship by means of the modified fastening plate 7a is illustrated in FIG. 8. Initially, with the busway beneath and at right angles to the beam, the fastening plate 7a is positioned at an angle of 45° to the axis of the busway housing and the beam as illustrated in broken lines in FIG. 8. The busway is then raised to its final position with the plate 7a sandwiched in a plane disposed between the upper face of flange 6 of the busway housing and the lower face of flange 4 of the beam. The plate is then rotated in a clockwise direction 45° from its broken line initial position to its full line position in which the upper lanced tabs 18 and 19 embrace the flange 4 of the beam and the lower bent tabs 10 and 11 embrace the flange 6 of the busway housing. In this position the locking tabs 16 and 17 are bent downward past the lateral edges of the housing flange 6 so as to interfere with counterclockwise rotation of the plate 7a to release the tabs 10, 11, 18 and 19.

To mount the busway flush with the ceiling of the structure the modified fastening device illustrated in FIGS. 9, 10, 11 and 12 is employed. It comprises a plate member 20 having end wall portions 20a and 20b bent down at right angles to the plane of the plate. Each of the end walls has one of its ends bent at right angles to provide a tab disposed beneath the plane of the plate 20 and with its upper edge spaced therefrom to enable the flange of a busway housing to be received in the recess between the tab and the plate. Thus, a tab 21 is formed by the bent end of end wall 20a and a tab 22 is formed by the bent end of end wall 20b. Projecting above the upper face of plate 20 at both ends thereof are curved lanced tabs 23 and 24. Two ceiling beams 25 and 26 are mounted in parallel relationship with the distance between their webs approximately equal to the distance between the exterior surfaces of end walls 20a and 20b of plate 20. This makes it possible to position a plate 20 between two ceiling beams with its end walls resting against the inner surfaces of their webs 27 and 28. In fastening the busway to the ceiling beams, the busway is held above the ceiling beams while a plurality of fastening plates are properly positioned on the busway housing. This is accomplished by holding the fastening plate above the busway in the intended location, rotating it counterclockwise about 20° until the ends of tabs 21 and 22 clear the edges of flange 6 and then lowering the plate until it rests on the busway flange. The plate is then rotated in a clockwise direction until the flange is locked in the recesses between the tabs and the plate. When the mounting plates are properly installed, the busway is lowered to the position illustrated in FIG. 12. In order that the plates 20 may be positioned between the webs 27 and 28, the beams 25 and 26 are sprung apart sufficiently to permit the plates to pass between the tubular members 29 and 30. In the final position the curved lanced tabs 23 and 24 are seated on the tubular members 29 and 30. The tabs 23 and 24 are then crimped around the tubular strengthening members 29 and 30. This may be done by means of a pair of pliers or by means of a simple crimping tool. To facilitate bending the tabs 23 and 24 without crushing the tubular portions 29 and 30, the tabs 23 and 24 are provided with elongated holes 23a and 24a. It will be observed that the wall portions 20a, 20b provide sidewise support for the beams 25 and 26 and prevent them from closing in toward the busway housing, which they would otherwise tend to do because of asymmetrical loading on them by the ceiling panels. If greater security is desired, screws may be added as illustrated in FIG. 12.

Although several embodiments of the invention have been shown and described, further changes and modifications that do not depart from the invention will readily suggest themselves to persons skilled in the art. In the appended claims it is aimed to cover all such changes and modifications as fall within the true spirit of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A hanger for attaching a busway housing provided with a flange to a beam having a longitudinally extending web and a longitudinally extending strengthening member joined thereto comprising a plate member adapted to be disposed in a plane between said strengthening member and said flange and having a tab for engaging said strengthening member and a second tab for engaging said flange.

2. A hanger for attaching a busway housing provided with a flange to a beam having a longitudinally extending web and a longitudinally extending strengthening member comprising a plate member adapted to be disposed in a plane between said strengthening member and said flange comprising a plate member having an integral lanced tab disposed on one face thereof for engaging said strengthening member and a second integral tab disposed on the opposite face thereof for engaging said flange.

3. A hanger for attaching a busway housing provided with a longitudinally extending flange to a beam having a longitudinally extending flange comprising a plate member adapted to be disposed between the flange of said housing and the flange of said beam and having a first tab for engaging said housing flange and a second tab for engaging said beam flange.

4. A hanger for attaching a busway housing provided with a longitudinally extending flange to a beam having a longitudinally extending flange comprising:

- (a) a plate member,
- (b) first and second tabs on the opposite flat surfaces of said plate member, and
- (c) said plate member being adapted to be disposed between said flanges for rotation in its own plane about an axis perpendicular thereto to effect engagement of each of said tabs with a corresponding one of said flanges.

5. A hanger for attaching a busway housing having a longitudinally extending flange to a beam having a longitudinally extending flange comprising:

- (a) a plate member,
- (b) first and second tabs on opposite flat surfaces of said plate member,
- (c) said plate member being adapted to be disposed between opposed flat surfaces of said flanges for rotation in its own plane about an axis perpendicular thereto from an initial position to a second position in which each of said tabs engages a corresponding one of said flanges, and
- (d) a tab on said plate adapted to be bent into interfering relationship with respect to an edge of one of said flanges thereby to lock said plate in said second position.

6. A hanger for attaching a busway housing having a longitudinally extending flange to a beam having a longitudinally extending flange comprising:

- (a) a plate member having a longitudinal axis and a transverse axis dividing it into successive first, second, third and fourth quadrants,
- (b) a plurality of tabs on one of the faces of said plate, at least one of said tabs being in said first quadrant and at least one other of said tabs being in said third quadrant.
- (c) a second plurality of tabs on the opposite face of said plate, at least one of said second plurality of tabs being in said first quadrant and at least another of said second plurality of tabs being in said third quadrant.
- (d) said plate member being adapted to be disposed between opposing surfaces of said flanges for rotation in its own plane about an axis perpendicular thereto from an initial position to a second position in which each of the tabs on one of said faces in said first and third quadrants engages a correspond-

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ing edge portion of one of said flanges and each of the tabs on the opposite face in said first and third quarters engages a corresponding edge portion of the other of said flanges.

7. A hanger for attaching a busway housing having a longitudinally extending flange to a beam having a longitudinally extending flange comprising:

- (a) a plate member having a longitudinal axis and a transverse axis dividing it into successive first, second, third and fourth quadrants,
- (b) first and second pairs of tabs on one of the faces of said plate member, said first pair being in said first quadrant and said second pair being in said third quadrant,
- (c) a third pair of tabs on the opposite face of said plate member, one tab of said third pair being in said first quadrant and the other tab of said third pair being in said third quadrant,
- (d) said plate member being adapted to be disposed between opposing surfaces of said flanges for rotation in its own plane about a perpendicular axis from an initial position to a second position in which said first and second pairs of tabs engage corresponding edges of one of said flanges and each tab of said third pair engages a corresponding edge of the other of said flanges and
- (e) a fourth pair of tabs, one of said fourth pair of tabs being in said second quadrant and the other of said fourth pair of tabs being in said fourth quadrant, and each of said fourth pair of tabs being adapted to be bent into interfering relationship with respect to a corresponding edge of one of said flanges thereby to lock said plate in said second position.

8. A hanger for attaching a busway housing provided with a longitudinally extending flange to a beam having a longitudinally extending flange comprising:

- (a) a plate member adapted to be disposed between the flange of said housing and the flange of said beam,
- (b) an integral lanced tab spaced from one face of said plate and extending parallel thereto for embracing one of said flanges and
- (c) an edge portion of said plate bent and returned upon itself to form a second tab spaced from the opposite surface of the plate to embrace the other of said flanges.

9. A hanger for attaching a busway housing having a longitudinally extending flange to a beam having a longitudinally extending flange comprising:

- (a) a plate member having a longitudinal axis and a transverse axis dividing the plate into quadrants,
- (b) a pair of lanced tabs integral with said plate, each disposed in a corresponding one of two diagonally opposite quadrants, said tabs being spaced from one

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surface of the plate and extending parallel thereto for embracing one of said flanges and

- (c) a pair of edge portions of said plate bent and returned upon themselves to form a second pair of tabs spaced from the opposite surface of the plate to embrace the other of said flanges, each of said second pair of tabs being disposed in a corresponding one of the other two diagonally opposite quadrants of said plate member.

10. A hanger for attaching a busway housing provided with a longitudinal flange to a pair of spaced apart beams each having top and bottom spaced apart longitudinally extending strengthening members and a longitudinally extending web joining said strengthening members comprising a plate member having a length approximately equal to the distance between the webs of said beams and having a first pair of tabs each disposed at a corresponding end thereof and adapted to engage the top strengthening member of a corresponding one of said beams and a second pair of tabs each disposed at a corresponding end of said plate and adapted to engage a corresponding edge of said flange.

11. A hanger for attaching a busway having longitudinally extending spaced apart top and base flanges to a pair of spaced apart parallel beams, each of said beams having longitudinally extending top and base strengthening members spaced apart a distance substantially equal to the distance between said top and base flanges and a longitudinally extending web interconnecting said strengthening members, said hanger comprising:

- (a) a plate member having a length approximately equal to the distance between the webs of said beams,
- (b) said plate member having at each end thereof a downwardly extending wall member adapted to abut the web of a corresponding one of said beams,
- (c) said plate having a first pair of tabs each disposed at a corresponding end thereof and adapted to engage the top strengthening member of a corresponding one of said beams,
- (d) said plate also having a second pair of tabs each disposed at a corresponding end thereof and,
- (e) each of said second pair of tabs being spaced from said plate member to provide between its upper edge and the lower face of said plate member a recess for receiving a corresponding edge of said top flange.

References Cited by the Examiner

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674,271 6/52 Great Britain.

CLAUDE A. LE ROY, *Primary Examiner*.