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MECHANIC'S SCAFFOLD

Filed Oct. 25, 1956

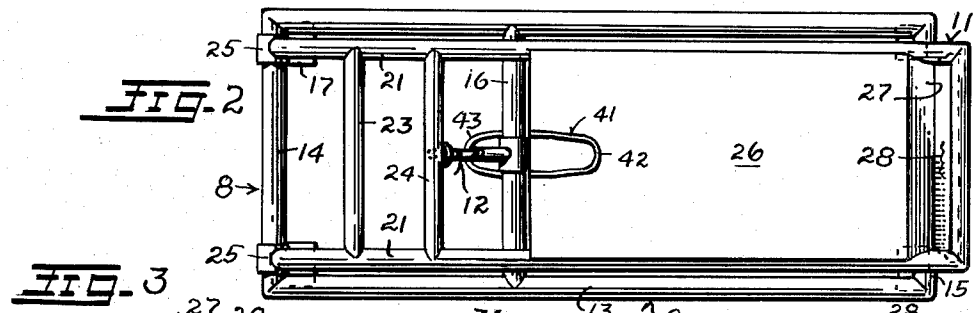


FIG. 2

FIG. 3

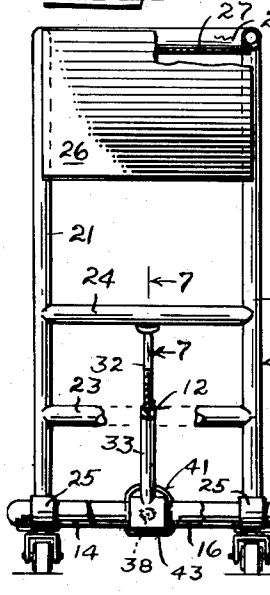


FIG. 4

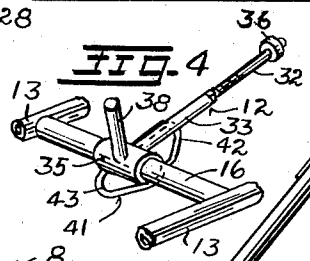
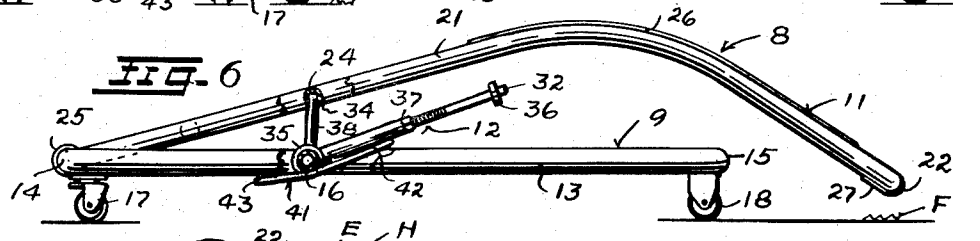


FIG. 5

FIG. 6



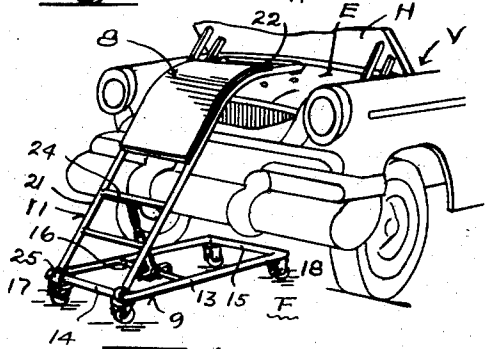
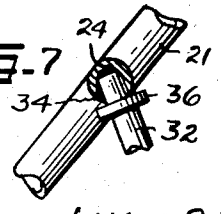


FIG. 1

FIG. 7



INVENTOR.
LINUS S. SNYDER
BY
Henry N. Young
ATTORNEY

United States Patent Office

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MECHANIC'S SCAFFOLD

Linus S. Snyder, San Joaquin County, Calif.
(Rte. 1, Box 48L, Jacksonville, Oreg.)

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The invention relates generally to a scaffold unit for supporting a mechanic in working position above a working point.

In working on machines and other objects, a mechanic must often be able to work from above with a maximum freedom of his hands and arms, a typical such work situation being found with reference to the engine installations of motor-operated vehicles. The present scaffold has been particularly designed for its use under such conditions, and a major object of its construction and use is to provide for the disposal of a mechanic with his body supported in generally prone position and independently of his arms which are left free for their use for work to be done generally below him.

Another object is to provide a mechanic's scaffold of the character described which provides a height-adjusted body support for a working mechanic.

Yet another object is to provide the scaffold unit with a particularly effective means for facilitating its conditioning for use or storage.

A still further object is to provide a particularly simple floor-supported and movable scaffold unit of the character described.

A further object is to provide a scaffold which is collapsible into a relatively flat assembly for its storage beneath a work bench, or the like.

An added object is to provide a particularly simple and effective means for alternatively conditioning the scaffold unit for its use or storage.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth or be apparent in the following description of a typical embodiment thereof, and in the accompanying drawings, in which,

Figure 1 is a perspective view showing a present scaffold unit as conditioned and disposed for its use with respect to the power unit of a self-propelled motor vehicle.

Figure 2 is an enlarged plan view of the scaffold as conditioned for use.

Figure 3 is a rear elevation of the scaffold, with portions broken away for showing certain details.

Figure 4 is a fragmentary perspective view showing the structure at and adjacent a strut member of the unit.

Figure 5 is a partly sectional right-side elevation of the operatively-conditioned scaffold.

Figure 6 is a partly sectional right-side elevation of the folded scaffold.

Figure 7 is an enlarged fragmentary view taken at the line 7—7 in Figure 3.

Understanding that the present scaffold unit has been particularly designed for supporting a mechanic's body above mechanisms which are not fully accessible from a side thereof or from an adjacent supporting floor, Figure 1 shows a scaffold 8 of my invention as disposed for its use by a mechanic working on the engine E of a usual type of motor-driven vehicle V standing on a supporting floor surface F and having its engine-covering hood H displaced for permitting access to the engine. In its present preferred embodiment, the scaffold 8 comprises a wheel-supported unitary rigid base element 9 having a unitary body-engaging rest element 11 of rigid structure hinged to the rear end thereof and carried from the base in adjusted angular relation thereto by a strut means 12 of adjustable length. The strut means 12 comprises an assembly which is operative between the base and rest elements 9 and 11 to dispose the forward portion of the element 11 adjustably spaced above the base element 9 while the forward end of the latter element is extended beneath the vehicle for disposing the free forward portion of the element 11 above the uncovered engine E while preventing a forward tilting of the scaffold unit by a mechanic supported in working position on the rest element 11.

The base element 9 of the present unit 8 is of rectangular outline having side members 13 connected at their extremities by a rear member 14 and a front member 15 and intermediately connected by a cross-member 16 which is parallel to the members 14 and 15. The members 13 and 14 and 15 and 16 of the base element 9 may conveniently comprise pieces of rigid tubing fixedly connected at their mutual junctures as a relatively light and rigid fabricated base unit. Dirigible casters 17 support the rearward end corners of the base 9 while wheels 18, which are rotatable about a common axis parallel to the forward base member 17, support the base at its forward corners, the mountings for said casters and wheels being fixedly related to the base 9 thereat; it will be understood that the present rolling support provided for the base 9 by the casters 17 and wheels 18 is such that it facilitates a generally maintained disposal of the elevated and extended scaffold element 11 in its most advantageous use position adjacent and over the best working point for a mechanic using the scaffold.

It will now be noted that the scaffold element 11 comprises complementary side members 21 connected at their forward ends by a member 22 and by intermediate laterally-spaced cross-members 23 and 24. Tubular axially aligned hubs 25 are provided at the rear ends of the side members 21 in enclosing relation to the rear cross-member 14 of the base element 9 adjacent the base sides 13 whereby the element 11 is hingedly connected to the base 9 for its swinging adjustment above the base, it being noted that the hubs 25 center the element 11 between the base side members 15. Preferably, and as shown, the cross-members 23 and 24 are spaced apart as ladder rungs, and the parts 21 and 22 and 23 and 24 and 25 may be of metallic or other tubing fixedly welded together at their mutual junctures to provide a relatively light and rigid frame structure in which the members 22 and 23 and 24 are parallel to each other and to the hinging axis of the hubs 25.

The sides 21 of the element 11 are similarly and correspondingly curved from corresponding points forwardly of the intermediate cross-members 24 to points rearwardly of the forward cross-member 22 to provide planar arched portions which are mutually parallel, and said portions are connected by a plate member 26 which overlies said curved portions, and is suitably and unitarily fixed thereto and across the frame thereat, as by welding. As is particularly brought out in Figures 2 and 3 and 5, a forward portion 27 of the plate 26 extends between the sides 21 to the opposite under faces thereof and thence forwardly beneath said under faces and the forward cross-member 22 to which the extension is secured, it being noted that the plate extension 27 cooperates with the sides 21 and cross-member 22 to define the rear side and the bottom of an article-supporting tray space 28.

To adapt the present unit for the disposal and use of its rest element 11 over engines or other mechanisms extending to different heights above a supporting floor F, the strut means 12 comprises a unitary assembly of ad-

justable length. As particularly shown, the aforesaid height-adjusting strut assembly 12 is releasably cooperative between the intermediate cross-member 16 of the base 9 and the cross-member 24 of the element 11, with said strut assembly essentially comprising an externally threaded section 39 threadedly engaged in a tubular section 33 to provide for a telescopic adjustment of the sections for adjustably varying the effective strut length, with the section 33 swingably attached to the cross-member 16. When the present scaffold is set up in position for its use, a mechanic standing on a cross-member 23 or 24 of the element 11 may lie prone along the plate 26 in working position, it being understood that the line of support provided by the forward support wheels of the base element 9 extends so far forwardly beneath the raised rest element 11 that the center of gravity of the unit and the supported mechanic is disposed sufficiently rearwardly of said forward line of support as to prevent a forward tilting of the scaffold.

The upper strut section 32 has its free end arranged for engagement in an opening 34 provided in solely the under side of the cross-member 24, while the section 33 extends fixedly from a hub sleeve 35 which complementarily receives the base cross-member 16 for a swinging of the strut assembly about the axis of the cross-member 16. The arrangement is essentially such that the element 11 is supported in position for its use when the free end of the strut section 32 engages in the cross-member 24 at the opening 34, while the element 11 may be lowered toward the plane of the base element 9 when the strut is freed from engagement with the element 11. Understanding that the raised element 11 is to support the weight of a mechanic working therefrom, the strut section 32 is preferably provided with a radial stop flange or collar 36 spaced appropriately from its free end for outwardly engaging the member 24 beside its opening 34 whereby to prevent a possibly damaging engagement of the extremity of the section with the inner face of the tubular wall of the member, while providing a convenient head for use in effecting a manual rotation of the section during a length adjustment of the strut in an arrangement wherein no strut part extends above the engaged member 24 for interfering with the use of the element 11. The threaded portion of the strut section 32 may mount a locknut 37 for locking engagement with the opposed end of the section 33.

Noting that, with the arrangement so far described, an inoperative swung-down disposal of the strut 12 would permit the extension of the longer element 11 beyond the base element 9 to engage the surface F which supports the base, and thereby hinder a rolling movement of the collapsed unit into or from any relatively shallow storage space, a means is preferably provided to prevent the engagement of the free end of the element 11 with the base-supporting floor. As is particularly illustrated, a relatively short strut member 38 extends rigidly from the hub 35 of the strut section 33 in such angular relation to the line of the strut 12 that its free end may be engaged in the opening 34 of the member 24 when the extreme end of the element 11 is slightly spaced from the support surface F. In this manner, the folded or collapsed unit 8 is arranged for its unhampered positioning movement on its mounting wheels, as from and to a storage point. As particularly shown, the strut 12 extends above the base 9 and below the element 11 when the strut 38 operatively engages the opening 39 of the member 24, whereby the strut assembly 32—33 is disposed for its ready grasping from above for its swinging into position to engage the opening 34 while the element 11 is being manually swung upwardly to its use position.

Since the cooperative engagement of the free ends of the struts 12 and 38 in the socket opening 34 of the cross-member 24 of the element 11 requires a manual support and specific disposals of the element 11 is appropriate positions therefor, a means is provided to facilitate both of said positioning operations, said means comprising the provision and use of a member 41 which provides a stop means to limit the strut assembly 12—38 to its rocking movement about the mounting cross-member 24 between limiting positions in which the respective strut ends are disposed for entering the opening 34. As particularly shown, the stop member 41 comprises a rigid end generally elliptical closed loop of rod or heavy wire which is fixed to and across the base member 18 at its under side and in axially spanning relation to the hub 35 with which the sides of the mounted member are axially cooperative for centering the hub on the member 18 while the end portions 42 and 43 of the member comprise stop arms.

As is particularly brought out in Figure 6, the stop arm 42 of the member 41 is disposed to engagedly support the lowered strut assembly 12 while the strut 38 registers with the opening 34. Figure 5 discloses that the stop arm 43 of the member 41 is engageable by the strut 38 when the strut 31 is extended in a position approximately that at which its free end may enter the opening 34; because the angular relation of the strut 31 to the rest element 11 is slightly variable as the strut length is changed, the stop arm 43 would usually not be engaged by the strut 38 when the free end of the strut 12 is operatively installed in the opening 34. It will thus be understood that the stop arms 42 and 43 are arranged to primarily function as temporary positioning stops for the struts 12 and 38 respectively, and might be provided independently or selectively, rather than as parts of the present member 41 which comprises a dual-purpose stop member.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the present mechanic's scaffold will be readily understood by those skilled in the art to which the invention appertains. While I have shown and described a structure and arrangement which I now consider to be a preferred embodiment of my invention, I desire to have it understood that the showings are primarily illustrative, and that such changes and developments may be made, when desired, as fall within the scope of the following claims:

1. In a mechanic's scaffold of the character described, an elongated rigid base element arranged for its disposal upon a supporting surface in fixed angular relation to the surface, an elongated rigid upper body support element hingedly attached to an end of said base element for its forward extension in overlying relation to the base element and providing rear ladder and forward body-rest portions, a strut member swingably attached to the base element at a point intermediately of its length and releasably engageable with the ladder portion of the upper element at a point intermediately of its length for the support of the latter element in raised overlying relation to the base element in position for the direct supported disposal of the body of a mechanic in prone position upon the body-rest portion of the upper element for a working use of the arms of the supported mechanic in the space below the level of the mechanic, and a second strut member swingably and coaxially attached to the base element in fixed angular relation to the first strut member and alternatively engageable with the rest element at said point for a support of the latter in a lowered and substantially coplanar relation to the base element and in spaced relation to the supporting surface.

2. The structure of claim 1 wherein the strut members extend from a common hub member which is oscillatable on an intermediate cross-member of the base element.

3. The structure of claim 1 wherein the strut members extend from a common hub member which is oscillatable on an intermediate cross-member of the base element, and a stop means is provided by the base element for alternative engagement by the strut members for limiting the movement of said strut members between the

approximate positions of operative engagement thereof with the rest element at said support point thereof.

4. The structure of claim 1 wherein the first strut member is of adjustable length to provide for the disposal of the engaged upper element with its body-rest portion in variably spaced relation to the base member.

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