

March 8, 1927.

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1,620,508

RAILROAD BRAKE MECHANISM

Filed July 6, 1926

2 Sheets-Sheet 1

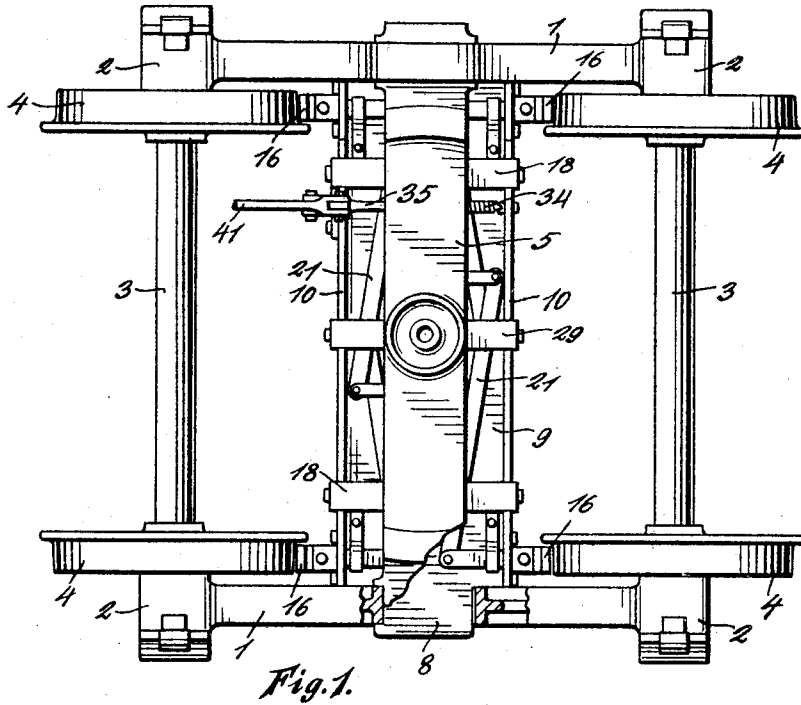


Fig. 1.

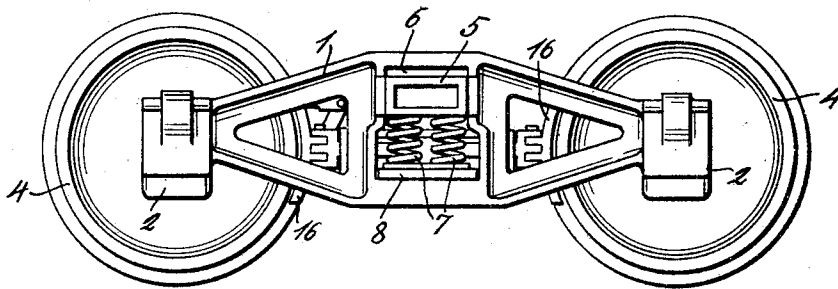


Fig. 2.

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2 Sheets-Sheet 2

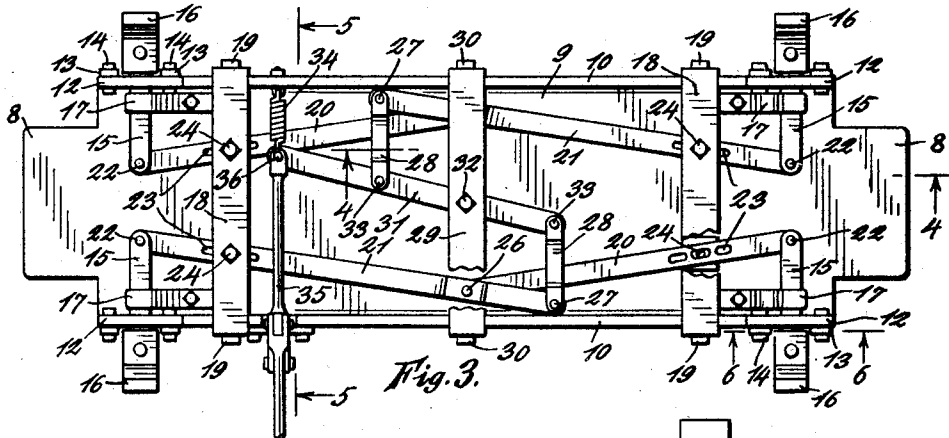


Fig. 3.

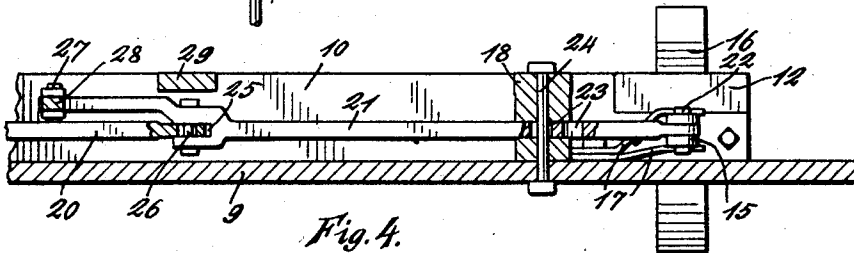


Fig. 4.

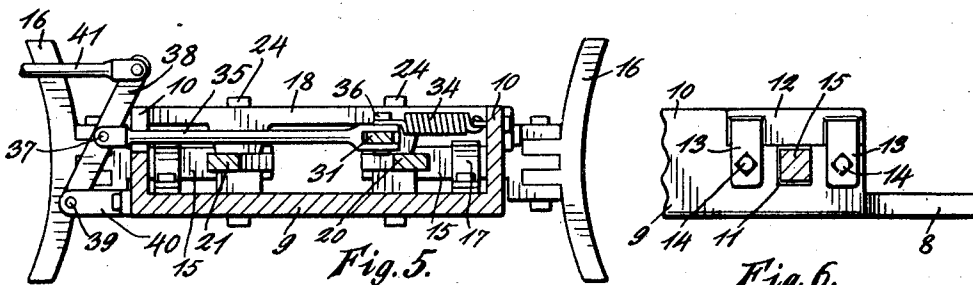


Fig. 5.

Fig. 6.

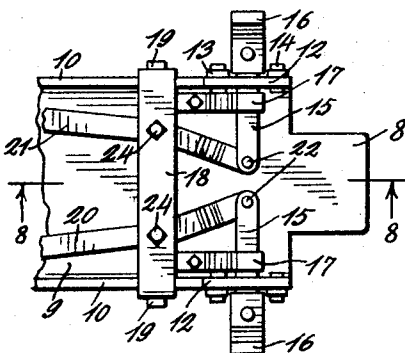


Fig. 7.

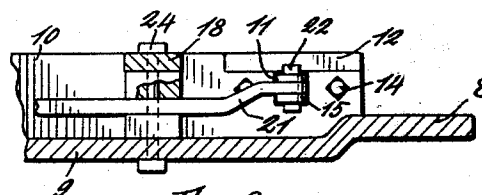


Fig. 8.

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RAILROAD-BRAKE MECHANISM.

Application filed July 6, 1926. Serial No. 120,610.

This invention relates to improvements in brakes of the type used in connection with railroad cars and street cars.

The importance of brakes is too well known to require mention and all railway cars and street cars have brakes of various kinds. The brake construction usually employed comprises a brake beam to the end of which the brake shoes are attached; this beam is suspended from the truck by means of strong links and has its center point connected with the air devices or other means for producing a force for bringing the brake shoes into braking contact with the wheels. It quite frequently happens that a link which supports the brake beams, breaks and that the end of the beam then drops down onto the track and causes a wreck.

It is the object of this invention to produce a brake construction in which the brake levers shall be supported on a carrier in such a manner that even if some of the parts do break, they will not fall down upon the track. It is a further object to produce a brake mechanism that shall be highly effective and reliable in its operation.

My invention can be best described and will be most readily understood when reference is had to the accompanying drawings and in which the preferred embodiment thereof has been illustrated and in which:

Fig. 1 is a top plan view of a railway car truck which has been equipped with my improved brake, parts having been broken away to better disclose the construction;

Fig. 2 is a side elevation of the truck shown in Fig. 1;

Fig. 3 is a top plan view of the spring plank showing the same detached from the truck and showing the brake beams and levers in place;

Fig. 4 is a section, to an enlarged scale, taken on line 4—4, Fig. 3 and shows some of the details of construction;

Fig. 5 is a section taken on line 5—5, Fig. 3, and is also shown to an enlarged scale;

Fig. 6 is a section taken on line 6—6, Fig. 3;

Fig. 7 is a plan view of an end portion of the spring plank showing a slight modification of the construction; and

Fig. 8 is a section taken on line 8—8, Fig. 7.

On the drawings I have illustrated my in-

vention in connection with an ordinary railroad car truck. In the several figures numeral 1 indicates the cast steel side frames of the truck, each of which is provided with journal boxes 2 for the reception of the ends of the axles 3. Secured to each axle are two wheels 4 of ordinary and well known construction. A cast steel truck bolster 5 extends from one of the side frame members to the other. The ends of said bolster extend through openings 6 in the side frame members and rest upon coil springs 7 whose lower ends are supported on the ends 8 of the spring plank 9. The spring plank is provided with upwardly extending flanges 10 which gives it a cross section resembling that of an ordinary channel iron. The brake levers and mechanism which are employed in the operation of the brakes are supported on the spring plank in the manner shown in Figures 1 to 6, to which reference will now be had.

Each of the flanges 10 have a rectangular opening 11 near each end. The corner of the flanges has been cut away so as to form a notch for the reception of the removable piece 12, which is provided with downwardly extending lugs 13 that project over the sides of the flange and are secured to the latter by means of bolts 14, in the manner shown most clearly in Figure 6. Rectangular bars 15 extend outwardly through the openings 11 and to the outer ends of these bars the brake shoes 16 are connected. Secured to the bottom of the spring plank directly inside of the flanges 10 are springs 17, which are preferably formed of two parts, one of which engages the top of the bar 15 and the other the bottom side of the bar in the manner shown in Figure 4. The object of these springs is to steady the brake bar 15 and to prevent rattling. Referring now to Figure 2, it will be noted that the brake shoes 16 are normally located in close proximity to the peripheral surface of the car wheels 4, but are out of contact with the latter except when it is desired to exert a braking action. It is evident that if the brake shoes 16 are forced away from each other and towards the wheels, that they will soon come into contact with the wheels and produce friction tending to stop the rotation of the wheels.

For the purpose of moving the bars 15 so as to apply the brake shoes to the wheels

and to remove them from the wheels, the following mechanism has been provided. Cross bars 18 are secured to the flanges 10 near each end of the spring plank. These bars are held in place by means of bolts 19. Bars 20 and 21 have one end each pivoted to the adjacent ends of the brake bars 15 by means of a pivot pin 22. These bars are provided near their ends with elongated openings 23 which serve to receive the pivot pins 24 that pass downwardly through the bars 18 and through the bottom of the spring plank in the manner shown in Figures 5 and 8. The pins 24 serve as fulcrums for the levers 20 and 21. The levers 21 are provided near their inner ends with a notch 25 which serves to receive the inner end of the lever 20. A pin 26 extends through the two parts of the bar 21 and through an opening in the inner end of the bars 20 in the manner shown in Figure 4. The levers 21 extend inwardly beyond the notch 25 and are provided at their extreme inner ends with openings for the reception of pivot pins 27 by means of which the links 28 are secured in place. At a point half way between the transverse bars 18 is a similar bar 29 that extends across the top of the spring plank and is secured to the latter by means of bolts 30. A lever 31 is pivoted to the underside of the bar 29 by means of a bolt 32. This lever extends unequal distances to each side of the pivot pin 32 in the manner clearly shown in Figure 3. At points 33 which are spaced equidistantly from the center pin 32, the links 28 are connected to the lever. It is now evident that if and when the lever 31 is oscillated about its pivot 32 it will cause the levers 21 to rock about their pivots 24 and since the levers 20 are pivoted to the levers 21 at points 26, they will also rock about their pivots 24. If the lever 31 is moved downwardly (Figure 3) against the tension of the spring 34, the brake bars 15 will be moved outwardly in such a manner as to force the brake shoes 16 against the wheels. For the purpose of moving the levers a connecting rod 35 has been pivoted to the longer end of the lever 31 at 36. The other end of this connecting rod is pivoted to the central point 37 of the vertical lever 38 that is pivoted at its lower end at 39 to the bracket 40. A rod 41 is pivoted to the upper end of lever 38 and connects the latter with the air brake equipment or with the hand wheel mechanism by means of which the brakes are usually operated. It is evident that if the rod 41 is moved downwardly (Figure 3) so as to tension the spring 34 that the brake shoe will be moved against the wheels in the manner above indicated. Since there is one wheel on each side of the spring plank, the force applied to the wheels will have no tendency to move the spring plank sideways as the forces will be substantially balanced.

The force should be applied to the wheels in a substantially radial direction or in other words, the centers of the brake bars 15 should be on a level with the centers of the wheels. There are some makes of trucks, however, in which the truck bolster comes farther down than on some others and this makes it necessary to lower the spring plank so as to obtain room for the various levers that are employed for operating the brake shoes. In these cases the ends 8 of the spring planks may be offset upwardly in the manner indicated in Figure 8. In order to compensate for this offset arrangement, the openings 11 are raised somewhat and are located a greater distance from the upper surface of the spring plank. This makes it necessary to give the ends of the lever 20 and 21 an upward bend in the manner shown in Figure 8. In Figure 7, I have shown a spring plank in which the end 8 is narrower than the one shown in Figure 3. The embodiment shown in Figure 7 is intended for use on trucks where the wheels come closer together than on the ordinary truck and this makes it necessary to offset the ends of the levers 20 and 21 so as to bring the pivot points 22 nearer together. The modification just described is, of course, a matter of size and does not in any way effect the operation or the general construction.

From the above it will be apparent that I have provided a brake mechanism that is of exceedingly simple construction and which is very effective in its operation. The various levers and links are located on top of the spring plank so that if there should be a breakage of any of the parts, they could not fall down onto the track so as to be the cause of wrecks or serious injury to the car. As it is my intention to employ, as a base for the frame work, the ordinary spring plank, it is evident that this brake construction can be applied to existing cars without making a material change in the trucks.

It will be noticed that I have provided several sets of holes 23 in the levers 20 and 21 and that these holes are elongated. By means of this arrangement the ratio of the lever arms can be changed so as to vary the braking effect obtained by the application of any given force.

Having now described the invention what is claimed as new is:

1. A brake mechanism adapted to be attached to a railway car truck, comprising, in combination, a spring plank having a flat central portion and parallel spaced flanges extending perpendicularly to the plane of the central portion, each flange having an opening near each end, a brake bar extending through each opening, a lever having its outer end pivotally connected with the inner end of each brake bar, a stationary pivot

which serves as a fulcrum for each lever and means for simultaneously moving said levers about their fulcrums whereby the brake bars will be reciprocated in the openings.

5 2. A brake mechanism adapted to be attached to a railway car truck, comprising, in combination, a flat spring plank whose sides extend at right angles to the plane of the body portion thereof so as to form parallel flanges, each end of each of said flanges 10 having an opening, a brake bar slidably mounted in each opening, a pivot pin located near each brake bar, a lever pivoted on each pin and having its end pivoted to the end 15 of the adjacent brake bar and means for simultaneously moving said levers about their respective pivots whereby the brake bars will be simultaneously reciprocated in the openings.

3. A brake mechanism adapted to be at- 20 tached to a railway car truck, comprising, in combination, a flat spring plank whose sides extend at right angles to the plane of the body portion thereof so as to form parallel flanges, each end of each of said flanges 25 having an opening, a brake bar slidably mounted in each opening, a pivot pin located near each brake bar at a point between the bars and near the flanges, a pair of inter-connected levers pivoted to the two brake 30 bars and pivot pins associated with each flange and means for simultaneously oscillating all of said levers an equal amount about their pivots whereby the brake bars will be reciprocated in the openings for the purpose 35 of setting and releasing the brakes.

In testimony whereof I affix my signature.

JOSEPH S. BALL.