Sept. 23, 1941. E. W. RIEMENSCHNEIDER 2,256,750

REINFORCED SKID PLATFORM

Filed March 21, 1940

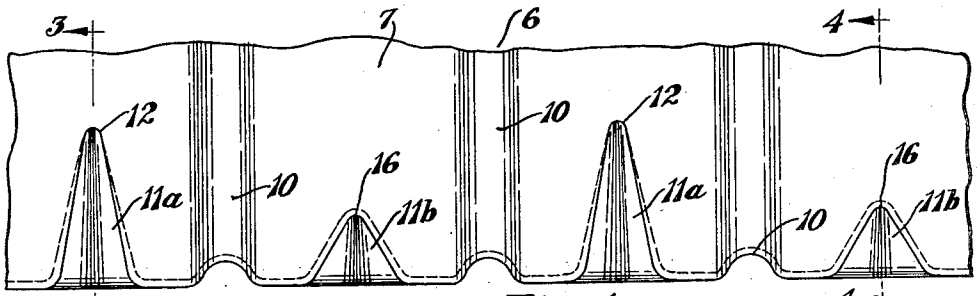


Fig. 1

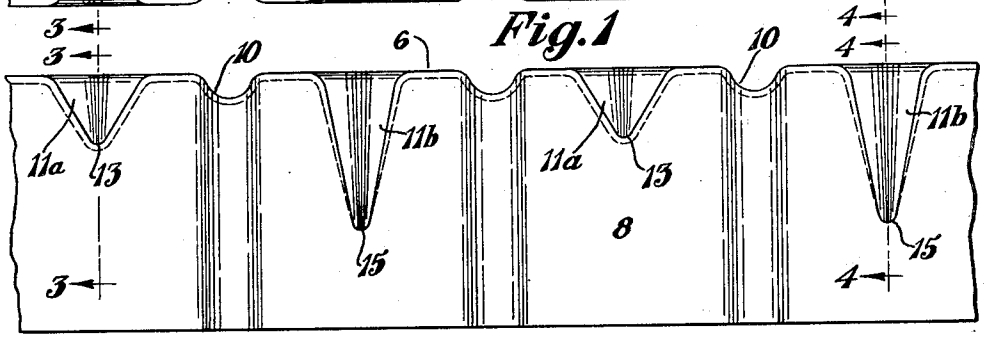


Fig. 2

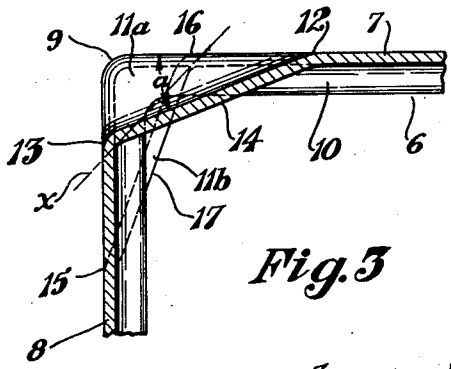


Fig. 3

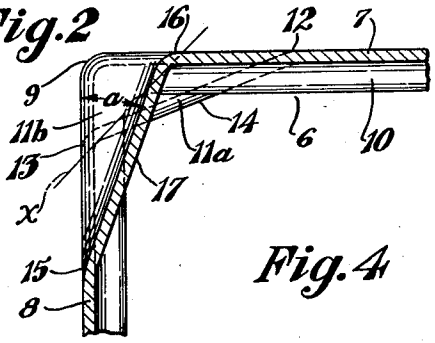


Fig. 4

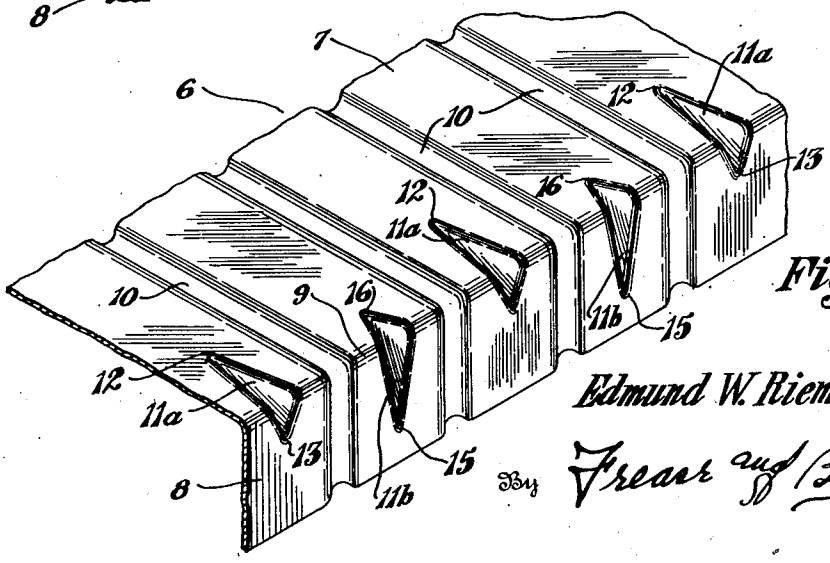


Fig. 5

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REINFORCED SKID PLATFORM

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4 Claims. (Cl. 248—120)

The invention relates generally to skid platforms capable of carrying heavy loads and adapted for use with lift trucks having a projecting lifting member for passing under the skid platform to lift and transport the same.

More particularly, the invention relates to one piece U-shaped sheet metal skid platforms having transverse stiffening corrugations extending continuously around the platform deck and legs and the corners between the same.

Such stiffening corrugations are required to extend continuously around the corners between the deck and legs to strengthen the metal of the platform at the places where failure would otherwise take place, because the metal is weakest at the platform corners.

The formation of the corners between the deck and legs of one piece corrugated skid platforms necessarily causes work hardening in the corner bends of the corrugations to such an extent that brittleness results in the metal at those places. This brittleness greatly reduces the capacity of such platforms when loaded to resist lateral shocks and glancing blows to which the platform is frequently subjected in use, and which consequently cause considerable damage with the result that rupture of the corners and ultimate failure of the platform occurs.

Certain prior skid platform constructions have provided for forming corrugations of special shape or for spreading the corrugations at the corners in attempts to strengthen the corner bends of the corrugations, but these constructions have been difficult to form and have required special forming dies.

Other prior constructions have provided transverse strengthening grooves formed in the corners intermediate the corrugations, said grooves being formed at an angle of 45° to the deck and legs of the platform.

The strength of a sheet metal skid platform to resist collapse or failure of the legs may be increased by bracing across the insides of the corners and the effect of strengthening grooves extending transversely in the corners is that of bracing the corners. Obviously, the farther the grooves extend from the corners into the deck and legs the greater will be the bracing or strengthening effect.

However, where strengthening grooves are formed at 45° to the platform deck and legs in the corners between the corrugations, the distance which such grooves extend into the deck and legs from the corners is limited by the depth to which said grooves can be formed without weakening the metal in the grooves.

In other words, for a certain width groove the depth of the groove cannot be substantially greater than the width without weakening the metal of the groove by distortion or stretching, and the depth of such groove limits the distance it extends into the deck and legs.

For example, if the groove is V-shaped in cross section and one inch deep at the platform corner, measured from the corner perpendicular to the bottom surface of the groove, the distance from the platform corner to the ends of the groove in the deck and legs is substantially 1.41 inches.

Obviously the width of the strengthening grooves at the corners is limited by the relatively close spacing of the corrugations and by the requirement for a maximum amount of deck surface for supporting loads, and moreover the depth of such grooves cannot be increased to any substantial extent without having the under side of the grooves interfere with the lifting member of the lift truck so as to prevent its lifting engagement with the platform deck.

Accordingly, such transverse strengthening grooves disposed at 45° to the deck and legs can only extend a short distance from the corner into the deck and legs, so that they strengthen the corners only to a very slight extent.

It is therefore an object of the present invention to provide an improved corrugated sheet metal skid platform having increased resistance when loaded to lateral shocks and glancing blows.

Another object is to provide a corrugated one piece metal skid platform having novel and improved corner reinforcing means.

A further object is to provide a corrugated one piece sheet metal skid platform having corner reinforcing means which do not interfere with the lifting member of a lift truck when the same engages and lifts the skid platform.

A still further object is to provide reinforcing means between corrugations at the corners of a sheet metal skid platform, said reinforcing means consisting of transverse strengthening grooves extending a substantial distance into the platform deck and legs without weakening the metal in or adjacent to the grooves.

And finally, it is an object of the present invention to provide a strong, lightweight and inexpensive sheet metal skid platform which accomplishes the foregoing objectives and overcomes the disadvantages of prior constructions.

These and ancillary objects are attained by

the improvements, novel features and combinations comprising the present invention, which is hereinafter disclosed and claimed, and which may be set forth generally as including in a corrugated one piece sheet metal skid platform, transverse strengthening grooves in the platform corners between corrugations, said grooves being disposed at such angles to the platform deck and legs as to extend from the corners a relatively great distance into said deck and legs without weakening the metal at the corners.

Referring to the accompanying drawing in which a preferred embodiment of the invention is illustrated by way of example.

Figure 1 is a fragmentary plan view of a reinforced corrugated sheet metal skid platform embodying the present improvements;

Fig. 2 is a side elevation thereof;

Fig. 3 is an enlarged fragmentary sectional view as on line 3—3 of Figs. 1 and 2;

Fig. 4 is an enlarged fragmentary sectional view as on line 4—4, of Figs. 1 and 2; and

Fig. 5 is a fragmentary isometric view of the improved skid platform on a reduced scale.

Similar numerals refer to similar parts throughout the several views of the drawing.

The sheet metal skid platform is fragmentarily indicated generally at 6 in the drawing and is generally conventional in form, having a horizontal rectangular deck 7 spaced from the floor or the like by upright legs 8 at the sides thereof, to form a skid platform of the usual inverted U-shape.

The legs 8 extend substantially vertically downward from and are integral with the deck 7, forming corners 9 between each leg 8 and the deck 7.

A series of stiffening corrugations 10 are formed in the platform 6 and are spaced longitudinally of the platform and extend continuously around the deck 7 and legs 8 and the corners 9, in a transverse or crosswise direction with respect to the platform. The corrugations 10 are shown as being substantially half round in cross section, but it is understood that they may be of different shapes, such as U-shaped or V-shaped, without departing from the scope of the invention.

The corrugations may be formed in the sheet metal blank from which the platform is made, prior to the bending operations which form the legs 8, or they may be formed in the same dies and by the same operations that perform the bending of the legs. In any event, the metal in the corner bends of the corrugations is subjected to excessive work hardening which causes embrittlement of the metal in the corner bends and weakens the capacity of the platform at those points to withstand lateral shock.

The improved strengthening grooves 11*a* and 11*b* are formed in the corners 9 preferably midway between the longitudinally spaced corrugations. The strengthening grooves 11*a* and 11*b* are preferably formed during or after the leg bending operations and, as best shown in Figs. 1 and 2, are preferably substantially V-shaped in cross section, although other cross sectional shapes can be used.

The depth of the grooves measured at the corners 9 in a direction perpendicular to the bottom surface of the groove is in such proportion to the width of the grooves at the corners as to permit the forming of the grooves without weakening the metal thereof by stretching or distortion. As shown, the grooves 11*a* extend from the corners 9 into the deck 7 a much greater distance than from the corners 9 into the legs 8, and the grooves 11*b* extend from the corners 9 into the legs 8 a much greater distance than from the corners 9 into the deck 7.

Preferably, the grooves 11*a* are staggered or alternately arranged with respect to the grooves 11*b*, so that alternate grooves extend respectively a relatively great distance into the deck and a relatively great distance into the legs.

The grooves 11*a* terminate in the deck substantially at points 12, and in the legs substantially at points 13, and the bottom walls 14 of the grooves are at an angle *a* of substantially less than 45° to the horizontal deck wall. Likewise, the grooves 11*b* terminate in the legs substantially at points 15 and in the deck substantially at points 16, and their bottom walls 17 are at an angle *a* of substantially less than 45° to the vertical wall of the legs.

If the same depth groove were formed in the corners 9 at an angle of 45° with the deck and legs, the position of which groove is approximately indicated by the dot dash line *x* in Figs. 3 and 4, and which depth could not be exceeded to any extent for the same width of groove without weakening the walls of the groove, then the 45° grooves would extend into the deck and walls substantially to the points 13 and 16 therein, and consequently the strengthening effect of such grooves would be equivalent to the strengthening effect of braces extending between the points 13 and 16 at inside of the corners.

With the present arrangement of alternate grooves extending relatively great distances into the deck and legs respectively, the strengthening effect on the platform corners as a whole is equivalent to that of braces extending between the points 12 and 15 across and inside of the corners 9; without having the bottom walls of the grooves project inwardly of the corners to an extent which interfere with the operation and use of the lift truck in conjunction with the skid platform, and without any weakening of the metal in the grooves due to stretching or distortion.

If the strengthening grooves were formed in the corners 9 at a 45° angle as indicated by the dot dash line *x*, the distance which the grooves extend from the corner into both the deck and legs is substantially 1.41 times the depth of the grooves at the corner measured perpendicular to the bottom of the groove. The grooves 11*a* and 11*b*, for substantially the same depth at the corners, extend into the deck and legs respectively a distance much greater than 1.41 times the depth at the corner, and it is this greatly increased distance which the groove 11*a* and 11*b* extend into the deck and legs which provides the increased strength at the platform corners.

Accordingly, the one piece sheet metal skid platform 6 having the improved corner grooves 11*a* and 11*b* provides a platform which has increased strength, and especially increased resistance to withstand severe lateral shocks or glancing blows when under heavy loads.

The improved strengthening grooves 11*a* and 11*b* are easily and inexpensively formed without weakening the metal in or adjacent to the grooves and do not decrease to any material extent the deck surface required for supporting loads.

I claim:

1. In a one piece sheet metal skid platform including a deck member and a leg member with a corner therebetween, longitudinally spaced transverse corrugations extending continuously around

the deck and leg members, and transverse strengthening grooves formed in said corner between said corrugations and the bottom walls of said grooves being disposed at angles of less than 45° to one of said members.

2. In a one piece sheet metal skid platform including a deck member and a leg member with a corner therebetween, longitudinally spaced transverse corrugations extending continuously around the deck and leg members, and transverse strengthening grooves formed in said corner between said corrugations and the bottom walls of said grooves extending into one of said members a distance greater than 1.41 times the depth of the grooves at the corner.

3. In a one piece sheet metal skid platform having a deck and legs with corners therebetween, longitudinally spaced transverse corrugations extending continuously around the deck and legs, and transverse grooves formed in said corners between said corrugations, alternate grooves extending respectively into the deck and legs the bottom walls of said grooves being at angles less than 45° to said deck and legs.

4. In a one piece sheet metal skid platform having a deck and legs with corners therebetween, longitudinally spaced transverse corrugations extending continuously around the deck and legs, and transverse grooves formed in said corners between said corrugations, the bottom walls of alternate grooves extending respectively into the deck and legs from the corners a distance greater than 1.41 times the depth of the grooves at the corners.

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