J. J. MACKLEM.

SECTIONAL SCAFFOLD.

APPLICATION FILED OCT. 15, 1919.

1,351,053. Patented Aug. 31, 1920.

3 SHEETS—SHEET 1.

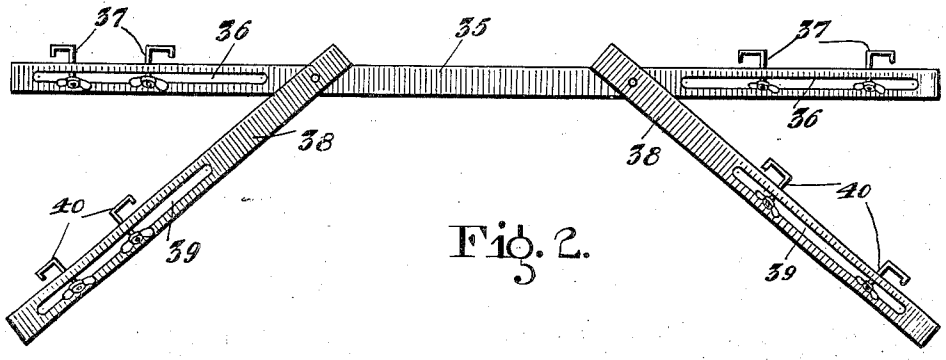
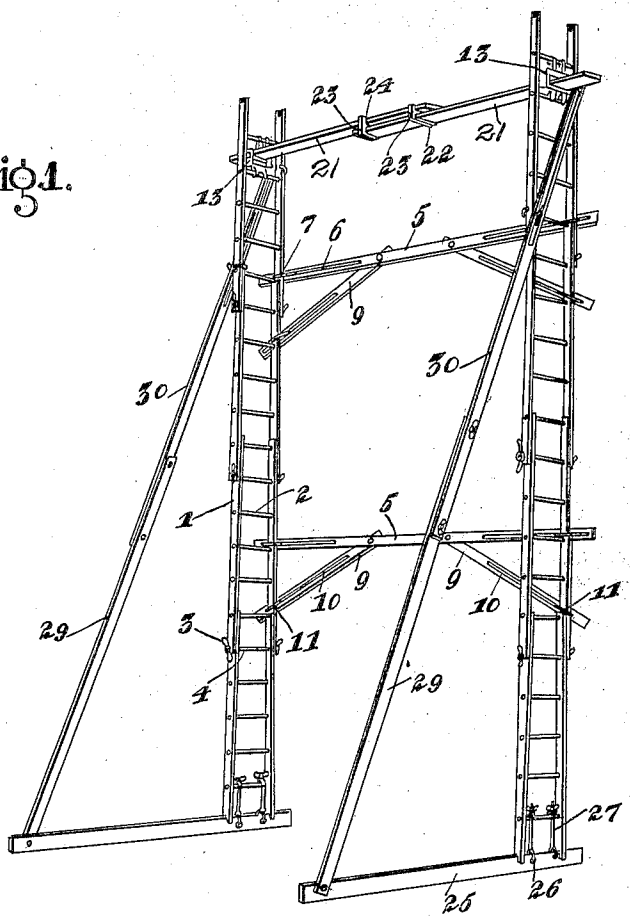


Fig. 2.

Fig. 1.



WITNESSES

Geo. D. Hall

G. S. Brock

INVENTOR

John J. Macklem.

BY Munn & Co.

ATTORNEYS

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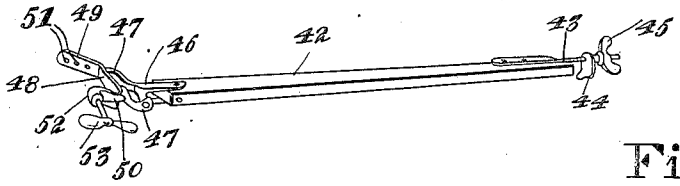
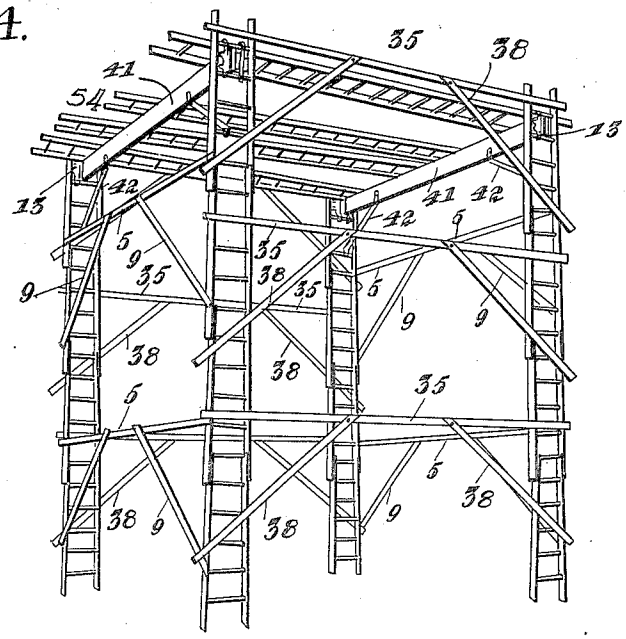


Fig. 3.

Fig. 4.



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Geo. D. Hall.

H. B. Brock

INVENTOR

John J. Macklem.

BY Munn & Co

ATTORNEYS

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3 SHEETS—SHEET 3.

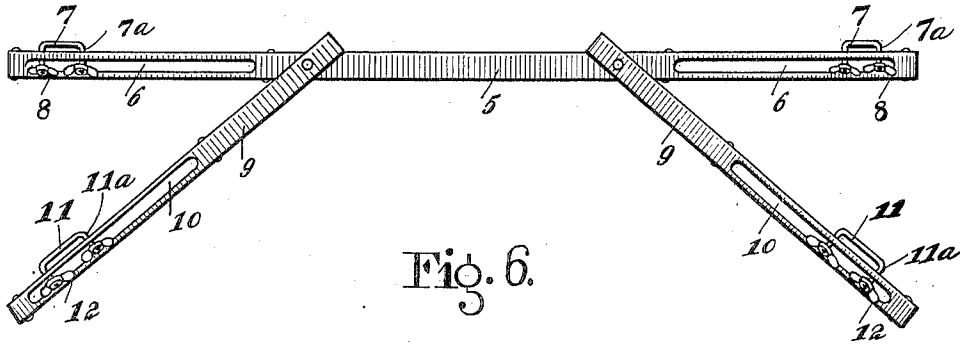


Fig. 6.

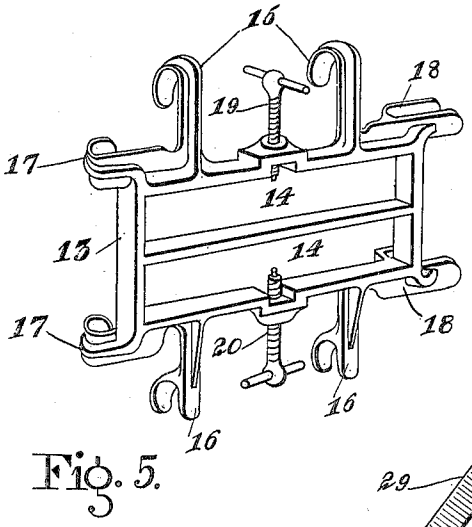
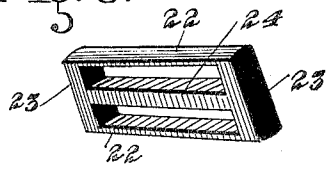


Fig. 5.

Fig. 7.

Fig. 8.



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ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN J. MACKLEM, OF GOSHEN, INDIANA.

SECTIONAL SCAFFOLD.

1,351,053. Specification of Letters Patent. Patented Aug. 31, 1920.

Application filed October 15, 1919. Serial No. 330,822.

To all whom it may concern:

Be it known that I, JOHN J. MACKLEM, a citizen of the United States, and a resident of Goshen, in the county of Elkhart and State of Indiana, have made certain new and useful Improvements in Sectional Scaffolds, of which the following is a specification.

My invention relates to scaffolding and has reference more particularly to sectional scaffolds and has for its primary object to provide a ladder scaffold of this class which will be simple in construction, cheap to manufacture, strong and efficient in use and which may be readily adapted to various conditions and locations.

Another object is to provide a sectional scaffold structure with bracing and locking adjuncts whereby the whole may be readily assembled and disassembled.

With these and other objects in view, my invention consists in certain novel features of construction, arrangement and combination of parts as will be hereinafter described and pointed out in the claims, reference being had to the accompanying drawing in which:—

Figure 1 is a perspective view of my improvements as used with what is termed a single scaffold with side sway braces and base supports.

Fig. 2 is an elevation of an end sway brace and connections which is used with a double scaffold.

Fig. 3 is a perspective view of a bracket brace bar used with double deck scaffold.

Fig. 4 is a perspective view of a double scaffold showing particularly the location and arrangement of the various elements of the same.

Fig. 5 is a perspective view of a bracket used to hold timbers or ledger boards.

Fig. 6 is a side elevation of a side sway brace and connections used with both single and double scaffolds.

Fig. 7 is a side elevation of one of the base supports, its brace and connections.

Fig. 8 is a view showing plank extension irons.

It will be seen upon referring to the accompanying drawings that my improved ladder scaffold comprises a plurality of vertical ladder sections capable of being lengthened by the superposition of additional sections, and a plurality of side sway braces, end sway braces, timber brackets, timber slide irons, timber braces, used for a single scaffold, and in using a plurality of such single scaffolds with their appurtenances combined to form a double scaffold with a plurality of decks.

The ladder sections are similar in construction to an ordinary ladder and consist of the usual side bars or rails 1, permanently secured together by the usual cross bars or rungs 2.

The superposed ladder sections are detachably connected together by suitable means in the present instance by winged nuts 3 on threaded bolts 4 engaging overlapped upper and lower ends of adjacent ladders.

In the form illustrated in Fig. 1, a pair of ladder sections are spaced apart and held so spaced by the side sway braces 5, which have slots 6 in each end portion and in these slots are mounted short U-irons consisting of a cross bar 7 and threaded legs 7^a upon which are mounted the winged nuts 8; these side sway braces are also provided with arms 9 pivoted at one end to the brace at each side of its center, and having elongated slots 10, extending along about one half of their length, in which slots are carried long U-irons including a cross bar 11 threaded legs 11^a extending therefrom and winged nuts 12 screwed thereon, all as shown in Fig. 6. The side sway braces 5 are placed in a horizontal position and the short U-irons 7 clamped around one of the side rails of a ladder member above a rung as shown in Fig. 1, and the brace arms 9 are swung to a diagonal position and clamped to the side rails of the ladders by the long U-irons 11.

At the desired height on the scaffolding I attach my improved timber bracket which is the subject of Patent 1,129,218, which consists of a rectangular slotted body 13 having a pair of parallel slots 14, a pair of hooked extensions 15 on one side, a pair of forked extensions 16 on the opposite side, a pair of hooked extensions 17 on one end, and a pair of forked extensions 18 on the opposite end, and clamping screws 19 and 20 threaded through the outer sides of the brackets.

As set forth in the patent referred to the bracket may be adapted to receive a timber flatwise, or edgewise, and in the present instance I show the bracket used to clamp timbers flatwise, the timbers 21 being clamped within the brackets 13 at one

end and their other ends overlapped and adjusted through what I call extension plank irons, each iron comprising a rectangular frame comprising flat side bars 22, flat end connecting bars 23, a flat central connecting bar 24, leaving a pair of slots within the iron; the side and central bars are flat and parallel and the end connecting bars are flat and parallel, and it is preferable to make the timber or plank extension iron as a single casting.

To the two sections of ladders shown in Fig. 1 are applied the base supports 25 which are planks having one end set edgewise and set in the forked lower ends of the side rails 1 of the lowermost ladder section; these base supports carry clevises 26 on which are carried eyebolts 27 having adjustable curved claw nuts 27^a threaded thereon to engage over the rungs of the ladder and the winged jam nuts 28 run down on the claw nuts to hold them in place.

From the outer ends of the base support the upright base support extends upwardly in a diagonal direction and consists of two overlapped and adjustable sections 29 and 30, the section 30 having an elongated slot 31 through which is passed bunter irons consisting of a threaded bar 32 and a hook shaped end bar 33, the end bar passing around the inner face of a side rail and held tightly to the same by a winged nut 34 screwed on the threaded end of bar 32, thus clamping the upright base support brace to the outer face of the ladder section, the brace extending obliquely across the outer faces of the ladder sections.

On account of the relatively great length of the slots in the various braces and the ready detachability and adjustment of the clamps, it will be seen that a pair of ladder section units can be employed through a large range of uses. The form shown in Fig. 1 being particularly well adapted for use against a side wall either indoors or out of doors.

In the form pictorially represented in Fig. 4 and which I term a 4-deck double bracket scaffold, it consisting of sixteen regular sections, four of the brackets illustrated in Fig. 5 of the present application, four bracket brace bars 42 which will be later described, six end sway braces, four side-sway braces, forty-eight bunter irons, twelve long and 8 short U-irons.

In said 4-deck scaffold the latter sections 1 have the usual rungs 2, the end sway braces are represented by 35 and comprise, as shown in Fig. 2, the braces 35 having elongated slots 36 at each end in each of which are mounted the bunter irons 37 similar in construction and operation to the bunter irons 32 used in connection with the upright base support 29 and 30 shown in Figs. 1 and 7. These end sway braces are clamped to outside faces of the end sets of ladders, the bunter irons 37 being clamped to the side rails of the ladders. These end sway braces are also provided with arms 38 which are bolted thereto at their ends and each is provided with an elongated slot 39 in which are slidably mounted the bunter irons 40, similar to bunter irons 37 just mentioned. These arms 38 are obliquely disposed with respect to the braces 35 and the bunter irons 40 are clamped to the side rails of the ladders at different levels.

In this form of scaffold the ledgerboards or stage timbers 41 comprise a single beam placed vertically edgewise and their ends are seated and clamped in my improved brackets 13 illustrated in Fig. 5 but in this instance, the brackets are disposed at right angles to the position of the same members as used in the scaffold, illustrated in Fig. 1; these timbers 41 are additionally supported and braced by what I term bracket brace bars 42 which are shown in detail in Fig. 3, consisting of the bar 42 having secured to one a threaded bolt extension 43 upon which is threaded a clamp nut 44 for engaging a ladder rung and locked in place by winged jam nuts 45, and at the opposite end with a clamp for the timber including a clevis 46 bolted to the end of the bar and a bracket pivotally connected to said clevis, the bracket including spaced apart side arms 47 and an intermediate cross bar 48 connecting same, said arms pivotally connected to said clevis at their inner ends, and the outer ends 49 and 50 being provided respectively with screw openings 51 and a threaded enlargement 52 in which is threaded a clamping screw 53; the arm having the screw openings is fitted on one side of the timber 41 and screwed thereto, the opposite arm 50 being on the opposite side of timber 41 and clamped rigidly thereto by the clamp screw 53.

These bracket brace bars 42 are pivotally connected by means of the clevis to the clamp brackets just described, and are swung in an oblique position and the ends carrying the threaded extension bolt 43 securely clamped to the rungs of the ladder sections, thus providing additional connections for the parts and constituting secure bracing and supporting and greatly adding to the strength, rigidity and safety of the structure.

Transversely across the structure and upon the timbers 41 are placed the four continuous ladders 54, and upon these may be laid staging or planking at any desired points so that several different workmen, such as painters or paper-hangers working on interiors, can use the one structure for working on different parts of the interior.

I claim:—

1. In a scaffold including a plurality of

superposed ladder sections spaced apart in pairs, side sway braces detachably connecting members of said pairs and including a slotted brace beam, slotted, diagonally disposed arms pivotally connected at one end to said beam, and short U-irons slidably mounted in the slots of the brace beam, and long U-irons slidably mounted in the slots of the pivoted diagonally disposed arms.

2. In a ladder scaffold comprising a plurality of superposed ladder sections spaced apart in pairs, a plurality of end sway braces detachably connected to said pairs, and including a brace beam having elongated slots adjacent the ends thereof, a plurality of bunter-irons slidably mounted in such slots, slotted brace arms pivotally connected at one end to said brace beam and having elongated slots adjacent their opposite ends and a plurality of bunter irons slidably mounted in said last mentioned slots.

3. In a ladder scaffold comprising a plurality of spaced apart ladder sections in pairs, base supports including a base beam detachably connected to the rungs of a ladder section, and extensible braces pivotally connected at one end to said base beams, extending obliquely across the faces of said ladder sections, and bunter irons carried by said braces for detachable connection with a ladder section.

4. In scaffolding including a plurality of spaced apart ladder sections and timbers supported on such sections, a bracket brace, including a bar, a threaded extension at one end thereof, a claw nut carried on said extension, a jam nut also carried on said extension and adapted to abut said claw nut, and a bracket hingedly mounted at the opposite end of said bar, and means carried by said bracket for detachable connection with the timber.

5. In scaffolding including a plurality of spaced apart ladder sections and timbers supported thereon, a brace including a bar, a threaded extension at one end thereof, means carried on said extension for detachably clamping said extension to a ladder rung, a bracket hingedly mounted at the opposite end of said bar and including spaced apart side arms and an intermediate cross bar connecting same, said arms pivotally connected at one end to the said brace bar, the opposite end of one of said arms provided respectively with perforations for detachably connecting that arm with one face of a timber, and the other arm having an internally threaded enlargement thereon, and a clamp screw mounted in said enlargement.

JOHN J. MACKLEM.