June 25, 1963 D. McDONALD 3,095,070

KNOCKDOWN SCAFFOLD

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Fig-4

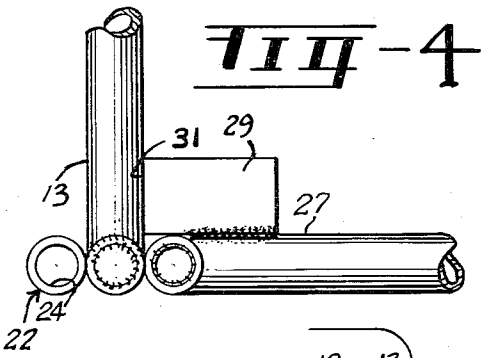


Fig-6

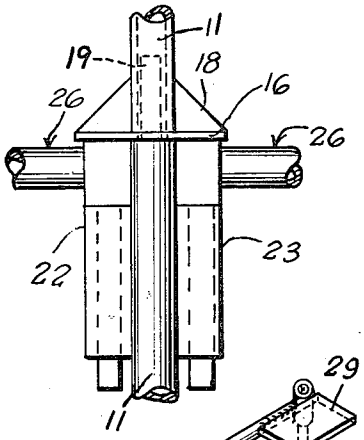


Fig-5

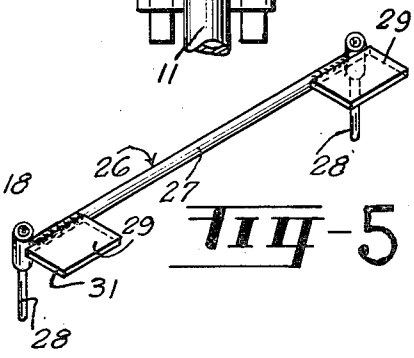
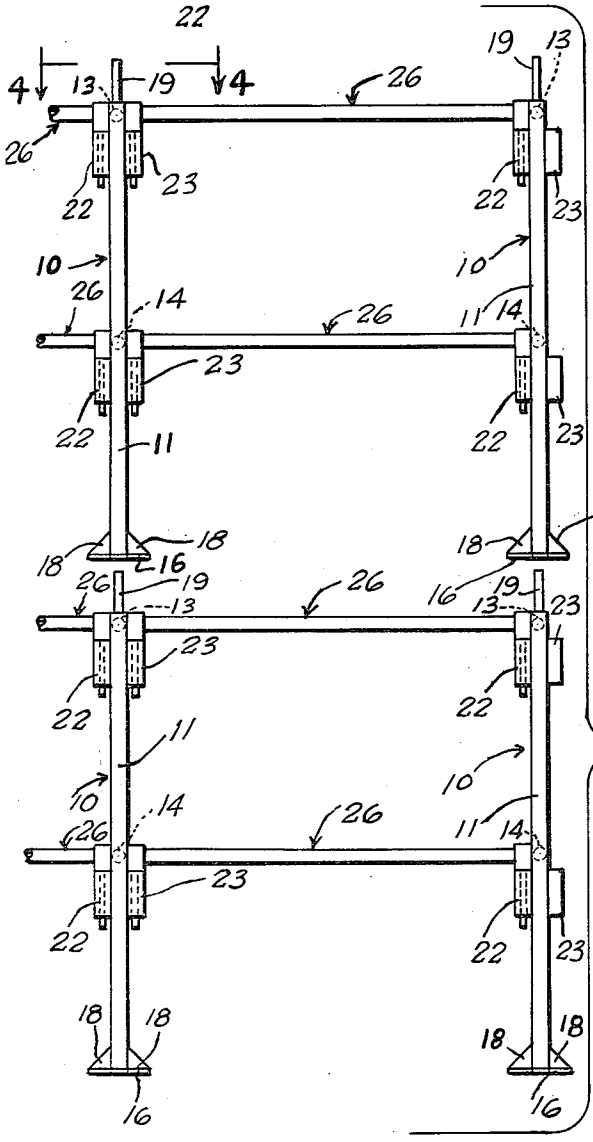


Fig-1



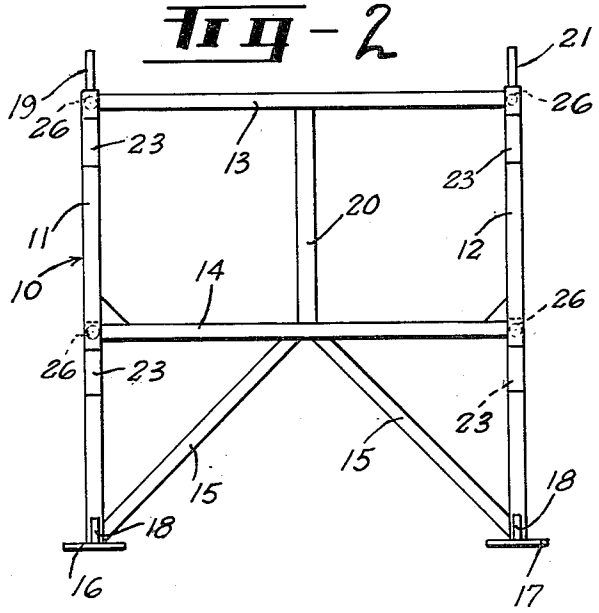
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KNOCKDOWN SCAFFOLD

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Fig - 2



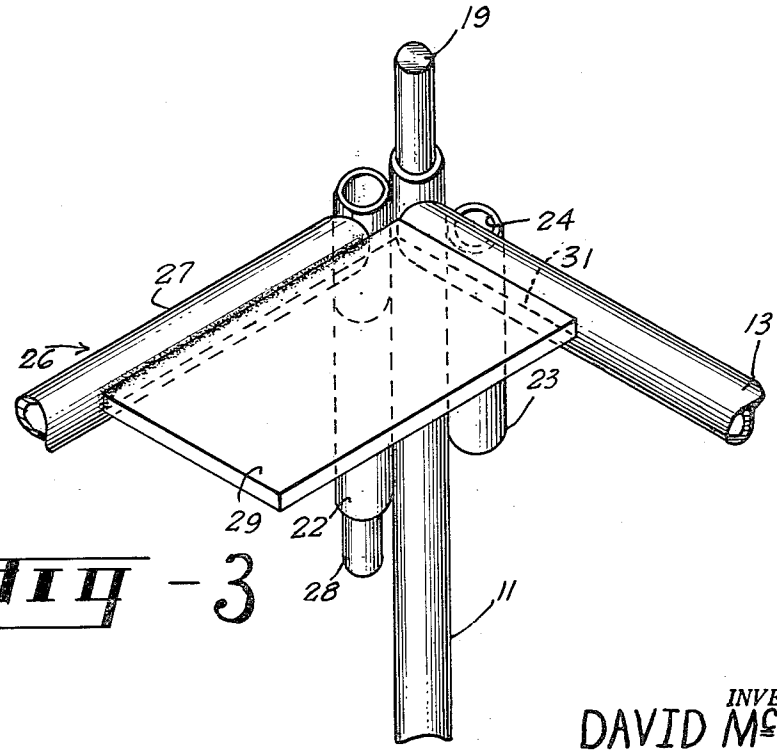


Fig - 3

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3,095,070

KNOCKDOWN SCAFFOLD

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6 Claims. (Cl. 189—15.5)

This invention relates to detachable sectional knockdown scaffolds and more particularly to detachable sections of a scaffold that are connected to each other in such a manner that the separate sections or frames remain in parallel position to each other and in a right angular relation to detachable connecting members that connect adjacent frames or sections to each other.

Heretofore, it has been a problem in the erection of scaffolds to have the separate sections or frames positioned at a right angle to detachable connecting members and to retain or hold the frames in parallel position to each other and in a right angular relation to the detachable connecting members after the scaffold has been erected.

By the present invention, a detachable connecting member is provided to connect adjacent scaffold frames or sections and has aligning means on each end thereof to insure that the frames are in proper alignment when they are connected and to insure that the frames are retained in proper position without any sagging after they have been connected.

The connecting member comprises a tubular member having a downwardly projecting pin on each end thereof that fits within a tubular socket secured to the vertical end members of a frame with an abutting surface extending laterally from the connecting member and in a vertical plane perpendicular to the longitudinal axis of the connecting member and in abutting contact with an integrally connected cross member positioned directly adjacent the connecting member to hold the frame against movement relative to the connecting member. Further, means are provided on the lower end of each end member that contact and lock the upper detachable connecting member of a subjacent frame in position thereby preventing accidental dislodgment of such connecting members.

Apparatus embodying features of my invention is shown in the accompanying drawings, forming a part of this application, in which:

FIG. 1 is a side elevational view of my sectional scaffold showing a plurality of end frames connected to each other by detachable connecting members and adapted to be stacked vertically on one another;

FIG. 2 is an elevational view of a single end frame or section of my scaffold;

FIG. 3 is a fragmentary, perspective view of a connection at which an end frame is connected by a detachable connecting member;

FIG. 4 is a fragmentary top plan view looking generally along the line 4—4 of FIG. 1 and showing one detachable connecting member in position with another connecting member being removed;

FIG. 5 is a perspective view of the detachable connecting member shown removed from my apparatus; and,

FIG. 6 is a fragmentary elevational view of a superposed frame locking an upper detachable connecting member for a subjacent frame in position.

Referring now to the drawings for a better understanding of my invention, I show in FIG. 1 a plurality of end frames 10 which are adapted to be vertically stacked on top of each other. A single end frame or section of the scaffold is shown in FIG. 2 and comprises round tubular end members 11 and 12 extending vertically and being connected by upper and lower round tubular cross members 13 and 14, respectively, that are welded

to the end members 11 and 12. Support plates 16 and 17 are arranged beneath the end members 11 and 12, respectively, and are provided with openings therethrough in alignment with the center of tubular members 11 and 12. Gusset plates 18 secure end support plates 16 and 17 to end members 11 and 12.

The upper ends of tubular members 11 and 12 have reduced diameter projecting ends 19 and 21, respectively, secured thereto and as shown in FIG. 6, the projecting ends 19 and 21 are adapted to receive superjacent end frames through the openings in support plates 16 and 17 with the plates 16, 17 resting on the enlarged diameter portion of tubular end members 11 and 12 directly adjacent projecting ends 19 and 21. Diagonal braces 15 extend between the lower ends of end members 11, 12 and lower cross member 14 to hold the end members 11, 12 in proper position. A vertical brace 20 extends between the cross members 13 and 14 to prevent member 13 from sagging.

Pairs of sockets 22 and 23 are positioned on each end frame 10 and are secured to each of the vertical end members 11, 12 on opposite sides thereof and at right angles to the longitudinal axis of cross members 13, 14 that connect end members 11, 12 of each frame 10. The upper receiving ends 24 of sockets 22, 23 are positioned slightly below the lower surface of adjacent cross members 13, 14.

The detachable connecting member is shown in FIG. 5 removed from engagement with the end frames and is indicated generally by the numeral 26. Connecting member 26 comprises a tubular connecting bar 27 having downwardly projecting pins 28 on each end thereof that are adapted to fit within sockets 22, 23 on frames 10. Aligning means are provided on each end of detachable connecting member 26 and comprise a plate member 29 extending horizontally from the connecting bar 27 and welded thereto. A vertical abutting edge surface 31 is provided adjacent the outer ends of bar 27 and extends in a plane perpendicular to the longitudinal axis of connecting bar 27 and parallel to the longitudinal axis of cross members 13 and 14.

As shown in FIGS. 3 and 4, the abutting surface 31 of member 26 is disposed in abutting relation adjacent cross member 13 and it must be accurately positioned before pins 28 will engage properly sockets 22 and 23. If detachable member 26 varies slightly from right angular relationship with cross members 13 and 14, abutting edge 31 will engage cross member 13 and prevent the pins 28 from fully seating in sockets 22 and 23. Edge 31 is positioned centrally of the cross members 13, 14 and when frames 10 are connected, any sagging or movement of the frames 10 away from right angular relationship with detachable connecting members 26 will be prevented by abutting edges 31 engaging cross members 13 and 14. It is clear that any number of bays or sections of my scaffold may be used. The support plates 16 and 17 lock the upper cross members 26 in position as they fit directly thereover and in contact relation with members 26. Thus, cross members 26 are prevented from being accidently dislodged from the sockets.

From the foregoing, it will be understood that I have provided a sectional scaffold having a detachable connecting member to connect separate frames or units of the scaffold in such a manner that the frames are retained in parallel position to each other and in a right angular relation to the detachable connecting members. This is accomplished by providing an abutting surface adjacent each end of the detachable connecting member which abuts the outer surface of cross members of frames 10. To assemble my scaffold it is necessary only to align the end frame 10 in proper parallel position and then position the conneting members 26 within the sockets on the

end frames. As a safety feature, plates 16 and 17 when positioned on a subjacent frame lock the upper detachable connecting member in position thereby preventing the connecting member from being removed from the sockets.

Without an abutting surface such as 31 to contact an adjacent member and prevent movement relative to the detachable connecting member 26, frames 10 would be free to move slightly and thereby cause an unstable scaffold which could possibly result in accidents to workmen supported by the scaffold. My sectional scaffold can be erected in a minimum of time and all that is necessary is that the sections 10 be positioned in proper parallel relation to each other and in a right angular relation to the detachable connecting members 26. Once the detachable members 26 are properly positioned, the scaffold provides a sturdy and reliable supporting surface for workmen.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. A knockdown scaffold comprising a pair of parallel frames detachably connected to each other, each of said frames having a pair of spaced vertical tubular end members forming the ends of the frames, at least one horizontal cross member extending between and integrally connected to the end members of each frame, each of the end members of each frame having a socket secured to the side thereof at a right angle to the longitudinal axis of the cross member thereof, the sockets on one frame facing the sockets on the other frame and having receiving ends disposed at a level adjacent the lower surface of the adjacent cross member, a detachable connecting member extending between the end members of the separate frames and having a downwardly extending pin on each end thereof fitting in the sockets of the end members between which the connecting member extends, and each end of said detachable connecting member having an abutting member extending laterally therefrom, said abutting member having an abutting surface extending in a plane generally perpendicular to the longitudinal axis of said connecting member and in contact with the integrally connected cross member directly adjacent thereto and without a mechanical attachment to retain the frames in parallel relation to each other and in a right angular relation to said detachable connecting members.

2. A knockdown scaffold having a pair of spaced parallel rows with each row having at least two frames stacked vertically on top of each other, each of said frames comprising a pair of spaced vertical tubular end members forming the ends of the frames, each of said end members having a projecting upper end of reduced diameter adapted to fit within the lower end of the tubular end member on a superjacent frame, at least one horizontal cross member extending between and integrally connected to the end members of each frame, each of the end members of each frame having a socket secured to the side thereof, the sockets on one row of frames facing the sockets on the other row of frames and having receiving ends disposed at a level adjacent the lower surface of the adjacent cross member, a detachable connecting member extending between and connecting the end members of each row of frames and having a downwardly extending pin on each end thereof fitting in the sockets of the end members between which the detachable connecting member extends, and each end of said detachable connecting member having secured thereto an abutting member extending laterally therefrom, said abutting member having an abutting surface extending in a plane generally perpendicular to the longitudinal axis of said connecting member and in contact with the integrally connected cross member directly adjacent thereto and without any mechanical attachment to retain the frames in parallel relation to each other and in a right angular relation to said detachable connecting members.

3. A knockdown scaffold having a pair of spaced parallel rows with each row having two vertically stacked end frames therein, each of said end frames comprising a pair of spaced vertical tubular end members forming the ends of the frames, each of said end members having a projecting upper end of reduced diameter adapted to fit within the lower end of the tubular end member on the superjacent frame, at least one horizontal cross member extending between and integrally connected to the end members, each of the end members of each frame having a pair of oppositely disposed sockets secured to the circumference thereof at a right angle to the longitudinal axis of the cross member on the frame, said sockets having upper receiving ends disposed at a level adjacent the lower surface of the adjacent cross member, a detachable connecting member extending between and connecting the end members of one row of frames with the end members of the adjacent row of frames and having a downwardly projecting pin on each end thereof fitting in the sockets of the end members between which the detachable connecting member extends, means on the lower end of the vertical end members of the upper frame locking the detachable connecting member in position within the sockets to prevent dislodgement thereof, and each end of said detachable connecting member having secured thereto an abutting member extending laterally therefrom, said abutting member having an abutting surface extending in a plane generally perpendicular to the longitudinal axis of said connecting member and in contact with the integrally connected cross member directly adjacent thereto and without any mechanical attachment to retain the frames in parallel relation to each other and in a right angular relation to said detachable connecting members.

4. A knockdown scaffold comprising a plurality of detachably connected end frames extending in spaced parallel relation to each other, each of said frames comprising a pair of spaced vertical tubular end members forming the ends of the frames, a cross member extending between and integrally connected to the end members of each frame, each of said end members having a pair of sockets secured to opposite sides of the circumference thereof and at a right angle to the longitudinal axis of the cross members, said sockets having upper receiving ends disposed at a level adjacent the lower surface of the adjacent cross member, a pair of detachable connecting members extending between and connecting the end members of one frame with those of an adjacent frame, said connecting members having a downwardly projecting pin adjacent each end thereof fitting in the sockets of the end members between which the connecting member extends, and a laterally extending plate member secured to each end of said detachable connecting member having an abutting edge surface extending laterally from the ends in a plane perpendicular to the longitudinal axis of the cross member, said plate member being in abutting contact with the integrally connected cross member directly adjacent thereto and without a mechanical attachment thereto to retain the frames in a right angular relation to the detachable connecting members and in parallel relation to each other.

5. A knockdown scaffold as defined in claim 4 further characterized in that each of said end members has an upper projecting end of reduced diameter adapted to receive the tubular end member of a superposed end frame whereby said end frames may be stacked vertically.

6. A knockdown scaffold having a pair of spaced parallel rows with each row having two end frames vertically stacked on each other, each of said frames comprising a pair of spaced, round tubular end members extending vertically and forming the ends of the frames, each of said end members having a projecting upper end of reduced di-

ameter adapted to fit within the lower end of a round tubular member on a superjacent end frame, at least one horizontal cross member extending between and integrally connected to the end member of each frame, each of the end members of each frame having a pair of aligned tubular sockets secured to opposite sides of the circumference of the end members and at a right angle to the longitudinal axis of the cross members, said sockets having upper receiving ends disposed at a level adjacent the lower surface of the adjacent cross member, a pair of detachable connecting members extending between and connecting the end members of one frame with those of an adjacent frame, each of said detachable connecting members having a downwardly projecting pin adjacent each end thereof fitting in the sockets of the end members between which the connecting member extends, means on the lower end of the vertical end members of the upper frames locking the detachable connecting members in position within the sockets to prevent dislodgement thereof, and a laterally extending plate member secured to each end of said detachable connecting members and having an abutting edge surface extending laterally from the

end in a plane perpendicular to the longitudinal axis of the cross members, said plate member being in abutting contact with the integrally connected cross member directly adjacent thereto and without a mechanical attachment thereto to retain the frames in a right angular relation to the connecting members and in parallel relation to each other.

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