March 14, 1961 M. GOLDSMITH 2,974,994

LIFTING BRIDLE CONSTRUCTION

Filed Jan. 30, 1957

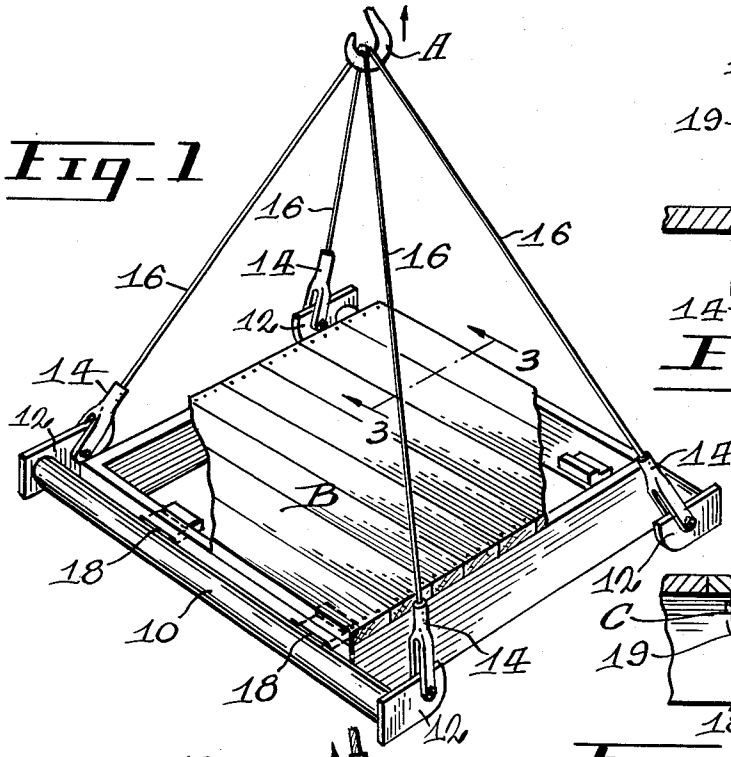


Fig. 1

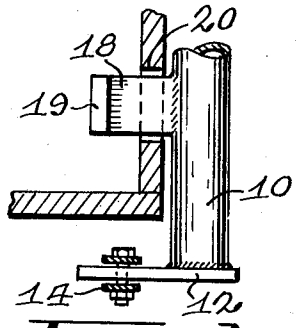


Fig. 2

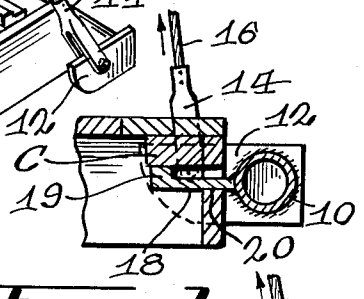


Fig. 3

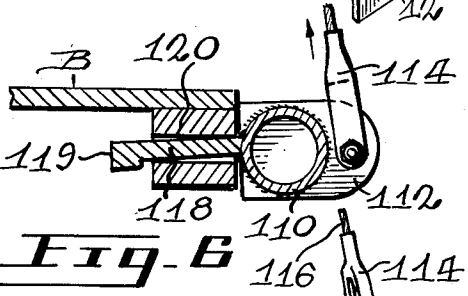


Fig. 6

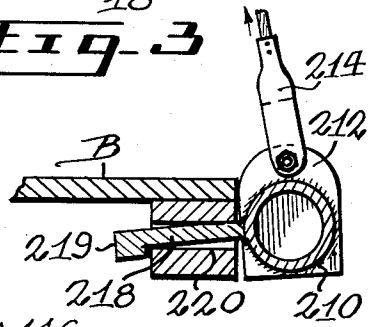


Fig. 5

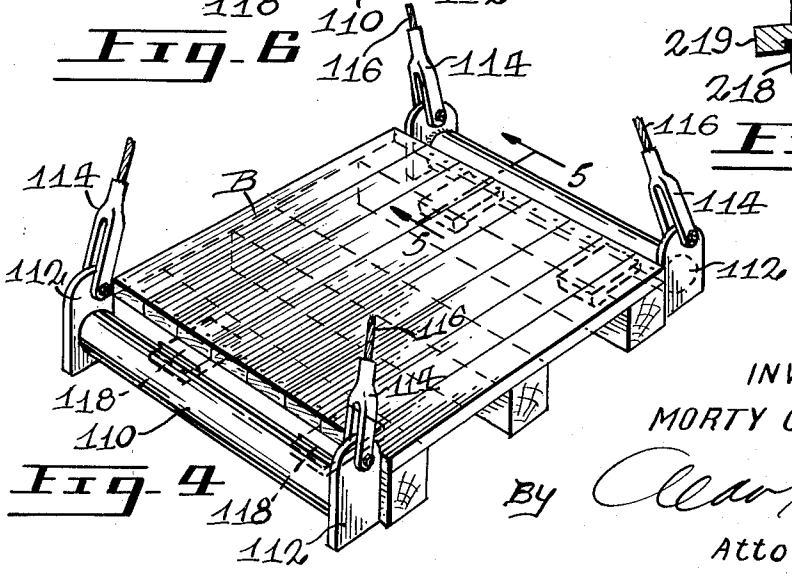


Fig. 4

INVENTOR
MORTY GOLDSMITH
By Alan Swabey
Attorney

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LIFTING BRIDLE CONSTRUCTION

Morty Goldsmith, Montreal, Quebec, Canada, assignor to Metro Engineering Company Ltd., Ville La Salle, Quebec, Canada

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12 Claims. (Cl. 294—74)

The invention relates to cargo-loading bridles or slings and more particularly to an article of this nature particularly suited for the handling of relatively large boxes, crates, or goods secured to the usual load supporting pallets.

Instead of utilizing the usual flexible wire or rope slings which are wrapped around and tend to damage the pallets or boxes on or in which the goods are transported, the present invention provides a bridle construction embodying means for engaging the lower portion of a pallet or box so that it can be easily picked up and transported without damage.

Essentially, a loading bridle constructed in accordance with the invention comprises a pair of elongated spreader members which are provided on each end with plates to which there are pivotally mounted cable attaching members. The cable portion extending between each pair of cable attaching members forms a loop, the loops being adapted to be placed over a crane or hoist hook to complete the lifting bridle.

More specifically, in order that a connection be made with the article to be moved, spaced apart outstanding tongues or bars are provided on each of the spreader members which are adapted to fit especially prepared slots provided in the base of the box or pallet to be moved.

In use, the spreader members are placed one on each side of the pallet or box and the lifting tongues are pushed into position in the slots provided for this purpose. Then the entire load can be picked up and moved to any location desired.

When used with a pallet, the length of the spreaders and the location of the end plates to which the cable attachments are mounted are arranged so that the total width of the combined members does not exceed the width of the pallet so that the open ends of the pallet would be free for engagement by a lift truck. This means that the loads could be deposited on or taken directly off a lift truck.

Having thus generally described the nature of the invention, particular reference will be made to the accompanying drawings, wherein there is shown by way of illustration, preferred embodiments of lifting bridles or slings constructed in accordance with the invention, and wherein:

Figure 1 is a diagrammatic view in perspective elevation of one preferred form of a bridle construction in accordance with the invention shown in operative connection with a platform or box base which has a slotted side to receive the tongues extending from the spreader members.

Figure 2 is an enlarged view partially in section of one corner of a construction shown in Figure 1 to show the engagement of the tongue with the platform side wall.

Figure 3 is a cross-sectional view of the construction shown in Figure 1 along the line 3—3, to illustrate in more detail the relative position of the engaging tongue and the use of a supplementary block to transmit the load.

Figure 4 is a diagrammatic view partially in perspective elevation to illustrate an alternative construction of a bridle in accordance with the present invention wherein the end members have been rotated relative to the pallet engaging tongues so that the cable attachments are made on top rather than at the side.

Figure 5 is a cross-sectional view of the construction shown in Figure 1 to illustrate in more detail the engagement of the alternative form of tongue with a pallet side wall with the spreader member having the cable attachment point directly above the spreader.

Figure 6 is a cross-sectional view corresponding in location to Figure 5 to show a still further variation of the relative position between the spreader end members and the pallet engaging tongues wherein the cable attachment is made at a point diametrically opposite the pallet engaging members.

With particular reference to Figures 1, 2 and 3 of the drawings, a bridle or sling constructed in accordance with the invention comprises essentially two elongated spreader members **10**, preferably tubular, which are provided on each end with plates **12** to which there are pivotally attached cable attaching members **14**. The cable **16** extending from the members **14** is formed as a loop, the paired loops being placed over the hook "A" of the crane or hoist as shown to complete the bridle.

In order that a connection be made with the article to be moved, outstanding tongues **18** are secured in spaced apart relationship on each of the spreaders **10**. Each of the tongues **18** is provided with upstanding terminal end portions **19** which serve to prevent the tongues from slipping outwards once they are fitted or engaged with slots **20** provided in the article to be moved.

In the accompanying drawing, this is shown as the base of a box indicated at "B," for illustrative purposes only. When used with a pallet, similar slots will be provided in the side members, for example as shown in Figure 4 so that the sling will be engaged identically to the manner shown in Figure 1.

Since the end plates **12** are disposed substantially parallel with the outstanding tongues **18** and the connection between the cable attaching members **14** is made at the outer end of each plate **12**, the pressure, under lifting conditions, is directed through the flanged ends **19** of the tongues **18** towards the bottom of the box or pallet. As is shown in Figure 3, a pillow block "C" may be inserted between the end of the flanges **19** and the bottom of the box or pallet to transmit the load more evenly.

With particular reference to Figure 4, an alternative construction is shown which is particularly suited for use in combination with a pallet. In this construction, the spreader members **110** are relatively shorter than those shown in Figure 1 and the position of the end plates **112** has been rotated relative to the engaging tongues **118** so that the cable attaching members **114** are disposed almost directly above the spreader members **110**. This construction is particularly suited for use with pallets which are loaded or moved by lift trucks and the re-positioning of the end plates **112** and the shorter length of the spreaders **110** make it possible to have the bridle assembly shorter than the length of the pallet leaving the open ends free for engagement by a lift truck. Since the moving of the end plates **112** changes the direction in which the lifting load is transmitted, the tongues **118** are provided with outstanding end flanges **119** which extend in the opposite direction to those shown in the construction of Figure 1. With this arrangement, the load is transmitted downwardly away from the load instead of upwardly as in the construction shown in Figure 1.

In a still further alternative arrangement, shown in Figure 5, the end plates **212** are rotated so that they are diametrically opposite to the outstanding tongues **218** mounted on the spreader member **210**. The cable attachment member **214** is again pivotally connected to the end plates **212** in a position directly opposite to that shown in Figure 1 so that the load is again transmitted downwardly to the side walls of the pallet or box with which the bridle is engaged. Again, the end flanges **219** of the outstanding tongues **218** are directed downwardly so as to prevent accidental withdrawal of the tongues when the bridle is in lifting operation.

As will be appreciated, the tubular members **10**, **110**, **210**, are placed on each side of the pallet or box to be moved and the tongues **18**, **118**, **218**, are pushed into position into the slots provided in the side walls or frame members of a pallet. The dimensions of the slots **20** are such that the end flanges **19**, **119**, **219**, of the tongues **18**, **118**, **218**, will freely slide therethrough, but once in position will not permit excessive up and down movement of the respective tongues when the device is in operation.

Slacking of the crane or hoist hook "A" releases the tension on the cables **16** and allows the members **10**, **110**, **210** to be pushed out releasing the tongues **18**, **118**, **218**, from engagement with the slots **20** of the particular load being transported.

I claim:

1. A lifting bridle adapted for use in combination with a rigid load supporting base having at opposite sides spaced apart bridle engaging recesses, comprising a pair of identical elongated spreader members of tubular formation, a pair of outwardly extending base engaging flat tongues fixedly secured to each of said spreader members and extending in the same direction in spaced apart relationship corresponding to the spacing between said load supporting base recesses, each of said tongues being provided at the free terminal end with outstanding supporting base engaging portions, a pair of connecting plates connected to each of said spreader members, one at each end in offset relationship from said base engaging flat tongues, a sling attaching member pivotally connected to each of said connecting plates, and a flexible sling connected between each pair of sling attaching members.

2. A lifting bridle, as claimed in claim 1, wherein said connecting plates are secured at one end to the terminal ends of each of said spreader members with the other end extending outwardly from said spreader member in substantial parallel alignment with said base engaging tongues and in the same direction, said sling attaching members being connected to the free ends of said connecting plates.

3. A lifting bridle, as claimed in claim 1, wherein said connecting plates are secured at one end to the terminal ends of each of said spreader members with the other end extending outwardly from said spreader member in substantial parallel alignment with said base engaging tongues and in diametrically opposed relationship, said sling attaching members being connected to the free ends of said connecting plates.

4. A lifting bridle, as claimed in claim 1, wherein said connecting plates are secured at one end to the terminal ends of each of said spreader members with the other end extending outwardly from said spreader member at an angle relative to said base engaging tongues, said sling attaching members being connected to the free ends of said connecting plates.

5. A lifting bridle, as claimed in claim 1, wherein the combined overall length of each of said spreader members and connecting plates is greater than the length of the sides of said load supporting base having said bridle engaging recesses.

6. A lifting bridle, as claimed in claim 1, wherein the combined overall length of each of said spreader members and connecting plates is less than the length of the sides of said load supporting base having said bridle engaging recesses.

7. A sling spreading and load engaging member adapted for use in combination with a load lifting sling, comprising, an elongated tubular body, a pair of load engaging flat tongues having a free end portion terminating in an upward flange fixedly secured to and extending diametrically outwards from said tubular body in the same direction and in spaced apart relationship relative to the axis of said body, connecting plates secured to the terminal ends of said tubular body in offset relationship to said load engaging tongues, and sling attachment members pivotally attached to each of said connecting plates.

8. A sling spreading member, as claimed in claim 7, wherein said connecting plates are each connected at one end to said tubular body with the other end extending outwardly therefrom in substantial parallel alignment with said load engaging tongues.

9. A sling spreading member, as claimed in claim 7, wherein said connecting plates are each connected at one end to said tubular body with the outer end extending outwardly therefrom transversely to the plane of said load engaging tongues.

10. A lifting bridle adapted for use in combination with a rigid load supporting base having opposing frame members including spaced apart slots extending therethrough, comprising a pair of identical elongated spreader members of tubular formation, a pair of outwardly extending base engaging flat tongues fixedly secured in axial alignment on each of said spreader members, said tongues each having a free end terminating in an upward flange and being disposed on said spreader members in spaced apart relationship corresponding to the spacing of said recesses in said load supporting base frame members and having dimensions slightly less than the dimensions of said frame members' slots, a pair of connecting plates mounted on each of said spreader members, one at each end in offset relationship with said base engaging tongues, each of said connecting plates having a free end portion extending outwardly from said spreader members, a sling attaching member pivotally mounted to each of said connecting plates and flexible sling means connected between each pair of sling attaching members.

11. A lifting bridle, as claimed in claim 10, wherein said elongated spreader members are each of tubular formation and there are two spaced apart load engaging tongues on each of said members.

12. A lifting bridle, as claimed in claim 10, wherein the combined overall length of each of said spreader members and connecting plates is greater than the length of said supporting base opposed frame members.

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