Dec. 14, 1943. E. B. JOHNSON 2,336,869

LOAD BRACE

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Fig. 1.

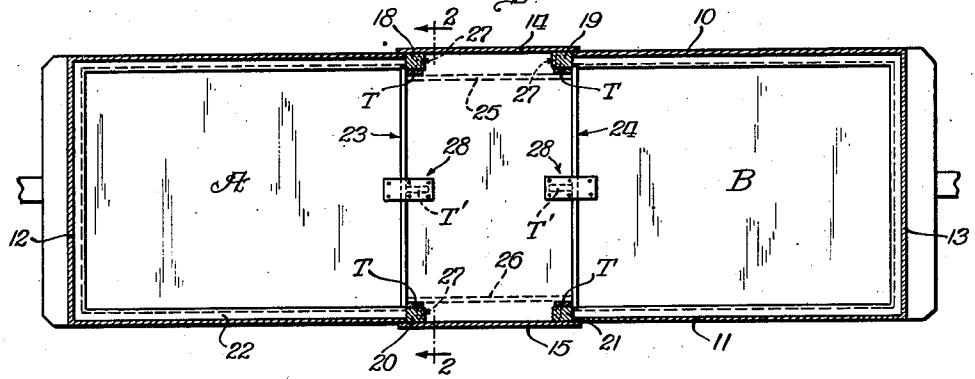
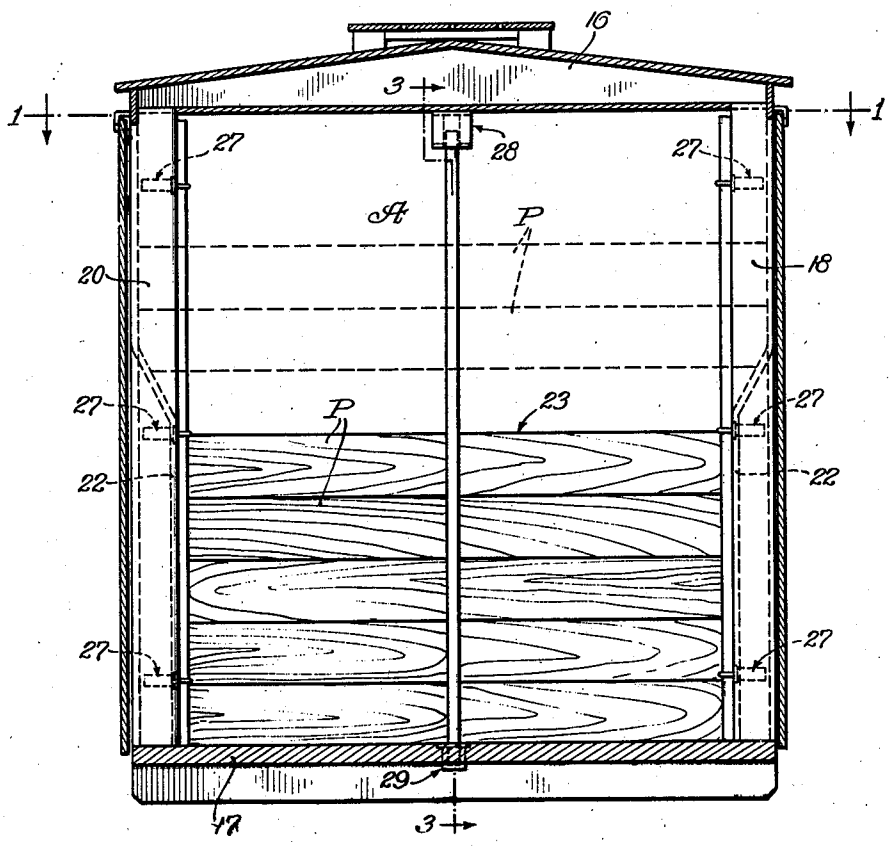


Fig. 2.



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Fig. 3.

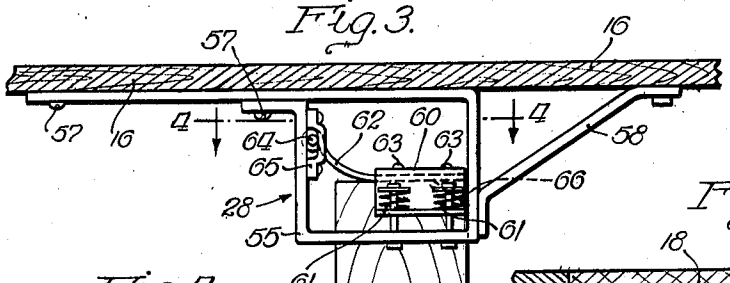


Fig. 4.

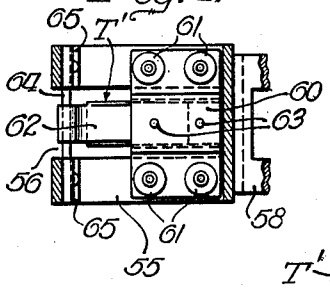


Fig. 6.

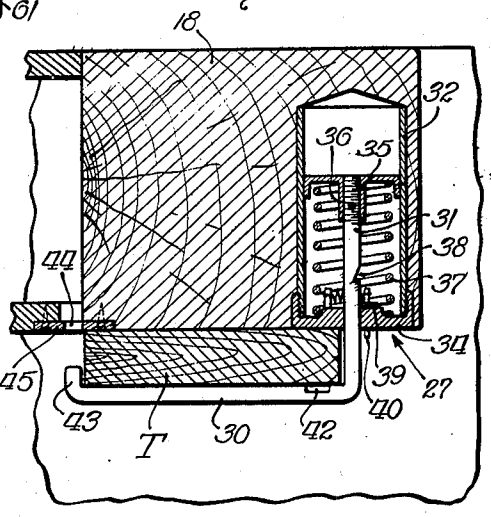


Fig. 5.

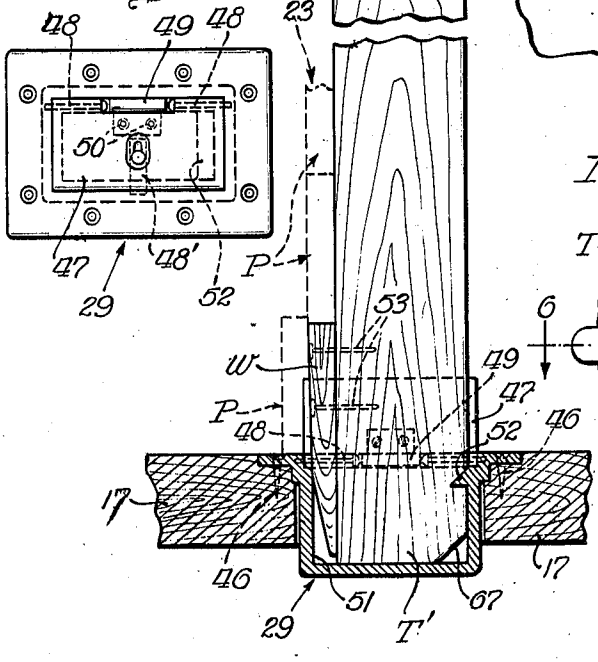
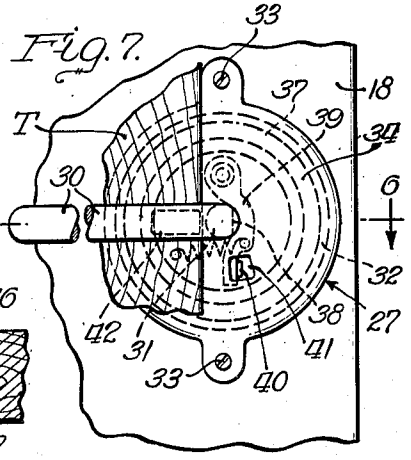


Fig. 7.



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Patented Dec. 14, 1943

2,336,869

UNITED STATES PATENT OFFICE

2,336,869

LOAD BRACE

Edwin B. Johnson, Chicago, Ill.

Application May 1, 1942, Serial No. 441,251

7 Claims. (Cl. 105—369)

The present invention relates to a load brace which has been adapted for use in freight cars of the box car type. In the past it has been common practice to utilize the very conveniently located door posts of a box car for nailing the various parts of the partitions thereto particularly when the car is being loaded at one end only or at both ends individually with different merchandise. The end posts or door posts are also used in this connection in providing a protective partition over the doors to carry the load when the whole car is being loaded. Because of the continued loading and unloading of the box cars with the numerous forms of merchandise and the continual removal and replacement of the partitions referred to in backing up the loads, the door posts become mutilated and split from the incessant use of the nails as used in fastening the partitions to the posts. This practice continues until the posts must be replaced which is a costly operation because it requires experienced labor to do the work and in most cases it requires the removal of a portion of the floor structure of the car and may or may not entail removal of some of the car lining walls and roof structure.

One of the main objects of the present invention is to prevent such a mutilation and replacement of the door posts by providing timber supporting means which readily serve to support and hold the partitions in the same manner hereinbefore employed but such means being adapted to provide a definite protection for the door posts.

Another object of the present invention is to provide the box car with load braces which can be readily adapted for building up partitions transversely of the freight car or longitudinally thereof to protect the freight car doors from the weight of any shifting of the loaded merchandise.

A still further object is to provide cooperative means disposed in substantial alignment with the door posts transversely of the car to provide a means for holding a timber intermediate the sides of the car to back up the load when one end of the car is being loaded, this timber being readily removable and replaceable without resorting to the use of nails. Heretofore, the use of upright timbers in the center portion of the car, by fastening the same with nails or the like, has also been objectionable by reason of the fact that the car floor and the ceiling structure eventually had to be repaired due to the mutilation accompanying this method of building up of crating partitions.

All other objects and advantages associated with the device of this invention shall hereinafter appear in the following detailed description having reference to the accompanying drawings.

In the drawings:

Fig. 1 is a horizontal cross-section through a box car taken substantially along the line 1—1 in Fig. 2.

Fig. 2 is a vertical transverse sectional view of the box car taken substantially along the line 2—2 in Fig. 1.

Fig. 3 is a vertical sectional view taken along the line 3—3 in Fig. 2.

Fig. 4 is a horizontal sectional view taken along the line 4—4 in Fig. 3.

Fig. 5 is a plan view of the well or bottom unit per se which is adapted for holding the lower end of the central timber in the car.

Fig. 6 is a plan sectional view of one of the clamping devices associated with the door posts and taken along the line 6—6 in Fig. 7, and

Fig. 7 is a front view on an enlarged scale of the unit shown in Fig. 6.

Referring now to Figs. 1 and 2 which diagrammatically illustrate the general construction of a freight car of the box car type, the car generally consists of the side walls 10 and 11, end walls 12 and 13, and the usual doors 14 and 15, the balance of the car being closed by the ceiling structure 16 and flooring 17. Adjacent each of the door openings 14 and 15 are the door posts 18 and 19 at one side of the car and 20 and 21 at the other side of the car respectively. Some of the freight cars are lined from floor to ceiling with an inner liner that is usually built flush with the door posts, but in the car illustrated a belt lining 22 has been indicated which forms a lower car lining terminating substantially midway between the floor and the ceiling structure.

In Fig. 1 suitable partitions have been illustrated closing in the end portions of the car and determining the storage or shipping spaces A and B. The partition backing up the load at A in the box car is designated as a whole at 23 while the partition backing up the load at B in the box car is similarly designated as 24. The foregoing partitions are used when backing loads less than the whole car loads and when a full car shipment is being loaded the partitions 23 and 24 will not be used, but longitudinal partitions such as indicated in dotted lines 25 and 26 are then employed.

In order to carry out the primary object of this invention, namely the prevention of mutilation to the car posts or other structure of the car, a plurality of clamping devices as indicated at 27

in Figs. 2, 6 and 7 have been provided and associated with the door posts. Also, centrally of the car, suitable ceiling fixtures and floor wells have been utilized and are indicated in general at 28 and 29 respectively.

Referring now to Figs. 6 and 7, the clamping devices or units 27 comprise a clamping arm 30 of general U-shaped configuration having one end 31 thereof operating in a substantially closed cylinder or tubular member 32 which is suitably secured to the door post 18 by means of screws 33 which pass through openings in the cap 34 of the spring housing member. The stem 31 of the clamping arm 30 is movable in an endwise direction in the cylinder 32 and is also capable of rotation therein. The end 31 of the clamping member is preferably threaded into a retainer 35 and pinned thereto as at 36, and a spring is confined between the retainer 35 and the cap member 34 to resiliently urge the clamping arm 30 toward the face of the door post 18. Obviously, the size and strength of the spring 37 can be changed to suit conditions although a spring selected according to the average conditions will be most feasible.

In order to increase the efficiency of the arm 30 to render the same inoperative as to its clamping action when inserting a timber such as T between the arm and the face of the door post 18, cooperative latching units 38 and 39 have been provided. The unit 38 is preferably in the form of a notch in the side of the stem 31 of the arm 30 which is engaged by a latch unit 39 in the form of a spring biased detent. Obviously, by drawing the arm 30 away from the face of the door post 18, the latch or detent member 39 will lock into the notch 38 to hold the arm 30 in spaced relation to the door post. After the timber T has been inserted, movement of an ear 40 on detent 39 and operating through an opening 41 in the cap member 34 will release the detent 39 allowing the free action of the spring 37 to firmly clamp the arm 30 against the timber T.

To facilitate withdrawal of the arm 30, a notch 42 has been provided therein for the reception of any type of hook member either to release the arm from a clamped timber or to withdraw the arm 30 from the face of the door post 18 when said arm has been disposed in inoperative position. When the arm is in inoperative position against the face of the door post, the tip end 43 normally is seated in the opening 44 of a retaining plate 45 secured to the door post 18 or adjacent lining wall.

It is apparent from the foregoing description that timbers such as T can be used and replaced at will to form a protective lining for the door posts and that they may be used for the reception of nails should that become necessary, or else they may be used as vertically disposed shoulders to hold the partition individual pieces or planks P of the partition 23 as best illustrated in Fig. 2. The common practice is to begin loading a car at the extreme end thereof progressively stacking the merchandise toward the center of the car and then inserting the partition pieces or planks P one by one as the height of the load increases. Under normal conditions the load, when relatively heavy will only be stacked or piled high enough to be approximately level with the belt lining and in this case the partition 23 will be substantially as shown in Fig. 2. It is obviously apparent that the partition pieces may be increased in height as shown in dotted lines in Fig. 2 in the cases where light loads prevail.

Referring now more particularly to Figs. 3, 4 and 5 which have to do with the ceiling fixtures 28 and the well member 29 which are adapted to centrally back up and steady the partition pieces or planks P intermediate their ends, the well fixture 29 is suitably nested in the car floor 17 and secured by a plurality of screws 46. This well is provided with a cover 47 which is normally closed by means of a spring-actuated latch bar 48' having its operating members flush with the car floor surfaces and the surface of the cover 47. Cover 47 is hinged by means of pins 48 oppositely disposed, the pins being locked against loosening by a spacer 49 suitably secured by means of screws 50 to the underside of the cover 47.

The well fixture 29 has its opening 51 of such proportions as to loosely receive a timber T' therein and one face of the opening 51 is provided with a retaining lip or claw 52 which is adapted to bite into the timber T' upon the insertion of a wedge W in the manner best shown in Fig. 3. By the use of the wedge, the timber T' is readily secured to the car floor without nailing of the timber to the floor and the wedge W after it has been driven in place can be suitably nailed to the timber T' as at 53 to prevent accidental retraction thereof.

The upper end of the timber T' is adapted to be received in a header 55 of the ceiling fixture 28, the header having a laterally disposed side thereof open as at 56 to allow the timber T' to enter into the pocket portion of the header. The header 55 is suitably secured to the ceiling structure by means of screws 57 or any other suitable means while a bracket 58 is connected between the header 55 and the ceiling 16 at the side of the header oppositely disposed to the pressure of the load.

Within the pocket portion of the header 55, the device includes a cap member 60 which is normally urged toward the car floor and against the upper end of inserted timber T' by suitably acting and supported springs 61. For all practical purposes the springs 61 can be of sufficient strength to hold the timber T' against movement out of the header 55, but this action or movement of the timber toward the opening 56 is readily counteracted and prevented by the wedge W acting within the well opening 51.

In order to properly guide the upper end of the timber T' underneath the cap 60 of the header 55, a suitable strap 62, which may or may not be in the form of a spring leaf, is riveted to the cap as at 63 and has a loose upturned end encircling a rod 64, the end portions of the rod 64 being vertically guided by the bearing blocks 65 for limited vertical movement which has been provided to compensate for the vertical movement of the cap 60 upon insertion and removal of timber T'. To further facilitate the placing of the timber T' into position to be clamped by the cap member 60, the upper corner 66 of the timber T' is chamfered, the lower corner 67 of the same timber likewise being chamfered to facilitate insertion into the well fixture 29.

Obviously, the foregoing description relates to a preferred embodiment of the device as shown and illustrated by way of example in the accompanying drawings. It is contemplated, however, to make such changes as may be governed by the breadth and scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A load brace connected with a door post of a conveyance comprising a clamp arm for securing a protective bracing timber against said door post, guide means for guiding said clamp arm to move transversely of the conveyance, and a support for the clamp arm to resist forces acting longitudinally of the conveyance, both the guide means and the support being carried by said door post, and resilient means carried by said door post and connected with said clamp arm to urge the latter toward said post to hold said timber in place.

2. A load brace for a door post of a conveyance comprising a clamp arm for securing a protective bracing timber against said door post, guide means for guiding said clamp arm to move transversely of the conveyance and a support for the clamp arm to resist forces acting longitudinally of the conveyance, both the guide means and the support being carried by said door post, resilient means carried by said door post and connected with said clamp arm to urge the latter toward said post to hold the timber in place, and cooperative latch members carried by said post and clamp arm, respectively to hold said clamp in timber receiving position, said members being releasable to cause said arm to clamp said timber.

3. A load bracing device for a door post of a box car comprising a clamp member movable toward and away from said door post and adapted for securing a protective bracing timber against the door post, guide means for guiding said clamp arm to move transversely of the conveyance and a support for the clamp arm to resist forces acting longitudinally of the conveyance, both the guide means and the support being carried by said door post, resilient means carried by said door post and connected with said clamp member to urge the latter toward said post to hold the timber in place, and latch means for locking said clamp member in a predetermined open position relative to said post for insertion of said timber behind said clamp member, said latch means being releasable to cause said member to clamp said timber against the door post, said clamp member being so shaped as to allow limited movement of said timber relative to said post due to weaving of said car.

4. A load brace connected with a door post of a conveyance comprising a swingable clamp arm for releasably securing a bracing timber against the face of said door post, guide means for guiding said clamp arm to move transversely of the conveyance and a support for the clamp arm to resist forces acting longitudinally of the conveyance, both the guide means and the support being carried by said door post, resilient means carried by said post to normally urge said arm toward the post and to hold said timber in place, said resilient means being arranged to permit swinging movement of said arm relative to said post whereby said clamp arm may be swung to one side of the timber.

5. A load brace connected with a door post of a conveyance comprising a support carried by said door post, a swingable clamp arm guided for movement in said support in a direction transversely of the conveyance, whereby to releasably secure a bracing timber against the face of the door post, said support functioning to resist forces acting longitudinally of the conveyance, resilient means interposed between said support and said clamp arm to normally urge said arm toward the post to hold the timber in place, said resilient means being arranged to permit swinging movement of said arm relative to said post whereby said clamp arm may be swung to one side of the timber.

6. A load brace connected with a door post of a conveyance comprising a support carried by said door post, a swingable clamp arm guided for movement in said support in a direction transversely of the conveyance, whereby to releasably secure a bracing timber against the face of the door post, said support functioning to resist forces acting longitudinally of the conveyance, resilient means interposed between said support and said clamp arm to normally urge said arm toward the post to hold the timber in place, said resilient means being arranged to permit swinging movement of said arm relative to said post whereby said clamp arm may be swung to one side of the timber and latch means cooperating with said clamp arm to lock said arm in timber receiving relation with respect to said post.

7. A load brace connected with a door post of a conveyance, comprising a support carried by the door post, a clamp arm for securing a protective bracing timber against said door post, said clamp arm having a stem slidably guided in said support, and a tip at the other end of the clamp arm between which stem and tip the timber is held, resilient means in said support arranged to urge the clamp arm toward the door post to hold said timber in place, and a retaining plate supported adjacent the corner post and arranged to receive the tip of the clamp arm when the latter is in inoperative position pressed against the door post.

EDWIN B. JOHNSON.