Nov. 10, 1959 J. E. BURKE 2,911,687

PRE-FABRICATED METAL STAGE

Filed April 26, 1955 2 Sheets-Sheet 1

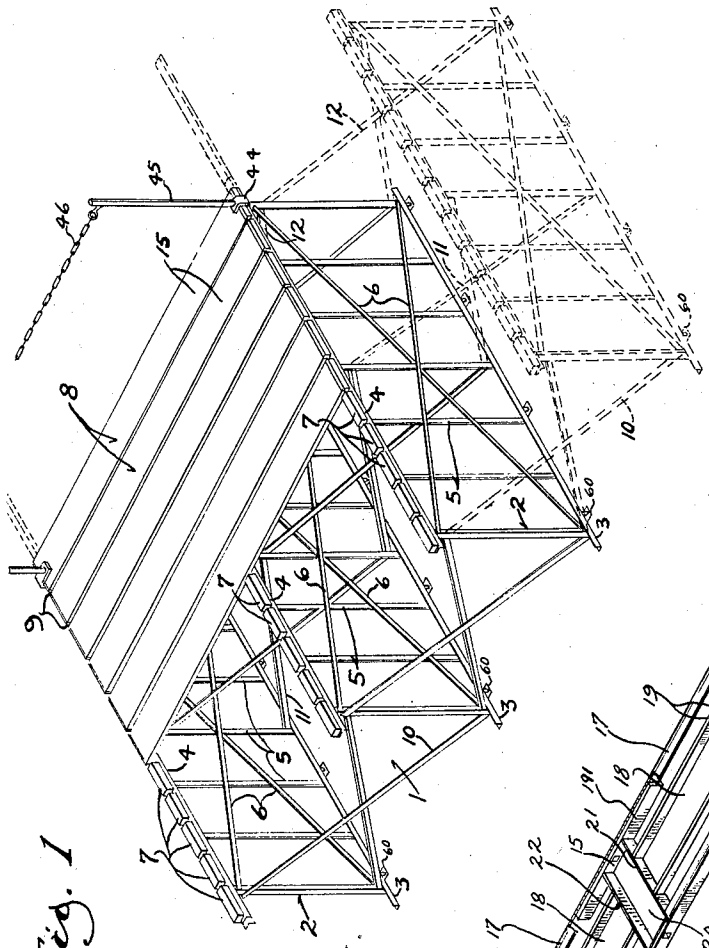

Fig. 1

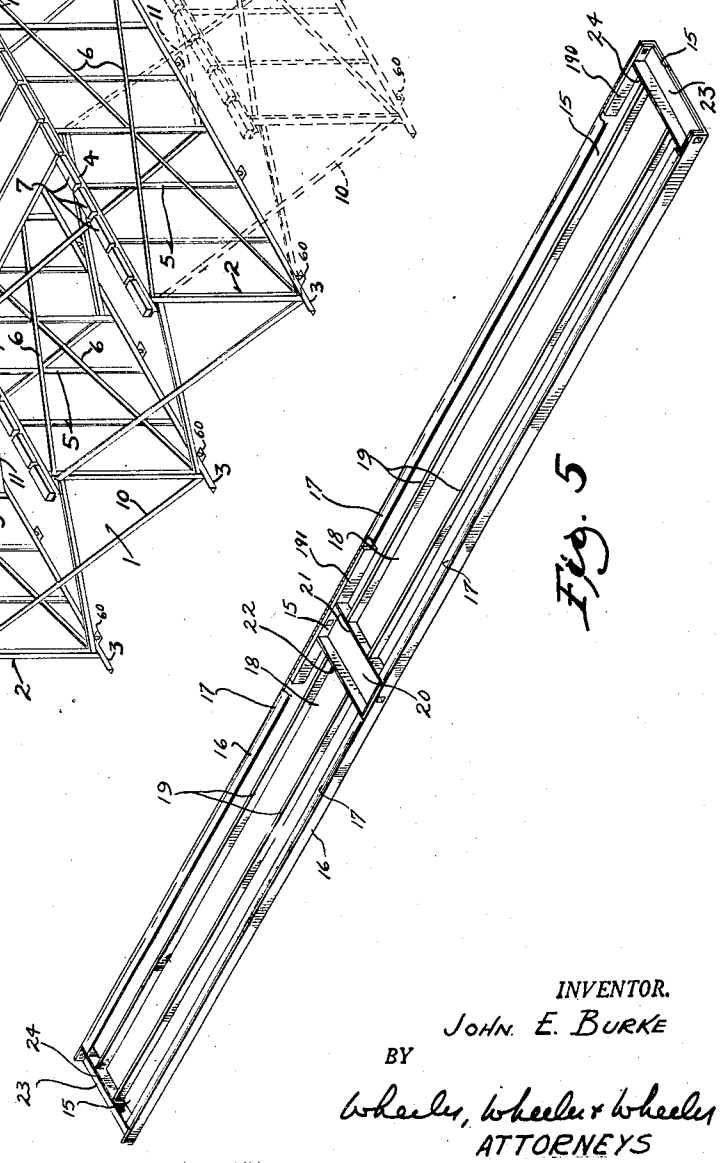

Fig. 5

INVENTOR.
JOHN E. BURKE
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

Nov. 10, 1959 J. E. BURKE 2,911,687

PRE-FABRICATED METAL STAGE

Filed April 26, 1955 2 Sheets-Sheet 2

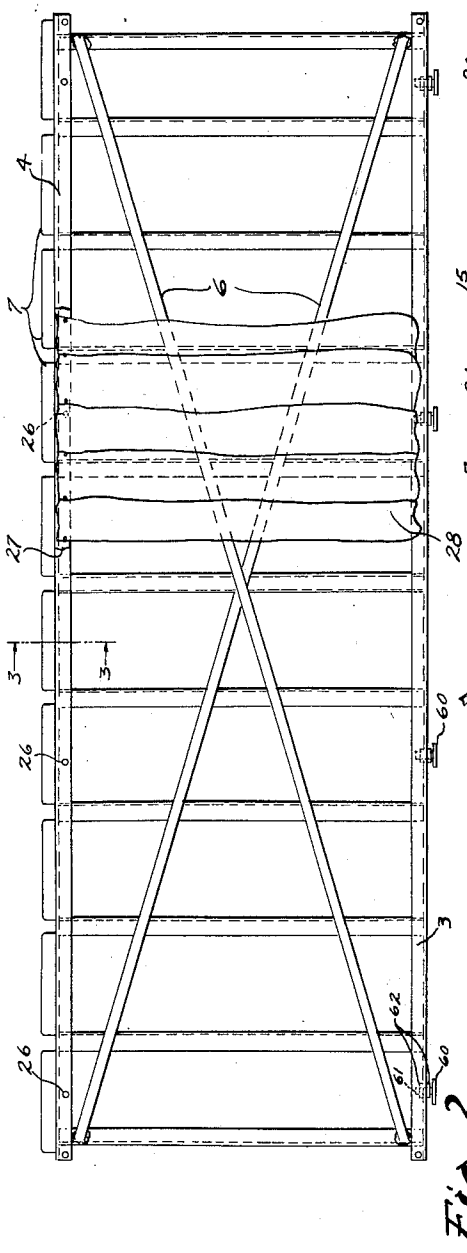

Fig. 2

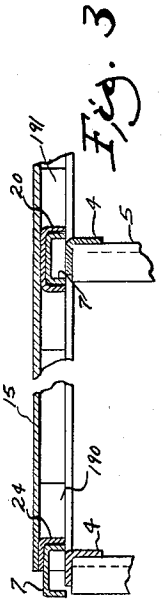

Fig. 3

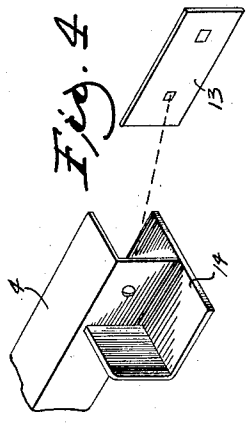

Fig. 4

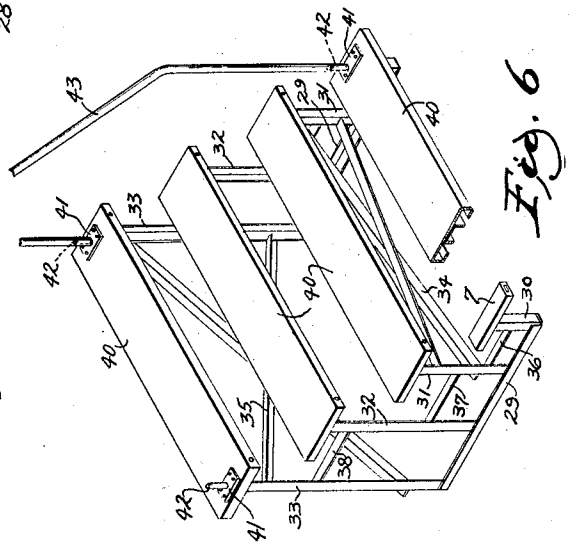

Fig. 6

INVENTOR.
JOHN E. BURKE
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

United States Patent Office 2,911,687 Patented Nov. 10, 1959

2,911,687

PRE-FABRICATED METAL STAGE

John E. Burke, Fond du Lac Township, Fond du Lac County, Wis., assignor to The J. E. Burke Company, Fond du Lac, Wis., a corporation of Wisconsin

Application April 26, 1955, Serial No. 503,934

17 Claims. (Cl. 20—1.123)

This invention relates to a pre-fabricated metal stage.

The stage may be made in any multiple of pre-fabricated units, each unit comprising at least three frame sections which are cross-braced in mutually spaced positions and have stringers upon which locating blocks are disposed at suitable intervals to fit into pockets with which the metal planks resting on the stringers are provided. The spacing between the blocks is desirably such as to provide cracks or slots between planks to drain off water and promote ventilation.

The spacing between the terminal frames of the series slightly exceeds the length of the metal planks so that one half of the width of the locating blocks of the terminal stringers is exposed to register with the ends of the planks of an added unit.

A portable flight of steps with detachable rails is also provided, each step comprising a metal plank differing only in length from the planks of the stage, the steps having individual supports at their respective ends terminating in locating blocks comparable to those used on the stringers of the frames comprised in the stage.

In the drawings:

Fig. 1 is a view in perspective of a partially completed stage unit embodying the invention.

Fig. 2 is a view in side elevation of a completed stage unit.

Fig. 3 is a fragmentary detailed view taken on the line 3—3 of Fig. 2.

Fig. 4 is a fragmentary detailed view in perspective showing how an additional frame unit is connected at the front or rear of the stage unit illustrated.

Fig. 5 is a view in bottom perspective of a plank used to construct the floor of the several stage units.

Fig. 6 is a view in perspective of a flight of stairs used to give access to the stage, portions being broken away.

The basic stage unit shown in Fig. 1 comprises a central frame 1 and two terminal frames 2.

The several frames are identical, each comprising an angle iron stringer 3, an angle iron joist 4, upright struts 5, which are likewise angle irons, and diagonal cross braces 6. For levelling purposes each of the frames may conveniently be provided with adjustable feet 60 having bolts 61 passing through the stringer 3 and secured by nuts 62, as best shown in Fig. 2.

Fastened to the top of each of the joist elements 4 is a series of mutually spaced positioning blocks 7. Each of these is like a shallow box downwardly open except as it rests upon the joist, as best shown in Figs. 1 and 3. The blocks 7 serve to position upon the frames 1 and 2 a series of planks 8 which are made of metal and slightly spaced to leave open slots at 9, being maintained in that spacing by the positioning blocks 7.

The several frames 1 and 2 are spaced from each other by cross-bracing 10, 11 and 12 at the front and back and intermediate portions of the frames, as shown in Fig. 1. If additional units are to be added laterally, the additional frames will be connected, as shown in dotted lines, using additional diagonal cross braces 10, 11 and 12 in accordance with the disclosure of Fig. 1. The stage may also be extended forwardly or rearwardly if desired, each of the joists 4 being connected to the corresponding joist of the frames of a successive unit by means of splicing plates 13 as suggested in Fig. 4. The splicing plates and joists and registering bolt holes and the joists may conveniently be provided with supporting elements 14 which pocket the ends of the bunting boards that extend across the ends of the frames to receive tacks which support bunting, as hereinafter described.

For the preferred structure of the plank used to form the steel floor of the stage, reference is made to Fig. 5, which shows the plank as it appears when inverted.

The plank comprises a top wall 15, which provides a continuous flat surface from end to end. The margins of wall 15 are turned down to form the side edge surfaces 16 of the plank and have inwardly turned flanges at 17 which are cut away at the several pockets hereinafter to be described. Between the pockets, the flat wall 15 is reinforced by channels 18 which are welded in place and which have laterally spaced downwardly depending flanges 19. Adjacent the several pockets hereinafter to be described, the side marginal portions 16 of the plank are reinforced by bars 190 and 191, as best shown in Figs. 3 and 5.

At an intermediate point in each plank, the channels 18 are spaced longitudinally to receive a pocket-forming channel 20 welded to the face 15 and which includes transverse flanges 21 and 22. The resulting pocket is of a length, width and depth to fit any one of the positioning blocks 7 carried by the intermediate frame 1 of the stage. (Figs. 3 and 5.)

The positioning blocks of the two end frames of the stage are received to the extent of half their width into terminal pockets 23 formed by angles 24 which are welded in place and extend transversely of the plank across the outer ends of the flanges 19 of channels 18 at a distance from the end of the plank which is just sufficient to accommodate half the width of a positioning block 7. (Fig. 3.)

While dimensions are not important to the invention, it may be noted that in practice the planks used are one hundred twenty inches in length and eleven and five-eighths inches in width. The stage unit made therefrom is ten feet wide and ten feet from front to back and forty-two inches high. The aggregate width of the ten planks is one hundred sixteen and one-fourth inches and the difference between one hundred sixteen and one-fourth inches and the overall width of the completed stage represents the nine inter-plank slots, which are three-eighths inch wide, to drain off water and permit free air circulation.

The full pocket 20 at the center of each plank is three inches wide and the notch or half pocket 23 at each end is one and one-half inches in width. The positioning block is two and three-quarters inches wide and one and five-eighths inches deep. The positioning blocks are welded to the top angle or joist member at a spacing of one and one-eighth inches between them and nine-sixteenth of an inch from the ends of the frames. The height of the several flanges which form the pockets is one and one-half inches so that the planks actually rest upon the blocks rather than the joists.

As clearly appears from Fig. 1, the spacing between the several frames 1 and 2, as determined by the cross-bracing at 10, 11 and 12, is such that the outside frames 2 have a spacing between their longitudinal center lines which is equal to the total length of the plank, thus leaving the outer half of each positioning block exposed to receive connection with the blank of an adjoining unit.

It being desirable to enclose the structural framework beneath such a stage, the joists 4 of the outer frames are

desirably provided with bolt holes **26** at suitable intervals. By means of bolts in these holes, a board **27** is secured to the stage and bunting **28** is tacked to this board to conceal the frames, as indicated fragmentarily in Fig. 2.

A set of portable steps is provided for access to the stage, the construction being indicated in Fig. 6. Stringers **29** of angle iron rest on the ground and carry uprights **30, 31, 32,** and **33** at progressively increasing height. The uprights **31** and **33** of the opposing stringers are connected by cross-bracing **34, 35,** and successive uprights are connected at successive levels by horizontal ties **36, 37,** and **38.**

To the exposed upper end of each upright is fastened position block **7,** identical with those used in the stage proper, and on these blocks are mounted steps **40** which are identical with the planks of the stage except in length and except for the further fact that each has a terminal pocket which is desirably sufficiently deep to receive the entire block **7.**

The uppermost and lowermost step may desirably be provided with plates **41** welded thereto and having upstanding studs **42** of such dimensions as to be receivable into the end of a three-quarter inch pipe bent to form a railing **43.** Fig. 6 shows one of the railings in place.

Both the flight of steps and the stage itself are readily demountable when not needed and can be erected speedily, the several frames preferably being handled as individual units requiring only cross connection by the braces **10, 11** and **12** to complete the stage framework upon which the planks can be laid in positions determined by the blocks **7** which are integrally welded to the joist portions of the several frames. Similarly, the two end frames of the flight of steps are handled unitarily and require only connection by the cross braces **34** and **35** to be in readiness to receive the step planks **40** and the railings **43.** The bunting boards **27** may be left permanently attached to the outer frame units. It requires but a few minutes to take fresh bunting to them as needed.

Socket clamps **44** are attachable to the stage units at the corners or elsewhere and are provided with studs like those shown at **42** in Fig. 6 to receive and support the posts **45** about which a chain or the like at **46** may be trained to provide a rail or enclosure for the staging unit. The fact that the post supports constitute clamps detachably applicable to the staging unit makes the arrangement as flexible as the stage itself. Regardless of the number of units used to make up the stage, the flexible chain or cable **46** can be extended around the whole, or such part as may be desired.

I claim:

1. A stage comprising a plurality of frames having detachable cross connection and providing joists, floor positioning blocks spaced at corresponding intervals along the respective joists and floor elements comprising flanged plates provided with pockets in registry with the respective blocks and engaged thereon.

2. The device of claim 1, in which each floor element comprises a floor plate having welded to its lower surface a pair of longitudinally extending channels, longitudinally spaced to form a central pocket and terminating short of the end of the plate to form terminal pockets.

3. The device of claim 2 in which the pockets are further delineated by flanges extending transversely of the plate and in welded connection with the plate and said channels at the sides of the respective pockets.

4. The device of claim 2 in which the terminal pockets are of materially less width than the intermediate pocket of each floor element, there being three frames having cross-bracing of such dimensions that the terminal frames are spaced with their center lines approximately coinciding with the ends of the respective floor elements, whereby portions of the positioning blocks of the terminal frames are exposed to receive and position floor elements of an adjacent unit.

5. The device of claim 2 in which each floor element is further provided with marginal flange means closing the ends of the respective pockets and engaged with the ends of respective positioning blocks.

6. The device of claim 5 in which the positioning blocks have a spacing longitudinally of their respective frames in excess of the thickness of the marginal flanges aforesaid, whereby the several floor elements are laterally spaced from each other.

7. The device of claim 2 in which the stage is provided with at least two bunting strip means of nail-receiving material, one such means being fixed to a terminal frame element of the stage, the several frame elements being provided with strip-receiving pockets in which the other bunting strip means is disposed.

8. A portable knock-down stair for a stage or the like, said stair comprising end frames each having a stringer and a set of uprights of successively increasing height cross-bracing detachably connecting certain of said uprights to maintain desired spacing between said frames, each upright being terminally provided with a positioning block, and a set of step elements having terminal pockets into which the respective blocks are telescopically nested.

9. The device of claim 8 in which spaced steps are provided with upstanding studs upon which the ends of a pipe railing are telescopically engaged.

10. A stage unit adapted to be extended and comprising a set of plank elements provided with pockets at intermediate points and partial pockets at their ends, staging frames providing joists and having positioning blocks connected with their respective joists and receivable into the pockets and partial pockets, and cross bracing for connecting said staging frames in spaced relation, the plank elements lying transversely of the staging frames and having their central pockets engaged with the blocks of an intermediate frame and having their terminal partial pockets partially lapping blocks of terminal frames, said latter blocks being partially exposed to receive terminal partial pockets of the plank elements of a stage extension.

11. The device of claim 10 in further combination with additional staging frames and plank elements, the plank elements being aligned with plank elements first mentioned and the additional staging frames underlying the centers and remote ends of the added plank elements, the ends of the added plank elements which are proximate the first mentioned plank elements being engaged with positioning blocks of one of the staging frames first mentioned.

12. The device of claim 10 in further combination with additional staging frames substantially aligned with the staging frames first mentioned and connected therewith in end to end relation, together with an additional set of plank elements parallel to the plank elements first mentioned and cooperative therewith to provide a stage platform extended across both sets of staging frames.

13. A stage comprising a substantially rectangular platform including laterally spaced staging frames and planks supported thereon, the said platform being extensible by the addition of like platforms to any of its four sides and comprising staging frames having joists, positioning blocks carried by the joists, plank elements spanning the joists of the several frames and provided intermediate their ends with pockets engaged with respective positioning blocks and provided at their ends with means forming partial pockets engaged with and partially lapping the positioning blocks of respective terminal frames, leaving portions of the blocks of terminal frames exposed for reception of partial-pocket-forming means at the ends of the planks of an added stage unit, and cross bracing means connecting the several frames aforesaid in a series which includes terminal frames having their respective blocks held by said cross bracing means at a center distance approximately equal to the length of the respective plank elements.

14. The device of claim 13 in further combination with

means connected with the ends of respective staging frames for connection thereto of aligned staging frames of another staging unit.

15. In a combination of the character described, the combination with a metal plank member provided on its under surface with flanges angularly related to define pockets, of laterally spaced supports provided with cross bracing and each having a positioning block fitting a respective pocket, to said plank being carried on said supports and positioned by said blocks and disengageable therefrom by relative upward movement.

16. The device of claim 15 in which the supports comprise staging members provided with a plurality of like blocks and in combination with a plurality of like planks.

17. The device of claim 15 in which the supports are

connected with other supports having like blocks at differing levels and upon which like planks rest at such levels to provide stairs.

References Cited in the file of this patent

UNITED STATES PATENTS

367,296	Heidland	July 26, 1887
688,993	Weber	May 13, 1902
1,495,189	Mack	May 27, 1924
2,345,706	Kurnit	Apr. 4, 1944
2,668,331	Horn	Feb. 9, 1954
2,726,866	Nally	Dec. 13, 1955

FOREIGN PATENTS

6,554	Great Britain	Apr. 2, 1894