April 14, 1942. R. N. JANEWAY 2,279,993

VEHICLE DRAFT MEANS

Original Filed Feb. 8, 1937 2 Sheets-Sheet 1

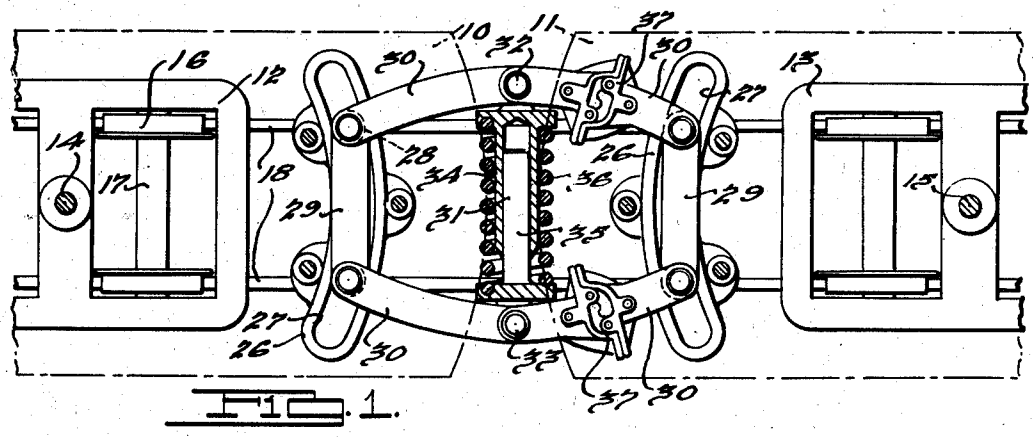


FIG. 1.

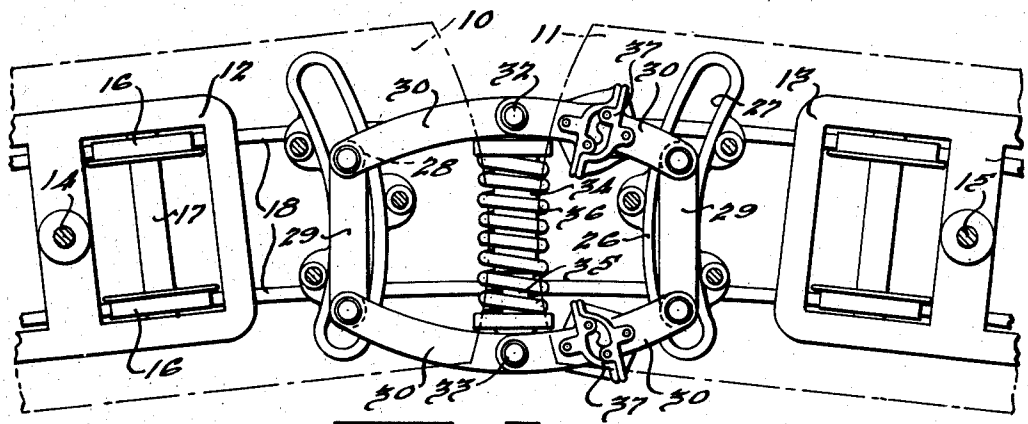


FIG. 2.

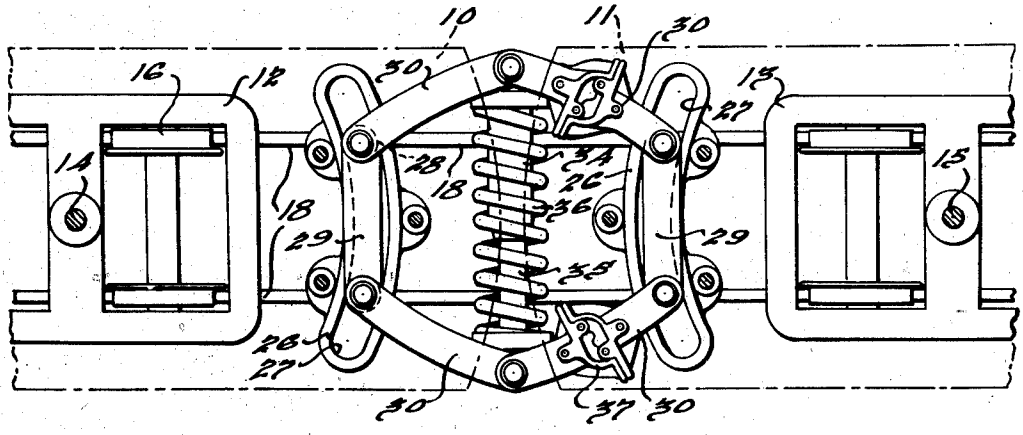


FIG. 3.

INVENTOR
Robert N. Janeway.
BY
Harness, Lind, Pater & Harris
ATTORNEYS.

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VEHICLE DRAFT MEANS

Original Filed Feb. 8, 1937 2 Sheets-Sheet 2

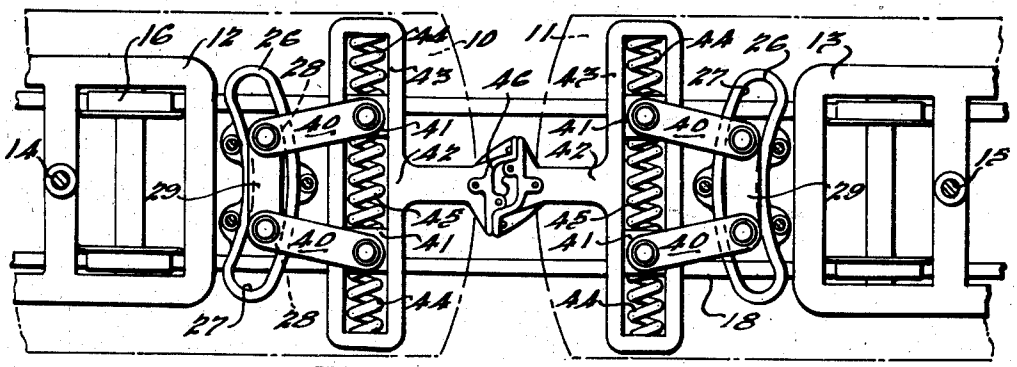


FIG. 4.

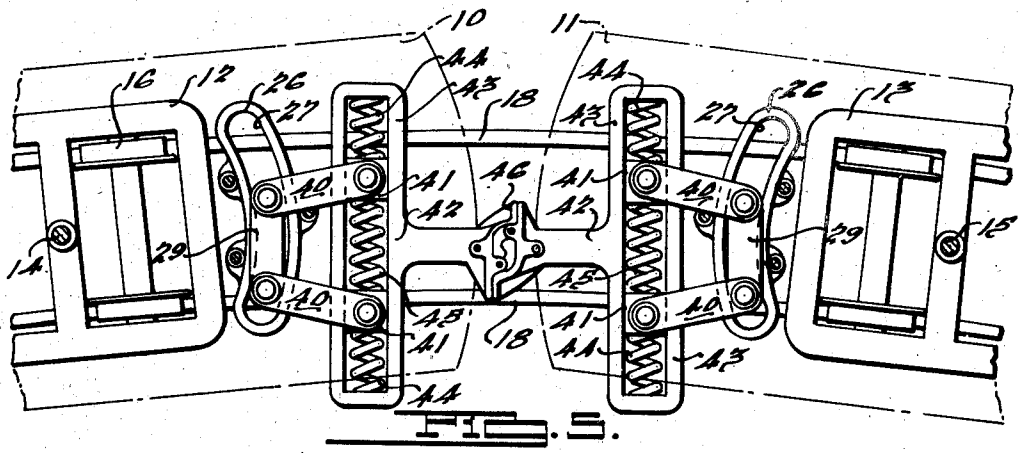


FIG. 5.

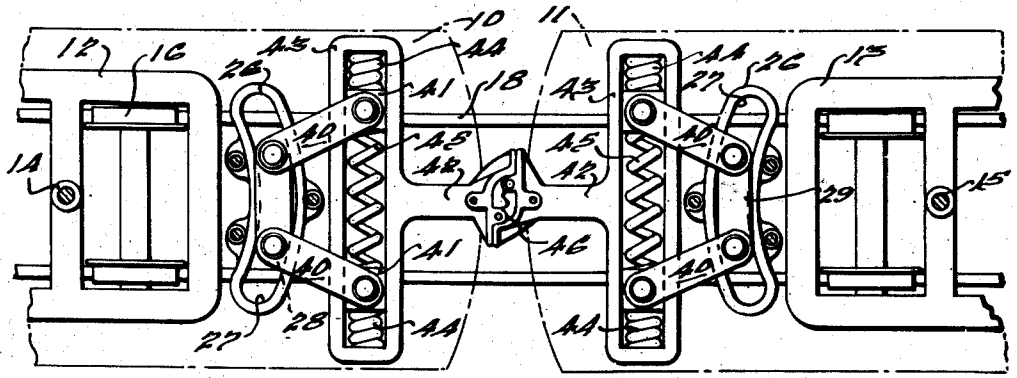


FIG. 6.

INVENTOR
Robert N. Janeway.
BY
Harness, Lind, Pates & Harris
ATTORNEYS.

Patented Apr. 14, 1942 2,279,993

UNITED STATES PATENT OFFICE

2,279,993

VEHICLE DRAFT MEANS

Robert N. Janeway, Detroit, Mich., assignor, by mesne assignments, to Railroad Rolling Stock Patents Corporation, a corporation of Delaware

Application January 12, 1940, Serial No. 313,547

Original application February 8, 1937, Serial No. 124,558. Divided and this application January 12, 1940, Serial No. 313,547

9 Claims. (Cl. 213—12)

My invention relates to railway vehicle equipment and it has particular relation to an improved type of draft means therefor.

My invention is particularly directed to the type of vehicle interconnecting means in which an interconnecting means located adjacent the ends of the vehicle body causes the forces transmitted thereby to have an effective center of application at any predetermined point within the vehicle, even though that point be materially removed from the point of attachment of the interconnecting means to the vehicle.

The object of my invention consists in providing a novel type of vehicle interconnecting means of the character indicated in which the interconnecting means serves to cushion any forces transmitted thereby, regardless of whether such forces are compressive or tensional in nature.

For a better understanding of my invention reference may now be had to the accompanying drawings, in which:

Fig. 1 is a view, partially in plan and partially in section, illustrating the adjacent ends of two railway vehicles connected together by draft means embodying one form of my invention.

Fig. 2 is a view of the structure illustrated in Fig. 1 showing one of the positions occupied by my draft means while the vehicles which it interconnects are passing around a curve in the railroad track.

Fig. 3 is a view of the structure shown in Fig. 1, illustrating the positions occupied by the various parts of my draft means at a moment of impact between the two railroad vehicles.

Fig. 4 is a view, partially in plan and partially in section, illustrating the adjacent ends of two railway vehicles connected together by draft means embodying a slightly modified form of my invention.

Fig. 5 is a view of the structure illustrated in Fig. 4 showing one of the positions occupied by my draft means while the vehicles which it interconnected are passing around a curve in the railroad tracks.

Fig. 6 is a view of the structure shown in Fig. 4, illustrating the positions occupied by the various parts of my draft means at a moment of impact between the two railroad vehicles.

This application is a division of my application, Serial No. 124,558 filed February 8, 1937.

In the structure illustrated in Fig. 1 I have shown diagrammatically two car bodies 10 and 11, provided with associated supporting trucks 12 and 13 respectively and with king pins or center bearings 14 and 15, respectively, about which the trucks turn with respect to the car bodies. Each truck is, of course, provided with the usual wheels 16 and axles 17, the wheels engaging the rails 18.

The car 11 is provided with an identical set of parts which have been marked with the same reference numerals.

On the bottom of each car body, as illustrated in Figs. 1, 2 and 3, is mounted a frame 26 comprising two arcuate guiding surfaces 27 between which are mounted two roller members 28. The guide surfaces represent arcs drawn about the center bearings 14 and 15, respectively, although they may be drawn about any other predetermined points if desired, and the two surfaces 27 are spaced from each other a distance slightly greater than the diameter of the rollers 28, permitting the rollers 28 to roll freely over either surface without frictionally engaging the other surface.

The two rollers 28 are held in spaced relationship by means of spacing links 29 and are likewise rotatably mounted on the ends of two spaced links 30. The adjacent ends of oppositely disposed links 30 are pivotally connected together and to opposite ends of a collapsible cylinder type of guiding device 31 by pins 32 and 33. Pin 32 is connected to a cylinder 34, which slidably encloses a piston or sleeve 35 to the opposite end of which pin 33 is pivotally secured. A coil spring 36 surrounds the cylinder 34 and sleeve 35 and is secured to the ends thereof so as to resiliently oppose either expansion or contraction of the guiding device. In addition, the members 34 and 35 may be employed as a hydraulic or pneumatic shock absorber if desired. The links 30 mounted on car 11 may be provided with coupling members 37, it being desirable that these couplings be of the rigid connection type which will hold the two parts of the links 30 in rigid relationship. In addition, coupling members may also be employed in the links 30 of car 10, or some other coupling arrangement may be used, it being only essential that means be provided for readily coupling and uncoupling the adjacent cars 10 and 11 when desired.

When any tension is exerted on the draft means by either car the pins 32 and 33, being spaced a greater distance than the rollers 28, whose relative position is fixed by spacing links 29, tend to be draw towards each other, which movement is resiliently opposed by the coil spring 36, thus cushioning any sudden alterations in the tension between the cars. In like manner any

compressive forces exerted on the draft means by either car causes the pins 32 and 33 to tend to move apart, as illustrated in Fig. 3, which movement is also resiliently opposed by the coil spring 35, thus cushioning any compressive impacts.

It will be understood that the rollers 28 permit the movable portions of the draft mechanism to move freely with respect to the arcuate guides 27 and therefore with respect to the car ends as the surfaces 27 constitute arcs drawn about the pins 14 and 15 as centers, and as the rollers 28 move freely thereon, the draft mechanism will automatically adjust itself with respect to those centers so that regardless of the relative angularity of the cars 10 and 11, as the cars pass around a curve in the tracks, the draft mechanism will always occupy a position symmetrically arranged about a line interconnecting the two center supports 14 and 15, as illustrated in Fig. 2, and all forces transmitted by said draft mechanism will have effective points of application of forces on the cars 10 and 11 at the points 14 and 15, respectively.

In the structure illustrated in Figs. 4, 5 and 6 the car bodies 10 and 11 are provided with trucks 12 and 13 mounted on center bearings 14 and 15 respectively. In addition, each car body is provided with a frame 26 incorporating arcuate guiding surfaces 27, which, as described in connection with Figs. 1 to 3, represent arcs drawn about the center bearings 14 and 15, or any other desired points as axes. Roller members 28 are likewise mounted between the guide surfaces 27 and are free to roll on either of them. Likewise the two roller members are held in the desired relative positions by spacing links 29.

Links 40 are pivotally secured at one end to the rollers 28 and extend divergently towards the adjacent end of the car. On the opposite ends of the links 40 are pivotally mounted blocks 41 which are slidably mounted in laterally disposed frames 42 provided with parallel guides 43 between which the blocks are confined. The ends of the frames 42 are closed and between the blocks 41 and the closed ends of the frames 42 are disposed coiled compression springs 44. Between the two blocks 41 is disposed a coiled compression spring 45. Each frame 42 is provided with a coupling member 46, 46 which cooperates with a corresponding coupling member of another car to lock the two frames 42 into a rigid unit and at the same time to permit of readily uncoupling the two cars when desired.

When tension is placed on the draft means by either car the blocks 41 of both cars tend to move towards each other, which movement is resiliently opposed by the springs 45, thus cushioning any such suddenly imposed forces. When a compression force is exerted by either car on the other, as best shown in Fig. 6, the blocks 41 tend to separate further, as previously explained, which movement is resiliently opposed by the compression springs 44, thus cushioning any such impact.

The rollers 28 move on the arcuate surfaces 27, as described in connection with Figs. 1 to 3, to keep the movable portions of the draft mechanism at all times symmetrically disposed with respect to a straight line interconnecting the two truck centers 14 and 15, even though the cars may be passing around a curve in the tracks, as shown in Fig. 5, thus causing all forces exerted by one car on the other to have an effective point of application at these points, and causing the forces so imposed to be directed on a line interconnecting the center bearings 14 and 15.

Although I have illustrated several forms which my invention may assume and have described in detail several applications thereof it will be apparent to those skilled in the art that it is not so limited but that various modifications and changes may be made therein without departing from the spirit of my invention or the scope of the appended claims.

I claim:

1. In vehicle draft means, an arcuate guide member adapted to be fixedly mounted on a vehicle adjacent one end thereof and disposed transversely with respect thereto; a roller structure including a plurality of rollers and means for maintaining said rollers in spaced relation carried by said guide member and adapted for rolling movement relatively thereto; a pair of links respectively pivotally secured at one end thereof to said roller structure; rectilinear guide means pivotally connected to the spaced opposite ends of said links including means for yieldably restraining relative movement between said opposite ends; and vehicle coupling means operatively associated with said guide means and links respectively, and constructed and arranged such that draft forces tending to cause movement of said links toward and away from each other are cushioned by said guide means.

2. In vehicle draft means, an arcuate guide member adapted to be fixedly mounted on a vehicle adjacent one end thereof and disposed transversely with respect thereto; a roller structure including a plurality of rollers and means for maintaining said rollers in spaced relation carried by said guide member and adapted for rolling movement relatively thereto; a pair of links respectively pivotally secured at one end thereof to said roller structure; rectilinear guide means connected to the opposite ends of said links including means for yieldably restraining relative movement between said opposite ends; an additional pair of links pivotally carried by the aforesaid links, and a coupler carried by each of said additional links.

3. In combination with a pair of vehicles adapted for draft connection with one another, arcuate guide members transversely mounted on respective adjacent ends of said vehicles; roller structures carried by said respective guide members for rolling movement relatively thereto; pairs of links, the respective links of each pair being pivotally secured at one of their end portions to one of said roller structures; pivotal connecting means for connecting the respective links of one pair with the respective links of the other pair; and means interconnecting said pivotal connections including means for yieldably restraining relative movement thereof.

4. The combination set forth in claim 3 wherein the links of one of said pairs each include detachable coupling means.

5. In combination with a pair of vehicles adapted for draft connection with one another, arcuate guide members transversely mounted on respective adjacent ends of said vehicles; roller structures carried by said respective guide members for rolling movement relatively thereto; pairs of links pivotally secured at their respective end portions to each of said roller structures; pivotal connecting means for connecting the respective links of one pair with the respective links of the other pair; and rectilinear guide means

interconnecting the spaced pivotal connections of the links, said guide means including end portions adapted for movement towards and away from one another; and means for resiliently restraining said movement.

6. In vehicle draft means, an arcuate guide member adapted to be fixedly mounted on a vehicle adjacent one end thereof and disposed transversely with respect thereto; a roller structure including a plurality of rollers and means for maintaining said rollers in spaced relation carried by said guide member and adapted for rolling movement relatively thereto; a pair of links pivotally secured at one end thereof to said roller structure; guide means including a pair of elements transversely slidable relatively to one another and to said vehicle; means pivotally securing the opposite ends of said links to said respective elements; and a vehicle coupler carried by said guide means.

7. In vehicle draft means, an arcuate guide member adapted to be fixedly mounted on a vehicle adjacent one end thereof and disposed transversely with respect thereto; a roller structure including a plurality of rollers and means for maintaining said rollers in spaced relation carried by said guide member and adapted for rolling movement relatively thereto; a pair of links pivotally secured at one end thereof to said roller structure; guide means including a pair of elements transversely slidable relatively to one another and to said vehicle; means pivotally securing the opposite ends of said links to said respective elements; means for yieldably restraining movement of said elements; and a vehicle coupler carried by said guide means.

8. In vehicle draft means, an arcuate guide member adapted to be fixedly mounted on a vehicle adjacent one end thereof and disposed transversely with respect thereto; a roller structure including a plurality of rollers and means for maintaining said rollers in spaced relation carried by said guide member and adapted for rolling movement relatively thereto; a pair of links pivotally secured at one end thereof to said roller structure; combined coupling and guide means including a coupling portion adapted for connection to an adjacent vehicle and a guide portion; a pair of guide elements carried by said guide portion and adapted for sliding movement transversely of said vehicle; and means pivotally connecting said links and said guide elements.

9. In vehicle draft means, an arcuate guide member adapted to be fixedly mounted on a vehicle adjacent one end thereof and disposed transversely with respect thereto; a roller structure including a plurality of rollers and means for maintaining said rollers in spaced relation carried by said guide member and adapted for rolling movement relatively thereto; a pair of links pivotally secured at one end thereof to said roller structure; combined coupling and guide means including a coupling portion adapted for connection to an adjacent vehicle and a guide portion; a pair of guide elements carried by said guide portion and adapted for sliding movement transversely of said vehicle; means for yieldably restraining movement of said guide elements; and means pivotally connecting said links and said guide elements.

ROBERT N. JANEWAY.