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S. GLADSTONE
BRAKE OPERATING MEANS

2,230,746

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2 Sheets-Sheet 1

Fig. 1.

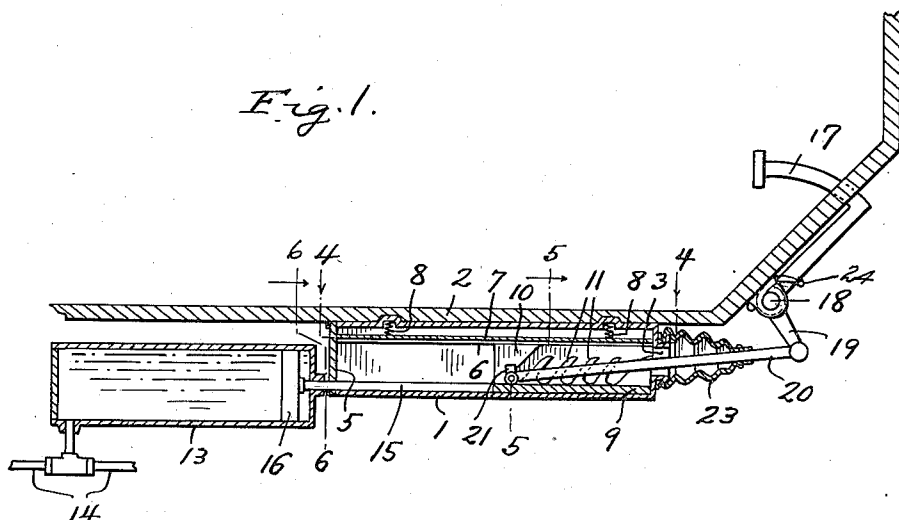


Fig. 2.

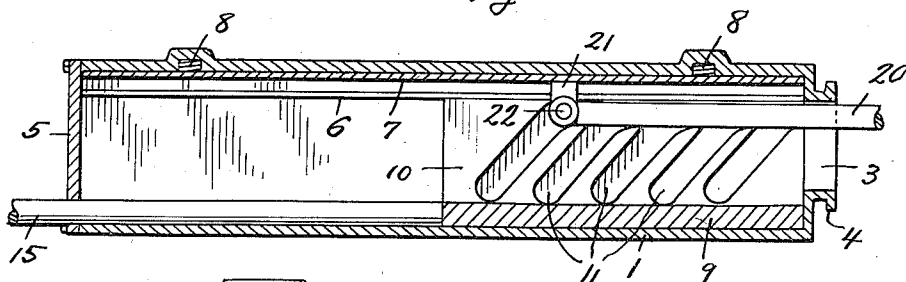
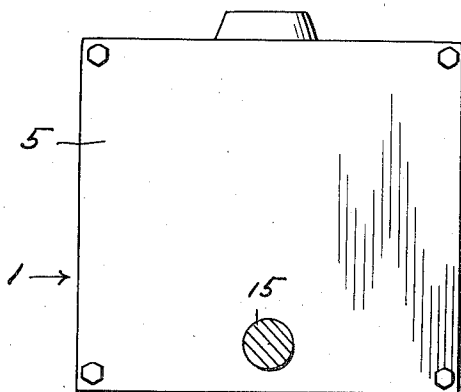


Fig. 6



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BRAKE OPERATING MEANS

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Application January 4, 1940, Serial No. 312,423

1 Claim. (Cl. 188—196)

The present invention relates to new and useful improvements in brake operating means particularly for motor vehicles equipped with hydraulic brakes and has for its primary object to provide, in a manner as hereinafter set forth, an apparatus embodying a novel construction and arrangement whereby wear as it occurs as well as loss of fluid from leakage will be automatically compensated for, thereby maintaining high operating efficiency over a comparatively long period of time without the necessity of making adjustments.

Other objects of the invention are to provide a brake operating mechanism of the character described which will be comparatively simple in construction, strong, durable, reliable, compact and which may be manufactured and installed at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in vertical longitudinal section through an apparatus constructed in accordance with the present invention.

Figure 2 is a view in vertical longitudinal section through the forward portion of the device, showing an automatic adjustment about to occur.

Figure 3 is a perspective view of the slidable shoe.

Figure 4 is a view in horizontal section, taken substantially on the line 4—4 of Figure 1.

Figure 5 is a cross sectional view, taken substantially on the line 5—5 of Figure 1.

Figure 6 is a cross sectional view, taken substantially on the line 6—6 of Figure 1.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises an elongated casing 1 which is mounted longitudinally in any suitable manner beneath the floor of the automobile, as at 2. At its forward end, the casing 1 is provided with an opening 3, a flanged neck 4 defining said opening. The rear end of the elongated casing 1 is closed by a removable plate 5.

The upper portions of the side walls of the casing 1 are provided, in said casing, with longitudinally extending flanges 6. Resting on the flanges 6 is a vertically movable plate 7 the purpose of which will be presently set forth. Coil springs 8 yieldingly resist upward movement of the plate 7.

Mounted for longitudinal sliding movement in

the casing 1 below the flanges 6 is a substantially channel shaped shoe or member 9. The side walls 10 of the substantially channel shaped shoe 9 have formed therein series of forwardly inclined grooves 11. Then, the upper portion of the walls 10 are recessed, as at 12, these recesses establishing communication between the grooves 11.

Mounted rearwardly of the casing 1 is a master hydraulic brake cylinder 13. Brake conduits 14 are connected to the rear end portion of the cylinder 13. Fixed to the shoe 9 and extending into the cylinder 13 from the casing 1 is a rod 15. Mounted on the rear end of the rod 15 and operable in the cylinder 13 is a piston 16.

The reference numeral 17 designates a foot pedal which is pivotally mounted beneath the floor board of the vehicle, as at 18. Projecting from the pivoted end of the foot pedal 17 is an arm 19. A suitable return spring 24 is provided for the foot pedal 17. The reference numeral 20 designates a push rod having one end pivotally connected to the arm 19, said push rod extending through the opening 3 into the casing 1. On the rear end of the push rod 20 is a crosshead 21 having reduced end portions 22 which are engaged in certain of the inclined grooves 11. A collapsible seal 23 connected to the push rod 20 and the flanged neck 4 closes the opening 3 in the casing 1.

It is thought that the operation of the apparatus will be readily apparent from a consideration of the foregoing. Briefly, when the foot pedal 17 is depressed the push rod 20 moves the shoe 9 rearwardly in the casing 1 thus actuating the piston 16 through the medium of the rod 15 for forcing the fluid to the brakes of the vehicle. Of course, under normal conditions, when the pedal 17 is released the parts return to substantially the position shown in Figure 1 of the drawings for releasing the brakes. However, if any considerable wear or loss of fluid has occurred the brake pedal 17, when it returns to raised position, drags the crosshead 21 upwardly in the manner suggested in Figure 2 of the drawings, said crosshead being pulled forwardly over the rounded upper ends of the lands between the adjacent grooves 11 and dropping into the next forward grooves. The brakes of the vehicle now release, the inclination of the grooves 11 permitting a predetermined release movement of the brake shoes. The length of the inclined grooves 11 is more than sufficient to permit enough horizontal movement of the shoe 9 to allow the brakes to release at all times, the crosshead 21 traveling in said grooves. This constitutes an important

and highly desirable feature of the invention. Also, the master cylinder 13 is of greater length than those in use at present for permitting sufficient travel of the piston 16 to apply the vehicle
5 brakes after a number of automatic adjustments have been made. As the crosshead 21 is thus pulled upwardly and forwardly for accomplishing an automatic adjustment of the brakes the plate 7 is engaged and raised thereby against the
10 tension of the coil springs 8. The plate 7 constitutes means for yieldingly securing or retaining the crosshead 21 in the grooves 11. While the apparatus is particularly intended for hydraulic brakes it may also be used for mechanical brakes.
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It is believed that the many advantages of a brake operating mechanism constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the apparatus is as illustrated and
20 described, it is to be understood that changes in

the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

A brake operating means for vehicles comprising an elongated casing, a substantially channel-shaped shoe slidably mounted in said casing for operative connection with the brakes of the vehicle, said shoe having series of inclined grooves
10 in its side walls, said grooves communicating with each other at their upper ends, a foot pedal, a rod operatively connected to said foot pedal, a crosshead on said rod engageable selectively in the
15 grooves for operatively connecting the shoe to the foot pedal, and a spring pressed plate slidably mounted in the casing and engageable with the crosshead for yieldingly securing said crosshead in the grooves.

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