

Feb. 2, 1937.

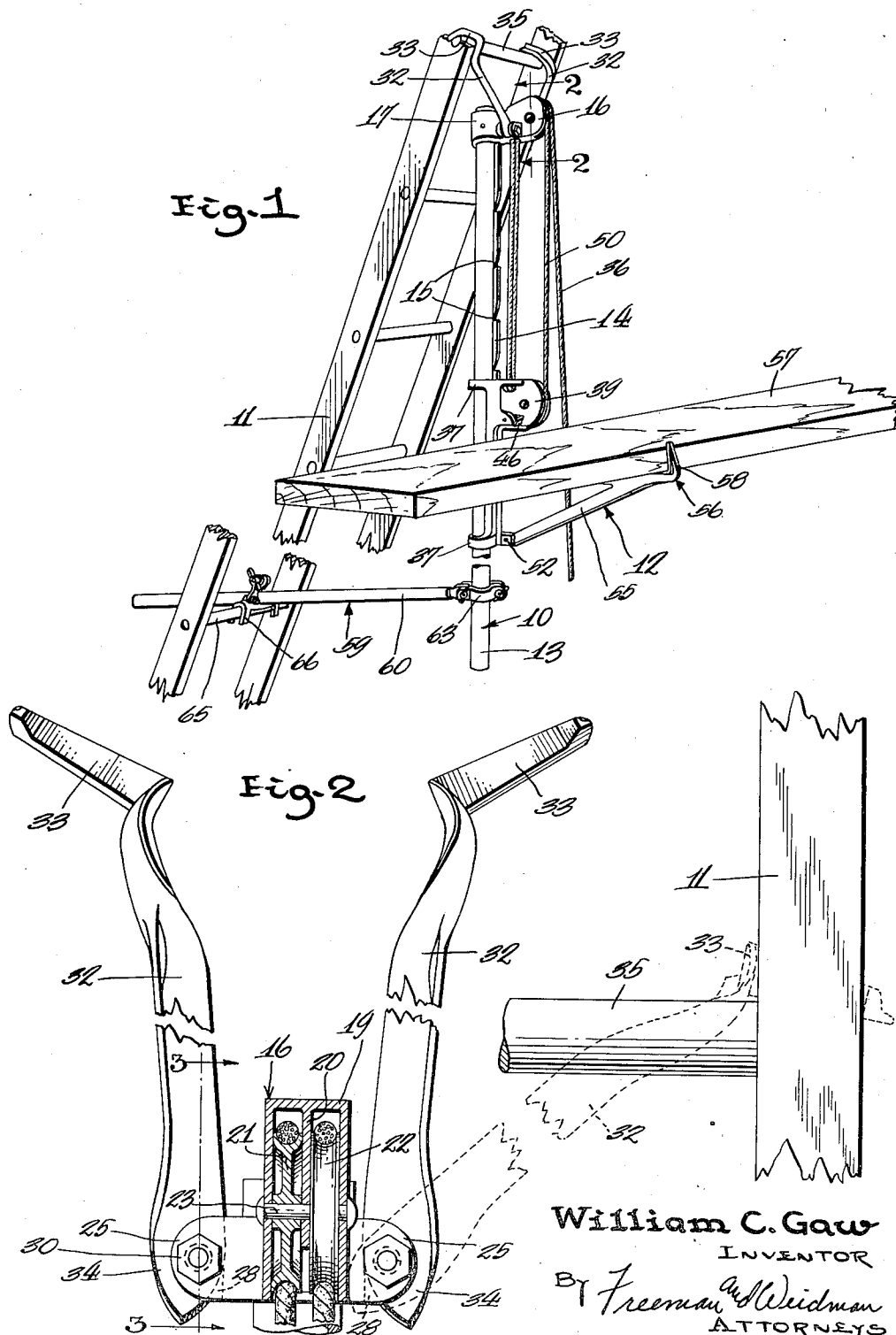
W. C. GAW

2,069,607

SCAFFOLDING DEVICE

Filed July 14, 1934

4 Sheets-Sheet 1



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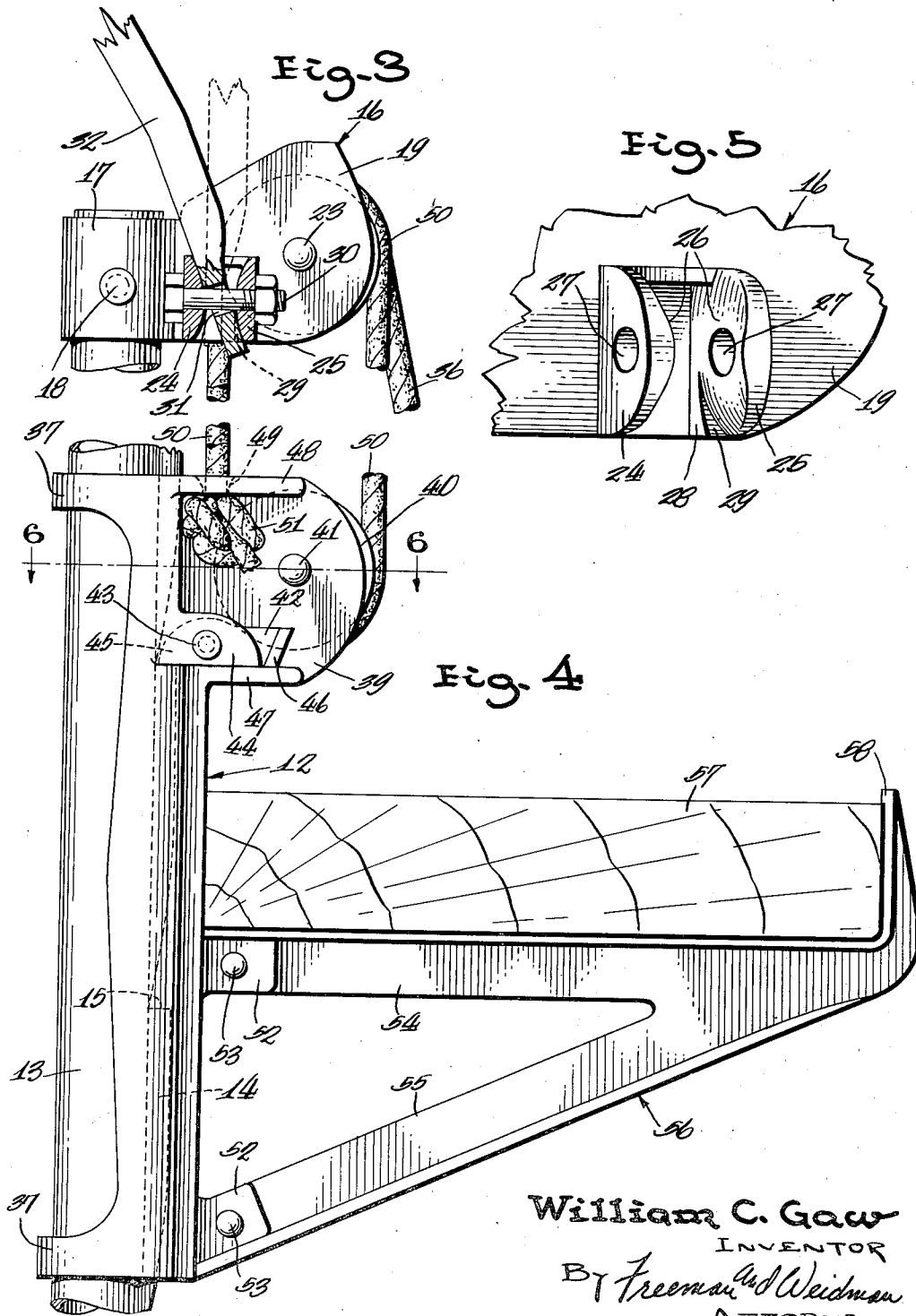
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4 Sheets-Sheet 2



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4 Sheets-Sheet 4

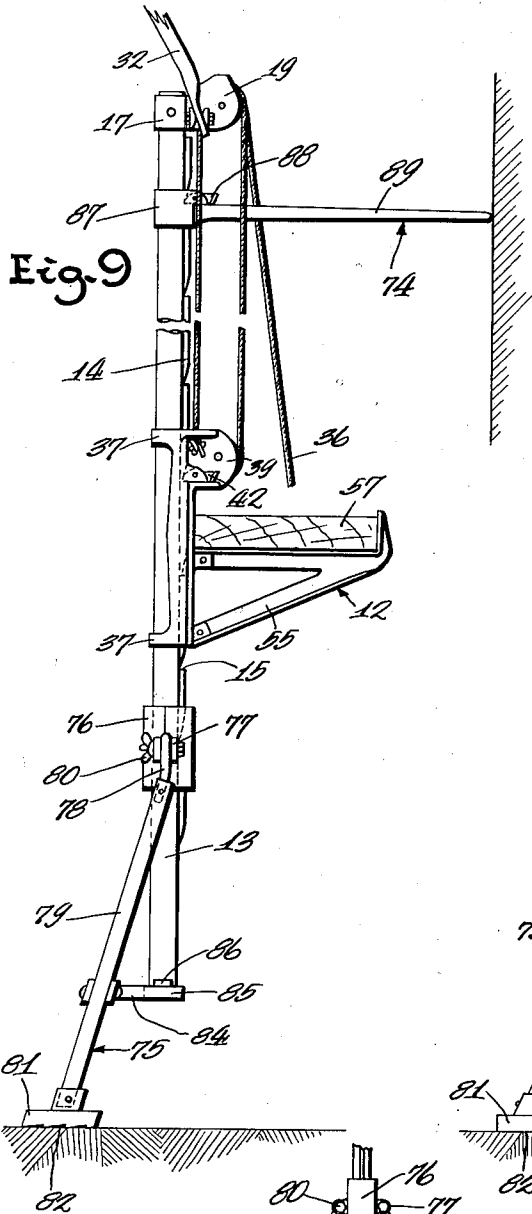


Fig. 9

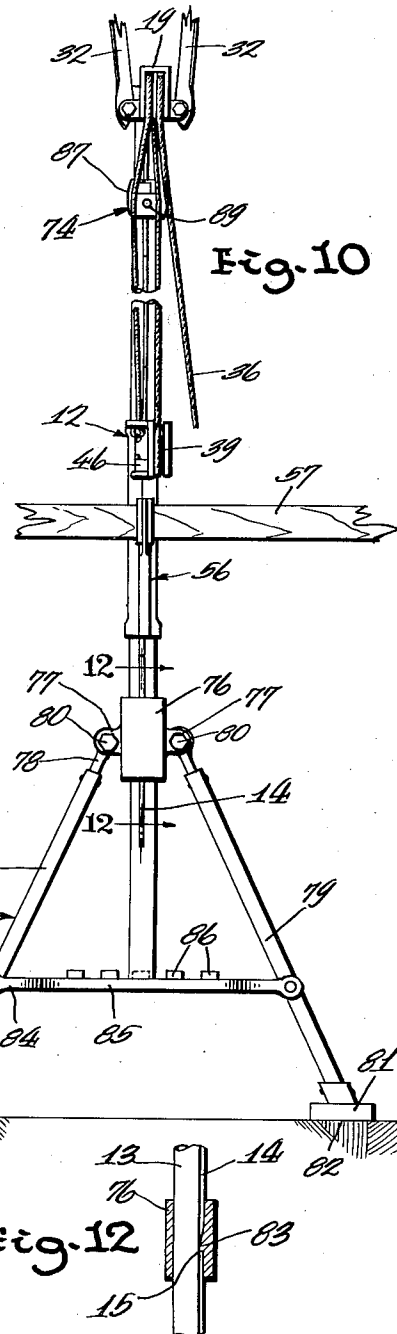


Fig. 10

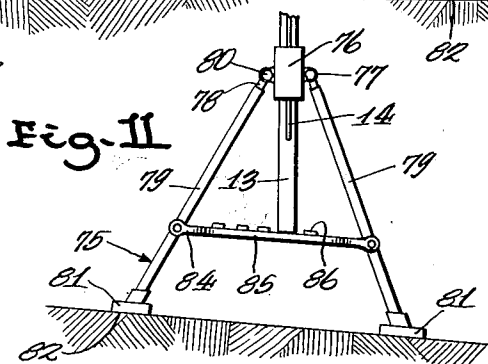


Fig. 11

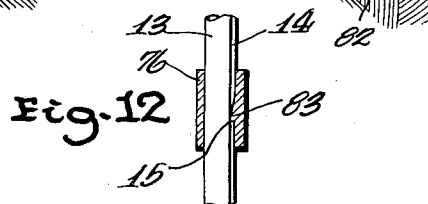


Fig. 12

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UNITED STATES PATENT OFFICE

2,069,607

SCAFFOLDING DEVICE

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14 Claims. (Cl. 304—31)

This invention relates to scaffolding devices, and has for an object the provision of a new and improved device of this character.

In the drawings accompanying this specification and forming a part of this application, I have shown, for purposes of illustration, one embodiment which my invention may assume, and in these drawings:

Figure 1 is a broken perspective view illustrating the preferred embodiment of my invention as used with a ladder,

Figure 2 is a broken vertical sectional view corresponding substantially to the line 2—2 of Figure 1, with parts shown in elevation,

Figure 3 is a vertical sectional view corresponding substantially to the line 3—3 of Figure 2,

Figure 4 is an elevational view of the platform supporting mechanism, and is drawn in operative alignment with Figure 3 to disclose adjacent cooperating parts,

Figure 5 is a fragmentary perspective view of the supporting-arm engaging lugs shown in Figure 3,

Figure 6 is a horizontal sectional view corresponding substantially to the line 6—6 of Figure 4,

Figure 7 is a broken side elevational view of the boom mechanism,

Figure 8 is a sectional view corresponding substantially to the line 8—8 of Figure 7,

Figure 9 is an elevational view showing the same embodiment of my invention as used without a ladder,

Figure 10 is an elevational view at right angles to Figure 9,

Figure 11 is a fragmentary elevational view illustrating the lower part of the embodiment used as shown in Figures 9 and 10, used on an inclined base, while—

Figure 12 is a sectional view corresponding substantially to the line 12—12 of Figure 10.

The herein disclosed embodiment of my invention when used in connection with a ladder, as shown in Figures 1 through 8, comprises a scaffolding device 10, adapted to be suspended from an upper portion of a ladder 11, and supporting, upon its depending portion, a movable and adjustable platform supporting device 12, adapted to support, as one of its uses, the weight of a workman. Although only one scaffolding device 10 may be used, it will be understood that a second device may be suspended from a second ladder spaced from the ladder 11, and a

suitable plank-like member supported by the two platform supporting devices 12.

The scaffolding device 10 comprises an elongated pipe-like member 13, provided with an integral radially projecting rib or spline 14 substantially the entire length of the member 13 and provided with milled-out portions forming stops 15.

Secured to the upper end of the member 13 is a casting 16 formed with a sleeve portion 17 embracing the upper end of the member 13 and fastened thereto by a pin 18. Extending from the sleeve 17 is a pulley housing 19, provided interiorly thereof with a partition 20 forming the housing into suitable compartments adapted to accommodate pulleys 21 and 22 journaled on a pin 23 which passes through the partition 20 and the sides of the pulley housing 19.

Projecting from each side of the pulley housing 16 are a pair of spaced lugs 24 and 25, and as shown in Figures 3 and 5, the lugs 24 and 25 are of substantially plano-convex cross-section, with the convex portions 26 thereof facing each other. The lugs are apertured as at 27, and each lug 25 is provided at its lower end, adjacent the pulley housing 19, with an abutment 28 extending from the convex surface 26 and cooperating therewith to form a shoulder 29. Bolts 30 extend through the apertures 27 and are secured in place by suitable nuts.

The bolts 30 also extend through loosely surrounding apertures 31 provided in oppositely disposed arms 32. The arms 32 are substantially L-shaped in cross-section, and are provided at their extremities with angularly disposed U-shaped portions 33. A portion 34 of the arms 32 adjacent the lugs 24 and 25 is of substantially flat cross-section, and is of a lesser width than the space between the convex portions 26 of the lugs 24 and 25, so that the arms 32 may rotate about the bolts 30 and also may tilt with respect to the longitudinal axis of the bolts.

With the arms 32 in upright tilted position, as shown in Figures 2 and 3, each arm 32 is positioned askew, with its portion 34 engaging the adjacent convex surfaces 26, and with a part of its portion 34 engaging the shoulder 29 to hold the arm 32 against rotation.

When it is desired to attach the scaffolding device 10 to the ladder 11, the operator elevates the device 10 until its upper end is at the desired height, and the upper end of the device 10 is then shifted toward an adjacent ladder rung 35, so that the arms 32 will contact this rung, and this

contact causes the arms 32 to shift longitudinally with respect to the axis of the bolts 30, thereby dislodging the portions 34 from engagement with the shoulder 29, and permitting the arms 32 to rotate, to swing the U-shaped portions 33 to a position adjacent the side rails or stiles of the ladder 11, to engage and grip the same when the device 10 is lowered slightly, and support the entire scaffolding device 10 therefrom.

The platform supporting device 12 comprises spaced collar members 37 embracing the member 13, slidably mounted thereon, and provided with recesses 38 to accommodate the spline 14 of the member 13. As shown in Figure 4, a pulley housing 39 is provided adjacent the upper end of the platform supporting device 12 and a pulley 40 is journaled within the pulley housing by means of a pin 41. Referring to Figure 6, it will be noted that the pulley 40 is off-set with respect to the axis of the member 13, to accommodate a pawl 42, disposed in line with the axis of the member 13, and journaled about a pin 43 extending through a wall of the pulley housing 39 and an ear 44 spaced from the pulley housing and formed integral therewith. The pawl 42 is provided with a tooth 45 cooperable with the stops 15 formed on the spline 14, and the opposite end of the pawl 42 is provided with a beveled projection 46 adapted to be operated by the user of the scaffolding device 10. An ear 47, integral with the pulley housing 39, and disposed adjacent the lower portion of the pulley housing 39, acts as a stop limiting reverse rotation of the pawl 42, so that the pawl 42 is normally held by gravity and by contact with a stop 15 in a substantially horizontal position, prevented from any further reverse movement.

Adjacent the upper end of the pulley housing 39 is an ear 48 formed with an aperture 49 adapted to receive a portion of a rope 50 provided with a knot 51 disposed beneath the ear 48 and engageable with the lower surface thereof. The rope 50 extends upwardly and around the pulley 21 in the upper pulley housing 19, and then downwardly and around the pulley 40 in the lower pulley housing 39, and then again upwardly and around the pulley 22 in the upper pulley housing 19, and then downwardly a substantial distance to provide a portion 36 which may be manipulated by the user of the scaffolding device 10.

Projecting from the outer face of the platform-supporting device 12 are lugs 52 to the upper and lower pairs of which are secured by means of pins 53 the two arms 54 and 55 of a plank-supporting bracket 56 adapted to support one end of a platform or plank 57 and provided at its extremity with an up-turned abutment 58 adapted to retain the plank 57 in position.

As shown in Figure 1, adjacent the lower extremity of the member 13 is a boom device 59 comprising a rod 60 provided with an apertured lug 61 engaged by a wing-nut bolt 62 carried by a split collar 63 surrounding the lower extremity of the member 13 and adjustably fixed with respect to the member 13 by a second wing-nut bolt 64. The rod 60 of the boom 59 extends laterally from the member 13 to a position adjacent a ladder rung 65.

Means are provided to secure the rod 60 to the rung 65, comprising a clamping member 66 provided with feet 67 straddling the rung 65, and with a recess 68 of a size to accommodate a portion of the rod 60 of the boom 59.

Disposed adjacent the recess 68 and extending from the member 66 are pairs of spaced ears 69

carrying bolts 69a rotatably supporting cam fingers 70 provided with cam surfaces 71 adapted to engage a portion of the rod 60 and to cooperate with the recess 68 to clamp the rod 60 in position. The cam fingers 70 are provided at their extremities with apertured ears 72, and a bolt and wing nut connection 73 serves to hold the fingers 70 in clamping engagement with the rod 60.

Normally it is desirable to adjust the boom 59 so that the member 13 is substantially vertical, but should occasion demand it, the member 13 may be angularly shifted with respect to the vertical, by proper positioning of the boom 59.

In operation, and with the arms 32 in engagement with the side rails or stiles of the ladder 11, the platform supporting device 12 and plank 57 may be raised or lowered by a single operator. In the event that it is desired to raise the platform supporting device 12 from the position shown in Figure 1, the operator grasps the portion 36 of the rope 50 and pulls downwardly thereon to raise the platform supporting device 12 the desired distance, whereupon the platform supporting device 12 is permitted to move downwardly slightly, until the pawl 42 engages the nearest stop 15, to hold the device 12 in the raised position.

Conversely, to lower the platform supporting device 12, the operator grasps the portion 36 of the rope 50 and pulls downwardly thereon to slightly raise the platform supporting device 12, and to disengage the tooth 45 of the pawl 42 from the adjacent stop 15 of the spline 14, and then places the toe of his foot in engagement with the beveled portion 46 of the pawl 42, and lifts the pawl 42, and then lets out on the portion 36 of the rope 50 until the platform supporting device 12 is lowered substantially the desired distance, whereupon the pawl 42 is released and the platform supporting device 12 is permitted to move downwardly slightly, until the pawl 42 engages the nearest stop 15. Either up or down, the operator may then move along the plank 57 to the other supporting device and perform the same operation to bring the plank 57 to a level position.

The herein disclosed embodiment of my invention also may be used without a ladder, for example, when the surface to be worked is not of great height, and as shown in Figures 9 through 12, when so used omits the boom 59 and adds a spacer 74 and a stand 75.

The stand 75 is applied to the elongated member 13 spaced from the lower end of the elongated member 13 and comprises a sleeve 76 embracing the elongated member 13 and provided with diametrically opposed pairs of apertured ears 77, each pair spaced to permit the interposition of an apertured lug 78 carried by the upper extremity of a supporting leg 79 and fastened to the corresponding ears 77 by a wing nut-bolt 80. The legs 79 are angularly disposed with respect to the longitudinal axis of the elongated member 13, and are provided each with a foot 81 having a roughened gripping surface 82 for anti-slipping engagement with a supporting base.

The sleeve 76 is split diametrically, so that a pair of diametrically opposed ears are carried by each half and interiorly of the sleeve 76 is an abutment 83 of a shape corresponding exactly with the milled-out stops 15 of the spline 14 on the elongated member 13. With the sleeve 76 in position and the abutment 83 disposed in a milled-out stop 15, and the lugs 78 interposed between the ears 77, the entire assembly is firm-

ly held in position on the elongated member 13 by drawing up on the wing nut-bolts 80.

Pivotally connected to the legs 79 intermediate their ends is an angular support 84 provided with an offset central portion 85 providing a base for the elongated member 13 and provided with a plurality of circular lugs 86 each of a diameter to fit within the open end of the elongated member 13 to hold the lower end of the elongated member 13 in selected position on the central portion 85 of the support 84. As shown in Figure 11, the scaffolding device may be supported on an inclined base, yet the elongated member 13 may be disposed substantially vertical, merely by positioning the open lower end of the elongated member 13 over the proper circular lug 86.

Located adjacent the upper end of the elongated member 13 is the spacer 74 comprising a sleeve 87 longitudinally movable on the elongated member 13, and adjustable to different positions thereon by means of a pawl 88 carried by the sleeve 87 and cooperable with the stops 15, and carrying a projecting arm 89.

In operation, and with the sleeves 76 and 87 properly positioned on the elongated member 13, and with the legs 79 suitably adjusted on the sleeve 76 and the lower end of the elongated member 13 encircling the proper lug 86 on the support 84, the scaffolding device is securely supported by the legs 79 and held in vertical position, spaced from the surface to be worked, and steadied, by the spacer 74 contacting the surface.

A platform may be carried by the platform supporting device 12, and moved up and down, in the same manner as when the device is used in connection with a ladder.

From the foregoing description it will be apparent that this invention provides a scaffolding device that is readily operated by a single workman, who may raise or lower the platform without stepping therefrom or dismantling the device, and that is economical of manufacture, is strong and durable, and possesses wide utility.

Under these circumstances it will be apparent to those skilled in the art that the embodiment herein disclosed accomplishes at least the principal object of the invention, and also, that the construction is adaptable to a wide variety of uses, and embodies advantages other than those herein discussed, and further, that the particular embodiment herein disclosed may be variously changed and modified without departing from the spirit or scope of the invention, and accordingly, that the above disclosure is illustrative only, and that my invention is not limited thereto.

I claim:

1. A scaffolding device, comprising: an elongated member, having one end adapted to be supported from a ladder, its other end depending from said support; means disposed adjacent said one end of said member and provided with abutments; attaching arms, rotatably and tiltably mounted on said means, rotatable in one plane, and tiltable in a plane substantially at right angles to said rotatable plane, said arms, when tilted being engageable with said abutments, so that they are held from rotating, and said arms being moved in said tiltable plane by engagement with a portion of said ladder adjacent a desired height to disengage said abutments and rotate to engage the side rails of said ladder; and supporting means movably mounted

upon said member, and adapted to carry a platform.

2. A scaffolding device, comprising: an elongated member, adapted to be disposed in substantially upright position; supporting legs pivotally secured adjacent the lower extremity of said elongated member, and adapted to cooperate with a base to support said member in upright position; supporting means, pivotally secured to said supporting legs, and provided with a plurality of abutments, the lower extremity of said elongated member being engageable with certain of said abutments in certain predetermined positions, said supporting legs and said supporting means being rockable with respect to said elongated member, so that said member may be disposed substantially upright when said supporting legs engage an inclined base; means movably mounted on said member, and adapted to carry a platform; and cooperating mechanism, carried by said member and said movably mounted means for effecting adjustment of said platform.

3. A scaffolding device, comprising: an elongated tubular member adapted to be disposed in substantially upright position, and having an integral spline extending substantially the length thereof, said spline being notched at spaced longitudinal points to provide stops; supporting legs, pivotally secured adjacent the lower extremity of said elongated member, and adapted to cooperate with a base to support said member in upright position; supporting means, pivotally secured to said supporting legs, and provided with a plurality of abutments, the lower extremity of said elongated member being engageable with certain of said abutments in certain predetermined positions, said supporting legs and said supporting means being rockable with respect to said elongated member, so that said member may be disposed substantially upright when said supporting legs engage an inclined base; means movably mounted on said member, and adapted to carry a platform; and cooperating mechanism, carried by said member and said movably mounted means for effecting movement of said platform.

4. A scaffolding device, comprising: an elongated member of tubular cross-section, having an integral hollow spline extending substantially the length thereof, said spline being displaced from the cross-sectional surface of said member, and having longitudinally spaced-apart stops formed therein, means movably mounted on said elongated member and having a part in cooperative relation with said spline to confine movement of said means in a general longitudinal direction with respect to said elongated member; and pawl means cooperable with said stops, and constructed and arranged to hold said movably mounted means in a predetermined position with respect to said member, and substantially free from binding action therewith.

5. In combination: an elongated member, having stops formed along the length thereof; means movably mounted on said elongated member; and a pawl pivotally carried by said movably mounted means, said pawl being operable to move in one direction of travel of said supporting means to pass said stops, and being operable in another direction of travel to engage one of said stops and a portion of said movably mounted means, and in engaging position being constructed and arranged to be disposed generally at right angles to the longitudinal axis of said elongated

member, to hold said movable member against movement in said other direction.

6. In combination: an elongated member, of tubular cross-section, having an integral hollow spline extending substantially along the length thereof, said spline being displaced from the cross-sectional surface of said member, and being formed with longitudinally spaced apart cut-out portions, each forming a transverse stop gradually merging with said spline; means movably mounted on said elongated member; and a pawl pivotally carried by said movably mounted means, said pawl being operable to move in one direction of travel of said supporting means to pass said stops, and being operable in another direction of travel to engage one of said stops and a portion of said movably mounted means and to be disposed generally at right angles to the longitudinal axis of said elongated member, and in this position said pawl holds said movable member against movement in said other direction.

7. A device, for use with spaced supports having a spanning member, comprising: an elongated member; attaching means, cooperable with said elongated member and adapted to engage said supports, for attaching said elongated member to said supports, said attaching means being normally biased to a position wherein the attaching means may engage said supports; and holding means, operable to hold said attaching means out of support engaging position against the bias of said attaching means, said holding means being constructed and arranged so as to release said attaching means for movement toward said support engaging position when said attaching means are moved against said spanning member.

8. A device, for use in combination with a ladder, comprising: an elongated member; attaching means, cooperable with said elongated member and adapted to engage said ladder, for attaching said elongated member to said ladder, said attaching means being normally biased to a position wherein the attaching means may engage said ladder; and holding means, operable to hold said attaching means out of ladder engaging position against the bias of said attaching means, said holding means being constructed and arranged so as to release said attaching means for movement toward said ladder engaging position when said attaching means are moved against a portion of said ladder.

9. A device, for use in combination with a ladder having side rails and connecting rungs, comprising: an elongated member; attaching means, cooperable with said elongated member and adapted to engage the side rails of said ladder, for attaching said elongated member to said ladder, said attaching means being normally biased to a position wherein the attaching means may engage said side rails; and holding means, operable to hold said attaching means out of side-rail engaging position against the bias of said attaching means, said holding means being constructed and arranged so as to release said attaching means for movement toward said side-rails engaging position when said attaching means are moved against a rung of said ladder.

10. A device, for use in combination with a ladder having side rails and connecting rungs, comprising: an elongated member; attaching means, cooperable with said elongated member and adapted to engage the side rails of said ladder, for attaching said elongated member to

said ladder, said attaching means being normally biased to a position wherein the attaching means may engage said side rails; holding means, operable to hold said attaching means out of side-rail engaging position against the bias of said attaching means, said holding means being constructed and arranged so as to release said attaching means for movement toward said side-rails engaging position when said attaching means are moved against a rung of said ladder; and supporting means movably mounted on said elongated member and adapted to carry a platform.

11. A device, for use in combination with a ladder having side rails and connecting rungs, comprising: an elongated tubular member, having a spline extending substantially the length thereof, said spline being notched at spaced longitudinal points to provide stops; attaching means, cooperable with said elongated member and adapted to engage the side rails of said ladder, for attaching said elongated member to said ladder, said attaching means being normally biased to a position wherein the attaching means may engage said side rails; holding means, operable to hold said attaching means out of side-rail engaging position against the bias of said attaching means, said holding means being constructed and arranged so as to release said attaching means for movement toward said side-rail engaging position when said attaching means are moved against a rung of said ladder; supporting means movably mounted on said elongated member, adapted to carry a platform, and being cooperable with said spline so that movement thereof is confined in a general longitudinal direction; pawl means cooperable with said supporting means and said spline stops so that said supporting means may be held in different positions; and mechanism for effecting movement of said supporting means.

12. In combination: an elongated member, adapted to be disposed in substantially upright position; supporting legs pivotally secured adjacent the lower extremity of said elongated member, and adapted to cooperate with a base to support said member in upright position; supporting means, pivotally secured to said supporting legs, and provided with a plurality of abutments, the lower extremity of said elongated member being engageable with certain of said abutments in certain predetermined positions, said supporting legs and said supporting means being rockable with respect to said elongated member, so that said member may be disposed substantially upright when said supporting legs engage an inclined base.

13. A device for use in combination with a support, comprising: supported means; connecting means adapted to connect said supported means to said support, said connecting means being movable in a plurality of directions, and normally biased in a predetermined support engaging direction; and holding means, normally holding said connecting means immobile, constructed and arranged to be actuated by movement of said connecting means in a direction other than said predetermined direction, to thereby release said connecting means for movement in said predetermined direction.

14. A scaffolding device, comprising: elongated upright means; and base means for supporting said upright means in vertical position, said base means having supporting means engageable with said upright means and constructed and arranged

so that said upright means may be longitudinally tilted about said supporting means, and said base means having a plurality of additional supporting means, vertically spaced from said first supporting means, and spaced laterally from each other, each additional supporting means being constructed and arranged to selectively accom-

modate said upright means at a position suitable for maintaining the same in vertical position whether the contour of the surface upon which said base means rests be perpendicular or inclined with respect to the vertical.

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