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BRAKE OPERATING MECHANISM

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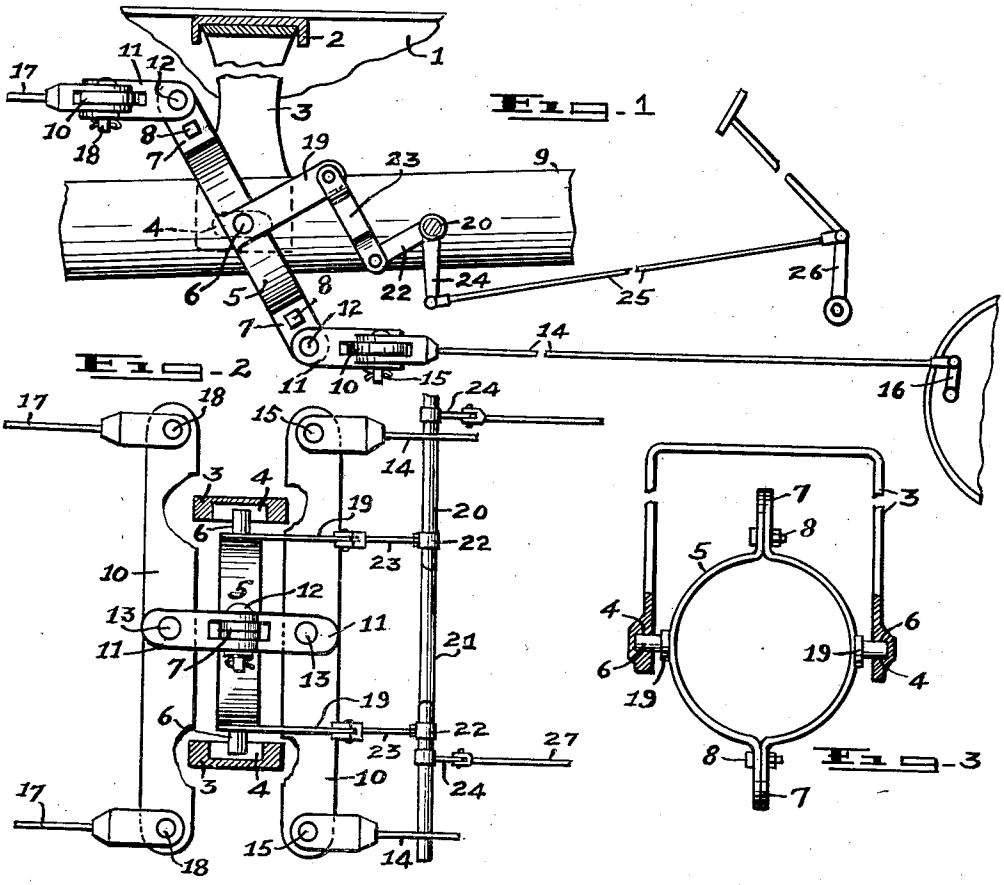


Fig. 1

Fig. 2

Fig. 3

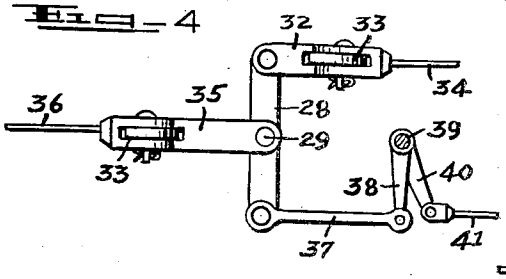


Fig. 4

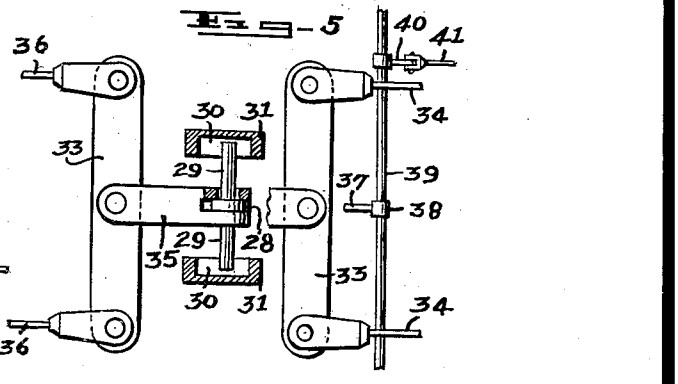


Fig. 5

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BRAKE OPERATING MECHANISM

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2 Claims. (Cl. 188—204)

This invention relates to a brake operating mechanism of the mechanical type for motor vehicles, and important objects of the invention are to provide a mechanical brake operating mechanism of the character described, which assures equal and centralized distribution of braking force to each of the wheels of vehicle, which embodies relatively few parts, which reduces the effort necessary for operation, and which may be readily installed in a vehicle already constructed as well as form a component part of a new vehicle structure.

Further objects of the invention are to provide a four-wheel brake mechanism of the class stated, which is simple in its construction and arrangement, strong, durable and efficient in its use, compact, positive in its action, and comparatively economical in its manufacture, installation and maintenance.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of the novel construction, combination, and arrangement of parts herein specifically described and illustrated in the accompanying drawing, but it is to be understood that changes in the form, proportions, and details of construction may be resorted to that come within the scope of the claims hereunto appended.

In the drawing wherein like numerals of reference designate corresponding parts throughout the several views:

Figure 1 is a side view of the brake operating mechanism in the released or inoperative position.

Figure 2 is a top plan view thereof in the operative or braking position.

Figure 3 is an end view of the rocker ring.

Figures 4 and 5 are, respectively, side and top plan views of a modified form of the device.

Referring in detail to the drawing 1 denotes the frame of a motor vehicle chassis including the transverse frame member 2. A substantially inverted U-shaped bearing bracket 3 is fixed to and depends from the transverse frame member 2. An oblong, horizontally disposed pocket bearing 4 is formed on the inner side of each of the spaced, parallel depending legs of the bearing bracket 3 adjacent to the lower free ends of said legs.

A rocker ring 5 is pivotally mounted between the depending legs of the bearing bracket 3 by means of a pair of trunnions 6, which are preferably formed integral with the rocker ring and transversely aligned with respect to each other at respective sides of the latter. The trunnions are engaged in respective pocket bearings 4 and are permitted to shift or float forwardly or rearwardly in the latter.

The rocker ring 5 comprises a pair of similar half sections, which have their upper and lower ends formed to provide a pair vertically and diametrically aligned connecting lugs 7 when bolted together, as at 8, and as clearly illustrated in Figure 3.

The rocker ring 5 is provided for the passage of the drive shaft 9 of the vehicle therethrough. The diameter of the rocker ring is considerably greater than the diameter of the drive shaft, whereby the former may rock the required operating distance without interference due to the latter. The provision and arrangement of the rocker ring, in the manner stated, permits the perfect centralization of my improved brake operating mechanism in the vehicle chassis.

A transversely extending equalizing bar 10 is connected to each of the connecting lugs 7 of the rocker ring 5 by means of a coupling 11. The latter are pivotally connected, as at 12, to respective connecting lugs 7, and as at 13, to the center of respective equalizing bars 10. The connections 12 of the couplings 11 allow the automatic vertical adjustment of the equalizer bars, and the connections 13 permit the automatic lateral adjustment of respective ends of said equalizer bars.

A pair of brake rods 14 have their rear ends pivotally connected, as at 15, to respective ends of the lower equalizing bar 10. The front ends of the brake rods 14 are pivotally joined with the operating levers 16, at the front wheels of the vehicle. A pair of brake rods 17 have their forward ends pivotally connected, as at 18, to the respective ends of the upper equalizer bar 10, and the rear ends thereof are adapted to be pivotally joined with the brake operating levers of the rear wheels of the vehicle.

A pair of parallel disposed actuating levers 19 are preferably formed integral with and project forwardly from the trunnions 6 at respective sides of the rocker ring 5. The actuating levers are diametrically opposed to each other on the rocker ring and extend at right angles relatively to the latter.

A transversely extending operating shaft 20, suitably journaled for rotation in the chassis frame, is disposed forwardly of the rocker ring 5 and provided with a dipped central portion 21 to clear the drive shaft 9. The shaft 20 carries a pair of spaced, fixed, depending operating arms

22. A connecting link 23 pivotally joins the free end of each of the actuating levers 19 with the free end of the respective operating arm 22.

A pair of depending brake arms 24 is also fixed on the shaft 20. A connecting rod 25 has its rearward end pivotally joined to the free end of one of the brake arms 24, and the forward end thereof is pivotally connected to the brake pedal 26, which is pivotally mounted on the vehicle in any suitable manner. The free end of the other brake arm 24 is pivotally joined with the rear end of a connecting rod 27 and the forward end of the latter is adapted for the connection with the hand brake of the vehicle.

When the brake mechanism is in the released or inoperative position, the rocker ring 5 is normally disposed at an angle from the vertical, with the upper portion disposed rearwardly of the lower portion thereof, as clearly illustrated in Figure 1.

It will here be noted that, the engagement of the trunnions 6 in the pocket bearings 4 is such that the former are free to shift or float forwardly or rearwardly in the latter, and that said bearing pockets are of such lengths that at no time will the trunnions abut against the end walls thereof, regardless of whether or not the braking device is in the released or braking position.

When the brake pedal is depressed to effect the braking operation, the actuating mechanism will shift the rocker ring 5 from its normal angular position toward the vertical position, whereby one of the equalizing bars 10 will be pulled forwardly and the other will be pulled rearwardly. During the braking operation the trunnions 6 float freely in the bearing pockets 4 either forwardly or rearwardly, but never a distance to allow same to abut against the end walls of said bearing pockets.

It is obvious that, the operation of the floating rocker ring 5 and of the centrally connected equalizing bars 10, will exert an equalized force to all of the brake rods 14 and 17, regardless of any variation in the lengths of the latter, or in the relative adjustments of the brakes at the four wheels of the vehicle.

In the modified form of the device, illustrated in Figures 4 and 5, the rocker member 28 is in the form of a straight bar, and is intended to be suspended in the chassis frame at one side of the drive shaft 9 or at any other position preventing the interference of the latter with the operation thereof. The rocker member 28 is provided with centrally disposed trunnions 29, which shift in the oblong pocket bearings 30 of a bearing bracket 31.

A coupling 32 pivotally joins the upper end of the rocker member 28 with the center of one of the equalizing bars 33. The ends of the latter are pivotally connected with the front brake rods 34. A coupling 35 is pivotally joined to the rocker member 28 by the trunnions 29 and to the center of the other of the equalizing bars 33, which latter has its ends pivotally connected to the rear brake rods 36.

The lower end of the rocker member 28 is pivotally connected to a connecting link 37, and the latter has its forward end pivotally connected with an operating arm 38, which is fixed to an operating shaft 39 suitably journaled for rotation in the chassis frame. The shaft 39 also carries a fixed brake arm 40, which joins with brake rod 41 extending to the brake pedal.

In the operation of the modified form of the device, the trunnions 29 shift or float in the pocket bearings 31 in the manner identical to that described relatively to the preferred form. It is evident that, when the rocker member 28 is drawn towards its vertical position, as shown in Figure 4, an equalized pull is exerted on the couplings 32 and 35 and on the centrally connected equalizing bars 33 to effect a uniform braking action to all of the four wheels of the vehicle.

It is apparent that the positions of the coupling 32 and of the connecting link 37 may be reversed if better suited to meet conditions found in practice, and that the parts of the device may be arranged to allow the rocker member 28 to extend in the transverse direction instead of the vertical position, as herein disclosed.

While illustrating and describing the present invention as embodied in a brake operating mechanism, it is obvious that the principle of the invention may be successfully employed in connection with the operation of railroad switches or for any other purposes wherein it is found to be applicable.

The present invention provides a most efficient device of its kind, which will function effectively to uniformly centralize and equally distribute the applied braking force to each of the four wheels of the vehicle by mechanical action and apparatus.

What I claim is:

1. In a four-wheel brake operating mechanism for vehicles, the combination of a frame member, a bearing bracket fixed to the latter, a rocker ring surrounding the drive shaft of the vehicle and provided with laterally aligned trunnions having a floating engagement in said bearing bracket, an equalizing bar pivotally connected centrally of its length with each end of said rocker ring, a brake rod pivotally connected with each end of said equalizing bars, and means for operating said rocker ring to shift said equalizing bars in opposite directions to effect the braking operation.

2. In a four-wheel brake operating mechanism for motor vehicles, the combination of a frame member, a bearing bracket fixed to said frame member including a pair of spaced depending legs, said legs having oblong horizontally disposed pocket bearings disposed adjacent to the lower end thereof, a rocker member provided with laterally aligned trunnions having a floating engagement in said pocket bearings, an equalizing bar pivotally connected centrally of its length with each end of said rocker member, a brake rod pivotally connected with each end of said equalizing bars, and means for operating said rocker member on said trunnions to shift said equalizing bars laterally in opposite directions to effect the braking operation without imparting longitudinal movement to said equalizing bars for maintaining the relative positions of said brake rods with respect to each other.

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