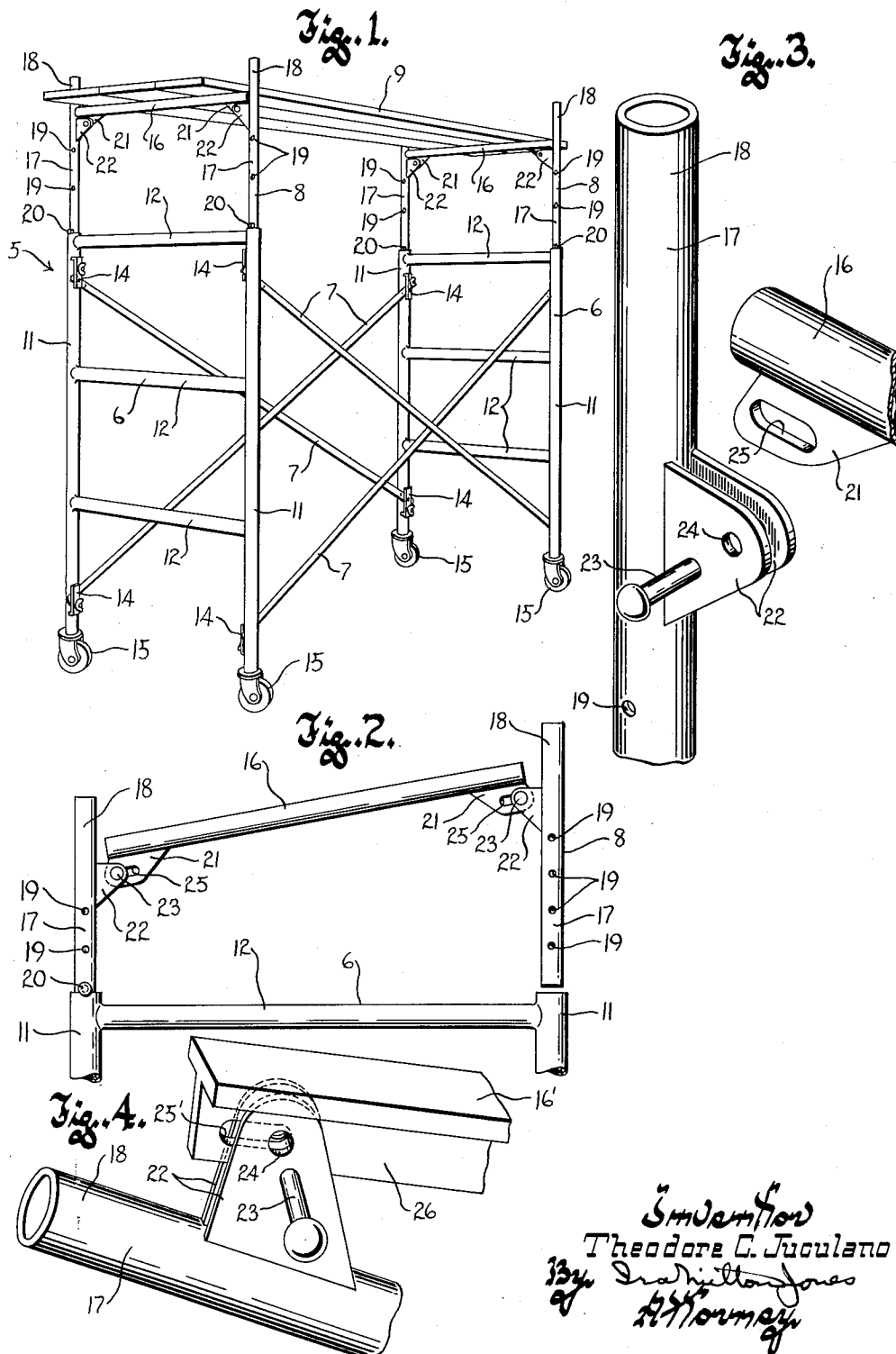


April 10, 1962

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METAL SCAFFOLD EXTENSION
Filed Nov. 16, 1959

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METAL SCAFFOLD EXTENSION

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Filed Nov. 16, 1959, Ser. No. 853,235

1 Claim. (Cl. 182-178)

This invention relates to metal scaffolds and refers more particularly to so-called scaffold extensions adapted to be secured to the upper portion of a metal scaffold frame and by which a plank or working platform may be supported at adjustably variable distances above the base of the scaffold.

As is well known, a metal scaffold is built of modules, each of which comprises a pair of elongated tubular upright members of uniform height connected and held in parallel spaced apart relationship by lateral members, and the modules are held upright by means of diagonal connecting members. Such scaffolding is built up in height by connecting uprights in end-to-end relation, one on top of the other; but the height thus attained by the modules is, of course, a multiple of the length of the uprights, and a so-called extension is usually installed on top of the uppermost section of connected uprights to support planks comprising a working platform at any of a number of different heights to which the extension may be adjusted.

Heretofore the scaffold extension commonly used has been a rigid, H-shaped member comprising a pair of tubular upright legs and an elongated crossbar having its ends rigidly connected to the legs a short distance below their tops. The crossbar of each extension, upon which the working platform rested, held the legs spaced apart by a distance such that the legs could be telescoped down into a pair of uprights comprising a module, and pins or other locking means, releasably engaged with the legs of the extension and the uprights therebeneath, held the crossbar at such distance above the tops of the uprights as was required to dispose the working platform at a convenient height. Extensions were, of course, installed on the uprights wherever they were needed along the length of a scaffold to support the working platform.

The type of scaffold extension just described has been used for many years without improvement, despite the fact that it was always extremely troublesome. The rigid connections between the legs and the crossbar, usually formed by welding, had to be very accurately made to insure that the legs were spaced apart by the same distances as the uprights of the modules into which they telescoped, and that the legs were absolutely parallel to one another, so that the legs would align properly with the uprights with which they were intended to cooperate. Then, when the scaffold was assembled and disassembled, both legs of the extension had to be held in exact coaxial alignment with the uprights that they engaged, and carefully maintained in such alignment as they were lowered into or raised from telescoping relationship with the uprights, for otherwise the legs would bind with the uprights. Moreover, no amount of care in assembly could make the legs of the extension telescope smoothly with the uprights if either the crossbar of the extension or one of its legs had been bent to throw the legs out of accurate parallelism with one another.

Thus it was long recognized that the prior type of extension for metal scaffolds had to be very carefully constructed and very gently handled during assembly, disassembly and transportation; but during all the years that it was used, its form remained unchanged and there seemed to have been no appreciation of the fact that its

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defects and disadvantages were not unavoidably inherent in it.

By contrast, it is an object of this invention to provide an extension for metal scaffolding which takes account of the deficiencies in previous metal scaffold extensions and avoids them, affording a structure comprising a pair of legs and a connecting cross member wherein the legs can be telescopically engaged one at a time with uprights of a scaffold module with which the legs cooperate, without any likelihood that either leg will bind with an upright as it is moved into or out of assembled relationship therewith.

Another object of this invention resides in the provision of a metal scaffold extension of the character described which may be very inexpensively constructed without the need for accurately maintaining critical dimensions, and which is not only easy to install on a scaffold but is also especially convenient to transport because it can be folded to swing its legs to positions in which they are compactly disposed alongside of the cross member.

It is also an object of this invention to provide a metal scaffold extension of the character described which will satisfactorily cooperate with the uprights of a scaffold module even if one of its legs or its cross member should somehow be bent slightly out of straightness, but which is less likely than prior extensions to sustain damage when being transported, by reason of the fact that the extension of this invention is compactly foldable.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claim, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claim.

The accompanying drawing illustrates two complete examples of physical embodiments of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

FIGURE 1 is a perspective view of an erected metal scaffold upon which is fastened an extension embodying the principles of this invention;

FIGURE 2 is a fragmentary elevational view on an enlarged scale of the upper portion of a metal scaffold module with the extension partly installed thereon;

FIGURE 3 is a disassembled perspective view of the connection between one of the legs and the cross member of the scaffold extension of this invention; and

FIGURE 4 is a fragmentary perspective view of a modified embodiment of the metal scaffold extension of this invention.

Referring now to the accompanying drawing, the numeral 5 designates generally a metal scaffold comprising a pair of modular end panels 6 connected and held upright by diagonals 7 to form a main frame, and a pair of scaffold extensions 8 at the top of the main frame which support planks 9 that provide a working platform.

Each of the end panels or modules 6 comprises a pair of elongated tubular uprights 11 held in parallel spaced apart relationship by means of laterals 12, which in this instance comprise a plurality of elongated tubular elements disposed at right angles to the uprights and having their ends rigidly connected to them, as by welding, to serve as the rungs of a ladder by which a workman may ascend to the working platform 9. The diagonals 7, which may also comprise elongated tubular members, are adapted to connect pairs of end panels 6 to hold them upright in opposing spaced apart relationship and readily disconnectable connectors 14 of a known type permit the

ends of the diagonals to be readily detachably fastened to the uprights to provide for quick assembly and disassembly of the scaffold. In the case of a small scaffold such as that shown in FIGURE 1, casters 15 may be mounted on the bottoms of the uprights 11 to facilitate movement of the assembled scaffold.

The end panels, of course, comprise modular units of uniform height and width, and they can be combined with one another in various ways to make longer and higher scaffolds. Each upright 11 has its end portions so formed that the bottom of one upright can be telescopically engaged with the top of another to enable a scaffold to be built up to virtually any desired height, provided such height is a multiple of the length of the uprights.

Smaller scale adjustments of the height of the working platform are provided for by the scaffold extensions 8, each of which is a substantially H-shaped member comprising a cross member 16 and a pair of upright legs 17 at the ends of the cross member which telescope into the upper end portions of the uprights 11 of an end panel. The legs 17 of each extension are tubular, having an outside diameter substantially equal to the inside diameter of the upper portions of the uprights, so as to be coaxially receivable in the latter. The cross member, which may also be tubular, has a length substantially equal to the distance between the uprights of a modular panel and is connected to the legs of the extension some distance below the tops thereof so that the portions 18 of the legs which project above the cross member can serve to prevent lateral displacement of planks 9 resting on the cross member.

Below the cross member 16 each leg of the extension has a plurality of transverse holes 19 therethrough, spaced apart at substantially uniform intervals lengthwise along the leg and in each of which a pin 20 is adapted to be removably engaged. As a leg of the extension is telescoped downwardly into one of the uprights of an end panel, with a pin 20 engaged therein, the pin seats on the top of the upright, determining the height to which the leg will project above the upright and thus adjustably establishing the distance at which the working platform 9 is supported above the top of the uppermost end panel.

The extension of this invention is distinguished by the fact that the connections between the legs 17 and the cross member 16 are such as to allow the legs to swing about said connections, toward and from one another, and also to move bodily to a limited extent in directions lengthwise of the cross member. Those skilled in the art will recognize that such a connection can be provided by a variety of different means, and that the structures for this purpose shown in the drawings are merely illustrative.

In this instance a lug-like bracket 21 secured, as by welding, near each end of the cross member and projecting downwardly therefrom, is confined between a pair of laterally projecting lug-like brackets 22 which are similarly secured to each leg of the extension spaced below the upper end thereof. The two brackets on each extension are parallel to one another and spaced apart a distance substantially equal to the thickness of the bracket 22 on the cross member, and a trunnion pin 23 extends through each of the brackets 21 on the cross member and has its opposite ends secured in aligned holes 24 in the brackets 22 on one of the legs to provide for swinging motion of the legs relative to the cross member. To permit the legs to also have bodily translatable motion relative to one another, the aperture 25 in each bracket 21 through which the trunnion pin extends constitutes a slot which is elongated lengthwise of the cross member.

In the embodiment of the invention illustrated in FIGURES 1 to 3 the cross member 16 is formed from a length of tubing similar to that comprising the legs 17. In the modified version of the invention shown in FIGURE 4 the cross member 16' comprises a beam having

a T-shaped cross section, and while a beam section of this shape may be more expensive than tubing of equal strength, the T-section beam obviates the need for brackets on the cross member like the brackets 21 in the embodiment shown in FIGURE 3. Instead, the stem portion 26 of the T is directly received between the brackets 22 on each leg, and the slot 25' through which the trunnion pin 23 extends is formed in the stem portion of the cross member.

In installing the extension of this invention, either leg may be telescopically slipped into an upright of a modular end panel, and when it has been firmly seated the other leg may be readily brought into coaxial relationship with the other upright of the panel and telescoped into it. The angular inclination of the cross member relative to the legs during such installation of the second leg, which tends to shorten the distance between the legs, is compensated for by the elongation of the slots 25, which extend laterally outwardly substantial distances beyond the positions occupied by the trunnion pins 23 when the legs of the extension are engaged in the uprights of an end panel.

Obviously it would be possible to provide only one of the legs of the extension with the swinging and translatable connection described, while the other was connected rigidly with the cross member, and in that event the advantages of the invention with respect to ease of installation of the extension onto the end panels of a scaffold would be substantially retained. However, to obtain the advantage of being able to fold the extension into a more compact space, one leg should at least have a connection with the cross member which permits it to swing about the latter, and the other leg should have a connection of the character described, which permits it to have both translatable and swinging motion relative to the cross member.

From the foregoing description taken together with the accompanying drawings it will be apparent that this invention provides an upper extension for metal scaffolds, adapted to support a working platform at adjustable variable heights, which can be made at relatively low cost and can be installed upon and removed from an end panel of a scaffold one leg at a time, without any binding between the legs of the extension and the uprights into which they telescope, and which is compactly foldable into a very small space.

What is claimed as my invention is:

An extension for the upper portion of a metal scaffold having tubular uprights fixed in laterally spaced apart relationship, by which extension one end of a working platform or plank may be supported at any of a number of different heights above the tops of the uprights, said extension comprising: a pair of elongated legs, each telescopically engageable with the upper portion of one of the uprights of a scaffold, and each having a plurality of holes transversely therethrough, disposed at spaced apart intervals along its length, each hole being adapted to receive a pin cooperable with an upright with which the leg is engaged to hold the leg projected a predetermined distance above the top of the upright; an elongated cross member extending lengthwise between the legs and having its ends adjacent to laterally opposite portions thereof, for holding the legs spaced apart a distance substantially corresponding to the lateral spacing between the uprights of a scaffold to which the extension is to be applied; means providing pin and slot connections between the opposite ends of the cross member and said portions of the legs enabling relative turning movement between the cross member and each leg about a horizontal axis which is adjacent to the leg and crosswise of the leg and the cross member, the slots in said connections extending substantially lengthwise of the cross member so as to provide for limited bodily motion of each leg toward and from the other leg relative to the cross member, whereby the legs can be telescopically engaged

one at a time with a pair of scaffold uprights without danger of binding regardless of limited variations in their spacing and/or deviations from parallel; and upright rigid plank retaining elements carried by said extension and projecting upwardly beyond said cross member from locations adjacent the opposite ends of the latter, to prevent a platform or plank resting upon the cross member from sliding laterally off of the cross member, said plank retaining elements constituting the uppermost portions of the extension.

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