

Nov. 28, 1939.

T. M. DUGAN ET AL

2,181,784

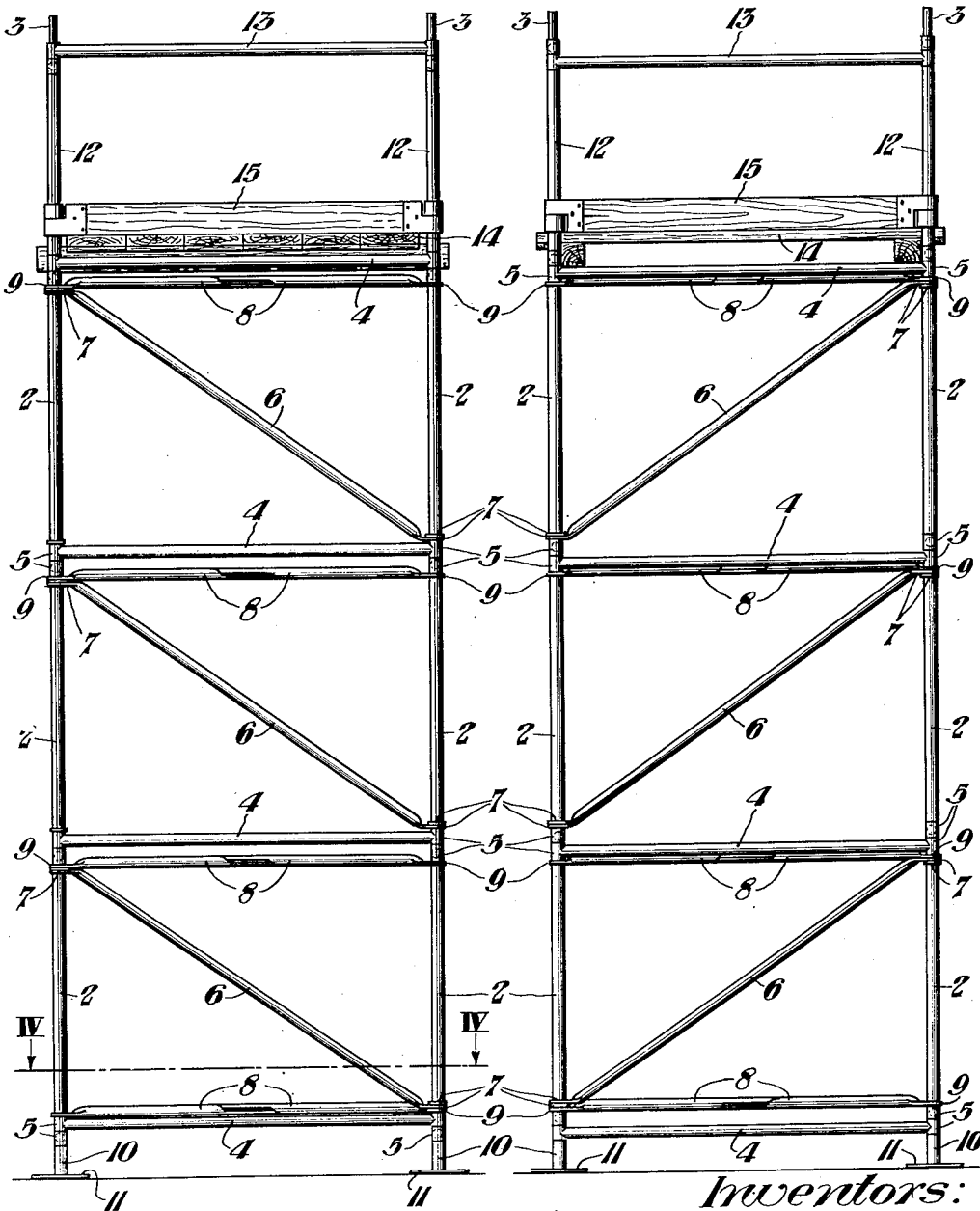
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2 Sheets-Sheet 1

FIG. 1.

FIG. 2.



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FIG. 3.

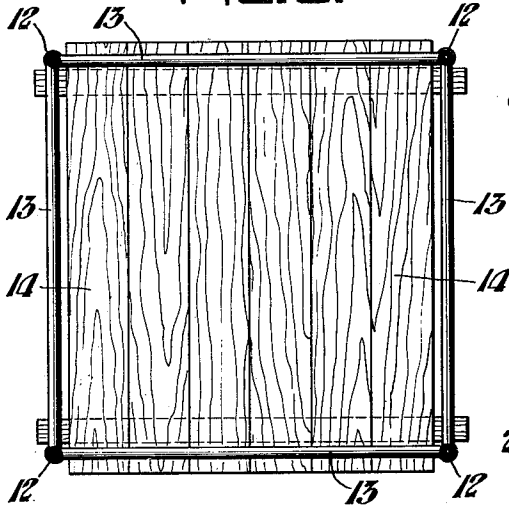


FIG. 4.

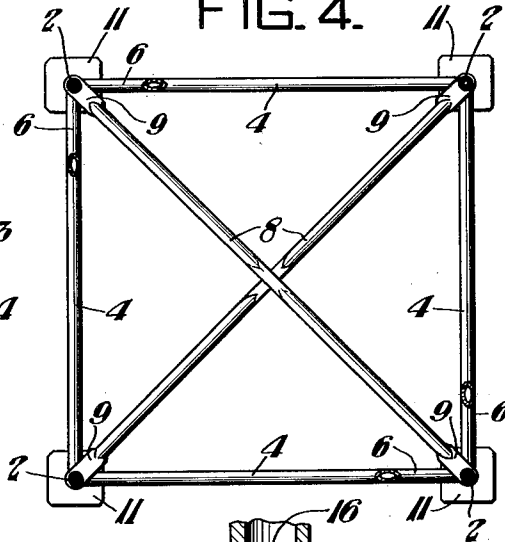


FIG. 5.

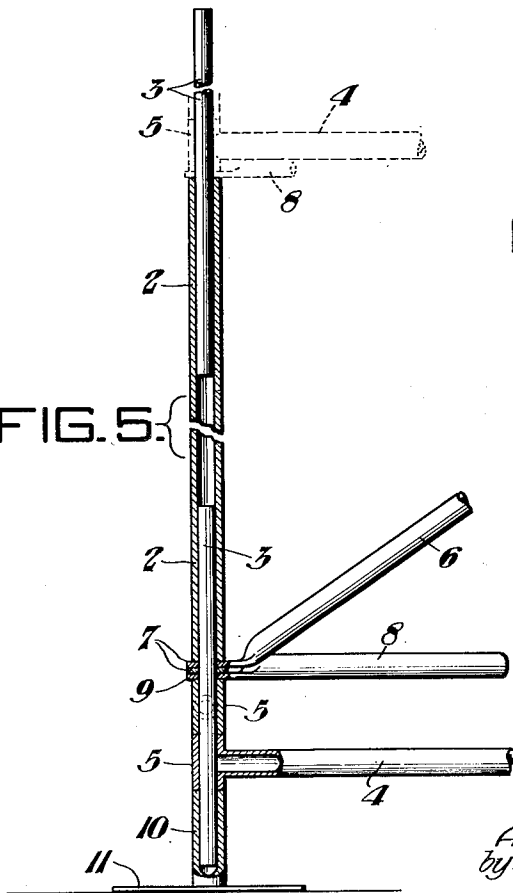
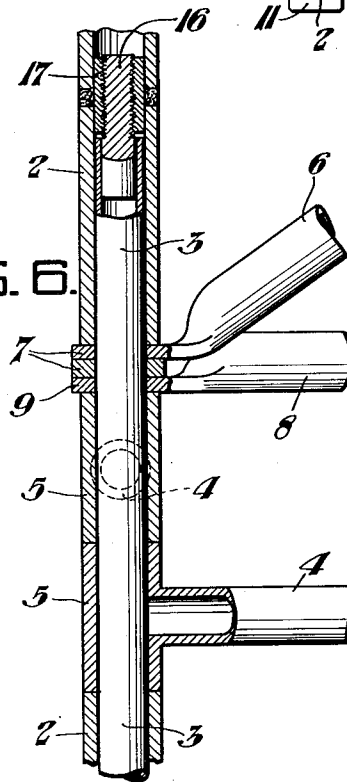


FIG. 6.



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UNITED STATES PATENT OFFICE

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9 Claims. (Cl. 304—2)

This invention relates to scaffolds and, particularly, to an improved scaffold of the portable type.

Various types of portable scaffolds have been suggested and used. Some of these have been commercially successful while others, for various reasons, have been a failure. Usually, most of the scaffolds heretofore suggested and used consisted of an excessive number of parts, including a number of small parts which were apt to become lost in dismantling and transporting them from one job to the next. Also, such scaffolds were usually expensive in their construction and difficult to assemble, and usually required a number of men and an excessive amount of time to assemble which was also expensive; while in cases where the scaffold was simple in design and consisted of a minimum number of parts, it was usually unsafe for use.

It is one of the requirements of a good scaffold that the load thereon be carried by the vertical uprights and not by the reinforcing cross-members. According to the present invention, all of the above disadvantages are eliminated and there is provided a scaffold having all the necessary requirements of a good scaffold.

It is an object of the present invention to provide a scaffold which is inexpensive in construction and, at the same time, one which can be easily and quickly assembled and dismantled.

It is another object of the invention to provide a scaffold consisting of a multiplicity of like sections, the members of which are interchangeable with the corresponding member of any other section.

It is a further object of the invention to provide a portable scaffold in which all of the members are made from tubular stock to obtain the maximum strength, thereby providing a scaffold which is strong and sturdy.

Various other objects and advantages of this invention will more fully appear during the course of the following specification and will be particularly pointed out in the appended claims.

In the accompanying drawings, we have shown, for the purpose of illustration, one embodiment which our invention may assume in practice.

In these drawings:

Figure 1 is a side elevation of the improved scaffold of our invention;

Figure 2 is an elevation similar to Figure 1, looking from the other side of the scaffold;

Figure 3 is a plan of the same;

Figure 4 is a section taken on line IV—IV of Figure 1;

Figure 5 is a vertical section through one of the leg section joints, showing the arrangement and relation of the reinforcing members on the leg; and

Figure 6 is a view similar to Figure 5, showing a modified construction of the leg joint, including means for locking the same together.

There is shown in the drawings, for the purpose of illustration, a scaffold of a square design consisting of three units. It will be understood that the scaffold of the present invention can be assembled into different shapes and made to be continuous if desired, so as to provide an elongated working platform; and that any number of units may be used to extend the scaffold to any desired height.

Each unit comprises four tubular leg sections 2 with each of these sections having an integral extension 3 on one end thereof which is substantially equal to the internal diameter of the tubular sections.

There is also provided in each unit four ledger or horizontal tubular spacing members 4. Each of the horizontal members 4 has on each end thereof a vertically extending sleeve 5 which is integrally connected thereto, preferably by means of welding. The horizontal members are adapted to extend between the leg sections and each of the sleeves carried thereby is adapted to telescopically engage the extensions 3 of the same.

In each unit there is arranged between each of the leg sections a brace or tubular reinforcing member 6 which extends diagonally in a vertical plane between each of the leg sections. Each of the diagonal vertical braces 6 has flattened, angularly extending apertured end portions 7. These apertured ends are adapted to telescopically engage with the extensions 3 of adjacent oppositely disposed leg sections.

There is also arranged, in a horizontal plane between each of the diagonally opposed leg sections in each unit, a reinforcing tubular cross-bar or member 8. Each of these cross-bars 8 also has flattened apertured ends 9 which are adapted to telescopically engage with extensions 3 of the leg sections.

The bottom unit or base section consists of four short tubular feet or leg sections 10, each having an integral extension on one end thereof similar to the extension 3 on the longer leg sections 2 and a flange or pedestal 11 on the opposite end thereof which is adapted to rest upon the ground or surface upon which the scaffold is to be erected.

There is arranged on top of the topmost unit

a working platform. This platform consists of four railing posts 12, four horizontal ledger or reinforcing braces 13 and, preferably, a wood floor 14. If desired, a toe board 15 may be provided.

It will be understood that the connecting portions of the members are telescopically engaged with the extensions 3 of the leg sections 2 at each of the joints or panel points as they are sometimes called, that is, the sleeve portions 5 of the horizontal members 4, and the flattened apertured ends 7 and 9 of the diagonal braces 6 and reinforcing members 8 respectively, are telescopically engaged with the extensions 3 at each joint between the leg sections in superimposed relation to each other so that all the forces or stresses which are transmitted to these members will be transferred directly to the extensions 3 at each of the panel points or joints, thereby eliminating such forces being transmitted directly to the leg sections. Thus it will be seen by providing such a construction that all of the forces or stresses transmitted to the members are transferred to the extensions 3 at substantially one point or at least confined within a minimum distance therealong, that is, all of the vertical, horizontal and diagonal stresses meet substantially at one point at each of the joints or panel points, thereby reducing the bending or turning moment in the vicinity of the joints and on the leg sections to a minimum, and this is one of the most important aspects of the present invention.

The scaffold of our invention may be made, if desired, with joints that can be locked together. That is, the units are locked together as they are mounted one on top of the other. This can be accomplished by providing a short threaded end portion 16 on the outer end of each of the extensions 3 of the leg sections 2, as shown in Figure 6, and a short corresponding internal threaded portion 17 on the inside of each of the female ends of the leg sections 2. In assembling, all of the reinforcing members are telescopically engaged with their respective extensions 3 and the adjacent leg sections then screwed on to tightly hold them in position.

It will be understood that every joint in the assembly, except the four joints at the base, must be composed of the members enumerated, or if for any reason it is desired to omit any of these members from the structure, it will be necessary to provide a filler or washer at the joint of substantially the same thickness as the member omitted so as to make the joint tight.

It will be seen that, as a result of this invention, there is provided an improved portable scaffold of a simple construction with reinforcing cross-bar members having flattened apertured end portions which can be easily and quickly fabricated.

Furthermore, as a result of our invention, it will be seen that all of the sections and members are respectively alike and interchangeable with each other, and this is an important advantage as it eliminates the need for an excessive number of different sections and members, thereby providing a scaffold which can be easily and quickly assembled and dismantled.

While we have shown and disclosed an embodiment of our invention, it will be understood that this embodiment is merely for the purpose of illustration and description, and that various other forms may be devised within the scope of

our invention as defined in the appended claims.

We claim:

1. A scaffold comprising a plurality of legs, each of said legs including a series of tubular sections, each of said sections having an extension integrally arranged therewith on one end thereof substantially equal to its internal diameter which is adapted to telescopically engage with the corresponding opposite end of an adjacent leg section, a horizontal tubular member extending between each of said sections, each of said horizontal members having a short vertically extending sleeve on each end thereof, said vertical sleeves adapted to telescopically engage with the extensions of said leg sections, and reinforcing tubular members having integral flattened apertured end portions arranged between each of said leg sections with their apertured ends telescopically engaged with the extensions of said leg sections.

2. A scaffold comprising a plurality of legs, each of said legs including a series of tubular sections, each of said sections having an extension integrally arranged therewith on one end thereof substantially equal to its internal diameter which is adapted to telescopically engage with the corresponding opposite end of an adjacent leg section, a horizontal tubular member extending between each of said sections, each of said horizontal members having a short vertically extending sleeve integrally connected to each end thereof, said vertical sleeves adapted to telescopically engage with the extensions of said leg sections, a tubular member having flattened angular apertured ends positioned diagonally in a vertical plane between each of the leg sections with their apertured ends engaged with the extensions of the adjacent oppositely disposed leg sections, and a horizontal reinforcing cross member extending between each of the diagonally opposed leg sections, all of said sections and members being respectively alike and interchangeable with each other.

3. A scaffold comprising a plurality of legs, each of said legs including a series of tubular sections, each of said sections having an extension integrally arranged therewith on one end thereof substantially equal to its internal diameter which is adapted to telescopically engage with the corresponding opposite end of an adjacent leg section, a horizontal tubular member extending between each of said sections, each of said horizontal members having a short vertically extending sleeve integrally arranged therewith on each end thereof, said vertical sleeves adapted to telescopically engage with the extensions of said leg sections, a reinforcing member extending diagonally in a vertical plane between each of said leg sections, and a tubular reinforcing cross member having flattened apertured ends positioned substantially in a horizontal plane between each of the diagonally opposed leg sections with their apertured ends engaged with the extensions of said leg sections, all of said sections and members being respectively alike and interchangeable with each other.

4. A scaffold comprising a plurality of legs, each of said legs including a series of tubular sections, each of said sections having an extension on one end thereof substantially equal to its internal diameter which is adapted to telescopically engage with the corresponding opposite end of an adjacent leg section, a horizontal tubular member extending between each of said sections, each of said horizontal members having a short

vertically extending sleeve on each end thereof, said vertical sleeves adapted to telescopically engage with the extensions of said leg sections, a tubular member having flattened angular apertured ends positioned diagonally in a vertical plane between each of the leg sections with their apertured ends engaged with the extension of the adjacent oppositely disposed leg sections, a tubular reinforcing cross bar having flattened apertured ends positioned substantially in a horizontal plane between each of the diagonally opposed leg sections with their apertured ends engaged with the extensions of said leg sections.

5. A scaffold comprising a plurality of legs, each of said legs including a series of tubular sections of equal diameter, each of said sections having on one end thereof an extension substantially equal to its internal diameter, the outer end of said extensions being threaded, the opposite end of each of said tubular sections having a short internal threaded portion, each of said inner threaded portions adapted to be screwed to the threaded portions of the extension of the adjacent leg section, a horizontal tubular member extending between each of said sections each of said horizontal members having a short vertically extending sleeve integrally connected to each end thereof, said sleeves adapted telescopically to engage with the extensions of said leg sections, a tubular member having flattened angular apertured ends positioned diagonally in a vertical plane between each of the leg sections with their apertured ends engaged with the extensions of the adjacent oppositely disposed leg sections, and a tubular reinforcing cross bar having flattened apertured ends arranged between each of the diagonally opposed leg sections substantially in a horizontal plane with their apertured ends engaged with the extensions of said leg sections.

6. A scaffold having a plurality of legs, each of said legs including a series of tubular sections substantially equal in size, each of said sections having an extension arranged on one end thereof substantially equal to the internal diameter of said sections, said extensions being securely attached to their respective sections and adapted to telescopically engage with the corresponding opposite end of an adjacent leg section, a threaded portion arranged on the outer end of each of said extensions, said threaded portions adapted to cooperate with threaded portions carried in the corresponding opposite ends of adjacent leg sections to securely lock the sections together, and a plurality of tubular bracing members arranged between said leg sections, each of said tubular bracing members having means arranged on the ends thereof which are adapted to telescopically engage with the extensions of said leg sections.

7. A scaffold comprising a plurality of legs, each of said legs consisting of a plurality of inter-engaged vertically aligned tubular sections, each of said sections having a reduced extension arranged integrally therewith on one end thereof telescopically engaging with the opposite end of

an adjacent leg section, a plurality of horizontally disposed tubular members having a vertically disposed sleeve portion arranged integrally therewith on each end thereof with said sleeve portions telescopically engaged with said extensions between the leg sections, and a plurality of diagonally disposed tubular reinforcing members with each having a connecting portion on each end thereof which is also telescopically engaged with said extensions whereby the sleeve portions of the horizontally disposed members and the connecting portions of said reinforcing members are superimposed relative to each other at each of the joints and disposed between the leg sections.

8. A scaffold including a plurality of tubular leg sections which are alike and interchangeable with each other, an extension arranged on one end of each of said leg sections and extending outwardly from the end thereof, each of said extensions being integrally attached to the end of its respective leg section and having an outer diameter slightly less than the inner diameter of said leg sections and adapted to telescopically engage with the opposite end of an adjacent leg section, a plurality of horizontally disposed tubular members which are alike and interchangeable with each other, each of said horizontal members having a vertically extending sleeve portion integrally arranged thereon at each end thereof and having an outer diameter substantially equal to that of said leg sections with each of said sleeve portions adapted to telescopically engage with the extensions between the leg sections, and a plurality of tubular reinforcing members having flattened apertured end portions integral therewith which are also adapted to telescopically engage with the extensions between the leg sections.

9. A scaffold comprising a plurality of tubular leg sections which are alike and interchangeable with each other, an extension arranged on one end of each of said leg sections and extending outwardly from the end thereof, each of said extensions being integrally attached to the end of its respective leg section and adapted to telescopically engage with the opposite end of an adjacent leg section, a plurality of horizontally and diagonally arranged tubular reinforcing members extending between said leg sections with each having a connecting portion arranged on each end thereof which is adapted to telescopically engage with said extensions, said connecting portions of said tubular members at each of the joints being superimposed relative to each other and disposed between the tubular leg sections, whereby the forces and stresses transmitted to said members are transferred to said extensions at substantially one point at each of said joints so as to reduce the bending moment in the vicinity thereof to a minimum.

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