

Sept. 9, 1958

R. J. GIBBS
PORTABLE SCAFFOLD

2,851,311

Filed April 22, 1955

2 Sheets-Sheet 1

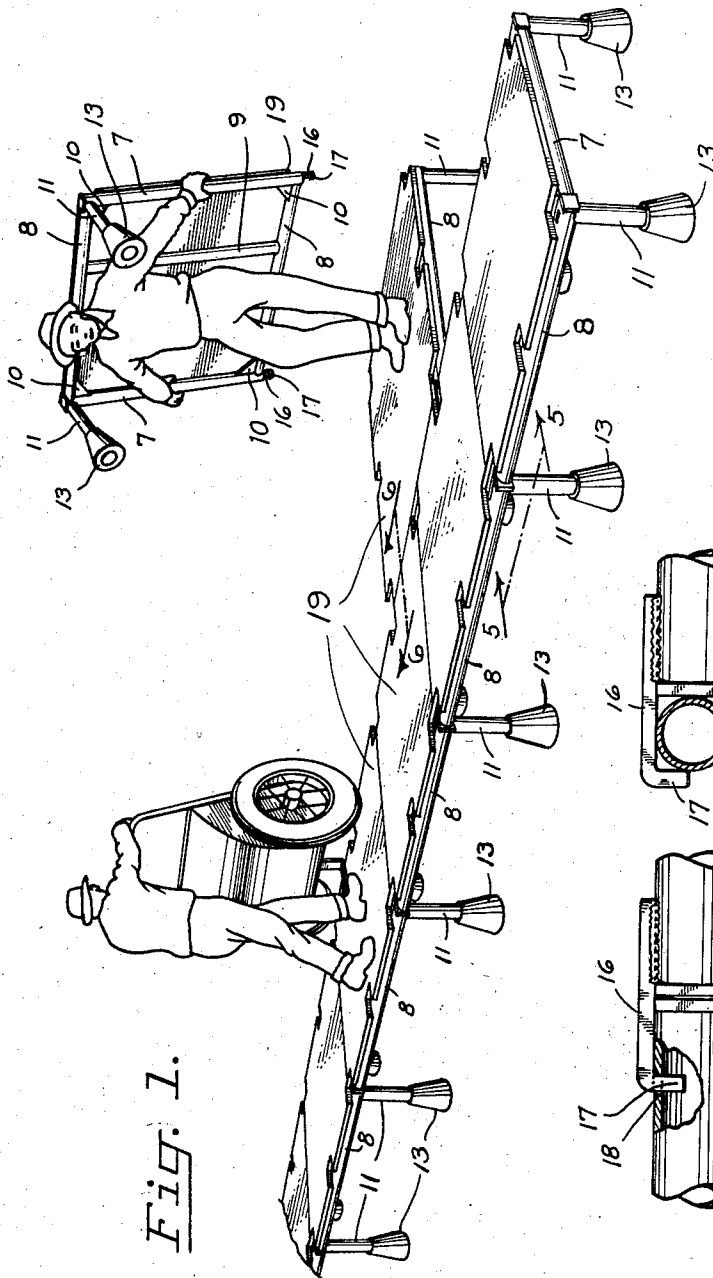


Fig. 1.

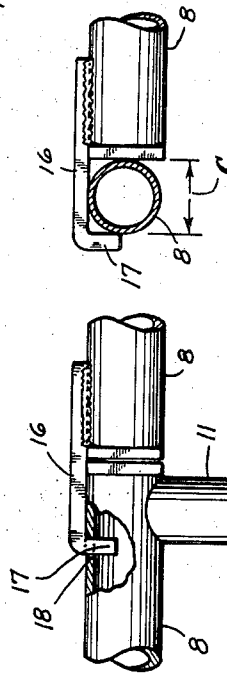


Fig. 5.

Fig. 6.

INVENTOR.
Ralph J. Gibbs
BY *W. J. Gibbs*
Atty.

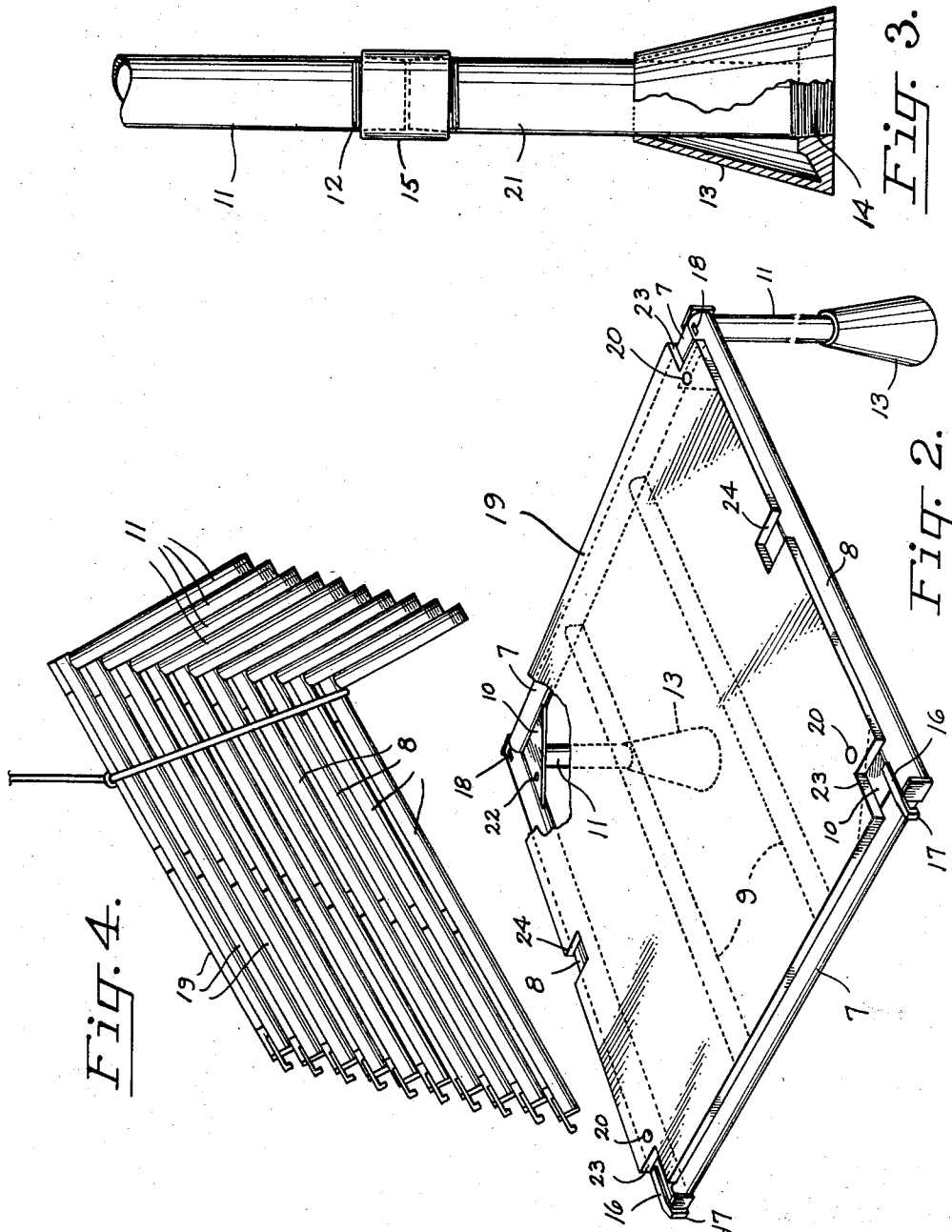
Sept. 9, 1958

R. J. GIBBS
PORTABLE SCAFFOLD

2,851,311

Filed April 22, 1955

2 Sheets-Sheet 2



INVENTOR.
Ralph J. Gibbs
BY *[Signature]*
Att'y.

1

2,851,311

PORTABLE SCAFFOLD

Ralph J. Gibbs, Eugene, Oreg.

Application April 22, 1955, Serial No. 503,168

3 Claims. (Cl. 304—1)

This invention relates to a light weight portable scaffold defining a runway made up of plural interconnected sections for erection and use in construction work as, for example, when a large reinforced slab deck is poured utilizing concrete buggies which are moved upon the runway to carry the wet concrete to the pour.

One object of my invention is to provide a portable scaffold defining a runway in which the individual interconnected sections are sufficiently strong to support loaded concrete buggies yet which are sufficiently light in weight that a single workman can lift and carry a section when it must be moved about on the job.

The advantages of the instant invention are best explained with reference to a construction job which includes the pouring of a reinforced concrete slab or deck. To this end, it will be appreciated that initially, the ground is prepared, the peripheral or outer forms are set, the steel reinforcing is placed and tied, the conduits or pipe which must traverse the finished slab are placed, and the inner forms are erected. After this preparation, long flat buggy runways are erected the length and width of the job so as to provide access across the job site for the workman and the concrete buggies. These runways stand on legs above the level of the steel and the finished slab. The loaded buggies are pushed by hand and dumped from the edges or ends of the runway to spill the concrete into the forms and over the steel. The runways themselves are of many and diverse forms, one of the most popular and inexpensive being a flat wood platform made up of rough timbers set upon sawhorses. It is one object of the instant invention to improve these conventional runways in strength, practicality, cost, weight, and other factors as now will be described.

One of the primary disadvantages of the conventional runway is that the sections of decking are massive, bulky, cumbersome and rough wood planks joined together and of such weight that two men are required to lift and carry them about. Portability, however, is an essential feature. Initially, of course, the runway must be assembled in place. Later, as a portion of the slab is poured, the runway must be picked up and removed section by section to make room for the pouring of the next section. With the conventional massive runway, this has required that two men step down among the steel reinforcing elements and, sometimes, into the wet concrete to lift the decking and remove the supporting sawhorses. With the instant invention, on the other hand, each section of runway is made up with a skeletal framework of light weight hollow pieces of pipe and with two legs supporting a plywood deck. The legs for each section also are hollow pipe and these are welded to the framework. In end result, this provides a runway in which each section is sufficiently light in weight that a single workman can lift and carry it about and in which the legs are integral with rather than separate from the deck. In fact, each section can be lifted and removed by a workman standing on an adjacent section of runway thereby eliminating the necessity to step down off the

2

runway into the wet concrete. The provision of this structure is one object of my invention.

Another disadvantage of the conventional runway is that the height at which the runway stands above the steel and the ground or forms is difficult, if not impossible, to adjust. Thus, a majority of contractors utilize a standard sawhorse height which is sufficient to clear the thickest slab they expect to encounter. This not only increases the weight of the runway structure needlessly when a thin slab is poured, but it also spaces the buggies an excessive distance above the forms when such a thin slab is poured. To eliminate this disadvantage, the legs of my portable runway section purposely are of a minimum length and are formed with a threaded section adjacent the lower end. In cooperation with this threaded section, a hollow frustoconic skirt encircles the legs and is screw threaded to the bottom thereof. This skirt defines a support foot for the leg. Further, this skirt readily is detached so that additional lengths of pipe may be coupled or screw threaded onto the leg. This provision allows the contractor to increase or decrease the height of the runway from job to job and the provision of structure allowing this result is another object of my invention.

With the conventional concrete runway, it is accepted practice to bridge the joint between sections of runway which are at right angles to one another by laying a board or other ramp over that joint. This has been considered essential since the width of the joint may vary and the buggies need a more or less continuous supporting surface when loaded. However, experience has shown that this is not an efficient or a safe method of joining runway sections at right angles or of bridging the joint. Firstly, the sections themselves are substantially independent and rest upon separate sawhorses. This allows one section to move relative to its neighbor after erection. With the instant invention, on the other hand, the abutting sections are provided with mated keepers which hook together such that adjoining sections can be joined and fixed together either end to end or at right angles one to another. In either arrangement, the adjoining sections are held in a close, face to face abutment and thus a ramp or board is not required over the joint. The provision of a keeper construction in combination with a runway of the above type is a further object of my invention.

Another object of my invention is to provide a section of portable runway with a smooth rather than a rough deck in order that concrete will not adhere thereto and in order that the section will stack neatly with other like sections when not in use or while being transported.

Yet another object of my invention is to provide a rectangular structural framework for a runway, said framework being formed of hollow pieces of pipe reinforced by corner fillet plates which serve a dual function in that they also provide an attachment structure to which the deck can be secured yet from which the deck can be detached should a replacement become necessary.

Still another object of my invention is to provide the deck of a portable runway with small cutaway portions adjacent each corner and adjacent the midpoint on each side so as to allow two-legged sections of runway to be joined, one to another, either end to end or at right angles.

These and other objects and advantages of my invention will become apparent during a consideration of the following detailed description, taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a perspective view of my portable scaffold defining a runway with certain of the sections connected end to end and with other sections connected at right angles, two workmen being shown upon the runway, one

3

dumping a buggy of concrete and one removing one of the sections of runway;

Fig. 2 is a perspective view, partially broken away, showing a single typical section of the scaffold;

Fig. 3 is a detail view, also partially broken away, showing one of the legs which support a section, this particular leg having an extension thereon to increase the height of the runway;

Fig. 4 is a side view showing a large number of the scaffold sections with the support feet removed and the sections nested to illustrate the ease of handling and storage which results;

Fig. 5 is a detail view, taken substantially on the line 5—5 of Fig. 1, showing the joinder of a hook or to an aperture when the sections are arranged end to end; and

Fig. 6 is another detail view, taken substantially on the line 6—6 of Fig. 1, showing the joinder of a hook to one of the hollow pieces of pipe which defines a side member, this joinder being utilized when a section is added at right angles to another section.

Each of the many sections of scaffolding defining a runway which is illustrated in the drawings is identical in order to provide a modular length and in order to allow a standard fabrication procedure. To this end, each includes a pair of parallel end members 7 and a pair of parallel side members 8. These are welded or otherwise joined end to end to form a rigid structural framework of rectangular outline. As can be seen in Fig. 2, both the side and end members are hollow pieces of pipe. In addition, the framework is reinforced with additional parallel longitudinal stringers 9 which also are hollow pieces of pipe. Across each of the four inner corners of the rectangular framework, I weld or otherwise fix a triangular fillet plate 10 so as to provide additional reinforcement and so as to provide a means for attaching a deck as hereinafter will be described. In sum total, this provides a structural framework which is both light in weight and of superior structural strength so as safely to support the heavy load imposed by a loaded buggy of concrete and so as to withstand the abuse incident to transportation and use in construction work.

In form, each section of scaffolding is a two legged truss. To this end, I prefer to weld a pendent hollow tubular leg 11 to the corners at but one end of the framework. Each of these legs carries a pipe coupling structure which I prefer to form as a threaded section 12 adjacent the lower end thereof for a purpose now to be described. Thus, in conjunction with each leg, I provide a hollow frusto-conic skirt 13 having a wide annular base as best shown in Fig. 3. This skirt defines a wide, sturdy support for each of the legs. Further, the skirt detachably is secured to the corresponding leg in order to allow quick removal of the foot when the length of the leg is to be varied or when a plurality of the sections are to be nested or moved about as shown in Fig. 4. To this end, each skirt bounds a circular axial opening having an upper diameter which slidably fits about the leg and a threaded lower diameter 14 which is mated to the aforementioned threaded section 12 of the leg. In Fig. 3, that portion of the leg 11 which is welded directly to the framework has been extended by adding a lower section of pipe 21 and by joining the parts 11 and 21 with a threaded collar 15. In this case, of course, the conic foot 13 is threaded and slidably is fitted over the bottom of the lower pipe section 21. In this manner, I provide for each runway section a sturdy yet a light weight support which quickly can be varied in height.

Referring more particularly to Figs. 2, 5, and 6, I have illustrated a mated keeper structure which joins the sections of scaffolding defining a runway either end to end or at right angles. To this end, a hook member 16 is welded or otherwise secured across the top end of two of the pipes so as to protrude longitudinally from the end of the framework opposite to the end which carries the legs 11. Each of these hooks carries a downturned end por-

4

tion 17 and, in cooperation therewith, vertical apertures 18 pierce the side members 8 which each overlies a leg 11. When two of the sections of runway are to be joined end to end, the hooks on one section merely are inserted through the apertures 18 in an adjoining section. Through an appropriate spacing of the structural elements, this causes the sections to come into close, face to face abutment so a buggy can traverse the runway smoothly without employing ramps or the like over the joints between the sections.

Referring to Fig. 6, it is another important feature that each hook 16 is provided with a longitudinal clearance indicated by the letter C and the arrow. This clearance is intermediate the downturned end portion 17 and the body of the structural framework. In accordance with one object of my invention, the clearance C is at least as great as the diameter of one of the members 7, 8. This clearance allows an arrangement of the runway sections at right angles to one another as hereinafter will be described. Optionally, it also allows a different type of end to end joinder of the sections where the ends of the hook are moved inboard slightly so as to overlie the periphery of the next adjacent end member 7 rather than to fit within the apertures 18. This may be preferred, for example, where it is feared that the apertures 18 inadvertently may fill with concrete.

In decking over each scaffolding section defining a runway, I have provided a smooth flat surface to which concrete will not adhere with the tenacity exhibited in the rough timbers of the conventional runway. To this end, the deck member itself includes a flat rectangular sheet of plywood 19 which fits upon the upper face of the rectangular framework. This plywood deck is secured at each corner to a corresponding one of the triangular fillet plates 10 by a bolt 20. This bolt traverses an appropriate aperture 22 in the fillet plate, which arrangement is best shown in Fig. 2. As is conventional, a nut can be employed beneath the fillet plate to secure the bolt and deck in place. This holds the deck firmly in place yet allows the deck to be removed should replacement become necessary over the years.

In detail, each deck member 19 is provided with a small cutaway portion 23 adjacent the corner so as to accommodate the previously described hook and aperture structure 16, 18. In addition, the mid-point at each side of the deck is cut away, as at 24, so as to accommodate the hook of an adjoining section when two of these sections are fitted together at right angles as shown in Fig. 6. The deck thus is arranged to accommodate either an end to end or a right angle disposition of the sections.

In use, a plurality of sections of scaffolding defining a runway are laid up end to end and with branch runways at right angles as shown in Fig. 1, the particular pattern being dependent upon the requirements of the particular job. Since each of the sections carries but two legs, the first section must be supported at one end upon the forms, a sawhorse, or other appropriate structure. Thereinafter, sections are added end to end by fitting the hooks 16, 17 to the apertures 18. Branch runways are added at right angles by allowing the hooks to overlie the side members 8 so as to rest within the cutaway portions 24 of adjoining sections. That is to say, one hook will rest within a middle cutaway portion 24 on a first section whereas the other hook will rest in a corresponding cutaway portion of a second abutting section as shown in Figs. 1 and 6. This particular joinder is accommodated by virtue of the clearance C which is shown in Fig. 6 whereby the hook can overlie a pipe periphery with the downturned portion in abutment.

As will be appreciated by those skilled in the construction trades, the runway is assembled on the job with the legs 11 intermediate the steel reinforcing bars and fixtures and with the feet 13 resting upon the ground or underlying forms. After assembly, the workmen wheel their loaded buggies along the runway and dump the

5

wet concrete from the ends of both the main and the branch runways. As each section of the slab is poured, one of the end sections is removed to make room for the next succeeding pour. In this way, the job progresses back toward the first section of runway which was laid up. The removal is illustrated in Fig. 1 where a workman is shown carrying a section away so as to allow the pouring to proceed from the end of the next inboard section. This removal is accommodated, with the instant invention, by the light weight tubular construction and plywood decking. Thus, each section is sufficiently light in weight that a single workman can lift and carry it about. As is apparent, the workman often can remove the hooks from the apertures and lift the section by himself. In certain instances, however, the legs and skirts may be more or less interwoven through the maize of reinforcing steel. In this instance, one of the workers distributing, finishing or vibrating the concrete will help lift the feet 13 clear of the steel. The worker on the runway then can lift the section up on to his back and carry it away either to a point of storage or to a point of further use. Similarly, it will be evident that a single workman can add a section where additional branches must be built out. To this end, the assembly will be effected by fitting the hooks to the eyes and allowing the far end of the section to drop into place. This provides a flexibility allowing the contractor to complete a big job with a minimum number of sections and thus is saving of capital expenditure money. Yet further, where additional height is required or where the runway must pass over an obstruction, additional lengths of pipe such as that shown at 21 can be added to the legs thereby increasing the reach or clearance.

As now will be apparent, I serve my inventive objects by providing a light weight yet a structurally strong scaffold section having feet which distribute the weight over a wide area. These sections can be nested for storage or movement and the decks are smooth so the concrete will not adhere thereto. In addition, the height

6

of each section can be varied and the runway can be built up either end to end or at right angles as required. In total, this allows the runway to be fabricated in modular lengths at a minimal cost having practical appeal to contractors engaged in concrete construction.

I claim:

1. In a portable scaffold comprising plural sections, each section having a mass capable of being lifted and carried by a single workman, said sections being detachably joined together to define an elongated runway, each section comprising a flat rectangular frame element composed of pairs of opposed side and end members, leg members fixed to one face of said frame element, at one end only of each section, decking secured to the other face of said frame element, and horizontal latch-fingers secured to and extending laterally over and beyond the frame end not carrying leg members and having a depending end portion.

2. Claim 1 modified in that the frame element at at least one side and at the end unsupported by legs is provided with a latch-finger engaging portion and the latch-fingers have a reach and clearance to overlie and grip a latch-finger engaging portion on an adjacent section.

3. Claim 1 modified in that said latch fingers lie generally in the plane of the decking, which latter is cut away to accommodate said latch fingers.

References Cited in the file of this patent

UNITED STATES PATENTS

911,195	Baker	Feb. 2, 1909
1,900,867	Olds	Mar. 7, 1933
2,294,550	Greulich	Sept. 1, 1942
2,306,311	Holland	Dec. 22, 1942
2,446,372	Jones et al.	Aug. 3, 1948
2,596,663	Duffey	May 13, 1952
2,618,124	Holsten	Nov. 14, 1952
2,687,617	Newell	Aug. 31, 1954