June 11, 1940. W. F. EISENSMITH 2,204,075

LOAD BRACING DEVICE

Filed July 21, 1939 2 Sheets-Sheet 1

FIG. I.

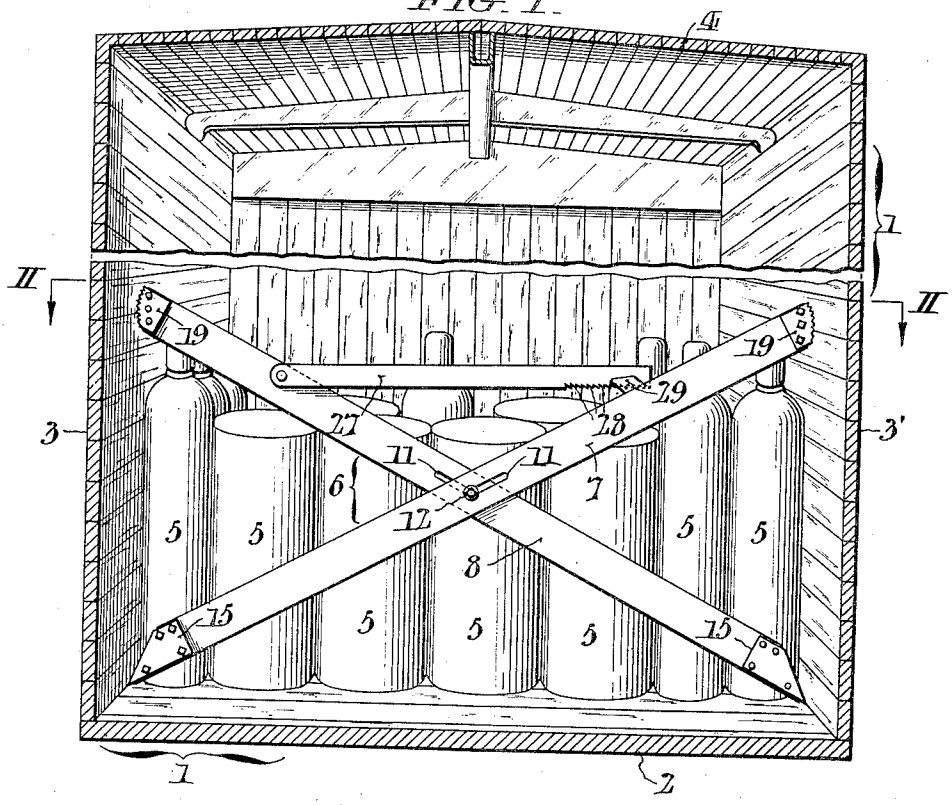
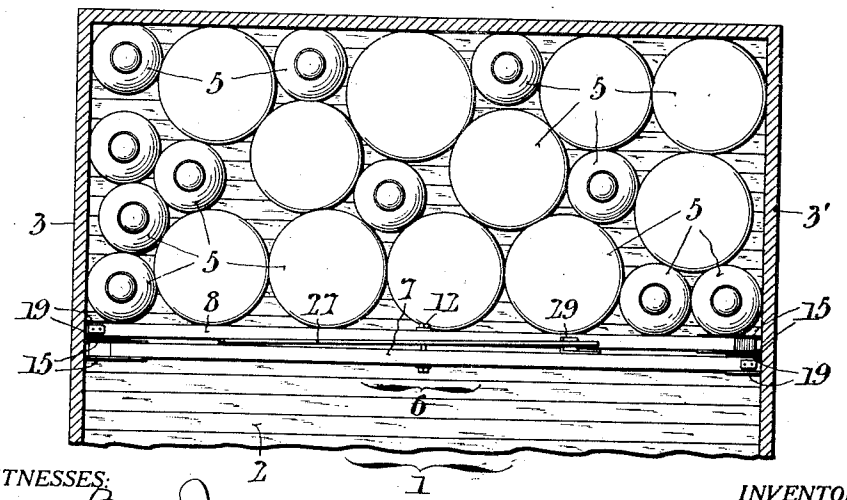


FIG. II.



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LOAD BRACING DEVICE

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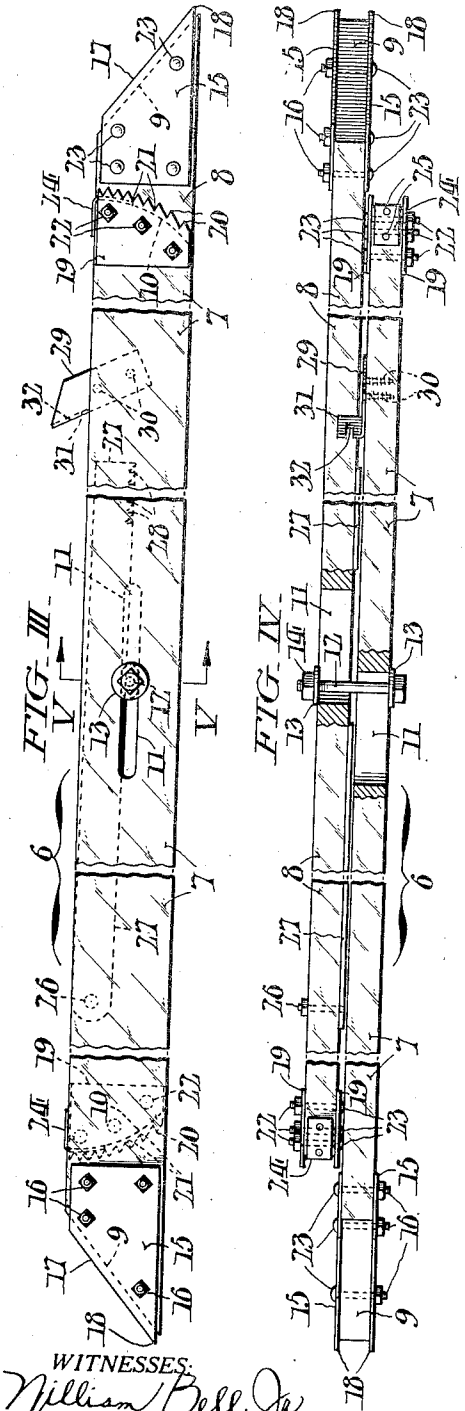


FIG. III.

FIG. IV.

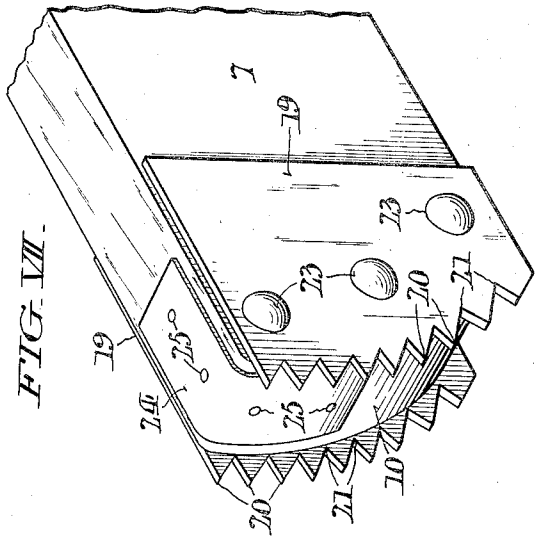


FIG. VIII.

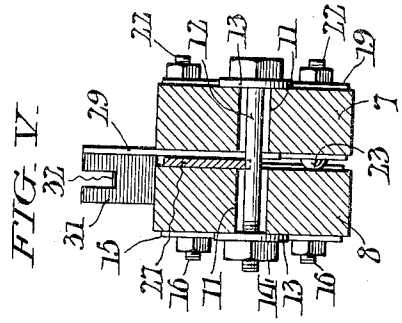


FIG. V.

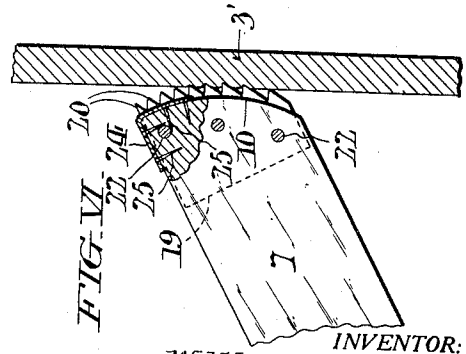


FIG. VI.

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UNITED STATES PATENT OFFICE

2,204,075

LOAD BRACING DEVICE

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Application July 21, 1939, Serial No. 285,688

6 Claims. (Cl. 105—369)

This invention relates to load bracing devices and, more particularly, to devices especially useful in restraining freight from shifting movements, or becoming loose, during transport in cars, trucks and similar vehicles.

The primary object of this invention is to provide a novel construction of bracing device capable of a four-point action without the aid of nails, screws, holding-cleats, or other retainer means.

Another object is to provide a bracing device which when placed in the desired position and so arrested is immune against working loose regardless of surrounding or impact vibrations.

A further object is to provide a fully assembled bracing device which can be readily adjusted for use in standard cars or trucks irrespective of their width.

A still further object is the provision of a bracing device of the type indicated above, characterized by a novel form of holder effectively preventive of the device bracing components ever becoming displaced, when once positioned, regardless of road or rail shocks and vibrations incidental to travel of the car or truck in which it is placed.

Another object is to provide a foldable and easily transportable load bracing device of the above indicated kind which is simple and durable in construction, as well as extremely efficient in active position.

Other objects and features of this invention, in addition to ancillary advantages, will be apparent from a consideration of the following explanatory disclosure, considered in connection with the accompanying sheets of illustrative drawings, while the concluding claims tersely express the subject-matter for which patent protection is sought.

In the drawings:

Fig. I is a broken perspective view looking inwardly of a truck body or car, with the load bracing device of this invention in active position.

Fig. II is a horizontal section on the plane II—II of Fig. I.

Fig. III is a broken face view of the load bracing device in collapsed position for carriage or transportation.

Fig. IV is a top plan view of the preceding figure, with the central portion broken out to more clearly show an important feature later on fully described.

Fig. V is a sectional view on the plane V—V of Fig. III.

Fig. VI is a fragmentary view illustrative of the impinging anchorage effected by each of the upper ends of the bracing members or bars with the confronting wall portion of a car or truck interior; and,

Fig. VII is a perspective view of the corresponding end of each bracing bar.

Referring first to Figs. I and II more particularly, the numeral 1 generally designates a cross-section of a conventional truck body or freight car, the same including a bottom or floor 2, opposed side walls 3, 3' and a roof 4; while container freight is comprehensively indicated as 5, the same being shown as comprising sealed containers of different species.

The load bracing device 6 of this invention as illustrated comprises counterpart beams 7, 8 of suitable material, such as rectangular-section seasoned lumber, with one end tapered relative to the horizontal at 9, and the other end arcually curved at 10 in respect to the vertical; said ends, respectively, serving in use as lower and upper wedging contacts. Medially lengthwise of each beam is an elongate slot 11 through which passes a connecting bolt 12 with a suitable washer 13 at each side of the device, and a clamping nut 14 whereby said parts are rigidly securable together at the requisite adjustment. Preferably flanking each tapering lower end 9 of the respective beams 7, 8 is a steel grip plate 15 which are jointly secured in position by through bolts 16, each said plate conforming substantially with the beam ends 9, with inclined edges 17 spaced evenly beyond said ends as clearly shown in Fig. III to provide impinging points 18, for a purpose hereafter explained.

Somewhat similarly, each beam upper arcual end 10 is reinforced by flanging steel grip plates 19 having suitably-directed teeth 20, the roots 21 of which are proximate curvilinearly-near the ends 10, said plates being secured in place by spaced through bolts 22. It is to be here noted that all of the bolts 16 and 22 have rivet-like heads 23 which are inwardly disposed so as to compact the beams 7, 8 as closely together as possible when collapsed. In addition, each beam end 10 intervening the grip plates 19 is fitted with a conformably bent protective strap 24 appropriately holed for attachment in position as by nails or wood-screws 25, such strap serving as a protector upon forcing the teeth 20 into biting engagement with the walls 3, 3' and to prevent splitting of the said beam end.

In order to firmly hold the device 6 in operative position as shown in Fig. I, one of the beams

8, for example, has pivotally attached at 26 a retainer bar 27 provided with suitably-directed ratchet or locking-teeth 28 for coaction with an angle-section catch, one flange 29 whereof is rigidly secured, as by screws 30, to the other beam 7, with the inwardly directed relatively-shorter flange 31 cut-out to provide an arrestor dog 32 engageable by the locking-teeth 28 aforesaid. It is to be also noted the flange 31 also serves as a stop for positioning the beams 7, 8 in parallelism when the device is collapsed, while the retainer bar 27 rests on the clamp bolt 12, as clearly understandable from Figs. III and V.

The operation of the load bracing device 6 may be briefly described as follows: The operator simply releases the clamp nut 14, thus enabling the beams 7, 8 to free movement with their end points 18 in the lower corners of the car or truck meeting side walls 3, 3' and floor 2, in close abutment to the packed freight 5, whereupon the upper grip plates 19 are similarly forced downwardly into impingement with said side walls, when the retainer bar 27 is swung into position for one of its teeth 28 to arrestively engage the dog 32, with the grip plate teeth 20 embedding the walls 3, 3', in an obvious manner, with a four-point arrestive contact. Obviously, to release the device 6, the retaining bar 27 is simply knocked upwards, when said device can be easily lifted out of engagement with the side walls 3, 3' and bottom 2 with but little manual effort, and folded up for carriage, storage or transport by collapsing the beams 7, 8 into mutual registration and tightening of the nut 14.

From the foregoing it will be readily apparent the load bracing device of this invention can be used for firmly holding all kind of freight against movement during transport and otherwise; and that said device is capable of use in many other positions than the one specifically disclosed herein. Also, that minor changes in the details of construction, as well as the materials used in its fabrication, can be resorted to without departing from the spirit and scope of the invention as concisely expressed in the following claims and the prior art permits.

Having thus described my invention, I claim:

1. In a load bracing device, the combination of counteractive complemental intersecting members disposed normal to the direction of the load thrust, each said member having a point engaging end and an arcual end for engaging opposed walls, means pivotally connecting said members medially of their length with capacity for relative movement, a retainer device mounted on and intermediate the pivotal connection and the outer end of one of said members, and an arrestor means carried by the other member for adjustable engagement by the retainer device.

2. In a load bracing device, the combination of counteractive complemental intersecting members of appropriate cross-section in a common plane normal to the load thrust, each said member having one end taperingly inclined with respect to the lateral center line and the other end arcually curved in respect to the longitudinal center line of the brace member for impingement with spaced walls, clampable means pivotally connecting the members medially of their length with capacity for relative sliding adjustment, a retainer member attached to one of the intersecting members at one extremity intermediate the pivotal connection and the other end of said member, and an arrestor device carried by the other member for adjustable engagement by the retainer member to lock the device in active position.

3. In a load bracing device, the combination of counteractive complemental intersecting beam members of rectangular cross-section disposed in a common plane normal to a horizontally acting load thrust, each said member having one end taperingly inclined downwards and the other end arcually curved respectively relative to the lateral and longitudinal center line of the beam for engagement with spaced parallel walls, a pivotal connection medially of the length of said members with associated slots permitting relative adjustment, said connection including means for clamping the members in bracing position or when collapsed to hold them in mutual registration, a retainer bar fulcrumed to one of the beam members at one extremity intermediate the pivotal connection and the outer end of said member, and an arrestor dog carried by the other member for adjustable engagement by the retainer member to secure the intersecting members immovable while in active position.

4. A load bracing device as defined in claim 3, wherein the complemental intersecting beam members have their ends respectively fitted with inclined and arcually curved flanking plates having projection beyond said ends, means rigidly securing said plates to the beam members in spaced relation, said arcually curved end plates being formed with teeth the roots whereof proximately adjoin the beam end curvatures, and a protector strap is applied to the beam arcually curved end intermediate the flanking plates also serviceable to prevent said curved end from splitting.

5. A load bracing device as defined in claim 3, wherein the retainer bar is formed with ratchet teeth along a portion of the lower edge remote from its fulcrum end.

6. A load bracing device as defined in claim 3, wherein the arrestor dog is in the form of an angle section attachment with one flange longer than the other, means whereby said attachment longer flange is securable to one of the intersecting beam members, and a cut out in the attachment shorter flange upper portion forming a dog-tooth.

WILLIAM F. EISENSMITH.