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Sittner, Jr. et al.

[11] **3,889,783**

[45] **June 17, 1975**

[54] **BRAKE LEVER SYSTEM FOR RAILWAY CARS**

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[21] Appl. No.: **495,887**

[52] **U.S. Cl.** **188/52;** 74/469

[51] **Int. Cl.** **B61h 13/20**

[58] **Field of Search** ..... 188/49, 50, 51, 52, 53, 188/54, 55, 56; 105/368 B; 24/469

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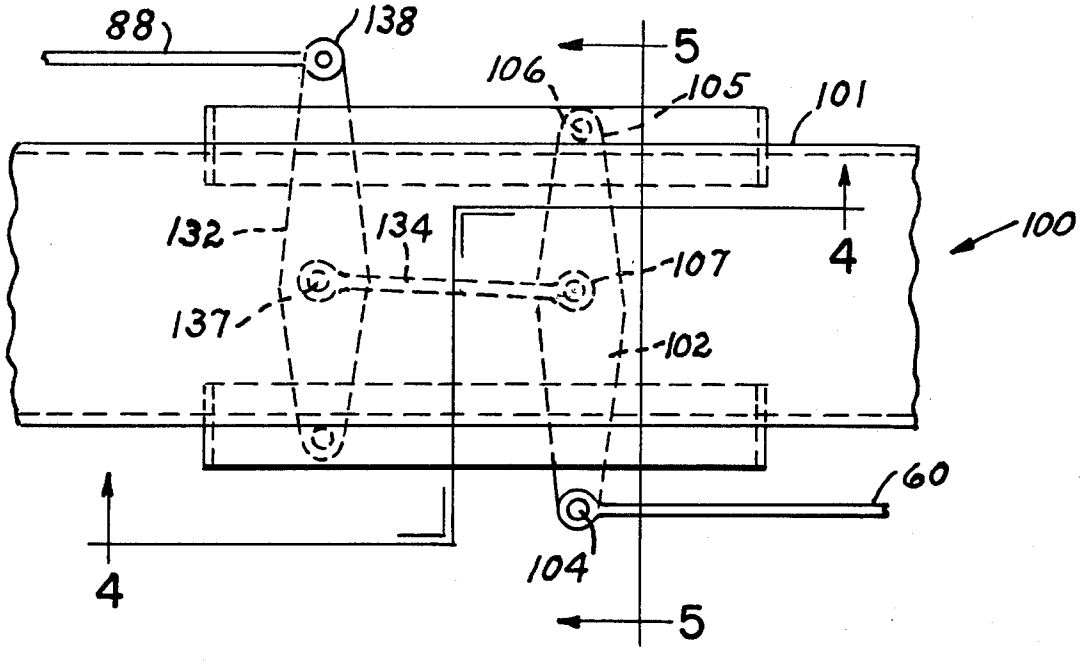
Primary Examiner—George E. A. Halvosa

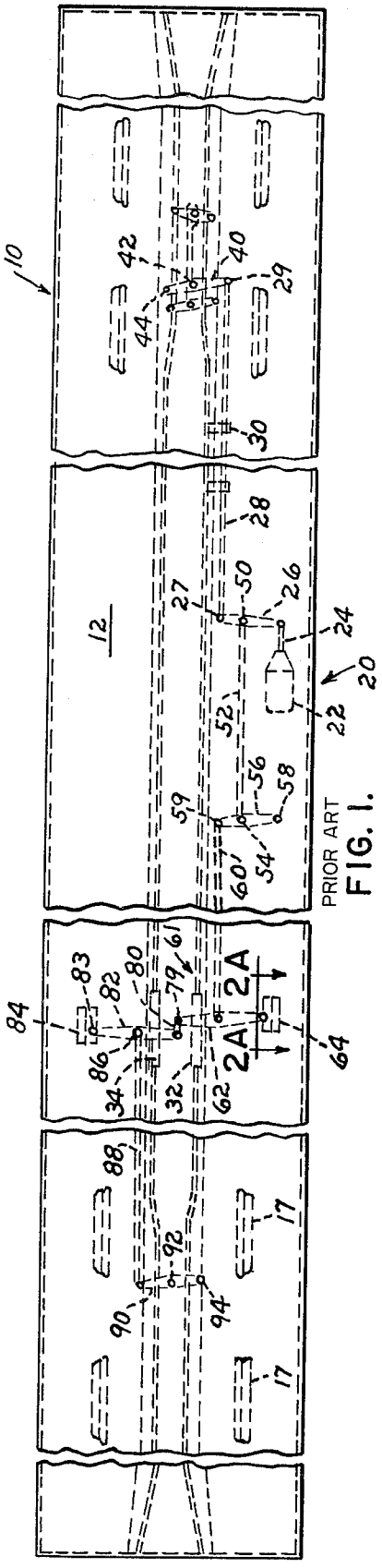
Attorney, Agent, or Firm—Henry W. Cummings

[57] **ABSTRACT**

In a railway freight car brake system, the brake system is transferred from one side of the center sill to the other side by means of transverse brake levers which are fulcrumed in the center sill webs. The levers pass through respective openings in the center sill webs and the openings may be provided with center sill reinforcement. Conventional fastening means, such as simple pin connections, may be used to connect the levers to either the center sill webs and/or to the center sill reinforcement. With this arrangement extensive prior art bracketing is avoided, and the transverse levers may be shorter. As a result there is less danger of the lever bottoming out in the center sill openings when the brakes are applied.

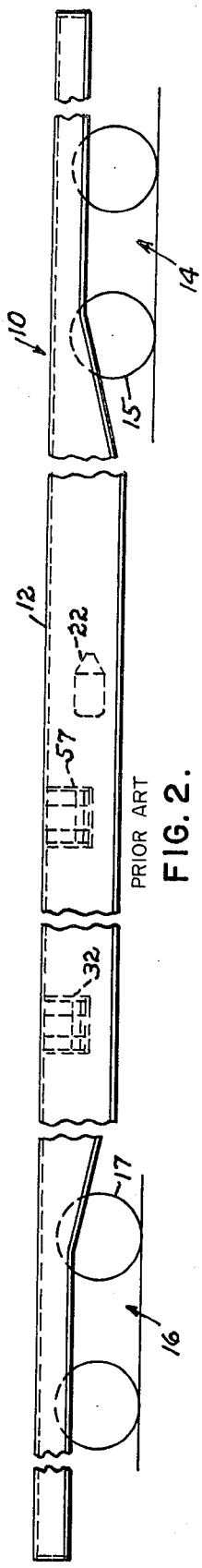
8 Claims, 7 Drawing Figures





PRIOR ART

FIG. 1.



PRIOR ART

FIG. 2.

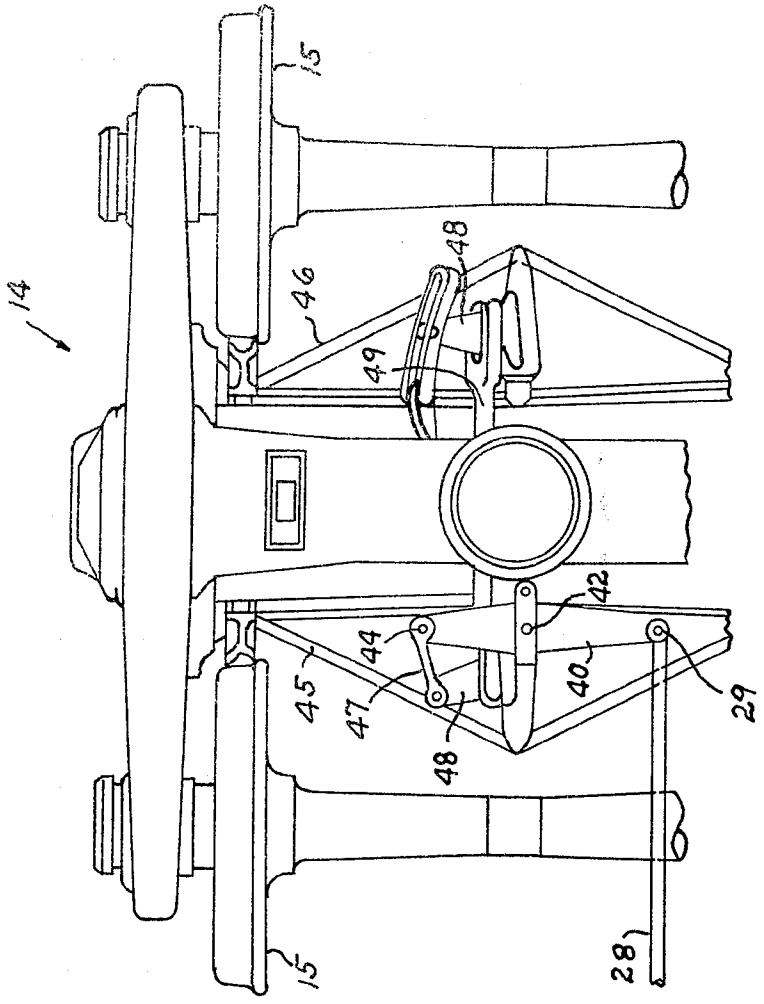


FIG. 2B.

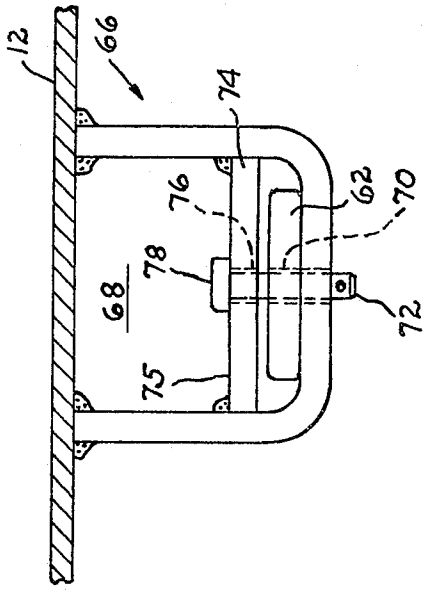


FIG. 2A.

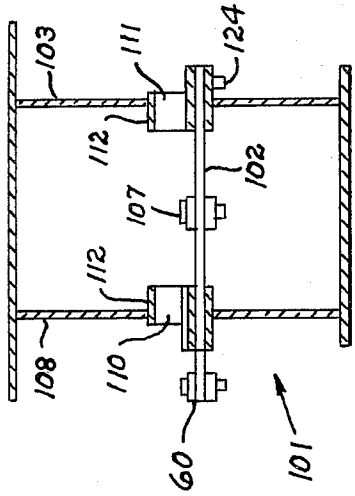
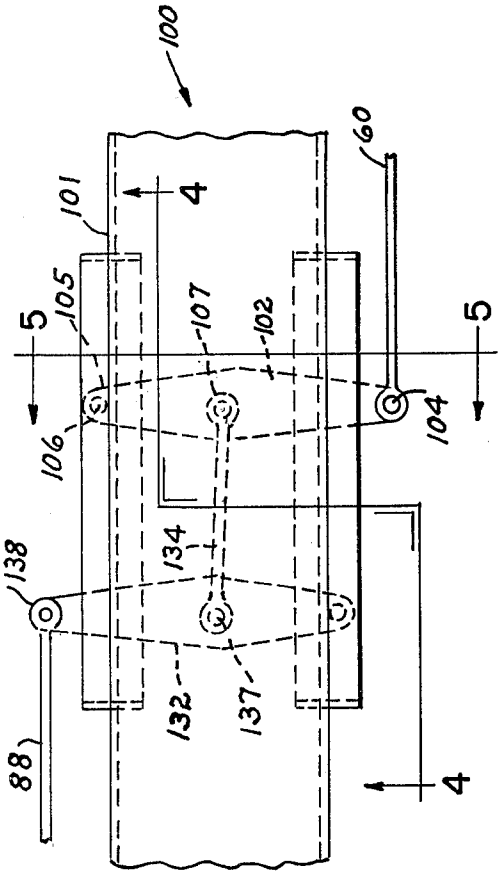


FIG. 5.



PRIOR ART

FIG. 3.

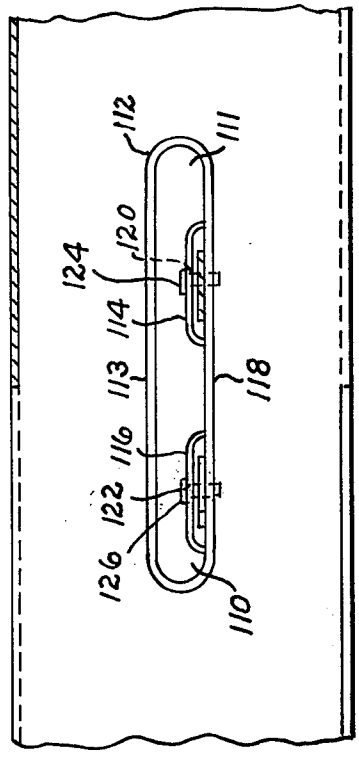


FIG. 4.

BRAKE LEVER SYSTEM FOR RAILWAY CARS

BACKGROUND OF THE INVENTION

Most flatcars today are built close to the rails, often only about 11 inches from the rail. This necessitates running the transverse crossover brake levers through the center sill of the car. There is simply not sufficient room to mount the brake levers below the center sill and maintain AAR clearance limitations.

Previous transverse brake lever connections have utilized long levers mounted upon large brackets which depend from the flatcar body or in some instances from the side sill flanges. Mounting these brackets upon the car body and/or side sill flanges amounts to considerable labor man hours and an expenditure for material for the brackets. Also, there is a possibility that these large levers will bottom out on the center sill when in a worn condition; and thus the brake will be applied at reduced force or will not be applied at all.

It is an object of the present invention to reduce the amount of bracketing required for transverse brake lever linkages.

It is another object of the present invention to reduce the length of transverse brake levers required in railway car brake systems which pass through the center sill.

Another object of the present invention is to render the brake system safer and less likely for the brake to bottom out during operation.

Other objects will be apparent from the following description and drawing.

SUMMARY OF THE INVENTION

In a railway freight car brake system, the brake system is transferred from one side of the center sill to the other side by means of transverse brake levers which are fulcrumed in the center sill webs. The levers pass through respective openings in the center sill webs and the openings may be provided with center sill reinforcement. Conventional fastening means, such as simple pin connections, may be used to connect the levers to either the center sill webs and/or to the center sill reinforcement. With this arrangement extensive prior art bracketing is avoided, and the transverse levers may be shorter. As a result there is less danger of the lever bottoming out in the center sill openings when the brakes are applied.

THE DRAWINGS

FIG. 1 is a top plan view of a prior art brake system often utilized in railway flatcars;

FIG. 2 is a side elevational view of the flatcar and brake system shown in FIG. 1;

FIG. 2A is an enlarged view along the lines 2A—2A in FIG. 1;

FIG. 2B is an enlarged plan view illustrating a brake beam applying the brakes to the wheels;

FIG. 3 is an enlarged plan view of the brake lever system according to the present invention;

FIG. 4 is a sectional view along the lines 4—4 in FIG. 3;

FIG. 5 is an elevational view along the lines 5—5 in FIG. 3.

DETAILED DESCRIPTION

A railway flatcar having a prior art braking system is illustrated in the drawings at 10. The flatcar comprises a conventional flatcar deck 12 supported by appropriate conventional trucks 14 and 16 respectively having wheels 15 and 17 which ride upon the rails.

The brake system is indicated in the drawings generally at 20 and comprises a brake cylinder 22 of known construction having a piston operable therein 24 which is connected to a main brake lever 26 at one end thereof. At the opposite end of main lever 26 there is a connection 27 to a brake lever 28 which extends longitudinally down the car to the right in FIGS. 1 and 2, which is supported by suitable angles or brackets shown in FIG. 1 at 30.

Lever 28 is connected at 29 to a transversely extending lever 40. Lever 40 is pivotally connected at 42 to the car body and at 44 to brake beams 45 and 46 (through levers 47, 48 and 49) in the usual manner, as shown in FIG. 2B. When lever 28 is moved from right to left in FIG. 1 the brake beams 45 and 46 apply the brakes to wheels 15 at this end of the car in the usual manner.

Main lever 26 is also connected at 50 to a longitudinally extending lever 52. Lever 52 connects to the midpoint 54 of transversely extending lever 56. Lever 56 is fulcrumed to the car body at 58 through suitable bracketry 57 shown in FIG. 2. Lever 56 at its opposite end 59 is connected to a longitudinally running brake rod 60.

In order to apply the brakes to this end of the car it is necessary to transfer the brake system to the opposite side of the car. According to one prior art construction indicated generally at 61 the longitudinal rod 60 is connected to a transverse rod 62 which is fulcrumed by means of a large bracket 64 to the car body. As shown in FIGS. 2A, the bracketry comprises a main bracket 66 generally U-shaped which is welded to the car body. A vertical web 68 is welded to the bracket 66 and also to the car body. Brake lever 62 has an opening therein 70 through which lever pin 72 passes to hold the lever in place. A plate 74 is affixed to bracket 66 having an opening therein 76 through which pin 72 passes and a surface 75 which pin head 78 engages to hold pin 72 in place.

Lever 62 at its opposite end 79 is connected to a short longitudinal link 80. Link 80 in turn is connected to a transverse brake lever 82 fulcrumed at 83 by bracketry 84 similar to that shown in FIG. 2A to the car body. Levers 62 and 82 pass through appropriate openings 32 and 34 in the center sill which have been burned out or otherwise removed. In this prior art arrangement the levers 62 and 82 are large generally around 4 feet in length. This necessitates openings in the center sill for these levers of approximately 4 feet long. Further, the use of the large levers 62 and 82 raises a possibility that these levers may bottom out in one or both of the center sill openings. In this event the brakes will operate with reduced force, or will not operate at all. This obviously produces a dangerous condition.

Transverse lever 82 is connected at its mid-region 86 to a longitudinally extending brake lever 88. Longitudinal lever 88 is connected to a transversely extending brake lever 90, pivoted to the car body at 92 and applies the brakes through its opposite end 94 to wheels 17 through an arrangement similar to that shown in FIG. 2B in a conventional manner.

In accordance with the present invention, the large transverse brake levers 62 and 82 and the brackets 64 and 84 are replaced with the simplified brake arrange-

ment indicated generally at **100** in FIGS. **3-5.** The longitudinally extending brake rod **60** coming from either transversely extending brake lever **56** or directly from main lever **26** is connected to a transversely extending brake lever **102** preferably at an outer end thereof **104.** Transverse lever **102** passes through the center sill **101** and is fulcrumed at opposite end **105** to the center sill at **106** with the arrangement shown in FIGS. **4** and **5.**

Openings are provided in the center sill as indicated at **110** and **111.** This may be provided by burning out or other techniques known in the art. Center sill reinforcement **112** is then welded to the center sill around the openings having an upper portion **113** and a lower portion **118.** Caps **114** and **116** are respectively affixed to lower surface **118.** The caps **114** and **116** respectively comprise openings **120** and **122** into which pins **124** and **126** are respectively placed to fulcrum transverse rod **102** and another transverse rod **132** respectively to opposite webs **103** and **108** of the center sill **101.**

It will be apparent that there is a longitudinal connection **134** which connects respectively to the mid-areas **107** and **137** of transverse brake levers **102** and **132.** Lever **132** at its opposite end **138** is connected to longitudinally extending rod **88** shown in FIG. **1** which applies the brakes to wheels **17** in the usual manner through transverse brake linkage **90.**

It will be apparent that the lever arrangement **100** has distinct advantages over the arrangement **61** illustrated in FIG. **1.** In the first place the extensive bracketry shown in FIG. **2A** is eliminated and is replaced with simple caps **120** and **122** which are readily applied to the center sill reinforcement **112.** Secondly, the length of the brake levers **102** and **132** may be significantly reduced as compared to the **4** feet normally utilized for levers **62** and **82.** Levers **102** and **132** need not exceed about **2' 2''.**

Thirdly, the brake arrangement shown in FIGS. **3–5** is safer than the brake arrangement shown in FIG. **1.** When the brakes are in a worn condition, there is a possibility that long transverse levers **62** and **82** may bottom out in their travel in the center sill, and the brakes applied with less force, or not at all. The likelihood of this occurring is considerably reduced in the embodiment shown in FIGS. **3–5** since the brake lever length has been significantly reduced.

While the brake arrangement of the present invention has been described in regard to a railway flat car, since railway flatcars are generally built closer to the rail than other freight cars, it will be apparent to those skilled in the art that the brake arrangement of the present invention may also be utilized in other freight cars including box cars, hopper cars and tank cars. It has particular application whenever, either because of cars built close to the rail, or from space or geometrical limitations, it is desirable for transverse rods to pass through the center sill and transfer the brake applying force to the other side of the center sill.

What is claimed is:

1. A railway freight car brake system comprising: a railway car having a longitudinally extending center sill; a brake cylinder mounted upon said car having a piston extending therefrom connected to a first transverse extending lever; said first transverse lever connected to a first longitudinally extending brake lever which acts to apply the brakes to a first end of said car; said first transversely extending brake lever being connected at about its midpoint to a second longitudinally extending brake lever extending in a direction opposite to said first longitudinally extending brake lever; said second longitudinally extending brake lever engaging a second transversely extending brake lever about the midpoint thereof; said second transversely extending brake lever being fulcrumed to the car body at one end thereof and the other end thereof being connected to a third longitudinally extending brake lever; said third longitudinally extending brake lever engaging a third transversely extending brake lever which passes through an opening in said center sill and which is fulcrumed to a first web of said center sill at one end thereof, said third transversely extending brake rod engaging at about the midpoint thereof a fourth longitudinally extending brake lever, said fourth longitudinally extending brake lever engaging a fourth transversely extending brake lever at about the midpoint thereof, said fourth transversely extending brake lever passing through an opening in said center sill and being fulcrumed at a first end thereof to a second and opposite web of said center sill; said fourth transversely extending brake lever at a second end portion engaging a fifth longitudinally extending brake lever, said fifth longitudinally extending brake lever acting to apply the brakes at a second end of said railway car.

2. A railway car brake system according to claim **1** wherein center sill reinforcement is provided around the openings in said center sill webs.

3. A railway car brake system according to claim **1** wherein means are provided on said center sill for removably fulcruming said third and fourth transverse brake levers.

4. A railway car brake system according to claim **2** wherein means are provided on said center sill reinforcement for removably fulcruming said third and fourth transverse brake levers.

5. A railway car brake system according to claim **4** wherein caps are integrally affixed to said center sill reinforcement and wherein pins pass through said caps and through said third and fourth transverse brake levers.

6. A railway car brake assembly according to claim **2** wherein the length of said third and fourth transverse brake levers does not exceed about **2' 2''.**

7. A railway freight car brake system comprising: a railway car having a longitudinally extending center sill; a brake cylinder mounted upon said car having a piston extending therefrom connected to a first transverse extending lever; said first transverse lever connected to a first longitudinally extending brake lever which first longitudinally extending brake lever acts to apply the brakes to a first end of said car; said first transversely extending brake lever being connected at about its midpoint to a second longitudinally extending brake lever extending in a direction opposite to said first longitudinally extending brake lever; said second longitudinally extending brake lever engaging a second transversely extending brake lever about the midpoint thereof; said second transversely extending brake lever being fulcrumed to the car body at one end thereof and the other end thereof being connected to a third longitudinally extending brake lever; said center sill having first and second vertical webs having respectively first and second openings therein; said web openings having reinforcing structure therearound; said third longitudinally extending brake lever engaging a third trans-

versely extending brake lever which passes through said second opening and is fulcrumed to said first web at one end thereof, said third transversely extending brake rod engaging at about the midpoint thereof a fourth longitudinally extending brake lever, said fourth longitudinally extending brake lever engaging a fourth transversely extending brake lever at about the midpoint thereof, said fourth transversely extending brake lever passing through said first opening and being fulcrumed at a first end thereof to said second web; said fourth transversely extending brake lever at a second end portion engaging a fifth longitudinally extending brake lever, said fifth longitudinally extending brake lever acting to apply the brakes at a second end of said railway car.

8. A railway freight car brake system comprising: a railway car having a longitudinally extending center sill; a brake cylinder mounted upon said car having a piston extending therefrom connected to a first transverse extending lever; said first transverse lever connected to a first longitudinally extending brake lever which first longitudinally extending brake lever acts to apply the brakes to a first end of said car; said first transversely extending brake lever being connected at about its midpoint to a second longitudinally extending brake lever extending in a direction opposite to said first longitudinally extending brake lever; said second longitudinally extending brake lever engaging a second transversely extending brake lever about the midpoint thereof; said second transversely extending brake lever being fulcrumed to the car body at one end thereof and the other end thereof being connected to a third longitudinally extending brake lever; said center still having first and second vertical webs having respectively first and second openings therein; said web openings having reinforcing structure therearound; said third longitudinally extending brake lever engaging a third transversely extending brake lever which passes through said second opening and is fulcrumed to said first web at one end thereof by means of a cap mounted on said reinforcing structure and a pin passing therethrough, said third transversely extending brake rod engaging at about the midpoint thereof a fourth longitudinally extending brake lever, said fourth longitudinally extending brake lever engaging a fourth transversely extending brake lever at about the midpoint thereof, said fourth transversely extending brake lever passing through said first opening being fulcrumed at a first end thereof to said second web by means of a cap mounted on said reinforcing structure and a pin passing therethrough; said fourth transversely extending brake lever at a second end portion engaging a fifth longitudinally extending brake lever, said fifth longitudinally extending brake lever acting to apply the brakes at a second end of said railway car.

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