

Nov. 23, 1948.

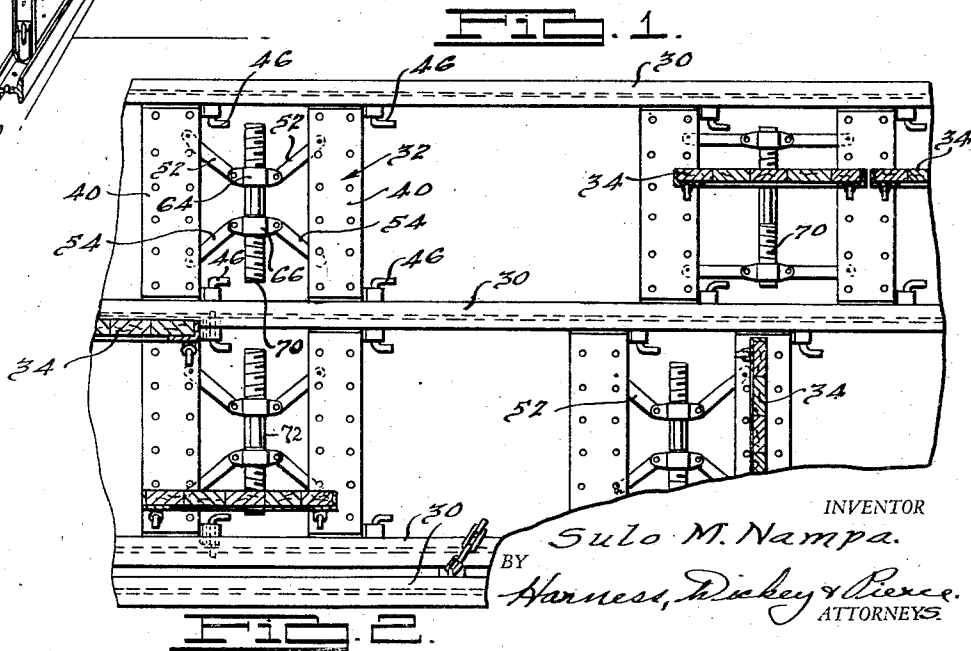
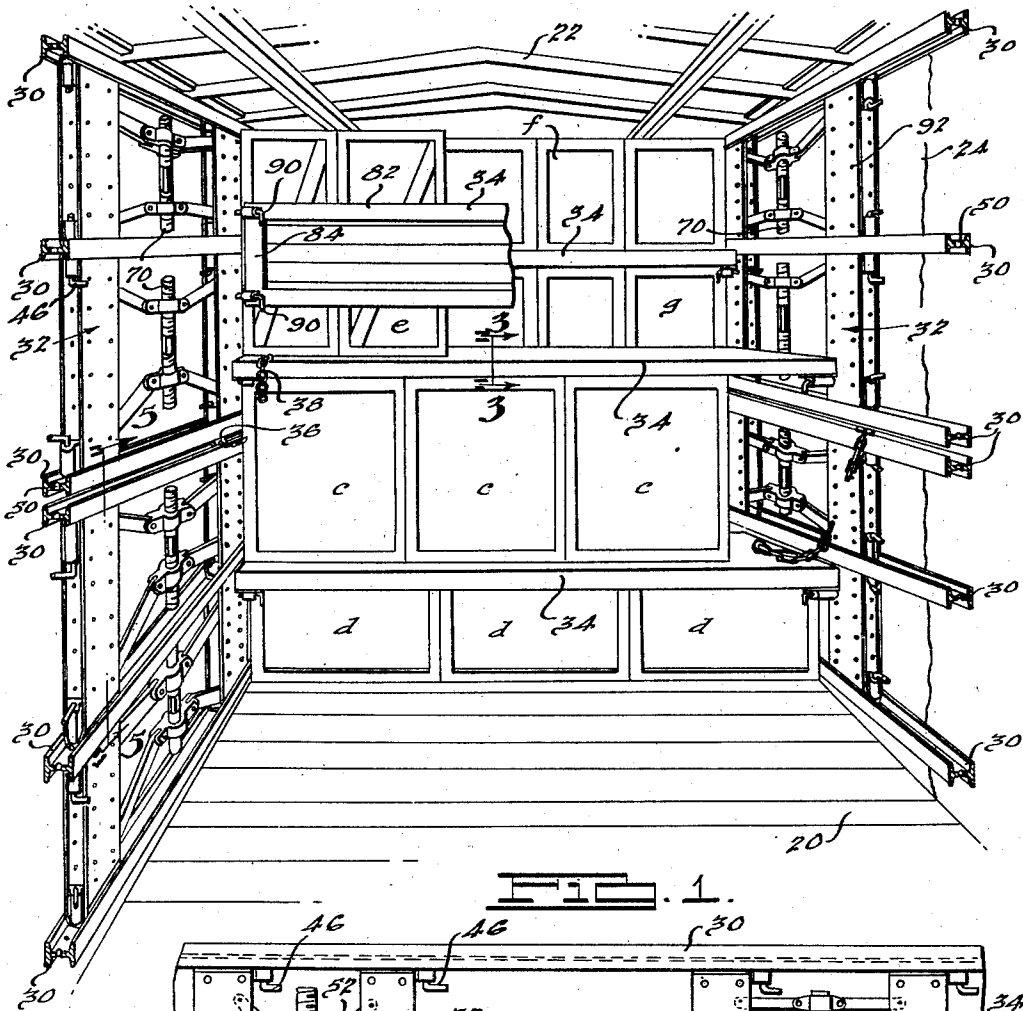
S. M. NAMPA

2,454,473

APPARATUS FOR LOADING FREIGHT OR THE LIKE

Filed June 3, 1943

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

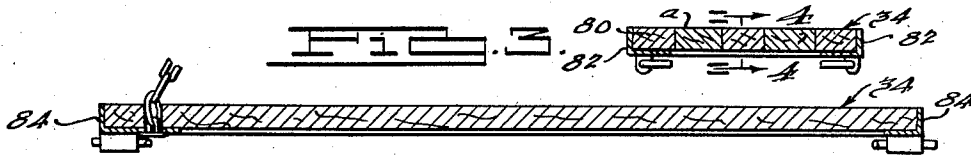


FIG. 4.

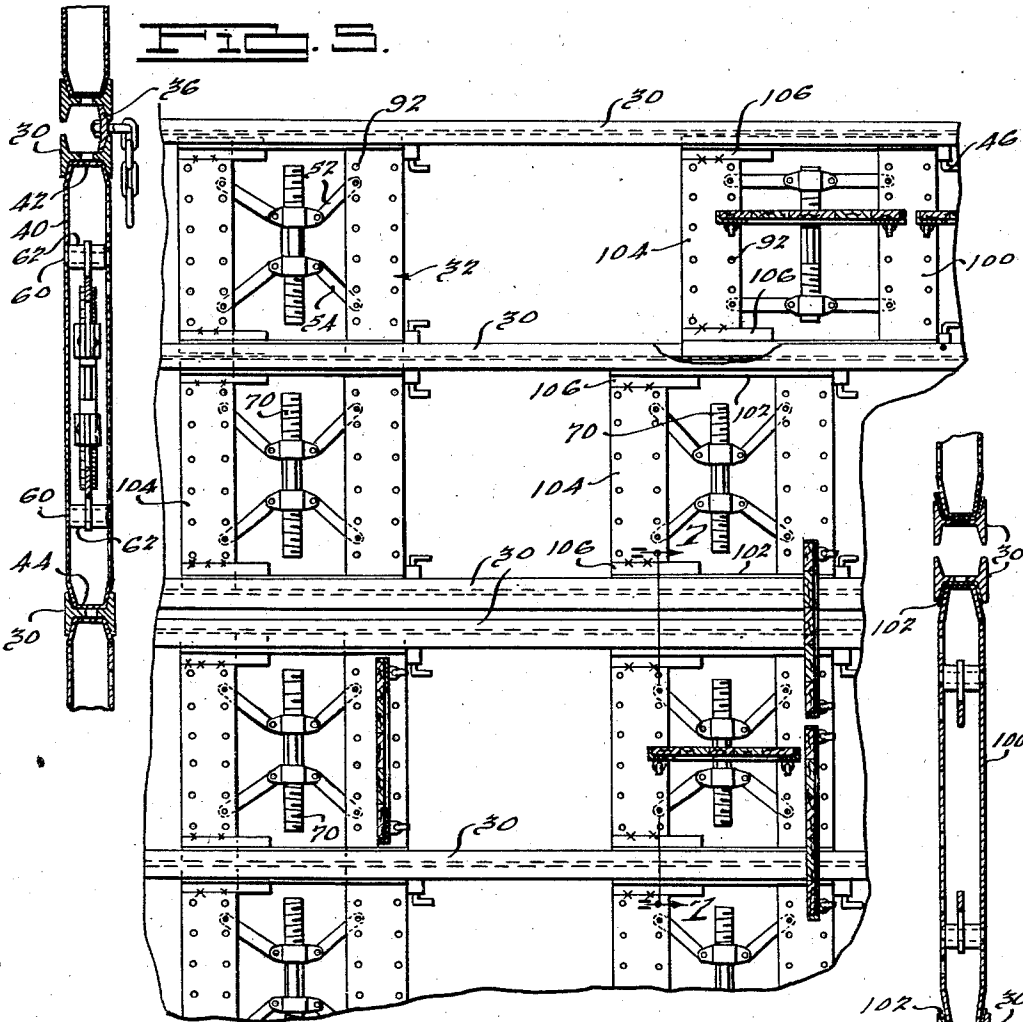


FIG. 5.

FIG. 6.

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2,454,473

APPARATUS FOR LOADING FREIGHT
OR THE LIKE

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Application June 3, 1943, Serial No. 489,445

16 Claims. (Cl. 105—369)

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The present invention relates to improved load-
ing apparatus for holding freight articles of dif-
ferent types in vehicles or storage spaces and,
more particularly, to improved equipment of this
nature certain parts which are built into or com-
bined 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. In certain of
its aspects, the present invention is a modifica-
tion of the loading arrangements described and
claimed in applicant's copending applications Se-
rial No. 343,357, filed March 12, 1942, now aban-
doned and Serial No. 475,082, filed February 8,
1943.

Applicant's above-identified copending appli-
cations disclose a loading organization, wherein
the storage chamber, such as a freight car, is pro-
vided on its respectively opposite side walls with
supporting structure, to which loading members,
used for decking, bulkheading and other purposes,
may be secured. This supporting structure takes
the form of adjustably mounted, elongated mem-
bers provided with surfaces disposed to inter-
lock with corresponding interlocking means at the
ends of the holding members. In the copending
arrangement, the holding members, when used
for bulkheading purposes, are preferably wedged
into engagement with the freight through the use
of a wedging tool, which may be anchored to
the supporting structure and through which a
wedging force may be applied to the holding
members.

The present arrangement employs a different
arrangement of supporting structure which com-
prises, generally, supports arranged at the re-
spectively opposite sides of the storage chamber,
supporting members carried by these supports,
and holding members which are secured to the
supporting members. In this arrangement, the
supporting members themselves afford means for
wedging the corresponding holding members,
when used for bulkheading, into engagement with
the freight. For this purpose, each supporting
member comprises a pair of relatively movable
members, at least one of which may be anchored
to the corresponding support and the other of
which, by application of force between it and the
corresponding anchored part, may be advanced
along the support. The thus moved part is ar-
ranged to support the holding member.

The above briefly described arrangement af-
fords other structural and operating advantages,
which are described in more detail below, and
are pointed out in the appended claims.

With the above as well as other considerations

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in view, the principal objects of the present in-
vention are to provide a freight loading system,
which is simple in construction, economical of
manufacture and erection, and which is reliable
and efficient in operation; to provide such an
arrangement incorporating freight holding mem-
bers and improved supporting structure therefor,
by which these members may be utilized for vari-
ous freight loading purposes, such as decking,
bulkheading, and the like; to provide such ar-
rangements wherein the supporting structure
comprises means adjustably carried by the side
walls of the storage chamber and which incor-
porate means for supporting and/or moving the
holding members into desired position.

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

In the drawings, throughout which correspond-
ing reference characters are used to designate cor-
responding parts:

Figure 1 is a partial view in perspective of the
interior of a freight car embodying the invention;

Fig. 2 is a fragmentary view in side elevation,
based upon Fig. 1;

Fig. 3 is a view in horizontal section, taken
along the line 3—3 of Fig. 1;

Fig. 4 is a view in horizontal section, taken
along the line 4—4 of Fig. 3;

Fig. 5 is a view in vertical section, taken along
the line 5—5 of Fig. 1;

Fig. 6 is a fragmentary view in side elevation
of a modification of the invention; and

Fig. 7 is a view in vertical section, taken along
the line 7—7 of Fig. 6.

It will be appreciated from a complete under-
standing of the present invention that the im-
provements may, in a generic sense, be embodied
in or used with a wide variety of freight holding
systems, and may also partake of various differ-
ent constructions. The disclosure herein of par-
ticular embodiments of the invention, applied to
a railway freight car, is, consequently, to be re-
garded in an illustrative and not in a limiting
sense.

Referring first to Figs. 1 through 5, the illus-
trative freight car is illustrated as being of usual
construction, having a conventional floor struc-
ture 20 and a roof structure 22. A usual side wall
structure is indicated at 24, and the hereinafter
described freight loading arrangement is con-
sidered as being built into this conventional car
structure. Alternatively, as will be appreciated
from a complete understanding of the invention,
the fixed loading elements of the present inven-
tion may, if desired, be erected in the car as an
incident to the original manufacture thereof and
may, consequently, form part of the car structure
itself.

The loading elements are shown as comprising
a plurality of side wall supports 30, a plurality of

frame-like supporting members 32, and a plurality of holding members 34, certain of which are illustrated as being used for decking purposes and one of which is illustrated as being used as a bulkhead. The side wall supports 30 may be variously constructed, but are shown as consisting of longitudinally extending I-section members, secured to the corresponding side walls 24, with the webs thereof extending horizontally. Each member 30 thus defines an upwardly presenting channel-shaped guideway and a corresponding downwardly presenting channel-shaped guideway. The three uppermost members 30 at one side of the car thus define two vertically spaced guides, which receive the corresponding supporting members 32. Similarly, the three lowermost members 30 define two vertically spaced guides which receive the corresponding supporting members 32. The relatively narrower guideway, which is defined between the intermediate members 30 at each side of the car, is utilized in the present arrangement as a guideway to support the heads 36 of retaining chains 38, associated with the holding members 34.

The supporting members 30 may and preferably do extend from the corresponding end of the car to the door opening at the corresponding side of the car and, if desired, extension means may be arranged to extend across the door openings, so as to provide the interior of the car with guide rail or supporting structure, which extends from end-to-end of the car.

Each supporting member comprises a pair of vertically extending, longitudinally spaced, box-like frames 40, which may be and preferably are formed of steel or other structural material. The upper and lower ends 42 and 44 of the frames 40 are shaped, as shown in Fig. 5, to nest within the corresponding channel-shaped portions of the associated members 36. As shown, the frames 40 are arranged to releasably interlock with the supports 30 in desired positions of adjustment therealong. As illustrated, the interlocking means comprises pins 46 carried by the frames 40, the projecting ends whereof are disposed to be received in longitudinally spaced openings 50 provided in the webs of the supports 30. It is preferred to arrange the system so that a supporting member 32 in one tier may be arranged in vertical alignment with a supporting member 32 in the adjacent tier, and to enable this relation, the pins 46 may be arranged so that, when projected into the openings 50, they extend only part way therethrough.

The frames 40 of each individual supporting member 32 are connected together by an adjustable toggle mechanism comprising upper and lower pairs of levers 52 and 54, the outer ends whereof are pivoted between the side walls of the corresponding frame, by means of pins, such as 60, and spacers 62. The inner ends of the levers 52 and 54 are connected to cross heads 64 and 66, which threadably cooperate with a screw 70, having a tool receiving central section. As will be understood, by turning the screw 70 in one direction or the other, the cross heads 64 and 66 may be caused to move towards or away from each other, thereby either collapsing or straightening the toggle mechanism, and causing the frames 40 to either approach or move away from each other. As will also be understood, by first anchoring one frame 40 of a supporting member 32 by moving its pins 46 into interlocking relation with the corresponding supports 30, and by thereafter

turning the screw 70, a wedging force may be applied to the companion frame 40.

It will be noticed that the toggle mechanisms incorporate the usual and substantial mechanical advantage producing features, whereby by the application of relatively small forces to the adjusting screws, very substantial adjusting or wedging forces may be applied between the relatively movable parts of the supports. It will be noticed too, that an infinitely fine adjustment is afforded by the present structure, which allows the primary anchoring surfaces, herein illustrated as anchor holes, to be relatively widely spaced, while at the same time enabling very minute adjusting movements of the freight holding members.

A further important advantage of the present structure resides in the fact that all of the adjusting mechanism associated with the freight holding members 34 act in planes parallel to and immediately adjacent the side walls of the chamber. These members, consequently, occupy but a very small percentage of the chamber space, and do not interfere with the loading of the freight articles to substantially the full width of the chamber.

As will be appreciated, in the broader aspects of the invention, various types of freight holding members may be associated with the individual supporting members 32. As shown, the members 34 are built up of planking members 80, so as to define a relatively wide, but relatively thin plank-like structure. Preferably and as shown, this structure is reinforced by longitudinally extending angle members 82 and corresponding end angle members 84. This construction leaves the face a (Fig. 3) free of projecting metal surfaces, and such surface thus functions as a cushioning surface for direct engagement by the freight articles.

Generically, the frames 40 and the cross members 34 may be connected together in unit relation, the connections between these parts being either fixed or adjustable. In the present and preferred embodiment of the invention, however, the cross members 34 are readily removable from the frames 40. Further, various means may be utilized to provide the connections between the cross members and the frames. As illustrated, the holding members 34 are provided with retractable holding pins 90, two being provided at each end, which cooperate with corresponding perforations 92 provided in the inner and outer panels of the frames 40. Preferably, in order to use both of such panels in supporting the cross members 34, the pins 90 are made sufficiently long to bridge both panels. The openings 92 may be variously arranged, but are shown as being distributed in two vertical rows in each frame 40. The spacing between the inner row of openings 92 on one frame 40 and the corresponding row of openings on the adjacent frame 40 preferably corresponds to the spacing between the pins 90 on the members 34. With this arrangement, as shown in Fig. 2, one member 34 may be supported between the two frames 40 of a particular supporting member 32, and a cooperating member 34 may be supported between one frame 40 of such member 32 and the adjacent frame 40 of the next successive supporting member 32. It will be noticed, also, that the members 34 may be secured to the supporting members 32 in desired positions of vertical adjustment.

It will be recognized that, if desired, the ends

of the supports 30, adjacent a door opening, for example, may be left in an open condition so as to enable the supporting members 32 to be freely removed from and inserted therebetween. Preferably, however, the desired number of supporting members 32 is introduced between the corresponding supports 30 as an incident to the original erection of the system, and thereafter such ends of the members 30 are provided with means which prevent the free or unauthorized removal of the supporting members 32. On the other hand, it is desirable to enable the holding members 34 to be freely moved around in the car. To prevent their removal from the car, it is preferred to provide each such member 34 with a previously-mentioned retaining chain, having a sliding head 36, which is adjustably received between the intermediate members 30 at one side of the car or the other.

In the modified embodiment of the invention shown in Figs. 6 and 7, the arrangement is the same with the exception that in this case each supporting member 32' comprises one frame 100, constructed as aforesaid, but of slightly shorter length. The upper and lower ends of this frame 100 are rigidly secured to channel members 102, which nest within the corresponding supports 30. The other frame 104 is also constructed as aforesaid, with the exception that it is somewhat shorter. The frames 104 are rigidly secured at their respectively opposite ends to short channel members 106, which nest within the just-mentioned channels 102 and are slidable therealong. In this case, only the frames 100 are provided with means, such as the pins 46, by which they may be interlocked with the supports 30. The frames 100 and 104 may be and preferably are interconnected by toggle mechanism of the above-described type, comprising the screw 70.

It is believed that various advantageous methods of utilizing the above-described structures will be apparent from the above description. An illustrative loading arrangement is shown in Fig. 1, wherein a member 34 is utilized to form a deck, to support freight articles c above a lower tier of articles d, which are shown as resting directly upon the car floor. A second member 34 is utilized to form a deck, to support a third tier of freight articles e. To the rear of the articles e, an additional member 34 affords a deck to support a tier of articles f above a tier of articles g. The remaining member 34 is shown as being vertically arranged as a bulkhead, and as being wedged against the face of the articles e.

Although only two specific embodiments of the invention have been described, it will be appreciated that various further modifications in the form, number and arrangement of the parts may be made without departing from the invention.

What is claimed is:

1. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, at least one of which is constructed for anchoring engagement with the corresponding support so as to enable the other part, by application of force between it and the corresponding anchored part, to be advanced along the corresponding support to a desired adjusted position, freight holding means extending between and carried by said supporting members,

and cooperating holding means on said freight holding means and on said supporting members for enabling said freight holding means to be so carried in any of a plurality of different positions of adjustment with respect to said supporting members.

2. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, a freight holding member disposed to extend between said supports, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, at least one of which is constructed for anchoring engagement with the corresponding support so as to enable the other part, by application of force between it and the corresponding anchored part, to be advanced along the corresponding support to a desired adjusted position, and each said other part and the said holding member having selectively cooperable holding means by which the holding member may be adjustably secured to and supported by said other parts.

3. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, a freight holding member disposed to extend between said supports, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, each of which is provided with means for releasably anchoring it to the corresponding said support so as to enable an unanchored said part, by application of force between it and the anchored part, to be advanced along the corresponding support to a desired position of adjustment, and each said supporting member and the said holding member having cooperating holding means by which the holding member may be secured to and supported by the said supporting members.

4. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, a freight holding member disposed to extend between said supports, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, each of which is provided with means for releasably anchoring it to the corresponding said support so as to enable an unanchored said part, by application of force between it and the anchored part, to be advanced along the corresponding support to a desired position of adjustment, and each said other part and the said holding member having cooperating holding means by which the holding member may be secured to and supported by said other parts.

5. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, a freight holding member disposed to extend between said supports, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, at least one of which is constructed for anchoring engagement with the corresponding support so as to enable the other part, by application of force

between it and the corresponding anchored part, to be advanced along the corresponding support to a desired adjusted position, said holding member having adjacent each end thereof at least a pair of spaced securing means, and each said supporting member having at least a pair of securing means with which the first-mentioned securing means are interengageable.

6. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, a freight holding member disposed to extend between said supports, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, at least one of which is constructed for anchoring engagement with the corresponding support so as to enable the other part, by application of force, to be advanced along the corresponding support to a desired adjusted position, said holding member having adjacent each end thereof at least a pair of spaced securing means, and each said supporting member having a plurality of securing means distributed thereover with which the first-mentioned securing means are engageable to adjustably support the said holding member in any of a plurality of vertically and horizontally adjustable positions.

7. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, a freight holding member disposed to extend between said supports, and a pair of supporting members associated respectively with the said supports, each supporting member comprising a pair of relatively movable parts, at least one of which is constructed for anchoring engagement with the corresponding support so as to enable the other part, by application of force between it and the corresponding anchored part, to be advanced along the corresponding support to a desired adjusted position, said holding member having adjacent each end thereof at least a pair of spaced securing means, and each part of each said supporting member having at least one securing means engageable with a said securing means on the holding member whereby said holding member may be supported at one end by the two parts of one supporting member or by one part of each of two adjacent supporting members.

8. The structure of claim 1 wherein said supports comprise horizontally disposed rails which extend lengthwise of the chamber and are secured to the corresponding chamber walls.

9. The structure of claim 2 wherein said supports comprise horizontally disposed rails which extend lengthwise of the chamber and are secured to the corresponding chamber walls.

10. The structure of claim 3 wherein said supports comprise horizontally disposed rails which extend lengthwise of the chamber and are secured to the corresponding chamber walls.

11. The structure of claim 4 wherein said supports comprise horizontally disposed rails which extend lengthwise of the chamber and are secured to the corresponding chamber walls.

12. The structure of claim 1 wherein each said support comprises a pair of vertically spaced rails which extend horizontally and lengthwise of the chamber and which cooperate to define a guide-

way to receive a corresponding supporting member.

13. The structure of claim 2 wherein each said support comprises a pair of vertically spaced rails which extend horizontally and lengthwise of the chamber and which cooperate to define a guideway to receive a corresponding supporting member.

14. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, which define between them a guideway, and a supporting member received between and guided by said supports, said supporting member comprising a pair of relatively movable parts, at least one of which is constructed for anchoring engagement with the said guideway so as to enable the other part, by application of force between it and the anchored part, to be advanced along the corresponding guideway to a desired adjusted position, and holding means on said supporting means to enable it to support cooperating freight holding means in any of a plurality of adjusted positions with respect thereto.

15. In a freight loading system for a freight chamber such as a freight car, the combination of elongated supports in said chamber which are spaced apart in a direction transversely to their length, which define between them a guideway, and a supporting member received between and guided by said supports, said supporting member comprising a pair of relatively movable parts, both of said parts being constructed for anchoring engagement with the said guideway so as to enable an unanchored said part, by application of force between it and the anchored part, to be advanced along the guideway to a desired position of adjustment.

16. In a freight loading means for a freight car or other freight chamber, the combination of substantially horizontal longitudinally extending side members mounted on and extending along the respectively opposite side walls of the chamber and provided with guiding and supporting surfaces, an adjustable freight holding member extending across the chamber between said side members, mechanism providing a mounting connection between said freight holding member and said side members whereby to support and guide it while it is adjusted along said side members, said mechanism being mounted on the respective said side members and embodying means interengageable with said guiding and supporting surfaces to effect said adjustment and to also hold the mechanism and consequently the freight holding member in adjusted locked position, said last-mentioned means comprising means all parts of which act in a plane substantially parallel to and immediately adjacent the side walls of the chamber, and means adjustably and removably connecting the freight holding member to said mechanism.

SULO M. NAMPA.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,049,655	Boller et al.	Jan. 7, 1913
2,165,652	Reifer et al.	July 11, 1939
2,354,861	Hermann	Aug. 1, 1944
2,360,029	Wieden	Oct. 10, 1944

Certificate of Correction

November 23, 1948.

Patent No. 2,454,473.

SULO M. NAMPA

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 1, line 5, after the word "nature" insert *having*; line 17, for the serial number "343,357" read *434,357*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of March, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.