

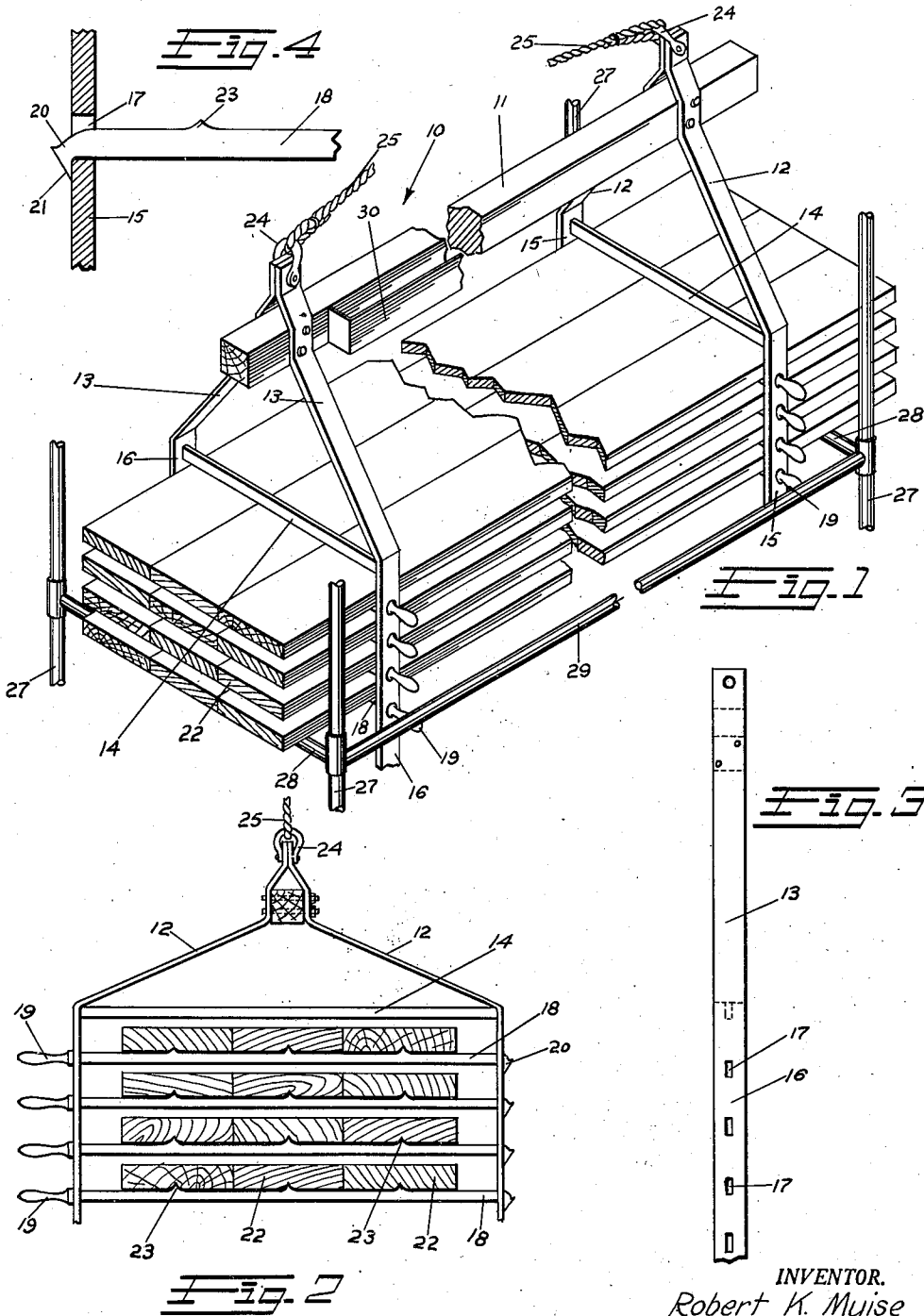
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R. K. MUISE

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MATERIAL HANDLING DEVICE

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INVENTOR.  
Robert K. Muise  
BY  
*Daeph Chappell*  
ATTORNEY

# UNITED STATES PATENT OFFICE

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## MATERIAL HANDLING DEVICE

Robert K. Muise, Congers, N. Y.

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This invention relates to a device for transporting and depositing material and more particularly to a sling carriage device for use in the construction of stagings and platforms.

Prior to the construction of large units of any kind such as, for example, office and tenement buildings, bridges, stadia, ships, swimming pools, and like large units, it is necessary to erect a temporary structure or scaffolding to support materials, tools and men stationed at various levels above the ground. The temporary structure will, in most cases, consist of a skeleton framework composed of vertical parallel stanchions with opposite parallel horizontal members secured to said stanchions at fixed intervals upwards along said vertical stanchions. Planks are lain across these opposite parallel horizontal members to form a scaffold or rigging which is disassembled when the ship, stadium or building is completed.

The skeleton framework will border on or rim the more permanent structure being built, and as this more permanent structure grows (more floors to a building, more decks to a ship, etc.) a correspondingly taller framework will have to be built. Planks will have to be raised to higher levels and positioned to the skeleton framework at these higher levels to form new platforms or scaffolds.

The loading of planks and the transportation and positioning thereof onto the opposite parallel horizontal braces of a skeleton framework is a tedious but necessary part in the construction of these temporary scaffolds or riggings. Any saving of time, reduction of risk, or simplification of the method of erecting these plank scaffolds would be beneficial to shipwrights and to the building construction industry.

An object of this invention is to provide means for hastening the construction and removal of scaffolds.

A further object is to decrease the risks involved in the construction and removal of scaffolds and riggings.

A further object is to increase the load of planks that can be carried in one hoist of the crane lifting the planks in preparation for erecting scaffolds and riggings.

Further objects and advantages of this invention, as well as its construction, arrangement and operation will be apparent from the following description and claims in connection with the accompanying drawing, in which

Figure 1 is an isometric view of this invention in operation,

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Figure 2 is a right elevation view of this invention, shown with the planks in position, said planks not being a part of this invention,

Figure 3 is an elevation view of one of the supports which forms part of this invention, and

Figure 4 is an enlarged view of the engagement of the bar with one of the slotted supports, said bar and supports being part of this invention.

Previous to this invention, before erecting a temporary scaffold or rigging, planks were stacked singly, one atop the other in groups, say, of three (the number in a group being arbitrary and dependent upon the width of the planks and the width of the scaffold required), the ends of the planks were choked and held firmly together by a cable, strong wire, or other suitable securing means. Pieces of dunnage were placed atop of this bound set of planks and another set of planks, similarly secured as the first group, was placed atop of the dunnage. The entire assembly, consisting of alternate layers of planks and dunnage, was lashed and secured to a crane. The crane hoisted the assembly and put it to rest on a landing already provided with a platform to support a workman.

The workman or workmen, since the job ordinarily required more than one person, removed the cable, strong wire, or similar strapping means that bound the top group of three planks, placed the now loose dunnage between the lower two layers of planks, relashed the remaining layers of planks, and then positioned the three recently removed planks onto and adjacent pair of parallel horizontal braces that are secured to the vertical stanchions of the skeleton framework.

The above described method limited the number of layers that could be carried, as the distance of the top plank of the stacked pile of planks from the lowest plank could not exceed the reach of a man of average height, it having been necessary to reach up from the platform on which the man was standing to remove the cable or wire that bound the ends of the top set of planks. This method of removing the planks was cumbersome and dangerous since the man removing the planks had to remove a tightly strung wire or cable while he was resting on a scaffold high above the ground, then had to remove the planks and position the latter onto the skeleton framework, and finally had to resecure the crane to the remaining stack of planks.

Another method of constructing plank scaffolds was to deposit the entire load of planks, secured as described above, upon the parallel

horizontal braces of the skeleton structure. Someone then had to climb to the very top plank, and, while seated on this top plank, had to loosen the lashing that secured all the groups of three planks together, step down on one of the horizontal braces of the skeleton structure and carefully guide the three loose top planks onto the opposite parallel horizontal braces of the skeleton framework, retighten the lashing attached to the crane onto the remaining planks, place the dunnage that separated the top group of planks from the group directly below to another part of the stacked pile of planks, and when the crane has moved off with the relashed load, assemble the planks recently removed from the assembly onto the skeleton framework so as to form a scaffold.

Reference will not be made to the drawings to show how the present invention speeds up the construction of the temporary scaffolds and removes many of the hazards inherent in the present method of constructing temporary scaffolds.

A carrying frame 10 comprises a ribband or strongback 11 from which depends a pair of jaws 12 and 13 that are bolted or otherwise firmly secured to the strongback 11. Each jaw is permanently reinforced by metal crosspieces 14 to prevent choking of the jaws 12 and 13.

At spaced intervals along the arms 15 and 16 of jaws 12 and 13, respectively, are slots 17 (Figure 3) into which are inserted bars 18, said bars 18 extending from one arm 15 or 16 to its opposite arm 15 or 16 and running parallel to the permanent reinforcing crosspiece 14. Each bar 18 has a handled end 19 which restricts the bar 18 from going beyond the slot 17 and also facilitates removals of said bar 18 from its position on the carrying member 10.

At the other end of the bar 18 is a curved foot 20 (Figure 4) having a hook 21 that extends below the slot 17 so that the bar 18 will not become disengaged from the slot 17. Said disengagement is very unlikely when planks 22 are resting on the bar 18 since the weight of the planks 22 is urging the hook 21 to remain below the slot 17. The rectangular shape of the slots 17 and corresponding rectangular shape of the bars 18 will key the bars 18 to the slots 17 so as to prevent rotation of the bars 18.

At spaced intervals along the top face of each bar 18 are barbs 23 (Figure 2) that are contiguous with each bar 18 and serve to grip each plank 22 that is lain across the bars 18 so as to prevent slippage of the planks 22. The number of barbs 23 is optional, and the slots 17 must be made long enough to allow these barbs 23 to pass through them.

In operation, the planks 22 are placed upon the bars 18, as shown in Figure 1, each layer having three or more planks 22, the number being optional and dependent upon the width of the scaffold required. The number of layers of planks 22 to be lifted by this carrying frame 10 is also optional and dependent upon the design of the carrying frame 10. The number of layers of planks 22 that can be carried can easily be altered to suit the needs of the one who is constructing the temporary scaffolds simply by extending the arms 15 and 16 and increasing the number of slots 17 and bars 18 that will be carried by these arms 15 and 16.

Shackles 24 are secured to the junction of the arms 13 and the junction of the arms 14 and a cable 25 connects the shackles 24 to a crane,

said crane lifting the entire load, planks 22 and carrying frame 10. The load is carried to a skeleton framework, a portion of said skeleton framework being shown in Figure 1. The skeleton framework consists of parallel vertical metal stanchions 27 to which are secured opposite parallel horizontal braces 28 and 29. The load is guided until the planks 22 are directly over the skeleton framework, the load being eased down so that the ends of the bottom layer of planks 22 rest on the horizontal braces 28. The resting of the lower layer planks 22 upon the opposite parallel horizontal braces 28 releases said lower layer of planks 22 from intimate contact with the lower bars 18 and permits a pair of said bars 18 to be withdrawn from the carrying frame 10 by simply pressing downward upon the handle 19 of the bar 18 so as to permit the hook 21 to pass through the slot 17.

The bar is withdrawn by a person standing on a scaffold adjacent the one being erected. In fact, it is possible to have a man ride along with the load so that he can reach down and remove the bars 18 as the crane goes from one location to another along the skeleton framework depositing layer after layer of planks 22.

A box or compartment 30 is detachably secured to the strongback 11, said box 30 serving to retain the bars 17 that are withdrawn from the carrying frame 10 after each deposition of planks.

Thus the scaffolds are built substantially in a horizontal plane prior to the erection of additional higher levers of scaffolds because the length of the planks 22 precludes the erection of a scaffold until the one below it has been laid. In other words, since the length of the planks 22 exceed the distance between parallel crosspieces 28 lying in the same horizontal plane, other crosspieces similar to crosspieces 28 are not secured upwards along stanchions 27 until planks 22 have been deposited on the crosspieces 28.

The above described device permits a safe and speedy construction of large scaffolds. This invention can also be used for disassembling the scaffolds and removing the planks 22 from the skeleton framework when there is no further need for the temporary scaffolds. This apparatus and method for transporting and depositing material could be applied to other industrial processes wherein it is necessary to deposit material in fixed groups onto an area or site to which human access is dangerous or undesirable.

It is to be understood that various modifications and changes may be made in this invention without departing from the spirit and scope thereof as set forth in the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. A sling carriage comprising a rigid framework having an open bottom, multiple readily removable article-supporting means disposed at two ends of said framework at spaced intervals upwards along said rigid framework, and article-retaining means on said article-supporting means.

2. A sling carriage comprising a rigid framework having an open bottom, multiple readily removable article-supporting means disposed at two ends of said rigid framework, means to hold said article-supporting means against horizontal dislodgement from said framework while articles are being supported by said article-support-

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ing means, and article-retaining means on said article-supporting means.

3. A sling carriage comprising a horizontal beam, multiple open-bottomed rigid frames secured to and depending, at spaced intervals, from said horizontal beam, slots in said frames, readily removable non-rotatable article-supporting rods secured, at spaced intervals, upwards along said rigid frames and supported in said slots, and article-retaining means on said article-supporting rods.

4. A sling carriage comprising a horizontal beam, multiple open-bottomed rigidly maintained frames secured to and depending from said horizontal beam, slots in said frames, readily removable non-rotatable plank supporting rods secured in said slots at spaced intervals upwards along said rigid frames, means attached to an end of said rods to hold them against horizontal dislodgement from said slots while blanks are being carried by said sling carriage, plank retaining means on said supporting rods, and means to receive the rods after said rods have been removed from said slots.

5. A sling carriage comprising a rigid framework having an open bottom, multiple readily removable article-supporting means disposed near opposite ends of said framework at spaced intervals upwards along the framework, article-retaining means on said article-supporting means, and a receptacle attached to the framework for housing the article-supporting means when the latter have been removed from their normal disposition on said framework.

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6. A sling carriage comprising a horizontal beam, multiple open-bottomed rigid frames secured to and depending from said beam, a plurality of readily removable article-supporting bars disposed at spaced intervals upwards along each of said rigid frames, article-retaining prongs arising from said bars, handles at an end of each bar to facilitate the removal of same when the weight of said articles is removed therefrom, and means attached to the other end of each bar to hold said bars against horizontal dislodgement.

7. A sling carriage comprising a horizontal beam, multiple open-bottomed rigid frames secured to and depending from said beam, a plurality of plank-supporting bars disposed at spaced intervals upwards along each of said rigid frames, plank-retaining prongs arising from said bars, handles at an end of each bar to facilitate the removal of same when the weight of planks is removed therefrom, and means attached to the other end of each bar to hold said bars against dislodgement.

ROBERT K. MUISE.

#### REFERENCES CITED

The following references are of record in the file of this patent:

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**Certificate of Correction**

**Patent No. 2,472,843**

**June 14, 1949**

**ROBERT K. MUISE**

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 3, line 18, for the word "not" read *now*; column 5, line 20, claim 4, for the words "blanks are" read *planks are*;  
and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of December, A. D. 1949.

[SEAL]

**THOMAS F. MURPHY,**  
*Assistant Commissioner of Patents.*