(No Model.)

T. S. E. DIXON.

RAILROAD CAR.

No. 384,828. Patented June 19, 1888.

Fig. 1.

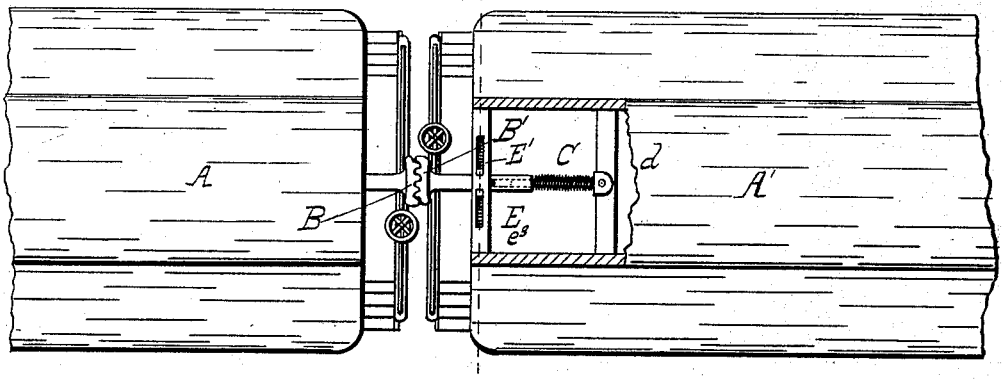


Fig. 2.

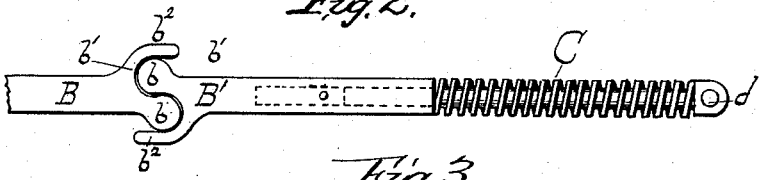


Fig. 3.

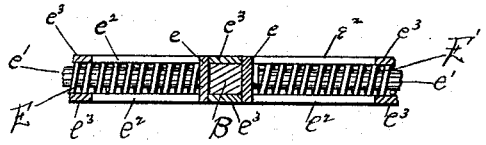
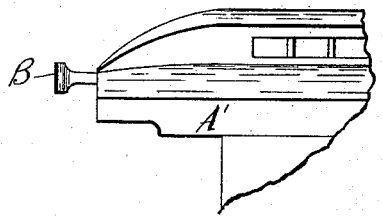


Fig. 4.



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RAILROAD-CAR.

SPECIFICATION forming part of Letters Patent No. 384,828, dated June 19, 1888.

Application filed May 9, 1888. Serial No. 273,268. (No model.)

To all whom it may concern:

Be it known that I, THERON S. E. DIXON, a citizen of the United States of America, residing at Hyde Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

In the drawings, Figure 1 is a top plan view of two cars coupled together in the usual way and provided with one form of my interlocking buffers, a portion of the roof of one of said cars having been broken away to show the preferred construction and arrangement of the buffer mechanism. Fig. 2 is a detached view showing a modified construction of the buffer-heads and one of the buffer-bars with its pivot and longitudinal spring. Fig. 3 is a detached view, showing the preferred construction and application of the transverse resisting-springs and their limiting-stops; and Fig. 4 is a side elevation of a portion of the top of a car, showing the arrangement of the buffer at the top.

Similar letters of reference indicate the same parts.

In railway travel great inconvenience and annoyance arise from the lateral swaying and rocking of the cars when in motion. Efforts have been made to prevent these movements by coupling the cars closely together, with their meeting surfaces held in frictional contact by spring-pressure exerted longitudinally of the car, so that while such surfaces are capable of sliding laterally or rocking in a vertical plane in contact with each other, the frictional resistance due to the spring-pressure aforesaid will tend more or less to prevent any such movement of the end of either car independently of the other. In practical operation, however, the various constructions which embody and apply the principle of frictional resistance, as above described, are found either to exhibit serious defects or to owe their advantages to other features of construction. The contact-surfaces tend to grind and wear out. The mere pressure of two flat surfaces against each other does not furnish so positive and effective a resistance against lateral sliding as is desirable. Other practical disadvantages result, which it is also desirable to obviate.

The object of my invention is to provide, independently of the draw-bars or other means for coupling the cars together for traction in a train, a new and improved means of preventing such independent lateral swaying and rocking, which will not be subject to the practical disadvantages aforesaid, and which can easily be applied to railroad-cars of any kind, whether provided with "vestibules" or not, and which will automatically engage with a positive or locking engagement when the cars come together and disengage when they separate. In carrying out this object I introduce a new principle of construction and operation—to wit, the application, independently of the draw-bar, of a buffer head or bar adapted for automatic positive engagement with and disengagement from a head or bar of similar construction on the adjacent car and laterally movable bodily in both directions against the resistance of a strong spring or springs. The principle of resisting the lateral swaying and rocking of the car by spring-pressure acting transversely in both directions is capable of embodiment and application in many different forms, of which, for purposes of illustration, I have shown two in the accompanying drawings. It can be applied with or without the vestibule attachment, and at, below, or above the car-platform. A special improvement consists in applying it at or near the top of the car, where it more strongly tends to resist the independent rocking movement of the cars, while also tending to prevent their lateral swaying.

In the drawings, *a a'* represent the end portions of two cars coupled together in a train in any usual manner.

B B' are two buffer-heads, (one attached to each car,) provided with a projection or projections, *b*, and a corresponding recess or recesses, *b'*, suitably arranged to interlock when the cars are coupled.

Spring C may be employed to project the buffer-heads toward each other, so as to insure and maintain their engagement, but are not otherwise necessary. The buffers may be made in any suitable form, and their corresponding projections arranged in any suitable manner that will enable them thus to automatically interlock with each other when the cars couple together and disengage when the cars separate.

As railroad-cars are now constructed it is also necessary to provide for the free up-and-down

play of the ends of the cars when in motion on the road; but this, although embodied in the structure herein shown, constitutes no part of my present invention. It will thus be seen that an essential element in my improved structure consists in buffers provided with recesses and projections which adapt them to automatically lock with each other when the cars come together, so as to prevent any side movement of the one independently of the other, and to automatically unlock or disengage from each other when the cars are uncoupled and separate, and which are independent of the draw-bar or other means of coupling the cars together in a train.

Instead of fastening each buffer to its car, like the frictional-contact buffers, so as to have a longitudinal but no lateral movement thereon, I allow them a limited lateral play and oppose the lateral movement in both directions from their normal position by an elastic or yielding resistance. Any suitable construction may be adopted which will permit such lateral play—for example, that of pivoting the inner end of the buffer to the car by a vertical bolt, *d*. The form in which the elastic resisting force is applied is not material so long as it is effective for the purpose. The best form in which I have contemplated its application consists in two springs, E E′, arranged to bear against the opposite sides of the buffer, so as to perform the triple duty of presenting the buffer properly for automatic engagement, resisting its lateral deflection in either direction, and answering as a stop to limit the extent of such deflection.

An independent improvement consists in arranging the interlocking lateral spring-buffers at or near the top of the car, as shown in Fig. 4, where they will more effectively tend to prevent any independent rocking of one of the cars on its longitudinal axis or line of support. To this end they may be attached to any suitable support at the upper part of the car —for example, to the projecting ends of the car-roof—so as to come into the proper engagement when the cars are united in a train. In passing curves the car rocks on the track, following the varying level of the rails, and both at curves and elsewhere it also tends to rock on its trucks, and by interlocking the buffers at the top of the cars the resisting lateral springs, acting at the greatest available distance from the center of such rocking motion, possess the important advantage of a correspondingly increased leverage against the rocking impulse, and thus their efficiency for the purpose of counteracting such form of lateral movement is thereby greatly increased, while they still act with unimpaired efficiency in also counteracting the bodily swaying of the car to either side.

Another independent improvement consists in limiting the inward movement of each spring E E′ by a stop to prevent either spring from aiding to overcome the resistance of the other to the lateral deflection of the buffer. In the forms represented in the drawings such stop is shown at *e*, and consists merely in a plate or pin attached either to the spring E or E′ or their guide-rod *e′* and sliding in a slot, e^2, in the surrounding frame or casing e^3, so as to strike and be arrested by the inner end of the slot when the buffer is in its normal position. When the buffer is deflected laterally from that position, the spring, which is thereby put under compression, can yield; but the other spring cannot follow, and hence each spring in its turn is enabled to exert and utilize its full force to resist such lateral deflection. Moreover, the springs act in couples in resisting such deflection—that is to say, if the end of a car is subjected to an impulse tending to cause it to lurch to either side, such tendency is resisted both by one of its own springs and by one of the springs on the proximate end of the next car—thus doubling the spring force and enabling each spring to be made lighter than would otherwise be necessary.

An advantageous construction is obtained by forming the buffer-heads substantially as shown in Fig. 2. In this form each buffer-head is forked, one of the forks terminating in a rounded head, *b*, the other being an arm, b^2, curved in an arc described from the center of the rounded head *b*. In this form the two buffer-heads will readily couple and uncouple, and will resist the lateral deflection of the cars without tending materially to compress the end spring, C, and thereby automatically disengage. The buffer-bars may be made extensible or longitudinally movable in any suitable way—for example, by making them in two parts, one of which telescopes on the other, as shown in dotted lines in Fig. 2.

The apparatus may be suitably housed or covered in any convenient manner to prevent the lodging of snow or formation of ice around the buffer bars or springs. In Figs. 1 and 4 the parts are arranged under and protected by the arched portion of the car-roof.

Buffers constructed and operating on the general principle hereinabove described are not only applicable to all forms of passenger-cars, but equally to freight-cars. Applied to mail-cars, they will so steady the movement of the cars as to greatly promote the comfort and facilitate the work of the clerks and other employés therein. In like manner, when applied to stock-cars, they will tend to prevent injury to the live stock transported therein.

It is so obvious that the buffer-bars B may each be divided into two bars, each with a spring pressing upon one side, and accomplish the same result that I deem it unnecessary to further describe such a construction.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of railroad-cars with buffers independent of the draw-bar, adapted to automatically lock with and unlock from each other, provided with springs for moving

them longitudinally to maintain their engagement, and bodily movable laterally in both directions against an opposing spring force, substantially as described.

2. The combination of railroad-cars with buffers arranged at or near the top of the cars, adapted to automatically lock with and unlock from each other, provided with springs for moving them longitudinally to maintain their engagement, and bodily movable laterally in both directions against an opposing spring force, substantially as described.

3. In a railroad-car, the combination of a buffer movable laterally in both directions from its normal position with two springs exerting their force upon it in opposite directions to resist such movement, and with stops to limit the action of said springs, substantially as described.

4. In a railroad-car, the combination of a laterally-movable buffer, a spring adapted to resist the lateral movement of the buffer in one direction from its normal position, and a stop adapted to prevent said spring from exerting its force against the buffer when the latter is moving in the other direction from its normal position, substantially as described.

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