

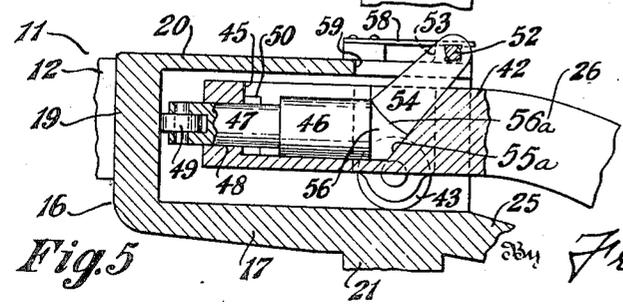
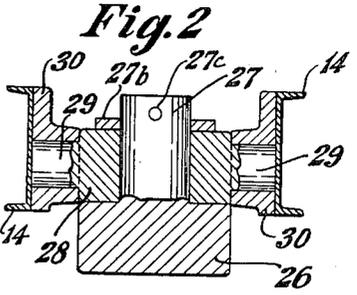
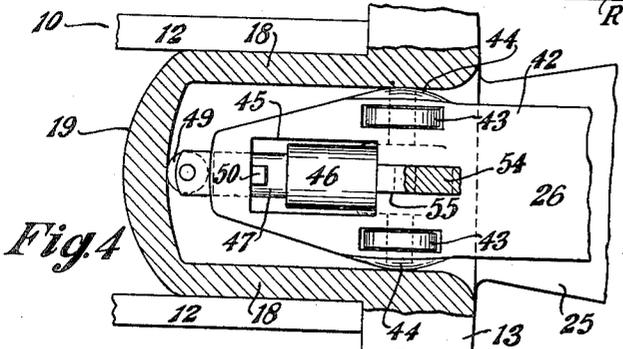
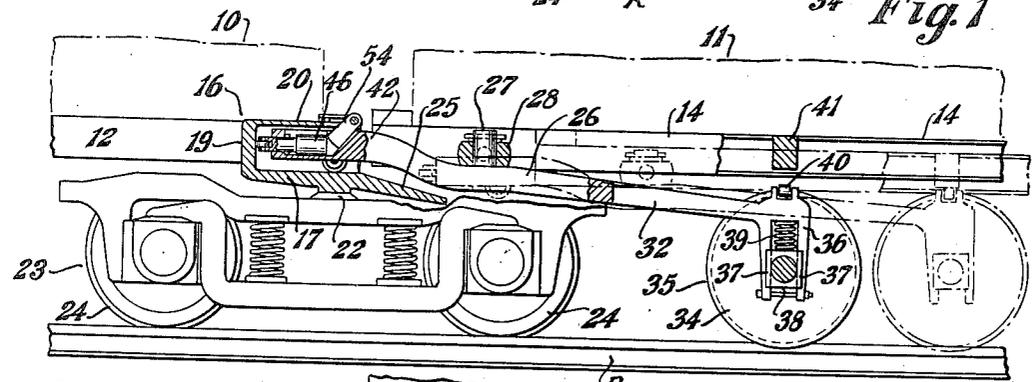
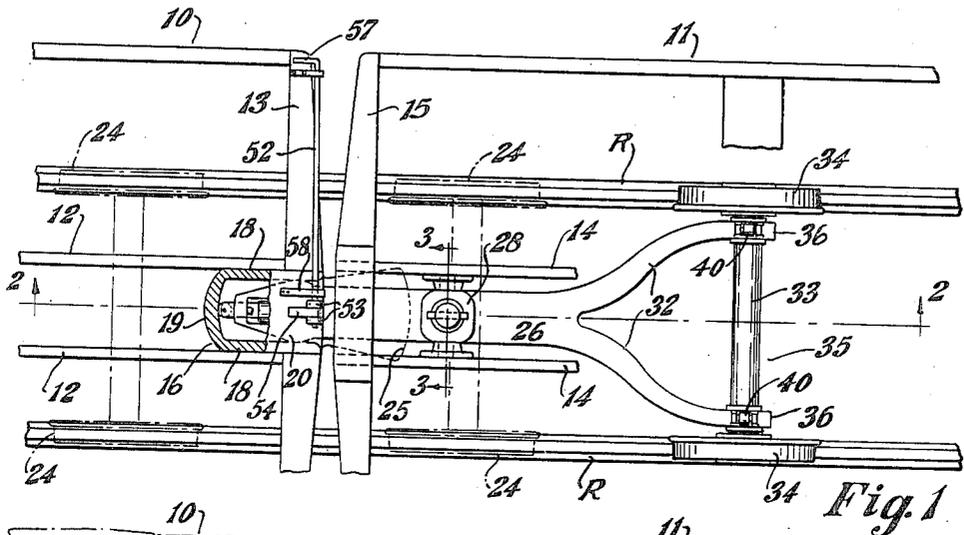
Dec. 19, 1939.

E. J. SATTLER

2,184,021

CAR SUPPORTING CONSTRUCTION

Filed Feb. 17, 1937



Inventor  
**Edward J. Sattler**

*Freese and Bishop*  
Attorneys

# UNITED STATES PATENT OFFICE

2,184,021

## CAR SUPPORTING CONSTRUCTION

Edward J. Sattler, Mineral City, Ohio

Application February 17, 1937, Serial No. 126,241

6 Claims. (Cl. 105—4)

The invention relates generally to car supporting construction for carrying the load of two cars at the joint thereof, and more particularly to an improved car supporting construction for use where the individual cars are adapted for rapid coupling or uncoupling.

A car supporting construction of this general type is disclosed in my prior Patent No. 2,024,603, dated December 17, 1935, and entitled Car supporting means, and this application embodies improvements over the construction disclosed in said patent.

The present invention is particularly adapted for high speed articulated trains wherein a single truck supports the adjoining ends of the cars, because in such trains as are now in use, the individual cars are not intended to be uncoupled and no provision is made for supporting the uncoupled end of any car.

The requirements for a car supporting construction for supporting the ends of two cars in coupled or uncoupled position include the provision of supporting means associated with the cars and coupling means associated with the supporting means and the cars in such a way as to transmit pushing and pulling forces substantially in a straight line, which may be termed the line of draft.

Also, the coupling means should be adapted to employ a standard type of draft gear for yieldingly absorbing shock in either direction.

Accordingly, it is an object of the present invention to provide improved supporting means for the ends of two cars in coupled or uncoupled position.

Another object is to provide improved supporting means associated with the joint between two car ends in such a way as to transmit draft forces from one car to the other in a substantially straight line.

Another object is to provide improved coupling means associated with the supporting means so as to transmit draft forces in a substantially straight line when the cars are coupled.

A further object is to provide improved coupling means associated with the supporting means in such a way as to be capable of employing a standard type of draft gear.

A still further object is to provide supporting means including an improved auxiliary support for one car end in uncoupled position.

It is also a general object of the present invention to provide an improved car supporting and coupling mechanism which will accomplish all of the foregoing objects, which is simple, rugged

and practical in construction and operation, and which involves a minimum of manufacturing and maintenance cost.

These and other objects are accomplished by the parts, elements, combinations and arrangements comprising the present invention, as shown in the drawing and hereinafter described, disclosed and claimed.

In general terms, the present invention may be stated as including a load distributing member pivotally connected with one car and having one end carried by the main truck at the joint between two car ends and the other end carrying an auxiliary support for said one car end, coupling means associated with said load distributing member, and said coupling means and said member being so constructed and arranged as to transmit draft forces from one car to the other in a substantially straight line.

Referring to the drawing forming part hereof,

Figure 1 is a fragmentary plan view of the improved car supporting construction applied to two car ends in coupled position, parts being broken away and other parts being shown in section;

Fig. 2 is a longitudinal sectional view taken substantially on line 2—2, of Fig. 1;

Fig. 3 is an enlarged fragmentary transverse sectional view as on line 3—3, of Fig. 1;

Fig. 4 is an enlarged fragmentary plan sectional view similar to Fig. 1; and

Fig. 5 is a longitudinal sectional view thereof.

Similar reference numerals refer to corresponding parts throughout the several views of the drawing.

Although the invention is shown and described as applied to railway cars, it will be understood that it may be applied to other vehicles, which are supported at the joint and adapted to be individually supported when uncoupled, as for instance, in a truck and trailer construction.

In the drawing, the ends of two cars 10 and 11 are shown coupled together and supported by the improved car supporting and coupling mechanism. The underframe of car 10 preferably includes sill members 12 connected to an end sill 13 at the end of the car, and the underframe of car 11 preferably includes sill members 14 connected to an end sill 15 at the adjoining end of the car. Each car has at its other end a framework identical with that of the adjoining end of the other car.

The end sill 13 has formed at its central portion a preferably cast socket portion 16 which fits between the sills 12 and extends longitudinally

inwardly from the adjoining end of car 10. The socket 16 has a bottom wall 17, side walls 18, end wall 19, and top wall 20.

A male joint portion 21 projects downwardly from bottom wall 17 for making a swiveled connection with the female joint member 22 of a four wheel truck 23 of usual construction, having wheels 24 rolling on rails R, and the truck 23 forms the main support for the joined ends of cars 10 and 11.

The bottom wall 17 of the socket 16 is preferably substantially horizontal and extends over the joint 21, 22, and a downwardly inclined guide plate 25, preferably outwardly flared at its end, as shown in Fig. 1, extends from said bottom wall 17 under the end of adjoining car 11, for a purpose hereinafter described.

The improved car supporting construction preferably includes a load distributing bar, or load bearing lever 26, which is carried by the adjoining end of car 11. As best shown in Fig. 3, the bar 26 is pivoted intermediate its ends on the sills 14 for rocking movement in a vertical plane and for swinging movement in a horizontal plane.

Preferably, the bar 26 has an upwardly projecting pivot stud 27, and the stud 27 is journaled or swiveled in a pivot block 28 which has laterally extending trunnions 29 journaled in bracket supports 30 secured to the sills 14. The pivot stud 27 is held in the block 28 by any suitable means, such as the washer 27b and pin 27c. This construction provides a simple and exceedingly rugged connection between the end of car 11 and bar 26, for transmitting pushing and pulling forces substantially in the line of draft, as will be hereinafter more fully described.

The end portion of the load bearing lever 26, which extends under car 11, is slightly downwardly inclined and is preferably bifurcated to form two arms 32 for being mounted on the axle housing 33 at laterally spaced points just inside the wheels 34 of a two wheel truck 35, which serves as the auxiliary support for the end of car 11 when the same is uncoupled.

Preferably, the ends of the arms 32 have downwardly open yokes 36 slidably fitting in guides 37 formed in squared portions 38 of the axle housing 33, and springs 39 are interposed between said squared portions 38 and the closed ends of yokes 36 for yieldingly resisting upward movement of the axle housing in the yokes.

As shown, the upper side of each yoke may be provided with a roller 40 for engaging a transverse bolster member 41 to support the end of car 11 at laterally spaced points on the auxiliary truck when the car is uncoupled.

The other end portion 42 of the bar or lever 26 is preferably substantially horizontal in coupled position, and is adapted for connection with the draft gear and the improved coupling means. Laterally spaced rollers 43 are journaled on the under side of end portion 42 for rolling up the inclined guide plate 25 and onto the bottom wall 17 of socket 16, when the car 11 is moved from the uncoupled position shown in dot-dash lines in Fig. 2 to the coupled full line position. As shown, the rollers 43 are located so as to be directly over the joint 21, 22 between the socket and main supporting truck 23 when the cars are coupled.

The sides of end portion 42 of the bar 26 are preferably provided with substantially semispherical portions 44 providing point contacts with side walls 18 of socket 16 to permit lateral swing-

ing of the bar about the pivot stud 27 as a center, and also tilting of one car relative to the other when the cars are in coupled position.

The end portion 42 of bar 26 is preferably provided with a rectangular slot 45, which is adapted to receive a draft gear of substantially standard construction. The draft gear shown includes an outer cylindrical member 46 slidably mounted in slot 45 and telescopically fitting over an inner cylindrical member 47, which extends through an end opening 48 in the end of the bar. The cylindrical member 47 has a roller 49 journaled in its outer end for abutting the concavely curved inner surface of end wall 19 of socket 16.

A key 50 is inserted in member 47 within the slot 45 for abutting the end wall thereof to limit movement of member 47 in one direction, that is, to the left, as viewed in the drawing. In accordance with the usual construction of draft gears, interengaging elements (not shown in the drawing) are provided within cylindrical member 46 and between members 46 and 47 for yieldingly or resiliently resisting relative longitudinal movement between members 46 and 47 of the draft gear.

The improved coupling means preferably includes a latch rod 52 journaled in lugs 53 projecting from end sill 13, or from top wall 20 of the socket 16 as shown, and a latch 54 is secured on the latch rod between the lugs. The latch 54 is adapted to enter an angular slot 55 having a lower inclined surface 55a and communicating with slot 45 for engaging an end portion 56 of draft gear member 46 at the inclined surface 55a thereof, which end portion 56 is slidably received in angular slot 55.

Preferably, the latch rod 52 extends laterally to one side of car 10 and is provided with a handle 57 for operating the latch, and a flat spring 58 secured to top wall 20 engages a squared portion on the latch rod (Fig. 5) to yieldingly hold the latch in the coupled position shown, and a suitable locking mechanism may be associated with the latch rod for holding the latch in raised or uncoupling position. A suitable opening 59 is provided in top wall 20 to permit raising the latch 54 for uncoupling the cars.

When the cars 10 and 11 are in coupled position, the rollers 43 are supported immediately over the joint 21, 22 by the bottom wall 17, and the load of the end of car 10 is carried by the main support 23. The load of the end of car 11 is distributed by the load distributing bar 26 between the main support 23 and the auxiliary truck 35. The proportion of the load of car 11, which is carried by the auxiliary truck 35, depends upon the proportionate lengths of the lever arms of the bar 26 at each side of the pivotal connection. As shown in Figs. 1 and 2, the distance between the pivot 27 and the auxiliary truck axle is substantially twice that of the distance between the pivot 27 and the rollers 43, so that substantially one-third of the load of the end of car 11 is carried by the auxiliary truck and two-thirds by the main truck.

When it is desired to uncouple car 11 from car 10, the latch 54 is raised out of engagement with draft gear member 46 by manipulating the handle 57 of the latch rod. The cars may then be moved apart longitudinally, and the rollers 43 will roll down the inclined guide plate 25 toward the dot-dash position of Fig. 2, in which position the rollers 40 will abut the bolster member 41 and place all of the load of the end of car 11 on the

auxiliary truck just before the rollers 43 leave the inclined guide plate 25.

When the cars are moved together for coupling, the rollers 43 ride up the guide plate and the end 42 of the bar 25 enters the socket 16. When the roller 49 abuts the end wall 19, the latch 54 will drop into the angular slot 55 to couple the cars together.

When the cars are in coupled position, a longitudinal pull on car 10 toward the left, as viewed in the drawing, will be transmitted through the latch 54, which is secured to end sill 13 of car 10, to draft gear member 46, and yieldingly therefrom through member 47, key 50, lever bar 23, and pivotal connection 27, 28 to car 11. The longitudinal pulling force is transmitted from latch 54 to draft gear member 46 at a point substantially in longitudinal and horizontal alignment with the pivotal connection 27, 28, which transmits the pulling force from the bar 23 to car 11. Accordingly, the line of draft transmitting the pulling force from car 10 to car 11 is substantially in a straight line, which is obviously the most efficient construction and arrangement both from the standpoint of operation and durability.

If a pulling force is applied to car 11, toward the right, as viewed in the drawing, it is transmitted through the same elements in the reverse order, to car 10.

If a pushing force is applied to car 10 toward the right, or to car 11, toward the left, as viewed in the drawing, it is transmitted through roller 49, draft gear 47, 46, bar 23 and pivot 27, 28 to car 11, or in the reverse order from car 11 to car 10; in which cases the line of draft is substantially a straight line.

It will be seen that the improved coupling means can be so constructed as to require a slight amount of compression in the draft gear before the latch drops in place, to eliminate substantially all slack between the cars in coupled position. This would merely require that the cars be brought together with sufficient force to compress the draft gear somewhat before coupling or uncoupling.

Where a solid train is desired in which there is no longitudinal movement in transmitting draft forces, the latch could be constructed to engage the load distributing bar directly, and the draft gear would then be located ahead of the engagement between the latch and bar for absorbing buffing loads or impact stresses.

It is understood that I do not wish to be limited to the particular form of latch and coupling means shown and described as a preferred embodiment, but that various modifications can be made therein without departing from the scope of the invention, the important thing being to have the coupling means engage the load bearing lever or a part thereof so as to keep the line of draft in a straight line longitudinally of the cars.

I claim:

1. Car supporting construction for supporting two car ends in coupled and uncoupled position, including a main truck supporting one car end, a load distributing member having a pivotal connection with the other car end provided with a slot and having one end supported on said main truck, a resilient draft gear mounted in said slot, and coupling means on said one car end engag-

ing said draft gear at a point in longitudinal and horizontal alignment with said pivotal connection.

2. Car supporting construction for supporting two car ends in coupled and uncoupled position, including a main truck supporting one car end, a load distributing member having a pivotal connection with the other car end and having one end supported on said main truck, a resilient draft gear mounted within said one end of the load distributing member, and a latch pivotally mounted on said one car for extending into said load member end and engaging said draft gear at a point in longitudinal and horizontal alignment with said pivotal connection.

3. Car supporting construction for supporting two car ends in coupled and uncoupled position, including a main truck supporting one car end, a load distributing member having a pivotal connection with the other car end having one end supported on said main truck, resilient draft means mounted within said end of the load distributing member and having a portion projecting outwardly therefrom for abutting said one car end, and coupling means pivoted on said one car end for engaging the other end of said draft means.

4. Car supporting construction for supporting two car ends in coupled and uncoupled position, including a main truck supporting one car end, a load distributing member having a pivotal connection with the other car end and having one end supported on said main truck, a resilient draft gear mounted within said end of the load distributing member, one end of the draft gear projecting outwardly for abutting said one car end for transmitting compression forces in one direction, and a latch pivotally mounted on said one car end for engaging the other end of the draft gear within the load distributing member for transmitting draft forces in the opposite direction.

5. Car supporting construction for supporting two car ends in coupled and uncoupled position, including a main support supporting one car end, a load bearing lever having a pivotal mounting on the other car end for distributing the load thereof between an auxiliary support at one end of the lever and the main support at the other end, a resilient draft gear in the main support end of said lever having one end projecting outwardly therefrom and abutting the one car and coupling means on said one car engaging the other end of the draft gear for coupling the car ends, the engagement of the coupling means with the draft gear and the abutment of the draft gear with said one car being in a straight line longitudinally and horizontally with said pivotal mounting of the load bearing lever.

6. Car supporting construction for supporting two car ends in coupled and uncoupled position, including a main truck supporting one car end, a load distributing lever having a pivotal connection with the other car, one end of said lever having a slot therein, means on said lever laterally adjacent to said slot rollably abutting said main support, resilient draft means located within said slot, and coupling means on said one car end extending into said slot and engaging said draft means.

EDWARD J. SATTLER.