Feb. 25, 1930. A. L. LEWIS ET AL 1,748,779

INDUSTRIAL INTEGRAL FRAME PLATFORM

Filed Jan. 21, 1928 2 Sheets-Sheet 1

Fig. 1.

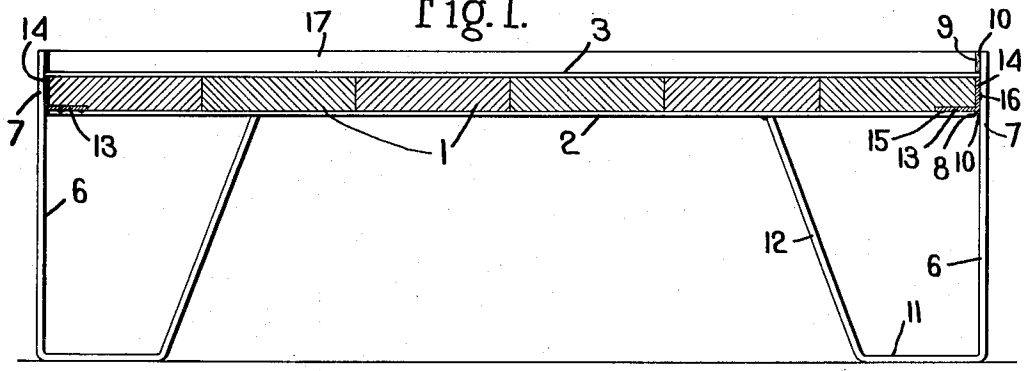


Fig. 2.

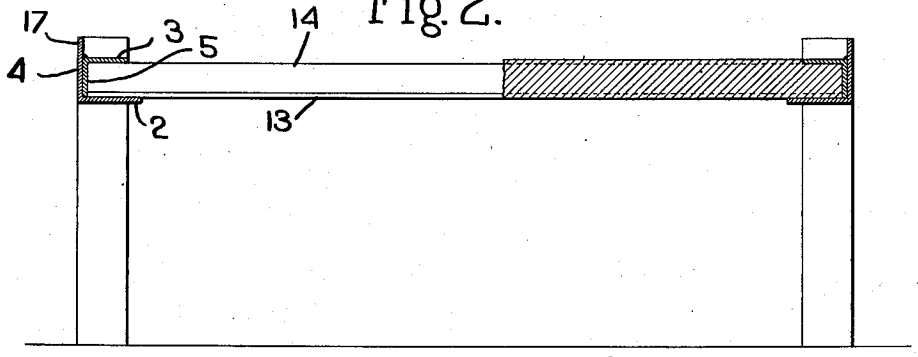


Fig. 3.

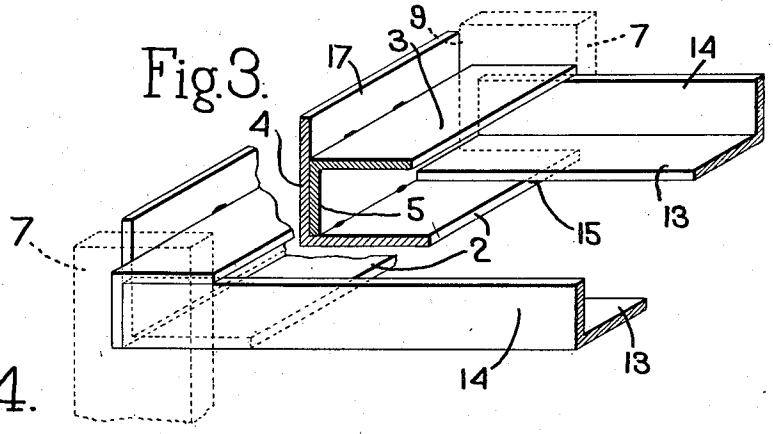
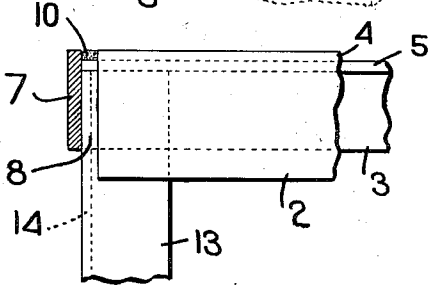


Fig. 4.



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Fig.5.

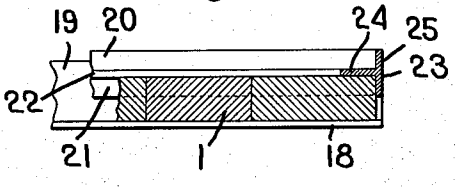


Fig.6.

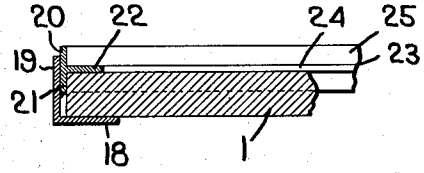


Fig.7.

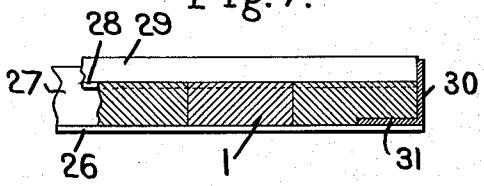


Fig.8.

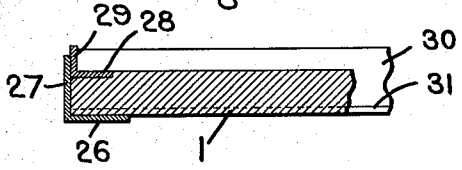


Fig.9.

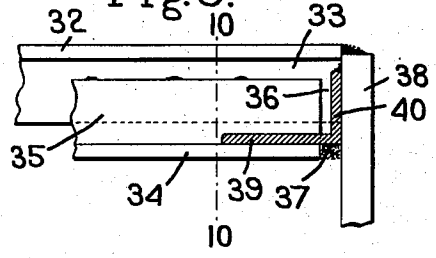


Fig.10.

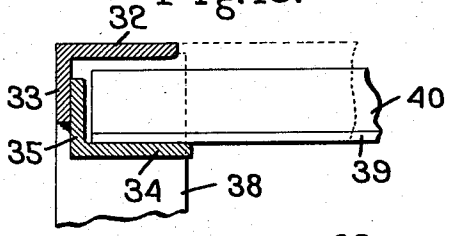
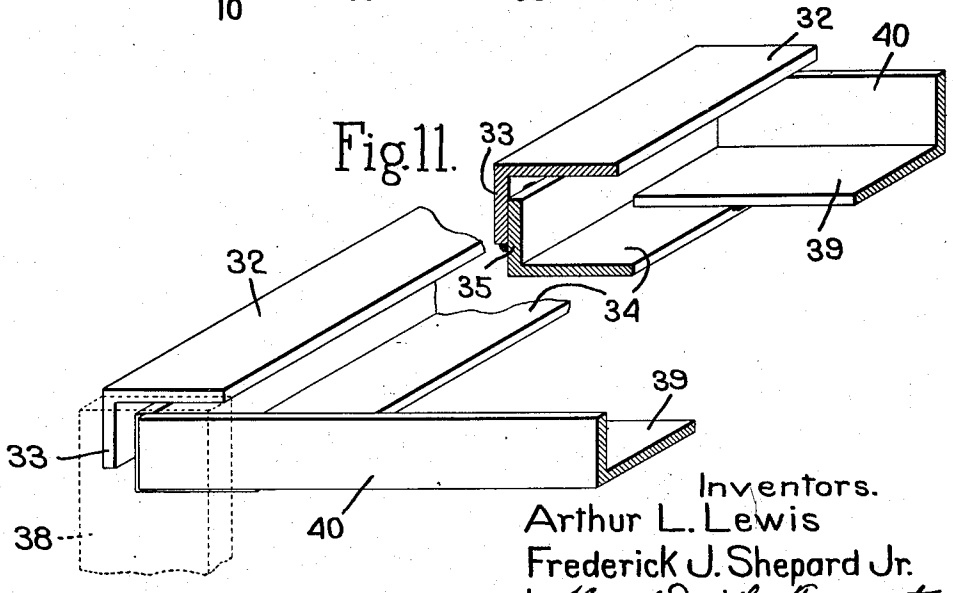


Fig.11.



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Patented Feb. 25, 1930 1,748,779

UNITED STATES PATENT OFFICE

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INDUSTRIAL INTEGRAL-FRAME PLATFORM

Application filed January 21, 1928. Serial No. 248,438.

This invention relates to improvements in portable industrial platforms of the type which are transported from place to place by elevating trucks and the object thereof is to provide a platform of great rigidity of construction which can be economically manufactured.

More particularly the invention relates to improvements upon the type of platform disclosed in the prior application for patent of Arthur L. Lewis, Serial Number 148,913 filed November 17, 1926 for improvements in portable platforms, and the object thereof is to provide a platform having a more rigid frame construction than that disclosed in the aforesaid application and one which will withstand the rough usage to which industrial platforms are subjected.

More specifically the object of the invention is to provide a fabricated platform frame so constructed as to permit the parts thereof to be more securely welded together than has hitherto been accomplished.

A further object of the invention is to provide a platform of the type above described having side frames formed of associated structural metal bars, with the vertical flanges of said bars extending above the plane of the upper face of the platform to provide retaining walls for holding the articles upon the platform.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawings and will be particularly pointed out in the claims.

Preferred embodiments of the invention are illustrated in the drawings, in which,

Fig. 1 is a longitudinal sectional view of a platform embodying the invention;

Fig. 2 is a transverse sectional view of the same;

Fig. 3 is a perspective view, partially broken away, of a portion of the platform frame illustrated in Figs. 1 and 2;

Fig. 4 is a detail bottom plan view of the construction illustrated in Figs. 1, 2 and 3, showing the vertical member of the leg in section;

Fig. 5 is a detail longitudinal sectional view of a corner portion of a modified construction embodying the invention showing structural T bars associated with angle bars;

Fig. 6 is a detail transverse sectional view of the construction illustrated in Fig. 5;

Fig. 7 is a detail longitudinal sectional view of a corner portion of another embodiment of the invention in which the associated structural bars of the side frame comprise large and relatively small associated angle bars;

Fig. 8 is a transverse sectional view of the corner portion of the construction illustrated in Fig. 7;

Fig. 9 is a detail view of a corner portion of a modified side frame construction;

Fig. 10 is a detail view of the construction illustrated in Fig. 9 on line 10—10 Fig. 9; and,

Fig. 11 is a perspective view, partially broken away, of the frame construction illustrated in Figs. 9 and 10.

The particular embodiments of the invention disclosed herein comprise a portable platform having floor members and side frame members each comprising a channel embracing the ends of the floor members fabricated from associated metallic structural bars having horizontal flanges engaging respectively the upper and lower faces of the end portions of the floor members with their overlapped vertical flanges welded together, with legs of substantially U-shape, each having a vertical leg member overlapping and abutting against the end of the side member and welded thereto and the other end of the leg member welded to the side member.

One of the objects of the present invention is to provide a construction in which the vertical leg member may be securely welded to the channel-shaped side frame members during the construction of the side frame, and another object of the invention is to provide means for securely welding the horizontal flanges of the side frame firmly both to the vertical leg members and to the horizontal girders which connect the side frames and protect the ends of the floor members.

By the present invention such a rigid welded connection between the vertical leg mem-

bers and the ends of the side frame members is provided by causing the vertical flanges of one of the associated side frame members to terminate short of the end of the other, thereby providing a recess to receive welding material which will homogeneously unite the shorter structural bar, the longer structural bar, and the leg member firmly together during the construction of the side frame. The rigid connection between the side frame and its leg and the transverse girder is provided by terminating a horizontal flange of one of the structural bars of the side frame short of the end of the other structural bar to provide a horizontal recess which is overlapped by the end of the cross girder and which is accessible after the assemblage of the platform and the horizontal girders at the ends thereof within the side frame to permit the introduction of welding material to unite the ends of the shorter horizontal flange, the portion of the transverse girder which overlies the recess and the vertical leg member homogeneously together with welding material introduced into the recess.

Both of these objects are accomplished in the preferred embodiments of the invention illustrated herein by causing one of the associated structural bars to terminate at its ends short of the other, thereby providing both the vertical and horizontal recesses between the ends of the shorter bar and the vertical leg members.

It will be obvious that similar recesses may be provided between the ends of a rolled channel bar and vertical leg members by making the vertical web member, or a horizontal flange member, or both, shorter than the full length of the side member, so that when such recesses are filled with welding material a rigid, homogeneous integral construction will be produced. Preferably sufficient welding material is introduced to fill the recesses between the shorter flanges of the side members and the legs which abut against the ends of the side members.

In the present construction both side frames desirably are of identical construction, but reversely arranged to enable the channels thereof to receive the ends of floor members, such as wooden planks. The transverse end girders, which desirably are in the form of angle bars, embrace the lower sides and ends of the floor members and serve to protect the lower ends of the floor members and also to connect the end frames together. These horizontal girders are equal in length to the floor members and the ends of the girders are introduced into the channels of the fabricated side frames with the vertical flanges of the side girders engaging the inner faces of the leg members. If the horizontal flanges of the side members abut against the vertical leg members the transverse girders may be welded to the lower flanges of the side frame only along the portions of the edge of the lower flanges of the side frames which are overlapped by the transverse girder. This is only the width of the girder and such a construction has been found to be insufficient to withstand the racking to which such platforms are frequently subjected.

As above stated, one of the most important objects of the present invention is to overcome this weakness of construction. This is accomplished by making the lower flanges of the channel-shaped side members shorter than the total length thereof, thereby providing recesses between the ends of the lower flanges of the side members and the portions of the legs which abut against and are welded to the ends of the side members. Such recesses underlie the horizontal flanges of the end portions of the girders which extend into the channels of the side frame and are accessible after the floor members and girders, which embrace the outer edges of the assembled floor members, are assembled in place in the side frames. The ends of the longer horizontal flanges of the side frame members, the ends of the girders, and the legs are then welded together by a three-way weld produced by electrical or autogenous deposition of welding material into the recess between the ends of the horizontal flanges of the side members and the leg members. The welded joint thus made extends the full width of the overlapping portions of these members, thereby providing a homogeneous connection between the side members, the girders and the legs.

Further re-enforcement may be made by welding the edge of the horizontal flange of the side frame to the face of the girders as in the weaker construction heretofore described and which it is the object of the present invention to improve.

The preferred embodiment of the invention illustrated in Figs. 1, 2, 3, and 4, comprises a platform having a series of juxtaposed floor members 1, such as wooden planks, the ends of which are supported in the channels of a metallic frame fabricated from associated metallic structural bars, such as angle irons, having respectively horizontal flanges 2 and 3 engaging lower and upper surfaces of the floor members 1, and vertical flanges 4 and 5 overlapped and welded together. In this construction the flanges 2 and 4 of the outer angle bar terminate short of the ends of the flanges 3 and 5 of the inner angle bar. Supporting legs 6 having vertical members 7 abut against the ends of the flanges 3 and 5 of the inner channel bar and are welded thereto within the recesses 8 and 9 between the vertical leg member 7 and the ends of the horizontal and vertical flanges 2 and 4 of the outer angle bar. The metal 10, which is deposited by welding, desirably fills these re-

cesses and forms a homogeneous three-way union between the vertical portion 7 of the legs, the vertical flange of the outer angle bar and the end of the inner angle bar.

The legs comprise the vertical member 7, a horizontal foot member 11 which rests upon the floor, and an upwardly inclined brace member 12, the upper end of which abuts against and is welded to the under face of the horizontal flange 2 of the inner angle bar The side frame thus constructed is in effect an integral unit and can be manufactured of any desired length. The vertical flanges of the angle bars may, during assemblage, be overlapped any desired distance to form a channel between the horizontal flanges of the associated angle bars which will fit the ends of planks or other floor members of any desired thickness. The floor members may be assembled upon said end frame units by merely inserting the ends of the floor members in the channels in the side frames. Horizontal transverse girders connect the side frames at their ends and are welded thereto as above described to form a rigid integral frame construction. These horizontal girders desirably are in the form of angle bars, the horizontal flanges of which underlie, or preferably are rabbeted into the lower face of the end floor members, while the vertical flanges of the horizontal girders engage and protect the edges of the end floor members.

In the constructions illustrated the horizontal flanges 13 of the transverse girders rest upon the horizontal flanges 2 of the outer side frame member and the vertical flanges 14 of the horizontal girders engage the inner faces of the vertical leg members 7 and are welded thereto. Inasmuch as the outer angle bar of the side frame terminates short of the ends of the inner angle bar of the side frame, the under face of the transverse girder overlies the recess 8 between the inner face of the vertical leg member 7 and the adjacent end of the flange 2 of the side member. By reason of this construction the horizontal girder can be welded within this recess both to the vertical leg member and to the end of the horizontal flange 2 of the side frame. The inner edge of the horizontal flange 13 of the transverse girder may also be connected to the flange 2 by welding 15. The vertical flange 14 may also be secured by welding 16 to the edge of the vertical leg member 7.

It is, of course, obvious that both ends of each transverse girder may be similarly secured to the side frames, thereby providing a practically integral platform frame of exceedingly rigid construction.

In the particular construction illustrated in Figs. 1 to 4 the flanges of the outer side frame angle bar are of much greater width than the flanges of the inner angle bar, and these angle bars are assembled in such a manner that the vertical flanges extend in opposite directions from the respective horizontal flanges, so that the vertical flanges 4 of the outer angle bar extend above the plane of the top of the floor members and provide a wall 17 which will prevent articles carried by the platform from slipping over the sides thereof.

The filling of welding material into the recess between the abutting face of the vertical leg member and the vertical flange 17 desirably is extended upwardly flush with the upper edge of the vertical flange 17 and with the top of the post, thereby providing a completed corner.

A modified construction is illustrated in Figs. 5 and 6 in which the associated structural bars comprise an angle bar having a horizontal flange 18 and a vertical flange 19 and a T-shaped bar having vertical flanges 20 and 21 extending upwardly and downwardly from a central, laterally extending, flange 22, the downwardly extending flange 21 being welded at spaced intervals, or throughout its length, to the vertical flange 19 of the associated angle bar. In this construction the horizontal flange 22 of the T-shaped bar is spaced apart from the horizontal flange 18 of the angle bar a distance equal to the thickness of the floor members 1 to provide a channel to receive the ends thereof. The flange 20 of the T-shaped member projects above the upper face of the floor members and provides a retaining wall of the character heretofore described. The transverse girder 23 is also T-shaped in cross section and its ends are welded to the structural side frame in the manner above described.

The horizontal flange 24 of this T-shaped girder desirably rests upon the upper face of the sides of the outer floor members 1 so that the upwardly extending flange 25 thereof forms a retaining wall. In order to assemble such T-shaped girders with the horizontal flange 24 in the same plane as the flange 22, the ends of the flange 24 may be recessed, or the flanges 22 and 24 mitred, or the flange 24 overlapped upon or beneath the flange 22 as will be obvious.

In Figs. 7 and 8 a modified construction is shown in which the side frames comprise associated outer and inner angle bars of different lengths. The outer angle bar comprises a horizontal flange 26 underlying the ends of the floor members 1 and a vertical flange 27 abutting the ends of the floor members and extending above the same. The associated inner angle bar is longer than the outer angle bar and comprises horizontal and vertical flanges which extend in the same direction as the respective horizontal and vertical flanges of the outer angle bar. The horizontal flange 28 rests upon or is rabbeted into the upper face of the platform members 1 and the vertical flange 29 engages and is welded to the vertical flange 27 of the outer member and

to the vertical leg member (not shown), in the manner heretofore described. The vertical flange 29, which projects above the surface of the floor members, forms a retaining wall of the character heretofore described.

In this construction the outer angle bar terminates short of the ends of the inner angle bar and a transverse girder is provided to connect the end frames with its horizontal flange 30 extending over the recess between the end of the inner angle bar and the end of the shorter outer angle bar with its horizontal flange 31 resting upon the horizontal flange 26 of the outer angle bar. The horizontal girder is welded to both of the angle bars forming the side girder and to the vertical member of the leg (not shown) which abuts the end of the inner angle bar 27 in the manner heretofore described.

In the construction illustrated in Figs. 9, 10, and 11, the side frames are fabricated from associated outer and inner angle bars, the outer angle bar having a horizontal flange 32 engaging the upper face of the floor members and a downwardly extending vertical flange 33, while the inner angle bar comprises a horizontal flange 34 engaging the under face of the floor members and a vertical flange 35 overlapping the inner face of the vertical flange 33 of the upper member and welded thereto preferably at intervals or throughout its length.

In this construction the inner angle bar terminates short of the end of the outer angle bar providing vertical and horizontal recesses 36 and 37 between the ends of the shorter inner angle bar and the vertical members 38 of the legs which abut against the outer longer angle bar in the manner aforesaid. These recesses permit the abutting face of the vertical leg member to be welded to the vertical flange 33 of the outer angle bar and also permit the horizontal flange 34 of the inner angle bar to be welded to the vertical leg member 38. In this construction the transverse girder is in the form of an angle bar having a horizontal flange 39 which rests upon the horizontal flange 34 of the inner angle bar of the side frame, and a vertical flange 40 which engages the inner face of the vertical leg member 38. The recess 37 between the horizontal flange 34 and the inner face of the post underlies the horizontal flange 39 of the transverse girder so that welding may be built up within these recesses which will homogeneously unite the vertical leg member, the horizontal flange of the transverse girder, and the end of the shorter side member. When both ends of the side members are thus connected by transverse girders welded thereto at each end as aforesaid, a substantially homogeneous integral frame of great rigidity is provided.

It will be noted from the above description that in fabricating the side frames either the outer or inner structural bar may be made to terminate short of the end of the other to provide vertical and horizontal recesses between the ends of the flanges of the shorter structural member and the inner face of the vertical member of the leg which abuts against the end of the longer structural member. Such recesses are accessible either from the outer or inner side of the end frame as the structure may permit to enable sufficient metal to be deposited by electric welding to produce a practically unbreakable union between the vertical leg member and the side members. The recesses thus provided are sufficiently narrow to permit them to be completely filled with the material deposited during the welding operation so that the ends of the shorter structural bar are homogeneously united to the projecting ends of the longer structural bar and to the vertical leg members, thereby providing a union of maximum possible strength.

By virtue of this construction the angle bars and legs of each side frame may be assembled and welded together to produce an integral structure. One of the ends of the floor may then be inserted in the channel of one side frame with the transverse girders embracing the outer edges of the outside floor members so that the ends of the transverse girder also enter the channel of the side frame. The other side frame may then be forced upon the opposite end of the floor and its girders so that the floor and associated girders will enter its channel. The recess 37 may then be filled with welding material so as homogeneously to unite the lower flanges 34 of the inner angle bar, the horizontal flanges 40 of the transverse girder and the vertical leg members 38 together, thereby producing an integral rigid frame construction. The horizontal girder may also be welded to the edge of the lower horizontal flange of the side frame, thus further reenforcing the joint.

It will be obvious from the above description that the side frames can be readily constructed of suitable angle bars or structural bars to provide channels of any desired width; that the ends of the floor members can readily be introduced into the channels of the side frames and that transverse girders embracing the longitudinal edges of the outer floor member and a face of the floor member can also be introduced readily into the channels and rigidly secured to the side frames by welding to form an integral frame structure. In each case the recess provided between the shorter of the associated side members and the leg which abuts against the end of the longer side member provides a space which enables either the vertical or the horizontal flange, or both flanges, of the transverse girder, to be welded to the vertical leg member and also to flanges of the side member.

It will be understood that the embodiments of the invention particularly described herein are of an illustrative character and that the invention may be embodied in other constructions, and that various changes in form, construction and arrangement of parts may be made within the spirit and scope of the following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A portable platform having floor members and side frames of channel bar form embracing opposite ends of the floor members, a horizontal flange of each of said side members terminating short of the ends of the channel bar, legs having vertical members abutting the ends of the channel bars and welded thereto, transverse metal end girders extending into the channels of the side frames and welded to the short horizontal flanges of the side frames and to the legs within the recesses between the respective legs and the ends of the horizontal flanges.

2. A portable platform having floor members and side frames of channel bar form embracing opposite ends of the floor members, a lower horizontal flange of each of said side members terminating short of the ends of the channel bar, legs having vertical members abutting the ends of the channel bars and welded thereto, transverse metallic end girders extending into the channels of the side frames, resting upon said lower horizontal flanges, and overlying the recesses between the ends of said lower horizontal flange and the vertical leg members and welded within said recesses to the ends of the shorter horizontal flanges and to the legs.

3. A portable platform having floor members and side frames each comprising a channel bar embracing the ends of said floor members with the horizontal flanges thereof engaging respectively the upper and lower faces of the floor, certain of the members of said channel bar terminating short of the ends of the channel bar, and legs having vertical members abutting the ends of the channel bar welded thereto within the recesses between the vertical leg members and the ends of the shorter member or members of the channel bar and horizontal end girders connecting said side frame welded to said channel bars and legs.

4. A portable platform having floor members and side frames each comprising a channel embracing the ends of said floor members and fabricated from associated metallic structural bars having horizontal flanges engaging respectively upper and lower faces of said floor members and overlapped vertical flanges welded together, one of said associated structural bars terminating short of and in proximity to the ends of the other, and legs having vertical members abutting the edges of the longer structural bar with metal welded to the abutting face of said leg and to said structural bars within the recesses between the ends of the shorter bar and said leg member.

5. A portable platform having floor members and side frames each comprising a channel embracing the ends of said floor members and fabricated from associated metallic structural bars having horizontal flanges engaging respectively upper and lower faces of said floor members and overlapped vertical flanges welded together, one of said associated structural bars terminating short of the ends of the other, legs having vertical members abutting the ends of the longer structural bar welded thereto within the recess between said vertical leg member and the end of the shorter structural bar and transverse metallic end girders welded to the vertical members of said legs and to the horizontal flanges of one of said associated structural bars within the recesses between said horizontal flange and the adjacent legs.

6. A portable platform having floor members and side frames each comprising a channel embracing the ends of said floor members and fabricated from outer and inner metallic structural bars having horizontal flanges engaging respectively upper and lower faces of said floor members and overlapping vertical flanges welded together, the outer structural bar terminating short of the ends of the inner structural bar, legs having vertical members abutting the ends of the inner structural bar and welded thereto within the vertical and horizontal recesses between said vertical leg member and the ends of the outer structural bar, and a metallic cross girder welded to the inner faces of the leg member of the side frames and also to flanges of a structural bar.

7. A portable platform having floor members and side frames each comprising a channel embracing the ends of said floor members and fabricated from outer and inner metallic structural bars having horizontal flanges engaging respectively upper and lower faces of said floor members and overlapping vertical flanges welded together, the outer structural bar terminating short of the ends of the inner structural bar, legs having vertical members abutting the ends of the inner structural bar and welded thereto within the vertical and horizontal recesses between said vertical leg member and the ends of the outer structural bar, and a cross girder comprising a metallic angle bar having its horizontal flange resting upon the horizontal flanges of the outer side bars and welded thereto and to the inner faces of the vertical members of said legs.

8. A portable platform having floor members and side frames each comprising a channel embracing the ends of said floor members and fabricated from an outer angle bar and an inner angle bar having flanges of narrower

width than those of said outer bar with horizontal flanges of said bars engaging respectively the upper and lower faces of said floor members and overlapped vertical flanges welded together, the outer angle bar extending above the plane of the upper face of said floor members and terminating short of the ends of the inner angle bar, and legs having vertical members abutting the ends of the inner angle bar and welded thereto within the vertical recesses between the vertical leg members and the vertical flanges of said outer angle bar, transverse angle bar girders connecting said side frames having their horizontal flanges resting upon the horizontal flanges of the inner angle bar of the side frame and welded to said inner angle bar and to said vertical leg member.

9. A portable platform having floor members and side frames each comprising a channel embracing the ends of said floor members and fabricated from outer and inner associated metallic angle bars having horizontal flanges engaging respectively the upper and lower faces of said floor members and overlapped vertical flanges welded together, the vertical flange of the outer angle bar being of greater width than the thickness of the floor members extending upwardly beyond the face thereof to provide a retaining wall for the articles upon the platform and terminating short of the ends of the inner angle bar, and legs having vertical members abutting the ends of the inner angle bar and welded thereto within the vertical recesses between said leg members and the ends of the inner angle bar, and transverse metallic angle bar girders having their horizontal flanges resting upon and welded to the horizontal flanges of the outer angle bars and to said vertical leg members and their vertical flanges welded to said vertical leg members.

10. A side frame construction for portable platforms comprising a channel embracing the ends of said floor members and fabricated from associated structural bars having horizontal flanges spaced apart to receive the ends of the floor members and overlapped vertical flanges welded together, one of said associated structural bars terminating short of the ends of the other and legs having vertical members abutting the ends of the longer structural bar welded thereto within the vertical recesses between said vertical leg member and the end of the shorter bar.

11. A side frame construction for portable platforms comprising a channel embracing the ends of said floor members and fabricated from associated structural bars having horizontal flanges spaced apart to receive the ends of the floor members and overlapped vertical flanges welded together, one of said associated structural bars terminating short of th ends of the other and legs having vertical members abutting the ends of the longer structural bar with the vertical recesses between the leg members and the adjacent ends of the shorter associated structural bar substantially filled with metal homogeneously welding said leg members to said fabricated associated side bars.

In testimony whereof, we have signed our names to this specification.

ARTHUR L. LEWIS.
FREDERICK J. SHEPARD, JR.