

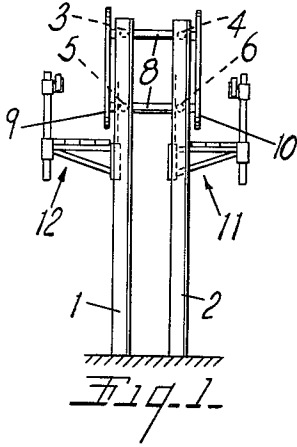
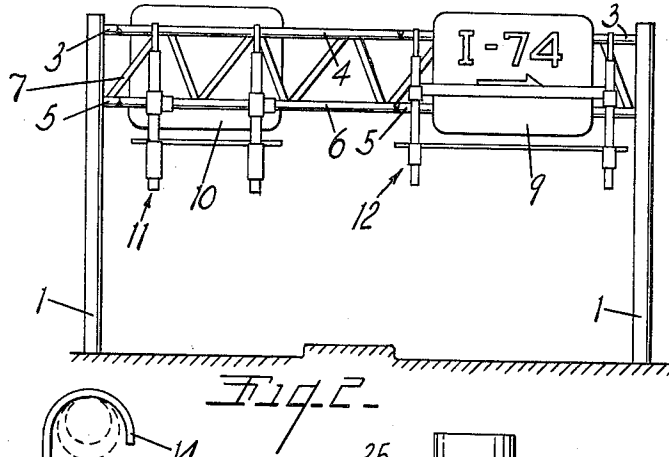
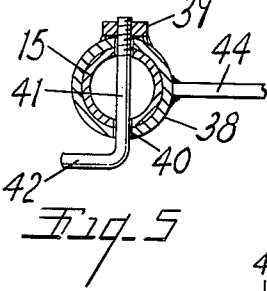
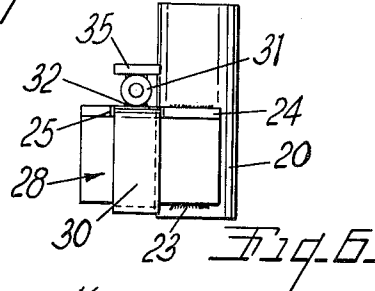
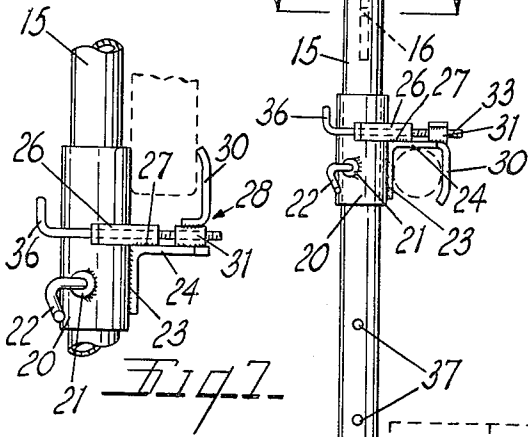
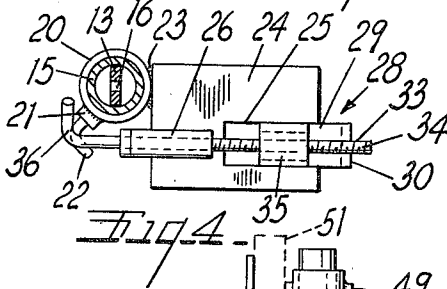
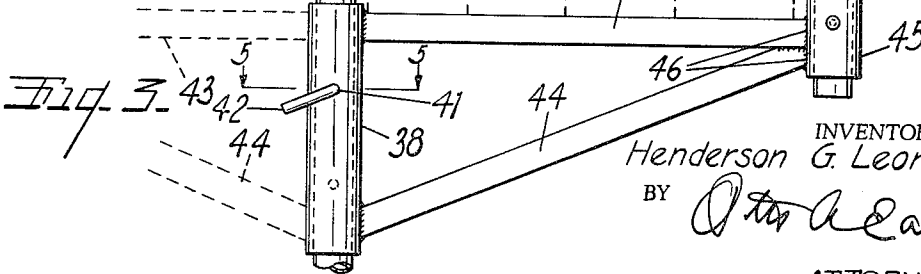
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3,159,243

SCAFFOLD HANGER FOR OVERHEAD HIGHWAY SIGN TRUSSES

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3,159,243 SCAFFOLD HANGER FOR OVERHEAD HIGHWAY SIGN TRUSSES

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7 Claims. (Cl. 182-150)

This invention relates to improvements in scaffold hanger for overhead highway sign trusses. The principal objects of this invention are:

First, to provide a scaffold hanger which will facilitate maintenance and installation of highway signs mounted on trusses extending across the highway and which will permit the support of a workman's scaffold over the highway with a minimum of interference with traffic on the highway below the sign and sign supporting truss.

Second, to provide a scaffold hanger which is selectively attachable with a wide variety of highway sign supporting trusses to securely support a workman's scaffold in operative position relative to the signs on the trusses.

Third, to provide a scaffold hanger which is attachable to the front side of a highway sign supporting truss at either end of a sign to be worked upon to project forwardly of the sign and support a workman's scaffold in front of the sign.

Fourth, to provide a scaffold hanger which is alternatively attachable over the back side of a highway sign supporting truss to support a scaffold in front of the truss and the sign to be worked upon.

Fifth, to provide a scaffold hanger for highway sign maintenance which is readily mountable on a variety of highway sign supporting trusses having chord members of different diameters and which is provided with a retaining or steady clamp engageable with a lower chord of the truss or alternatively with the lower edge of a sign mounted on a single large cross bar or boom, without any lower chord or truss element.

Sixth, to provide a scaffold hanger having the foregoing properties and capabilities which is readily demountable into separate sections so that no section is too heavy to be easily raised into position and engaged with the sign supporting truss.

Seventh, to provide a scaffold hanger for highway sign maintenance which is strong and rugged and which will support a workman's platform in front of a sign at different levels as required for work on the sign and which is relatively inexpensive to manufacture.

Other objects and advantages of the invention will be apparent from a consideration of the following description and claims. The drawings, of which there is one sheet, illustrate a highly practical form of the scaffold hanger and various alternative operative engagements of the scaffold hanger with a highway sign supporting truss or boom.

FIG. 1 is a fragmentary side elevational view of a highway sign truss and signs thereon with two of the scaffold hangers of the invention supported on the truss in alternative mounting positions.

FIG. 2 is a fragmentary front elevational view of the sign supporting truss and one of the signs and scaffold hangers associated therewith, the truss being broken away at one side to illustrate the back side of another sign and an alternative mounting of the scaffold hanger of the invention.

FIG. 3 is a fragmentary side elevational view of the scaffold hanger of the invention in assembled operative position.

FIG. 4 is a transverse cross sectional view taken along the plane of the line 4-4 in FIG. 3.

FIG. 5 is a fragmentary cross sectional view through

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the hanger taken along the plane of the line 5-5 in FIG. 3.

FIG. 6 is a fragmentary end elevational view of the steady or retaining clamp on the scaffold hanger.

FIG. 7 is a fragmentary side elevational view of the steady or retaining clamp and a portion of the scaffold hanger arranged in a third alternative operative position with respect to a highway sign.

The high speed limited access highways currently being built in this country have created a demand for large and readily readable signs to instruct drivers as to routes and directions for leaving the highways and these signs are mounted in part on booms or trusses extended across the highway and above the level of the highest vehicle expected to travel the highway. These signs and their supporting booms or structures require periodic maintenance which necessitates workmen standing on scaffolds in front of the signs or the trusses and the scaffolds must be erected in a minimum of time and with ample clearance therebelow so that traffic is interrupted as little as possible while the maintenance work is carried out.

FIGS. 1 and 2 show one form of overhead highway sign and supporting truss and two alternative positions for mounting the scaffold hangers of the invention with respect thereto. The sign structure consists in the example illustrated of two pairs of upright posts 1 and 2 projecting above the highway at each side thereof and supporting a double truss sign supporting structure including upper chord members 3 and 4 and lower chord members 5 and 6. Angled connecting elements 7 connect the chord members of each truss. Depending upon the width of the highway and the size and weight of the signs to be supported, these trusses and their elements may be of different sizes and as mentioned in the objects of the invention some highway signs are mounted on a single large tubular cross beam or boom. Horizontal connecting elements 8 connect the two trusses of the sign support illustrated. One sign 9 is supported on one truss having the chord elements 3 and 5 while a second sign 10 is supported in oppositely facing relation by the chord members 4 and 6. The scaffold hangers of the invention indicated by the general reference 11 are supported behind the sign 10 and laterally inwardly from the sides of the sign. The hangers associated with the sign 9 and indicated generally at 12 are supported on the front side of the truss and laterally outwardly from the sides of the sign. The hangers 11 and 12 are of identical construction as will be described and are readily adaptable to the alternative mountings illustrated.

The scaffold hanger of the invention consists of an upper chord engaging hook member 13 having a widely curved hook 14 adapted to hang over the largest chord element likely to be encountered. The hook member is desirably formed of flat bar stock of sufficient strength to support the load of the scaffold and the workmen. The hangers are invariably used in pairs so the load on each hanger is approximately half of the total load but safety factors may be incorporated in the design of the hook members. The lower ends of the hook members project telescopically and adjustably into the upper ends of tubular cylindrical suspension members 15. The hook members have a series of vertically spaced holes 16 formed therein and the suspension member has a boss 17 formed on one side with a hole formed diametrically through the suspension member to receive the connecting pin 18. The inside of the boss 17 is threaded to engage threads on the pin 18 and the pin has a manually operable handle 19 formed by bending the end of the pin laterally. The position of the cylindrical suspension member may thus be adjusted vertically while providing adequate support for the suspension member.

Positioned along the intermediate portion of the suspension member 15 is a retaining or steady sleeve 20 which is slidably and rotatably mounted relative to the cylindrical suspension member. A boss 21 formed on the side of the retainer sleeve is drilled and tapped to receive a set screw 22 which can be screwed into the sleeve to engage the suspension member 2 and clamp the retainer sleeve in any desired vertical or rotative position. Mounted on one side of the retainer sleeve 20 as by welding at 23 is an angle shaped bracket having a laterally projecting arm 24. The arm 24 projects to two sides of the retainer sleeve 20 and defines a laterally opening slot 25 forming a guide or slideway in the arm. A tubular support 26 is secured to the bracket arm as by welding at 27 in aligned relation with the slot 25. Adjustably positioned within the slot 25 is an angled retainer or steady hook 28 having an arm 29 guidingly received between the sides of the slot and a vertically projecting arm 30 which may project downwardly as in FIGS. 1, 2, 6 or which may be projected upwardly as in FIG. 7. The arm 29 has a tubular element 31 secured thereto as by welding at 32 and this tubular element is internally threaded and aligned with the tubular support element 26 to receive the end of a pin 33 which projects through the support element 26 and is threaded as at 34 to engage the tubular element on the retaining hook member. An alternative slideway engaging plate 35 is secured to the opposite side of the tubular element 31 and engages the guide slot when the retainer hook is inverted as in FIG. 7. The pin 33 has a manually operable handle 36 by means of which the retainer hook member is adjusted in the slideway 25 to clamp the arm 30 behind one of the chord members of the truss as shown in FIGS. 1, 2 and 3 or to engage the back side of a sign as indicated in FIG. 7. The retainer hook carries no vertical load but merely prevents the tubular suspension element from swinging on the upper hook 14. By sliding the sleeve 20 upwardly or downwardly the retainer hook can be arranged to engage the lower chord of any truss or the lower edge of any sign.

The lower end of the tubular suspension member 15 has a plurality of holes 37 formed therethrough and disposed in 90° rotated position relative to the boss 17 and pin 18 at the upper end of the suspension 2. Slidably and rotatably positioned around the lower end of the suspension 2 is a scaffold supporting sleeve 38 of substantial length. The sleeve 38 has a boss 39 formed on one side thereof and aligned with a hole 40 in the opposite side of the sleeve. The boss is internally threaded so that a third supporting pin 41 may be passed through the sleeve and a selected pair of the holes and engaged in the threaded boss 39. The pin 41 has an angled end 42 forming a manually operable handle and when installed the pin supports the sleeve 38 from the suspension member 15.

Projecting laterally from the side of the supporting sleeve 38 is a scaffold supporting arm or bar 43 connected to an inclined brace bar 44. At their outer ends the bars 43 and 44 are connected together and to an upright tubular socket 45 as by welding at 46. The socket 45 removably receives and supports a hand rail support rod 47 and the rod in turn supports a sleeve 48 having a retaining screw 49 projecting therethrough into the bar. The sleeve 48 carries a U-shaped bracket 50 within which a wooden safety or hand rail 51 may be removably supported.

With reference to FIG. 3 it will be noted that the scaffold supporting sleeve 38 and its scaffold supporting bars 43-44 may be rotated to project to the right as shown in full lines or to the left as shown by the dotted lines. This permits the scaffold support bar to project from a suspension member 15 mounted on the front side of a truss as at 12 in FIG. 2 or from a suspension member mounted on the back side of a truss as at 11 in FIG. 2. The lower end of the suspension member and the

scaffold supporting sleeve projects a minimum distance below the lower chord of the truss and the lower edge of the sign so as to interfere as little as possible with the vertical clearance below the sign and above the surface of the road.

In the event that the scaffold support is to be used on a sign support having a single cross bar or boom and no lower chord the retainer or steady hook 30 can be inverted on the bracket arm 24 to project upwardly and engage the lower edge of the sign as shown in FIG. 7. As previously noted the retainer hook carries no substantial vertical load and this arrangement of the retainer hook is usually adequate to steady the lower end of the scaffold hanger.

The major elements of the scaffold hanger are readily separable so that they can be made of sufficient weight and strength to carry the required load and still be easily mounted.

What is claimed as new is:

1. A scaffold hanger for overhead highway sign trusses comprising,
 - a tubular suspension member having a plurality of vertically spaced holes formed through the lower portion thereof and a single hole formed through the upper end thereof at 90° to the holes in said lower portion,
 - a boss on the side of said member around one side of said single hole,
 - said boss and said single hole being internally threaded on one side of said member,
 - a hanger bar of flat cross section with a downturned hook on its upper end and having a straight lower end received in the upper end of said member,
 - a first angled pin passed through said single hole in threaded engagement with said member and said boss and selectively passed through one of several spaced holes provided therefor in said hanger bar,
 - a retainer sleeve slidably and rotatably positioned around the mid-section of said member and having a set screw clampingly engageable with the member,
 - a bracket secured to said retainer sleeve and having a laterally projecting arm with a guide slot formed therein,
 - a tubular support on said arm aligned with said slot and off-set alongside said sleeve,
 - an angled retainer hook having an arm slidably received in said slot and having a nut secured to said arm,
 - a second angled pin passed through said tubular support and threadedly engaged with said nut,
 - a platform supporting sleeve slidably and rotatably receivable around the lower end of said member and having a hole formed transversely therethrough with a boss around one side of the hole,
 - a third angled pin threadedly engaged in one side of said last hole and the boss therearound and passed selectively through one of said holes in the lower portion of said member,
 - and a scaffold support bracket projecting from one side of platform supporting sleeve and having a hand rail post receiving socket on its outer end.
2. A scaffold hanger for overhead highway sign trusses comprising,
 - a tubular suspension member having a plurality of vertically spaced holes formed through the lower portion thereof and a single hole formed through the upper end thereof at 90° to the holes in said lower portion,
 - said single hole being internally threaded on one side of said member,
 - a hanger bar with a downturned hook on its upper end and having a straight lower end received in the upper end of said member,
 - a first angled pin passed through said single hole in threaded engagement with said member and selec-

tively passed through one of several spaced holes provided therefor in said hanger bar,
 a retainer sleeve slidably and rotatably positioned around the mid-section of said member and having a set screw clampingly engageable with the member, 5
 a bracket secured to said retainer sleeve and having a laterally projecting arm with a guide slot formed therein,
 a tubular support on said arm alined with said slot and off-set alongside said sleeve, 10
 an angled retainer hook having an arm slidably received in said slot and having a nut secured to said arm,
 a second angled pin passed through said tubular support and threadedly engaged with said nut,
 a platform supporting sleeve slidably and rotatably 15
 receivable around the lower end of said member and having a hole formed transversely therethrough,
 a third angled pin threadedly engaged in one side of said last hole and passed selectively through one of said holes in the lower portion of said member, 20
 and a scaffold support bracket projecting from one side of platform supporting sleeve.
 3. A scaffold hanger for overhead highway sign trusses comprising,
 a tubular suspension member having a hole formed 25
 through the lower portion thereof and a hole formed through the upper end thereof at 90° to the hole in said lower portion,
 said holes being internally threaded on one side of said member, 30
 a hanger bar with a downturned hook on its upper end and having a straight lower end telescopically engageable with the upper end of said member,
 a first angled pin passed through said upper hole in threaded engagement with said member and selectively 35
 passed through one of several spaced holes provided therefor in said hanger bar,
 a retainer sleeve slidably and rotatably positioned around the mid-section of said member and having a set screw clampingly engageable with the member, 40
 a bracket secured to said retainer sleeve and having a laterally projecting arm with a guide slot formed therein,
 a tubular support on said arm alined with said slot and off-set alongside said sleeve, 45
 an angled retainer hook having an arm slidably received in said slot and having a nut secured to said arm,
 a second angled pin passed through said tubular support and threadedly engaged with said nut,
 a platform supporting sleeve slidably and rotatably 50
 receivable around the lower end of said member,
 a third angled pin passed through and threadedly engaged in one side of said platform sleeve and passed through said hole in the lower portion of said member to selectively support said platform sleeve at 55
 different levels and hold it against rotation on said member,
 and a scaffold support bracket projecting from one side of said platform supporting sleeve.
 4. A truss engaging scaffold hanger comprising, 60
 a cylindrical suspension member, a hanger member telescopically engageable at its lower end with said suspension member and having a truss engaging hook on its upper end,
 a first connecting and supporting pin passed through 65
 the telescoped ends of said members and threadedly engaged with the outer-most of the members,
 one of said members having a plurality of spaced holes therethrough selectively receiving said first pin,
 a retainer sleeve slidably and rotatably engaged around 70
 said suspension member and having a set screw adapted to selectively clamp the sleeve to the suspension member,
 an arm projecting from the side of said retainer sleeve 75

and forming a laterally directed slot forming a slide-way,
 a truss chord hook member having one end slidably 5
 guided in said slideway with a chord engaging arm projecting vertically therefrom,
 tubular elements secured in alined relation on said hook member on said arm and off-set laterally of said retainer sleeve,
 a second pin passed through said tubular elements 10
 and threadedly engaged with one of them to reciprocate said hook member on said arm and the slideway thereon,
 a platform supporting sleeve member slidably and rotatably received on said suspension member,
 a third pin passed through said supporting sleeve member and said suspension member and threadedly engaged with one of the members having a plurality of 15
 vertically spaced holes formed therein selectively receiving said third pin,
 and a scaffold supporting bracket carried by and projecting laterally from said supporting sleeve member,
 said pins having angularly bent ends forming manually operable handles thereon.
 5. A truss engaging scaffold hanger comprising,
 a cylindrical suspension member, a hanger member 20
 telescopically engageable at its lower end with said suspension member and having a truss engaging hook on its upper end,
 a first connecting and supporting pin passed through the telescoped ends of said members and threadedly engaged with the outer-most of the members, 25
 one of said members having a plurality of spaced holes therethrough selectively receiving said first pin,
 a retainer sleeve slidably and rotatably engaged around said suspension member and having means adapted to selectively clamp the sleeve to the suspension member,
 an arm projecting from the side of said retainer sleeve 30
 and forming a laterally directed slideway,
 a truss chord hook member having one end slidably guided in said slideway with a chord engaging arm projecting vertically therefrom,
 tubular elements secured in alined relation on said hook member and said arm, 35
 a second pin passed through said tubular elements and threadedly engaged with one of them to reciprocate said hook member on said arm and the slideway thereon,
 a platform supporting sleeve member slidably and rotatably received on said suspension member, 40
 a third pin passed through said supporting sleeve member and said suspension member and threadedly engaged with one of the members having a plurality of vertically spaced holes formed therein selectively receiving said third pin,
 and a scaffold supporting bracket carried by and projecting laterally from said supporting sleeve member, 45
 said pins having manually operable handles thereon.
 6. A truss engaging scaffold hanger comprising,
 a suspension member having a cylindrical lower portion, a hanger member telescopically engageable at its lower end with the upper end of said suspension member and having a truss engaging hook on its 50
 upper end,
 a first connecting and supporting pin passed through the telescoped ends of said members and threadedly engage with one of the members,
 one of said members having a plurality of spaced holes therethrough selectively receiving said first pin, 55
 a retainer sleeve slidably and rotatably engaged around the cylindrical portion of said suspension member and having means adapted to selectively clamp the sleeve to the suspension member, 60
 an arm projecting from the side of said retainer sleeve and forming a laterally directed slideway,
 a truss chord hook member having one end slidably guided in said slideway with a chord engaging arm projecting vertically therefrom, 65
 tubular elements secured in alined relation on said hook member and said arm,
 a second pin passed through said tubular elements and threadedly engaged with one of them to reciprocate said hook member on said arm and the slideway thereon, 70
 a platform supporting sleeve member slidably and rotatably received on said suspension member,
 a third pin passed through said supporting sleeve member and said suspension member and threadedly engaged with one of the members having a plurality of vertically spaced holes formed therein selectively receiving said third pin, 75
 and a scaffold supporting bracket carried by and projecting laterally from said supporting sleeve member, said pins having manually operable handles thereon.

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an arm projecting from the side of said retainer sleeve and forming a laterally directed slideway, a truss chord hook member having one end slidably guided in said slideway with a chord engaging arm projecting vertically therefrom, 5 tubular elements secured in alined relation on said hook member and said arm, a second pin passed through said tubular elements and threadedly engaged with one of them to reciprocate said hook member on said arm and the slideway 10 thereon, a platform supporting sleeve member slidably and rotatably received on the cylindrical portion of said suspension member, a third pin passed through said supporting sleeve mem- 15 ber and said suspension member and threadedly engaged with one of the members, one of said last two members having a plurality of

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vertically spaced holes formed therein selectively receiving said third pin, and a scaffold supporting bracket carried by and projecting laterally from said supporting sleeve member, said pins having manually operable handles thereon. 7. A hanger as defined in claim 6 in which said hook member is reversible on said arm and has an auxiliary slideway engaging element on the opposite side of the tubular element on said hook member whereby the chord engaging arm of the hook member may be disposed upwardly or downwardly.

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