July 21, 1936. B. F. FITCH 2,047,956

DEMOUNTABLE VEHICLE BODY

Filed March 2, 1934 2 Sheets-Sheet 1

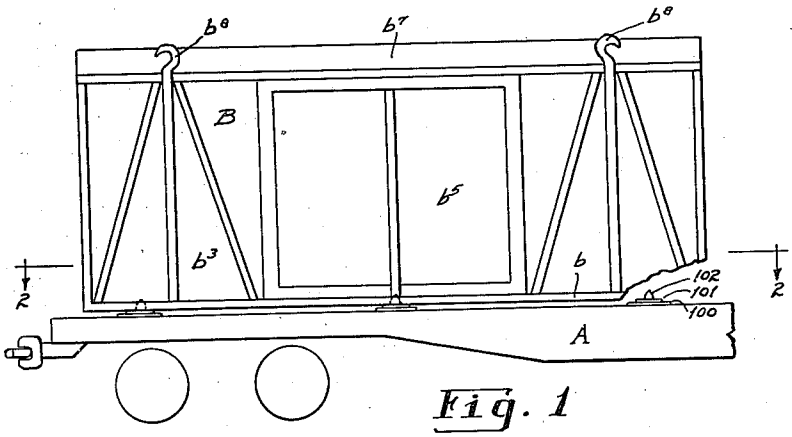


Fig. 1

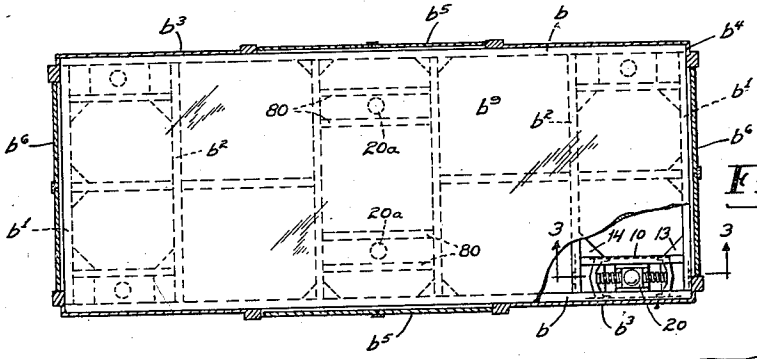


Fig. 2

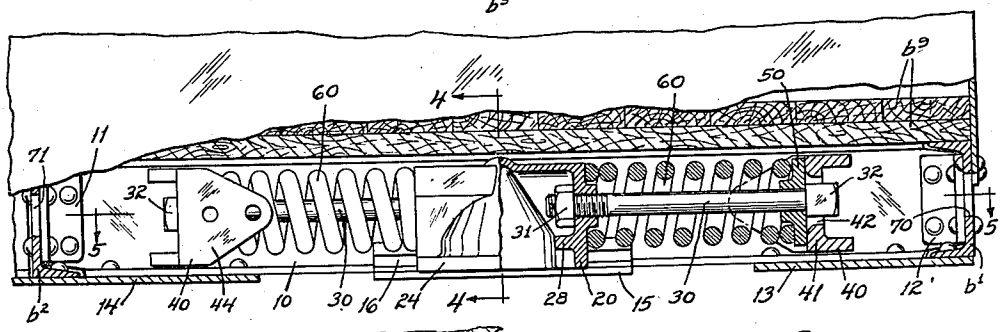


Fig. 3

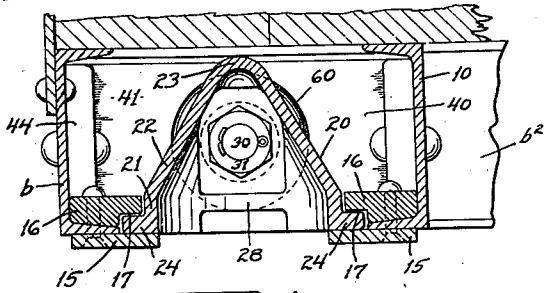


Fig. 4

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DEMOUNTABLE VEHICLE BODY

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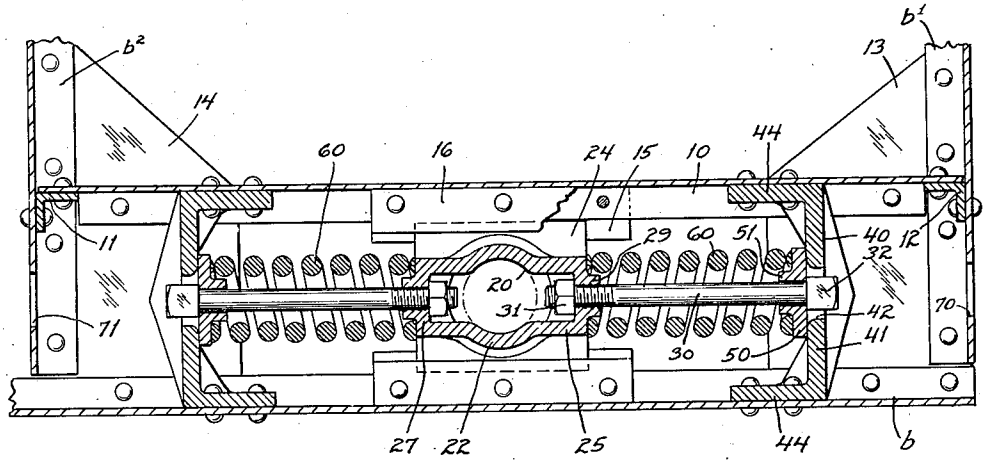


Fig. 5

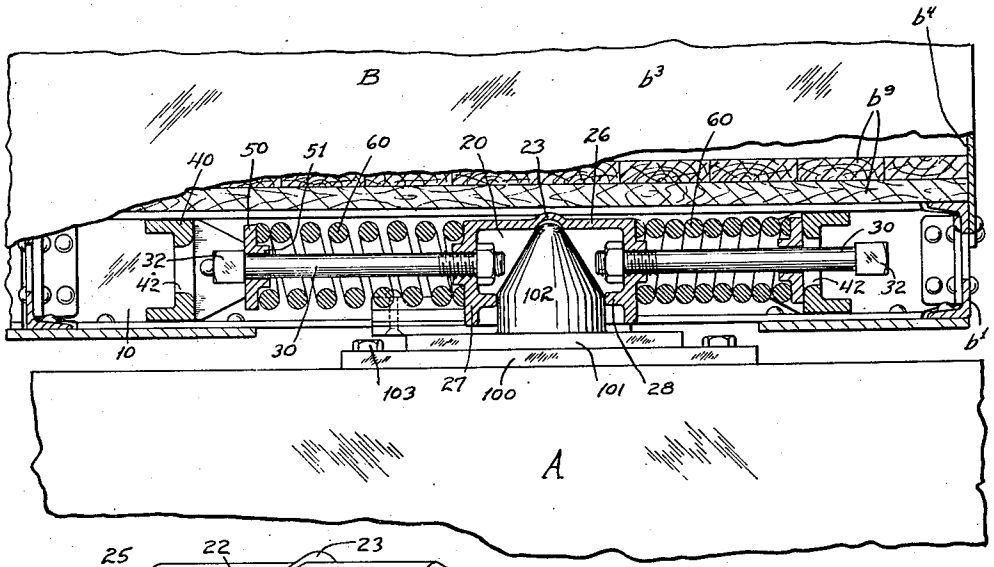


Fig. 6

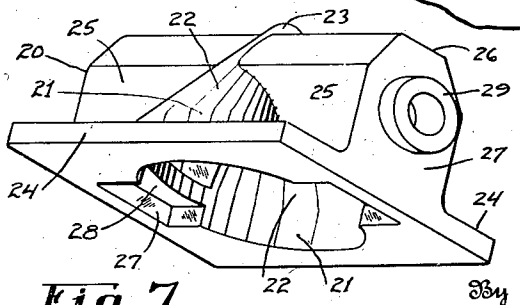


Fig. 7

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DEMOUNTABLE VEHICLE BODY

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Application March 2, 1934, Serial No. 713,683

3 Claims. (Cl. 105—366)

This invention relates to demountable truck bodies or freight containers adapted to be carried interchangeably on a highway truck and another vehicle, especially a railway car. In the inter-city transportation of package freight, it has been found very efficient to load the freight into demountable bodies, after which such loaded bodies are placed on a highway truck, transported to a rail head, lifted and deposited on suitable anchorages on a railway car. The loaded body is then transported by the railway car to another city, and then transferred to a highway truck for ultimate delivery.

In the operation of railway cars, there are longitudinal buffing and tugging strains which tend to shift the load in the bodies or the bodies themselves longitudinally, and may at times become so severe as to cause injury to the contents or to the body, by reason of the inertia impact of the load against the body ends, and may even tear the body loose from the anchorages. To obviate this difficulty it has been proposed to provide the railway car with yielding buffers which the body may engage. I find, however, that it is much simpler, and causes less interference with other uses of the railway car, to provide yielding anchorages carried by the demountable body itself, which may coact with fixed anchorages on the railway car.

I have so devised the yielding body-anchorages that they may be located within the floor frame and beneath the floor of the demountable body, and hence, do not restrict in any manner the carrying capacity of the container or provide objectionable obstructions on the railway car, but are effective to prevent the transmission of sudden blows from the car to the body. My invention includes this feature broadly and also the more specific embodiment thereof illustrated in the drawings and hereinafter more fully described.

In the drawings, Fig. 1 is a side elevation of one of my demountable bodies resting on a flat car, the car and a lower corner of the body being broken away; Fig. 2 is a horizontal section of the body as indicated, for instance, by the line 2—2 on Fig. 1, looking downward, the floor being partly broken away to show one of my shock-absorbing anchorage devices; Fig. 3 is a vertical longitudinal section through the shock absorbing anchorage, as indicated by the line 3—3 on Fig. 2, but on a larger scale; Fig. 4 is a cross-section of the anchorages as indicated by the line 4—4 on Fig. 3; Fig. 5 is a horizontal section through the shock absorbing mounting, as indicated by the line 5—5 on Fig. 3; Fig. 6 is a vertical section similar to Fig. 3, but with the body mounted on a railway car and displaced in the left-hand direction from its normal position consequent upon a right-hand jerk of the car; Fig. 7 is a bottom perspective of one of the anchoring sockets of the body, detached.

In Fig. 1, and also in Fig. 6, A is to be taken as indicating an ordinary railway flat car on which demountable bodies, preferably two or more, may stand in longitudinal alignment; B indicates the body itself, which may be of my standard construction having a floor frame composed of longitudinal side sills *b*, end sills *b1*, and internal longitudinal and transverse beams, shown in Fig. 2, and some of them designated *b2*. Secured to such floor frame are side walls *b3* and end walls *b4*, each of which are equipped with double-hinged doors *b5* and *b6*. The side and end walls carry a suitable roof *b7* and the body sides are provided with suitably braced load attaching hooks *b8* by which the body may be lifted for transfer from one vehicle to another. Resting on the floor frame within the body walls are suitable layers of flooring *b9*. My shock absorbing anchorages are mounted beneath such flooring and are secured by members of the floor frame as about to be described.

In the floor frame, adjacent each corner of the body, I provide a short longitudinal beam 10, parallel with the sides and extending between an end sill and the adjacent transverse floor beam *b2*, and secured thereto, as by riveted clips 11 and 12. I may also provide a gusset plate 13, secured to the side and end sills, and a similar gusset plate 14 secured to the side sill and the cross beam *b2*. This added beam 10 is preferably a channel of the same cross-section as the side sill *b*, which is also a channel, such two channels having their flanges facing each other, as shown in Figs. 2 and 4. Secured to the lower flanges of the side sill *b* and the added longitudinal member 10 on their underside are supporting plates 15 and on their upper side strips 16, which are rabbeted on their undersides, as shown at 17. This provides a fixed guideway along the inner edges of the bottom flanges of the longitudinal members *b* and 10.

Slidably mounted in the guideway above described is the body position member 20. This device is of the general form shown in Fig. 7, and comprises a hollow casting having a central downwardly facing socket, the wall of which extends first upwardly as a cylinder at 21 and then continues for the most part as a cone 22 with a rounded dome top 23. On the opposite sides of the cylindrical portion are integral external longitudinally-extending ribs 24, which occupy the

guiding space between the frame members 15 and 16. Leading longitudinally from the socket described are upright webs 25 of the casting, which converge near the top and are closed at the top by a substantially horizontal web 26. Both the upright and horizontal webs terminate at their ends in vertical end webs 27, these end webs being also connected with the socket wall by transverse webs 28.

The casting above described provides a downwardly facing socket, conical for its major portion but cylindrical near its bottom, and integrally associated with vertical end walls and lateral guiding ribs. Connected to each end wall of the casting is a rod 30, extending longitudinally from the casting. The rod is shown as screw-threaded into the end wall 27 and locked by a jamb nut 31. At its distant end the rod is provided with a head 32, which normally freely occupies a considerably larger opening 42 in the transverse wall 41 of a bracket 40, having side flanges 44, Fig. 5, which are riveted to the webs of the side sill b and the longitudinal beam 10. Slidably mounted on each rod 30 is a washer 50, bearing against the face of the bracket 40 and provided with a hub 51. Freely surrounding each rod is a comparatively stiff and strong compression spring 60, the ends of which embrace respectively the hub 51 of the washer 50 and a hub 29 in the outer face of the end wall 27 of the anchorage casting.

It will be seen from the description given that I have provided in the floor frame of the body and beneath the floor a socket member 20, which is slidably guided by the floor frame, but is normally held stationarily in a central position by the two springs 60, as shown in Figs. 3 and 5.

The male anchorage carried by the railway car may be of the form shown, described and claimed in my prior Patent No. 1,814,304 issued July 14, 1931 to my assignee, Motor Terminals Company. As there shown, and also as shown in Figs. 1 and 6 hereof, such fixed anchorage comprises a plate 100 having a surmounting plate 101, and above this a projection 102, the lower portion of which is cylindrical and the upper portion conical. These parts may be one integral casting adapted to be secured to the floor frame of the railway car by bolts or cap screws 103, which pass through the plate portion 100, but have their heads lower than the top plane of the plate portion 101.

The springs 60 are of sufficient stiffness to maintain the socket member 20 normally in a fixed position, so that the body may be lowered onto a railway car and positioned to have the sockets readily register with the fixed projections 102. Any slight inaccuracy in the lowering is provided for by the conical ends of the projections, which operate to cam the body laterally or longitudinally or both, so that it comes to a definite position with the cylindrical portions of the body sockets embracing the cylindrical portions of the fixed projections.

Now in the operation of the train, if a severe tugging strain is given to the car, as for instance, in taking up slack in starting, the fixed positioners on the car simply carry the socket members on the body in the direction of movement of the car further compressing the springs in advance of the socket and loosening the springs behind them. This condition is illustrated in Fig. 6, where the car is presumed to have been given a jerk toward the right. Immediately following such displacement the highly compressed springs reacting will restore the body to normal position. A severe buffing strain will, of course, produce a similar result but in the opposite direction, compressing the other springs 60 and relieving the springs on the opposite sides.

The displacement of the socket is limited by the possible compression of the springs 60, Fig. 6, showing the right-hand spring completely compressed. In this movement the head 32 of the rod 30 on the other side passes out of the opening 42 of the bracket 40, but carries the washer 50 with it as shown in Fig. 6 and thus maintains that spring 60 in normal condition. This openings 42 are made large enough to allow some sagging of the rods 30 without danger of the head of the rod striking the bracket 40 when the device returns to normal position.

It will be seen that my shock absorbing mounting of the body anchorages is entirely in an idle space within the floor frame of the body and beneath the floor; that it is effective to hold the anchorages in fixed position for normal usage, while the body is being located on the vehicle, but is also effective to allow a relative yielding between the vehicle and container in case of abnormal longitudinal strains, thus protecting both the load and the container itself, the displacement of the body being thereafter automatically rectified by the reaction of the compressed springs.

In assembling the shock-absorbing parts, the brackets 40 and the longitudinal guides 15 and 16 may be riveted in place at the time the floor frame is constructed. The socket casting may be passed downwardly between one end of the guide and the adjacent bracket and then shoved longitudinally with its guiding ribs in the fixed guiding spaces; then the springs and washers may be put into place, after which the rods may be located within the washers and springs and screwed into the wall of the socket member. Finally, the locking nuts may be passed upwardly through the open lower end of the socket and put in place on the inwardly projecting ends of the rods.

To simplify the assemblage of the parts, as well as to enable easy replacement of a spring, should one become broken, I form openings 70 and 71, in the end sill b1 and the cross-beam b2, which align with the rods 30. The rod may be readily passed into place through the corresponding opening, the locking nut being detached. The angular formation of the head 32 of the rod enables the application of a suitable wrench to screw the rod in or out of the socket casting, as the case may be.

In addition to the four positioning members in the four corners of the body, I prefer to mount a pair of positioning members intermediately which are in the central region of the body measured longitudinally, but preferably set in from the sides, as indicated at 20a, Fig. 2. Such additional members may be mounted between structural beams 80, secured to the adjacent cross members of the floor frame. The construction of the shock absorbing mounting itself will be the same as that described for the corner mountings.

The intermediate anchorages are designed to prevent any possible displacement of the body if there should be such a vertical jolt as would lift the body at one end or the other above the vehicle projection sufficiently to cause the sockets at that end to clear the projections. In case of such a jolt, anchorages at the other end would

form the fulcrum about which the body would rise and the centrally located anchorages would remain well in engagement to maintain the body in proper registration even though the sockets of the distant ends might clear the corresponding fixed projections. This is simply a safety provision for an abnormal condition which would not often occur in railway transportation but is more liable in truck transportation; for example, if a truck wheel should drop into a man-hole in a city street.

It may be noted that my provision for shiftable anchorages within the body reduces the accuracy necessary in the longitudinal spacing of the fixed anchorages on the vehicle, since if the presentation is accurate enough so that the fixed anchorages enter the sockets at all, the springs allow sufficient longitudinal shifting to enable an effective seating. This feature occasionally becomes of use if there is a stretching or buckling of the vehicle due to collisions or impact, or if the anchorages thereon become displaced, due to impact against the anchorages themselves during transit of other forms of freight on the vehicle. With the shock absorbers on the body, this emergency adaptation is available for both the railway car and the truck chassis.

I claim:

1. In combination, a vehicle having a set of positioning devices thereon, a demountable freight container having a set of positioning devices on its base adapted to detachably mate with the aforesaid devices of the vehicle when the container is placed thereon, one set of devices having guides permitting parallel relative movement of the guided devices in the direction of travel of the vehicle, yielding means oppositely bearing on the guided positioning devices in said direction of travel of the vehicle, said yielding means permitting movement of the container on the vehicle and tending to return the container toward a predetermined position after each movement, and positive restraining means associated with the yielding means and preventing the same from moving the guided positioning devices beyond mating position with respect to the other set of positioning devices.

2. In combination, a vehicle having a set of positioning devices thereon, a freight container demountably carried on the vehicle and having a set of positioning devices respectively arranged to mate with the said devices of the vehicle, one set comprising vertical sockets and the other vertical projections adapted to enter the sockets, guides for one set of devices extending longitudinally of the direction of travel of the vehicle, oppositely acting spring means operatively connected with guided positioning devices to absorb shock to the container by permitting it to move on the vehicle, in the direction of extent of the guides, and positive restraining means for the spring means preventing the latter from moving the guided devices in either direction beyond centered position with respect to the cooperating positioning devices.

3. A demountable freight container adapted to be removably positioned on a supporting vehicle having a set of fixed positioning devices thereon, a set of movable positioning devices on the base of said container adapted to detachably mate with the aforesaid devices of such vehicle when the container is placed thereon, buffer spring means reacting on the container and operatively bearing on the positioning devices thereof in opposite directions parallel to the movement of the container when carried on the vehicle, and positive restraining means associated with the spring means and acting thereon to prevent the same from moving the positioning devices of the container beyond mating position with respect to the positioning devices of the vehicle.

BENJAMIN F. FITCH.