

July 4, 1950

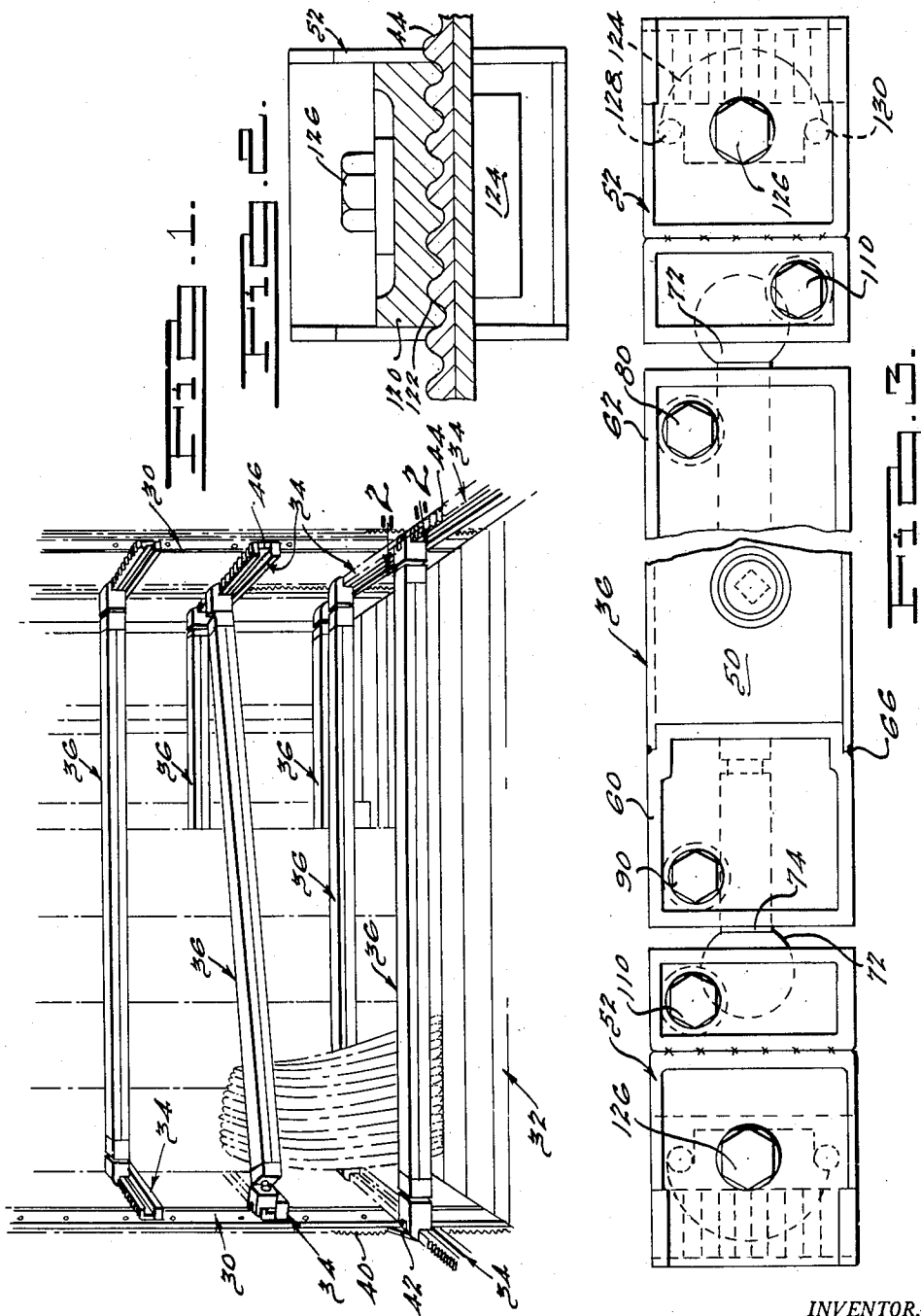
S. M. NAMPA

2,513,348

APPARATUS FOR LOADING FREIGHT OR THE LIKE

Filed Jan. 5, 1944

2 Sheets-Sheet 1



INVENTOR.
Sulo M. Nampa.
BY
Harness, Dickey & Pierce.
ATTORNEYS.

July 4, 1950

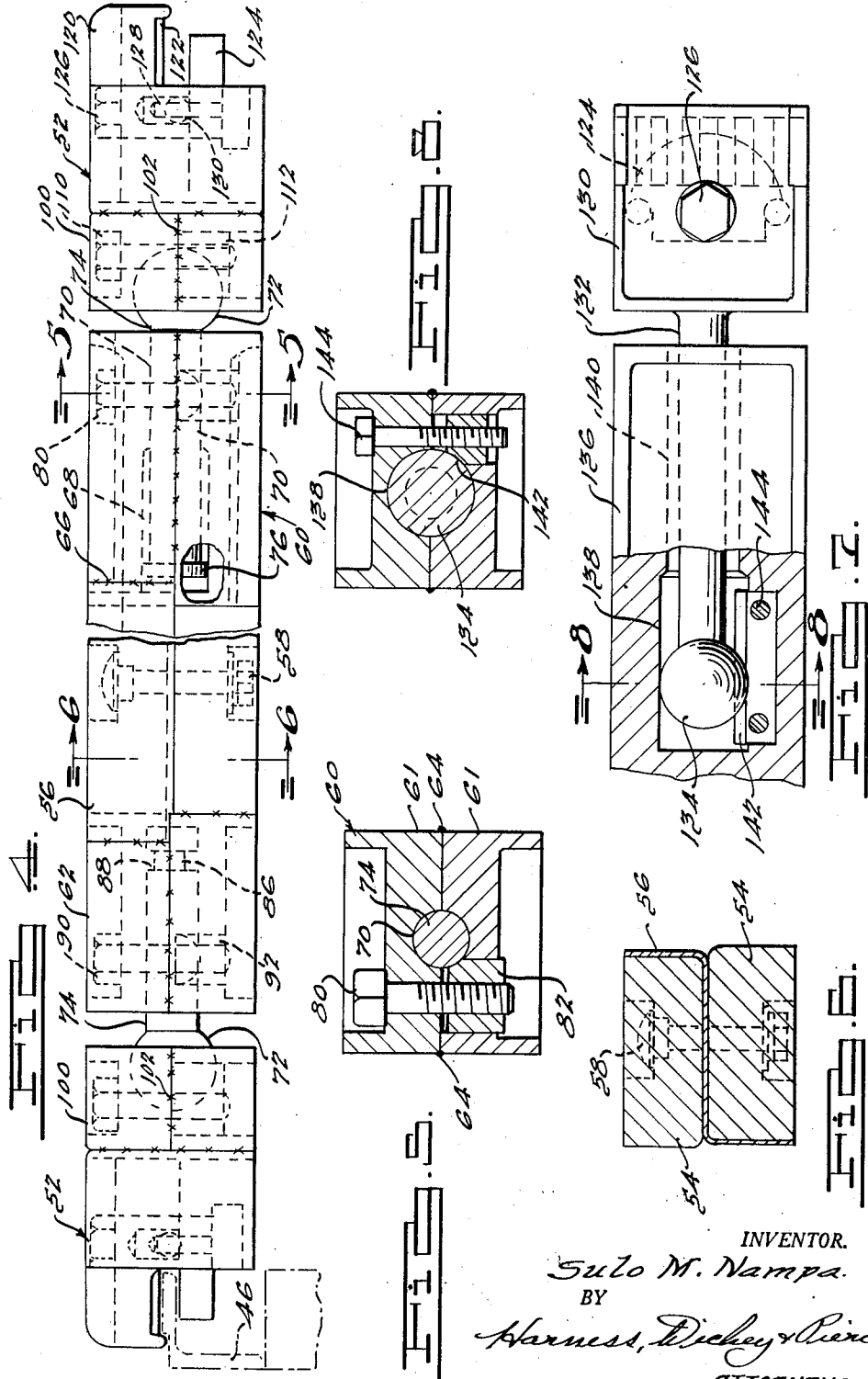
S. M. NAMPA

2,513,348

APPARATUS FOR LOADING FREIGHT OR THE LIKE

Filed Jan. 5, 1944

2 Sheets-Sheet 2



INVENTOR.
Sulo M. Nampa.
 BY
Harness, Dickey & Pierce.
 ATTORNEYS.

UNITED STATES PATENT OFFICE

2,513,348

APPARATUS FOR LOADING FREIGHT OR THE LIKE

Sulo M. Nampa, Detroit, Mich., assignor to Evans
Products Company, Detroit, Mich., a corpora-
tion of Delaware

Application January 5, 1944, Serial No. 517,049

9 Claims. (Cl. 105—369)

1

The present invention relates to improved loading apparatus for holding freight articles of different types in vehicles or storage spaces and, more particularly, to improved equipment of this nature having certain parts which are built into or combined with a vehicle, such as a railway freight car, or other storage space, and having certain other parts which are adjustably and variously cooperable with the built-in parts, the several parts of the equipment cooperating to hold (that is, for example, to brace, support or carry, space, wedge, or provide shelves, partitions, or bins for) a wide variety of freight articles. This application discloses and claims improvements upon and modifications of the structures disclosed and claimed in applicant's copending applications Serial No. 434,357, filed March 12, 1942, and Serial No. 469,719, filed December 21, 1942, both since abandoned but replaced, respectively, by continuation applications, Serial No. 740,330, filed April 9, 1947, and Serial No. 121,424, filed October 14, 1949.

Applicant's above-identified application Serial No. 434,357 discloses and claims certain features of a loading organization which, as specifically disclosed, comprises two series of upright supporting members arranged at the respectively opposite sides of, and permanently secured to, a freight car; wall members which are adjustably and removably supported by the uprights; and cross members which are disposed to be supported at their ends by wall members at the opposite sides of the car, so that the cross members extend across the car. The cross members may be used to form or to support bulkheads, to form or support decking arrangements, to support cooperating upright and horizontal members utilized to subdivide the storage space longitudinally, as well as for variety of other purposes, all as set forth with greater particularity in the above identified application Serial No. 434,357. Applicant's above-identified application Serial No. 469,719 discloses and claims a system which, in one sense, may be characterized as employing freight holding members (specifically cross bars) which are adjustable in length and which are also provided with supporting heads which are rotatable relative to the body of the corresponding member.

The inventive features to be claimed in this application are, in a generic sense, applicable to a wide variety of different freight loading arrangements, but in a more restricted sense and as to at least certain of their aspects, they have particular utility when embodied in freight load-

2

ing arrangements of the general type described above. In certain of their aspects, also, these inventive features provide improved combinations of freight loading elements, and in certain of their other aspects, they provide improved freight loading elements per se.

With the above as well as other considerations in view, the principal objects of the present invention are to provide improved freight loading arrangements which are simple in construction, sturdy, low in cost and in weight, and reliable and efficient in operation; to provide improved loading elements for use in such arrangements; to provide such arrangements embodying as an element a freight holding member having a body portion adapted to engage freight and having heads for cooperation with supporting structure, particularly characterized in that a tiltable connection is provided between each head and the body portion; to provide such arrangements wherein the tiltable connection embodies elements which permit at least a limited adjustment of the length of the freight holding member; to provide such arrangements wherein the connections between the body portion and the heads enable the body portion to be rocked about its axis relative to the heads; to provide such arrangements wherein the heads are adapted for relatively rigid but releasable connection to supporting structures, and wherein the connections between the heads and the body portion are arranged to permit the heads to be universally tilted relative to the body portion, whereby to better accommodate the holding member to the shape or other characteristics of the freight articles; and to generally improve and simplify the construction and arrangement of freight loading systems.

Other and more detailed objects of the invention appear in the following description and in the appended claims.

In the drawings, which show preferred but illustrative embodiments of the invention and throughout the several views of which corresponding reference characters are used to designate corresponding parts:

Figure 1 is a general view in perspective of a freight holding arrangement embodying the invention and which is built into one end of an otherwise conventional freight car structure;

Fig. 2 is a fragmentary view in vertical section taken along the line 2—2 of Fig. 1;

Fig. 3 is a plan view of a freight holding bar embodying the invention;

3

Fig. 4 is a view in side elevation of the structure of Fig. 3;

Fig. 5 is a view in transverse section taken along the line 5—5 of Fig. 4;

Fig. 6 is a view in transverse section taken along the line 6—6 of Fig. 4;

Fig. 7 is a fragmentary view of a modification; and

Fig. 8 is a view in transverse section taken along the line 8—8 of Fig. 7.

As aforesaid, it will be appreciated from a complete understanding of the inventive features claimed herein that, in a generic sense, they may be embodied in or used with a wide variety of freight holding systems, and these features may also be embodied in various different constructions. The disclosure of these features in particular forms and as embodied in or used with particular types of loading apparatus is, consequently, to be regarded in an illustrative and not in a limiting sense.

Referring first to Fig. 1, the illustrated arrangement comprises generally the upright supporting members 30, which are arranged in aligned series at the opposite sides of a freight car 32; the wall members 34, which are disposed at the respective sides of the car and are adjustably supported by and between adjacent pairs of uprights 30; and a series of cross members 36, some or all of which may embody the particular distinguishing features of the present invention. It will be understood that the uprights 30 preferably extend, in spaced relation, along each side of the car, from the associated door opening to the corresponding end of the car and that, if desired, both ends of the car may be similarly equipped.

As described in the above copending applications, the uprights 30 may themselves constitute the vertical members of the car structure. Preferably and as shown, however, the uprights 30 are relatively wide, plate-like members, which are secured to the structural frame members of the car. It is preferred to use uprights 30 of relatively heavy metal, so that these uprights, in addition to affording a support for the cooperating freight loading elements, also serve to reinforce and strengthen the car structure as a whole. As will also be understood, the uprights 30 may extend from the floor of the car entirely to the roof structure or, in case the unit weight of the freight to be accommodated is too large to permit loading of the car entirely to the roof, the uprights 30 may extend only part way from the floor to the ceiling.

As is also described in detail in the aforesaid copending applications, the uprights are provided on their outer surfaces with vertical rows of evenly spaced tooth-like projections 40, which cooperate with correspondingly spaced tooth-like projections on hangers 42 with which the wall members 34 are provided. Each wall member is provided with a hanger 42 at each end thereof and the relation of the parts is such that a particular wall member can be locked in any of a plurality of vertically spaced positions relative to a particular pair of uprights 30. In addition, each wall member 34 is readily separable from a particular pair of uprights. Reference is here made to the disclosures of said copending applications for further details concerning the structural features of the uprights 30 and wall members 34, which permit these features of adjustability and removability.

For cooperation with the cross members or

4

cross bars 36, the wall members 34 are provided along their upper surfaces with continuous series of evenly spaced rounded tooth-like projections 44. These projections are either formed integrally with or are rigidly secured to the upper surfaces of angle members 46, which form part of the wall members 34. The underside of the horizontal flange of each angle member 46 forms a holding surface for cooperation with the hereinafter described latching elements associated with the cross bars 36.

In practice, a relatively large number of the wall members 34 are preferably provided so that each bay (the area between adjacent uprights 30) at each side of the car may be provided with several wall members. Since the individual wall members 34 are independently adjustable, any desired distribution of the wall members along the sides of the car may be provided. In certain cases, a staggered relation is utilized, in which the wall members in successive bays are at different elevations. In other instances, as where it is desired to furnish a car with platforming or decking, it is desirable to have a plurality of wall members, positioned in successive bays, at the same elevation so as to provide, in effect, a single wall member greater in length than the width of any one bay. When so disposed, the wall members extend in continuous end-to-end relation, and the teeth thereon constitute a single continuous rack.

Referring now to Figs. 3, 4 and 5, as well as to Figs. 1 and 2, the cross bars 36 are illustrated as comprising a central body portion 50 and a pair of supporting heads 52. In the illustrated arrangement, the cross bars 36 are dimensioned to extend entirely across the car, and the body portions thereof are arranged for direct engagement by the freight articles. It will be understood that, if desired, the improvements of the present invention may be incorporated in bars of other lengths such, for example, as the half bars described in the aforesaid applications, and may also be arranged so that the body portions thereof accommodate interlocking means for engagement by related freight holding members. Thus, the load to be engaged by the body portion may either be a freight article or another freight holding member.

As shown, the body portion 50 comprises a pair of wooden beams 54, which receive between them a reinforcing member 56 of Z-section. The beams 54 may be held together in any suitable way, as by means of the bolts 58.

The respective ends of the body portion 50 are provided with sockets 60 and 62. The socket 60 comprises a pair of metallic members 61, such as forgings, disposed in back-to-back relation and welded together along the lines 64. The socket 60 is secured to the Z-bar 56 by welding along the adjacent ends of the flanges of the latter, one such weld line being indicated at 66. The opposed faces of the members 61 are recessed so that together they define a bore having an enlarged portion 68 and a smaller portion 70.

The ball 72 associated with the right-hand head 52 is provided with a shank 74, which, subject to the hereinafter described locking means, is both slidable and rotatable within the reduced bore portion 70. The rear end of shank 74 is provided with annular enlargement 76, which is slidable and rotatable within the enlarged bore portion 68. It will be appreciated that the collar 76 limits the degree to which the shank 74 and, consequently, the ball 72 may move axially of the socket

5

60 and thus limits the degree to which the bar 36 may be extended.

In order to lock the body portion 50 relative to the shank 74, the stud 80 and the associated locking member 82 are provided. The stud 80 is received in a bore provided therefor in the members 61. The lower portion of this bore is enlarged to receive the locking member 82, and the enlarged bore portion opens into the bore portion 70. One face 84 of member 82 is complementary in shape to the shank 74. As will be understood, by releasing stud 80, the locking relation between member 82 and shank 74 is released. By tightening stud 80, member 82 is drawn up into tight engagement with the surface of the shank 74.

The left-hand socket 62 is constructed as described with reference to the right-hand socket 60 with the exception that the shank 74 associated therewith is not slidable lengthwise thereof. Instead, the shank 74 is provided with an annular groove 86, which receives an annular ring 88, which is secured within the associated socket. With this relation, it will be appreciated that while the shank 74 is normally rotatable within the socket 62, it is fixed in place axially thereof, all adjustments of the bar length being accomplished at the right-hand end thereof. If desired and as shown, a locking means comprising a stud 90 and locking collar 92 may be associated with the left-hand socket and these members may be arranged as described with reference to socket 60.

The two heads 52 may be and preferably are constructed as described in detail in the aforesaid copending applications, with the exception that the inner ends thereof are provided with sockets 100, which receive the previously mentioned balls 72. The sockets 100 may be formed of two similar members secured together in back-to-back relation, as is indicated by the weld lines 102 and which members are recessed to define the spherical sockets for the balls 72. Preferably, each socket is provided with locking mechanism illustrated as comprising a stud 110 and a locking member 112. As in the previous instances, the stud 110 is received in a bore provided therefor in the corresponding socket 100, and the member 112 is received in an enlarged bore portion which opens into the space occupied by the associated ball 72. The locking member is provided with a spheroidal surface which binds against and locks the associated ball in a fixed position relative to the socket when the associated stud 110 is tightened.

As is described in more detail in the aforesaid copending applications, the heads 52 are provided with a jaw-like extension 120, the underside whereof is provided with a plurality of rounded tooth-like projections 122, which mate with the tooth-like projections 44 provided on the associated wall members 34. The heads 52 are provided with retractable latches 124, which may be rotated, by means of an associated stud 126, from the locking position shown in the figures, through an angle of 180°, to a position in which they are retracted within the body of the associated head. When so retracted, the latches 124 enable the associated bar 36 to be rested upon the wall members 34. When so applied, the latches 124 may be rotated to the active position, in which they lie beneath the flange of the associated angle member 46. The latches thus hold the teeth 122 and 44 in mating relation and prevent movement of the bar 36 lengthwise of the members 34.

A limit to rotation of each latch 124 in an unlocking direction is afforded by a stop pin 128,

6

and an associated spring-pressed detent 130 yieldingly holds the corresponding latch in either the projected or retracted position.

The modified embodiment of the invention shown in Figs. 7 and 8 may and preferably does duplicate the construction just described with the exception that in this instance the illustrated right-hand head 130, instead of being provided with a ball receiving socket 100, is provided with a rearwardly extending shank 132, which terminates in an enlarged ball 134. The corresponding socket 136, which may be secured to the central body portion of the associated bar in the manner described with reference to the sockets 15 60 and 62, is provided with an enlarged bore portion 138 which slidably receives the ball 134 and a smaller bore portion 140, which accommodates the shank 132. It will be appreciated that bore portion 140 is sufficiently larger than the shank 132 to accommodate the amount of universal movement of the head 132 which it is desired to provide. As shown, the bore 138 is elongated and is provided with a correspondingly elongated locking member 142, which may be associated with a pair of locking studs 144 in the previously described manner. Locking member 142, when released, enables the ball 134 to both swivel and move longitudinally of the bore 138, thereby providing both cocking and lengthwise adjusting movements of the head 130. When locked, the member 142 secures the ball 134 in a desired cocked, lengthwise and rotative position relative to the body of the bar.

As will be understood, the left-hand head may be arranged as just described, with the exception that, if desired, the corresponding bore 138 may be spherical in shape so that it will accommodate the axial rocking movements of the body of the bar relative to the associated head, and the cocking of the head, but will not accommodate the axial adjustment. This latter adjustment is afforded at the right-hand end of the bar and in most instances is not needed at both ends.

It will be recognized from the foregoing that the bars 36 are characterized as having freight engaging body portions and supporting heads, the construction and arrangement of the heads being such that, when engaged with a wall member 34 and with the associated latch in place, only a limited amount of cocking of the heads relative to the wall members 34 is possible. Such limited cocking, which is afforded by the constructions of the aforesaid copending applications, is sufficient in many instances to accommodate the necessary cocking of the bar relative to the load. In other cases, a greater amount of cocking of the bar is needed. For example, with many freight loads, it is desirable to support one end of the bar considerably nearer the end of the associated car than the other end of the bar, or to support one end of the bar at a considerably different elevation than the other end of the bar, or both. The tiltable connections of the present invention readily permit such angular disposition of the bar, one of the bars 36 being shown in angled position in Fig. 1.

In use, it will be appreciated that after the desired number of wall members 34 are applied to the uprights 30 (with the wall members at opposite sides of the car in either vertically aligned or vertically displaced relation, depending upon the character of the freight articles) the corresponding cross bars 36 may be applied thereto by resting the ends of the bars upon the wall members and thereafter pushing the bars

along the wall members to desired position. The rounded character of the tooth-like projections 44 and 122 enables such last-mentioned movement while the bars remain supported by the wall members. In case a particular bar is to be associated with wall members which are at the same vertical level, and further in case the bar is to extend straight across the car, such bar may be adjusted so that its heads are aligned with the body portion, and it may also be adjusted to the proper length and to have the proper rocked relation of the body (about its own axis) relative to the heads. In case the bar is to extend angularly across the car, either to accommodate different elevations of the wall members, or to enable one end of the bar to be located nearer the end of the car than the other, or both, the heads may be loosened, tilted to the desired degree, and thereafter re-tightened. All of these adjustments may, as will be understood, be made either before the bar is applied to the wall members or thereafter. Normal tolerances in the connections between the heads and the wall members enable final wedging movements of the bar, relative to the freight articles, to be accomplished by advancing the ends of the bar one at a time, it being understood that it is preferred to rely on the tiltable feature of the present heads to accommodate angularities in excess of those required to accommodate the just-mentioned final wedging movements. When the final position of a particular bar is attained, the latches 124 associated therewith may be turned into latching position.

Although only two specific embodiments of the invention have been described in detail, it will be appreciated that various further modifications in the form, number and arrangement of parts may be made without departing from the invention. It should be noted that in the foregoing description and in the claims the word "tilt" is used to mean angular inclination of the axis of the head relative to the longitudinal axis of the body as distinct from merely relative rotation between the head and body about said longitudinal body axis.

What is claimed is:

1. As an article of manufacture, a freight holding bar having, in combination, a load engaging body portion, holding portions spaced along the body portion for interlocking engagement with associated supporting means, means connecting the holding portions to the body portion, said connecting means including relatively movable elements which enable at least one of said holding portions to tilt relative to the axis of the body portion, and means carried by and forming part of said bar for securing said one holding portion in any of a plurality of tilted positions.

2. As an article of manufacture, a freight holding bar having, in combination, a load engaging body portion, holding portions spaced along the body portion for interlocking engagement with associated supporting means, means connecting the holding portions to the body portion, said connecting means including relatively movable elements forming a universal joint to enable at least one of said holding portions to be tilted in any of a plurality of directions relative to the axis of the body portion, and means carried by and forming part of said bar for securing said one holding portion in any of a plurality of tilted positions.

3. In combination, a pair of spaced elongated,

generally parallel supports, a freight holding bar extending between and supported by said supports, said bar having a load engaging body portion and holding portions spaced therealong, said holding portions being releasably and interlockingly engageable with said supports, means connecting the holding portions to the body portion, said connecting means including relatively movable elements which enable said holding portions to tilt relative to the axis of the body portion, and means carried by and forming part of said bar for securing said holding portions in any of a plurality of tilted positions.

4. In combination, a pair of spaced elongated, generally parallel supports, a freight holding bar extending between and supported by said supports, said bar having a load engaging body portion and holding portions spaced therealong, said holding portions being releasably and interlockingly engageable with said supports, means connecting the holding portions to the body portion, said connecting means including relatively movable elements forming universal joints to enable said holding portions to be tilted in any of a plurality of directions relative to the axis of the body portion, and means carried by and forming part of said bar for securing said holding portions in any of a plurality of tilted positions.

5. In combination, a pair of spaced supporting members having holding elements distributed along their lengths, a freight holding cross bar having a body, holding portions connected to the body at the ends thereof, said holding portions being interlockingly engageable with said holding elements, said bar including means located adjacent an end and having elements slidable relative to each other lengthwise of the bar for connecting at least one of said holding portions to the body portion, said sliding enabling the spacing between the holding portions to be freely adjustable, and said bar further including relatively movable elements which enable said holding portions to be tilted relative to the axis of the body.

6. In combination, a pair of spaced supporting members having holding elements distributed along their lengths, a freight holding cross bar having a body, holding portions connected to the body at the ends thereof, said holding portions being interlockingly engageable with said holding elements, said bar including means located adjacent an end and having elements slidable relative to each other lengthwise of the bar for connecting at least one of said holding portions to the body portion, said sliding enabling the spacing between the holding portions to be freely adjustable, said bar further including relatively movable elements between the body and holding portions forming universal joints which enable said holding portions to be tilted relative to the axis of the body, and means for securing said one holding portion in any of a plurality of tilted positions.

7. In combination, a pair of spaced supporting members having holding elements distributed along their lengths, a freight holding cross bar having a body and holding portions connected to the body and spaced lengthwise thereof, said holding portions being interlockingly engageable with said holding elements, said bar including means enabling the body to be rockable about its axis relative to the holding portions, said bar further including relatively movable elements which enable both of said holding portions to be tilted relative to the axis of the body, and

9

means carried by and forming part of said bar for securing both of said holding portions in any of a plurality of tilted positions.

8. In combination, a pair of spaced supporting members having holding elements distributed along their lengths, a freight holding cross bar having a body, holding portions, means for connecting the holding portions to the body at the respective ends of the body, said holding portions being interlockingly engageable with said holding elements, said connecting means including means located adjacent an end of the bar and having elements slidable relative to each other lengthwise of the bar for connecting one of said holding portions to the body portion, said sliding enabling the spacing between the holding portions to be freely adjustable, said elements enabling at least one said holding portion to tilt relative to the axis of the body, and said connecting means further including means enabling at least a tilting of said other holding portion relative to the axis of the body.

9. As an article of manufacture, a freight holding bar having a body, holding portions, means connecting the holding portions to the body at the ends thereof for interlocking engagement with spaced supporting means with which the bar is associated, at least one of said connecting

10

means including elements adjacent an end slidable relative to each other lengthwise of the bar, said relative movement enabling the corresponding holding portion to move relative to the body so as to increase or decrease the spacing between the holding portions, and said bar further including relatively movable elements which enable said holding portions to be tilted relative to the axis of the body.

SULO M. NAMPA.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
503,437	Pitcher -----	Aug. 15, 1893
642,058	Worsick -----	Jan. 23, 1900
1,049,655	Boller et al. -----	Jan. 7, 1913
1,064,130	Conlin -----	June 10, 1913
1,247,230	Daly -----	Nov. 20, 1917
2,030,773	Thomas -----	Feb. 11, 1936
2,056,704	Anderson -----	Oct. 6, 1936
2,085,923	Murphy -----	July 6, 1937
2,091,869	McCurdy -----	Aug. 31, 1937
2,268,394	Hebert -----	Dec. 30, 1941