

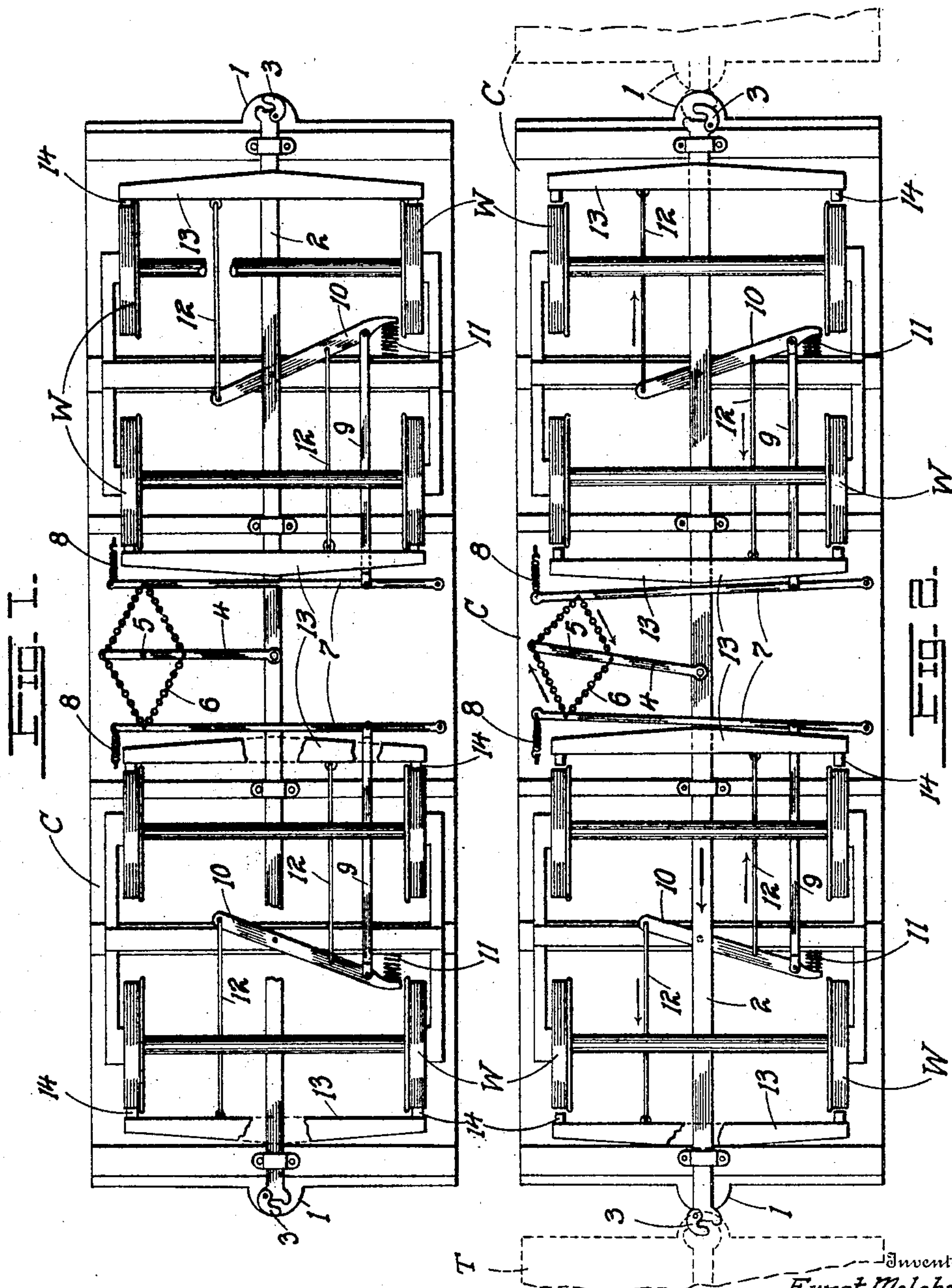
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E. MELCHERT.
BRAKE MECHANISM FOR RAILWAY CARS.

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Witness

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BRAKE MECHANISM FOR RAILWAY-CARS.

No. 814,792.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ERNST MELCHERT, a citizen of the United States, residing at Mount Olive, in the county of Macoupin and State of Illinois, have invented certain new and useful Improvements in Brake Mechanism for Railway-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in brake mechanism for railway-cars; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a bottom plan view of a car with draft-bar in normal position and with the brakes applied. Fig. 2 is a similar view showing the draft-bar shifted longitudinally by a draft on the same and showing the brakes released. Fig. 3 is a top plan of a part of a car, a part of the engine, and its tender coupled together. Fig. 4 is a vertical longitudinal section on the line 4 4 of Fig. 3, the engine being in the act of pulling. Figs. 5, 6, 7 are diagrammatic elevations of an engine, its tender, a car, and a portion of a second car, showing, respectively, the engine in the act of coupling, Fig. 5, the engine and tender and cars coupled and the several draft-bars shifted to positions to release the brakes for purposes of backing the train, Fig. 6, and showing the several parts, Fig. 7, in position for pulling or drawing the train. Fig. 8 is a section similar to Fig. 4 with the engine-buffer extension lowered to permit the train to back without first setting the brakes; and Fig. 9 is a similar section showing the adjusting-wedge for permitting a partial application of the brakes for a train going downgrade.

The object of my invention is to provide a car with mechanism which will automatically apply the brakes to the wheels upon the disengagement or the uncoupling of the engine therefrom or upon a partial or total relaxation of the pull by the engine upon the draft-rigging of the car. In the present improvement the brake mechanism and the draft-rigging are permanently connected, so that the application or release of the brake-shoes will depend on the status or position of the draft-rigging relative thereto.

The invention possesses advantages which

will be better apparent from a detailed description thereof, which is as follows:

Referring to the drawings, C represents an ordinary freight-car, being provided at each end with centrally-disposed rounded noses or formations 1 1, by which the cars are properly and permanently spaced apart and along which they are free to rub and oscillate in passing around a curve, said noses projecting approximately about four inches beyond the body of the car proper.

Disposed longitudinally and centrally along the bottom of the car and relatively below the noses 1 1 is a longitudinally-movable draft-bar 2, carrying terminal couplers or draw-heads 3 of the automatic coupler type, whereby in the longitudinal bodily movement of said draft-bar against the draw-head of a draft-bar of an adjacent car the two draw-heads, and consequently the cars, will become coupled automatically.

In the absence of any draft or pull on the draft-bar the latter occupies a position symmetrical about the transverse center of the car, the draw-heads projecting equal distances beyond the ends of the car and substantially the distance of the noses 1 1, Fig. 1. When the draft-bar is in this normal position, the brakes of the car are set, the connection between the brake-shoes and the draft-bar being substantially as follows: Pivoted centrally to the bar 2 is one end of a transversely-disposed lever 4, which is free to oscillate about a pin or axis 5 on the bottom of the car, the free end of said lever, and a point thereon removed from the pin 5 a distance equal to the distance of said free end from the pin, being respectively coupled to the opposite laps of a chain 6, the ends of the chain-laps being each connected to a transversely-disposed lever 7, whose free end is controlled by a contracting spring 8, the opposite end being pivotally secured to the bottom of the car adjacent to the edge thereof.

Pivotally secured to the lever 7 at a point near the pivotal end of said lever is one end of a link 9, the opposite end thereof being pivotally coupled to the long arm of a second lever 10, pivoted to the car-body above the draft-bar 2. The free end of the long arm of the lever 10 is controlled by an expanding spring 11, interposed between said lever and the timbers of the car-bottom. The lever 10, which may be denominated herein as the "brake-lever," is coupled on each side of its

pivotal point by means of links 12, extending in opposite directions to the brake-beams 13, carrying the brake-shoes 14, which engage the wheels W of the trucks. The contracting tendency of the springs 8 and the expanding tendency of the springs 11 jointly serve to force the brake-levers in proper direction to apply the shoes 14 to the wheels, as fully shown and as must be apparent from Fig. 1, the contraction of the spring 8 drawing on the lever 7 in a direction to push the link 9, the latter being pulled upon by the spring 11, which tends to force the long arm of the brake-lever 10 outwardly. In this way the oscillation of the brake-lever 10 is such as to draw on the links 12, disposed on opposite sides of its axis of oscillation, the said links in turn drawing on the brake-beams 13 and setting the brakes. The brakes are set when the draft-bar 2 occupies its normal position on the car—that is, when its opposite ends or draw-heads 3 project equal distances beyond the car-body and substantially even with the noses 1. A shifting of the draft-bar 2, however, in either direction from its normal or central position has the effect of oscillating the lever 4 so as to effect a release of the brakes. This is shown in Fig. 2, where the draft of the engine has pulled on the draft-bar so as to shift it to the left, as shown by the arrow in Fig. 2, this movement oscillating the lever 4 so as to draw on the right-hand half of the inner lap of the chain 6 and on the left-hand lap of the outer lap, as indicated by the arrows in connection with the respective laps. The pulls on the respective laps of the chain draw the levers 7 7 toward each other, thereby expanding the springs 8 and compressing the springs 11 and oscillating the brake-levers 10 in proper direction to force the links 12 12 away from each other, as shown by arrows in Fig. 2, and hence release the brakes. Of course were the draft on the bar 2 in the opposite direction, so as to oscillate the lever 4 in the opposite direction, the result would be the same, for an oscillation of the lever 4 in either direction from its normal position (shown in Fig. 1) will have the effect of drawing the ends of the levers 7 7 toward one another and release the brakes, so that a draft or pull on the draft-bar 2 has the effect of releasing the brakes, which immediately become set automatically under the actions of the springs 8 11 the moment the draft is removed.

The manner of securing the necessary draft on the draft-bar of course is by means of coupling the engine to the car or series of cars, the coupling being effected in the following manner and by the following mechanism, all as more fully and specifically illustrated in Figs. 3 to 7, inclusive. E represents the engine, T the tender, and C C the cars. Like the cars, the tender carries a draft-bar 2' and draw-heads 3' 3'. The rear

of the tender likewise is provided with a rounded nose 1', and the front of the tender is provided with a buffer 15. The engine is provided with a buffer 16, the buffers 15 16 projecting beyond the walls of the tender and engine, respectively, a distance equal to the projection of the noses 1 1', (four inches.) The buffer 16 is provided with a swinging extension 16', which when swung horizontally is sufficient to fill the space between the parts 15 16, (or eight inches. See Fig. 4.) The engine, moreover, is provided with a stationary draw-head 17, projecting four inches beyond the buffer 16. Except as hereinafter referred to the extension 16' is swung back and is not used, Fig. 4. Looking now at the diagrammatic views, Figs. 5, 6, 7, from which the extension 16' has been omitted, Fig. 5 represents the several draft-bars 2 2' in normal position, and hence the brakes are set. The engine draw-bar 17 is now ready to impact against the draw-head 3' of the tender, (the engine moving toward the right in Fig. 5.) When this takes place, the entire series of draft-bars 2 2' are driven into forcible engagement with one another, causing the series to automatically couple. This impact of course shifts the entire series of draft-bars from their normal position to a position rearward, (as a result of the impact,) and thus releases the brakes. The engine could then push the series of cars rearwardly, the brakes being released and the several draw-heads or couplers firmly coupled together, Fig. 6. Should, however, the engine pull on the train of cars, the several draft-bars will be drawn forwardly first to the points of their normal position, (when the brakes will momentarily be applied,) then past said normal positions to that indicated in Fig. 7, the pull by the engine drawing the coupled series of draft-bars 2 2' after it until each draw-head 3 3' projects four inches beyond the nose 1, (the draw-head 3' projecting four inches beyond the buffer 15 of the tender,) when the brakes will be released, as indicated fully in Fig. 2, which figure corresponds to the diagrammatic view of Fig. 7. Should it be desirable to back up the train without first forcing the several draft-bars 2 through the intermediate positions, which would permit the brakes to be applied, the operator can simply drop the swinging extension 16' down between the parts 15 16, Fig. 8, without releasing the tension or draft on the several draft-bars 2 2', the train thereby backing up with brakes fully released. In going downgrade, where it is desirable that the brakes be partially applied and yet avoid the danger of the train crowding up on the engine a distance sufficient to relieve the draft-bars from the pull which corresponds to the released position of the brakes, the operator or engineer swings the part 16' out of engagement and in lieu thereof drops a wedge 18 between the parts

15 16, the distance to which the wedge is lowered determining the distance to which the parts 15 16 are allowed to approach, the inclined faces of the wedge of course determining what this distance shall be. In Fig. 9 the parts 15 16 have been allowed to approach each other to partially relieve the draft on the draft-bars 2, the springs 8 11 partially applying the brakes under the circumstances, which of course is desirable when the train is going downgrade. The wedge 18 is mounted at the end of one arm of a bent foot-lever 19, pivoted to a bracket 20 on the engine and within easy reach of the engineer. The lever is held in any position to accomplish the purpose desired, and when once wedged in between the parts 15 16 of a descending train it will remain there until released by a pull on the train. As the cars round a curve the noses 1 1 rock over each other, as is obvious. A car or train of cars left standing on a siding, whether on a level or on a grade, cannot escape, since the brakes become set the moment the engine is uncoupled. For purposes of the present invention the tender may be considered a "car."

Having described my invention, what I claim is—

1. In a train, a car having a longitudinally-movable draft-bar, a coupling at one end of said bar, an engine having a coupling cooperating with the coupling on the draft-bar of the car, a wedge or equivalent device for permitting of a variable distance between the adjacent ends of said engine and car, and a brake mechanism on the car controlled by the longitudinal movement of the draft-bar, substantially as set forth.

2. In a car, a longitudinally-movable draft-bar, couplers at opposite ends thereof, and suitable rounded formations or noses on the cars overhanging the couplers, substantially as set forth.

3. In a car, a longitudinally-movable draft-bar, brake mechanism normally set against the wheels for a central position of the bar, intermediate link connections between the

draft-bar and brakes for releasing the latter upon a shifting of the draft-bar in either direction from its central position, and terminal couplers forming a rigid part of said bar and moving with the same, substantially as set forth.

4. In combination with an engine, a car, a longitudinally-movable draft-bar on the car adapted to be coupled to the engine, brake mechanism actuated by the movement of the draft-bar in either direction, and suitable devices adapted to be interposed between the engine and car for preserving the distance between them and thereby preserving the pull on the draft-bar and keeping the brakes released, substantially as set forth.

5. In a car, a longitudinally-movable draft-bar, brake mechanism effectively applied to the car-wheels for a normal position of the draft-bar, couplers forming rigid terminals of the draft-bar for coupling a series of draft-bars mounted on a corresponding series of cars in juxtaposed relation upon a joint displacement from their original positions of said several draft-bars, and devices interposed between the draft-bars and their corresponding brakes for releasing the latter upon the joint displacement aforesaid, substantially as set forth.

6. In a train, a car having a longitudinally-movable draft-bar, a coupling at one end thereof, an engine having a coupling cooperating with the coupling on the draft-bar, means for permitting of a variable distance between the engine and car, and a brake mechanism on the car actuated by the longitudinal movement of the draft-bar, the extent of said movement depending on the distance between the engine and the car, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ERNST MELCHERT.

Witnesses:

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