HYDRAULIC BRAKE CONTROL MECHANISM

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FIG. 1.

FIG. 2.

FIG. 3.

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This invention relates to certain new and useful improvements in brake control mechanisms as applied to fluid actuated brakes on wheeled vehicles.

The advantages of my invention over similar devices now in use consists of a simplified construction and a quicker and more positive braking pressure and an automatic cutout for any broken or defective lines leading to the brakes.

An important object of the invention is to provide signaling means associated with the brake-actuating mechanism to warn the driver of a defect therein.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts throughout, and in which—

Figure 1 is a plan view of the mechanism, showing it attached to the frame of a four-wheeled vehicle.

Figure 2 is a vertical section showing the operating parts on the device, and

Figure 3 is a fragmentary sectional view taken on the line 3—3 of Figure 2.

This specification, with the accompanying drawings, wherein like reference numerals refer to like parts throughout, fully describes the invention.

Numerical 1 is the frame of a typical vehicle on which is mounted the body 2 of the control mechanism. The body 2 contains a multiplicity of cylinders, 3 and 4, in which travel the brake-actuating pistons 5 and 6, which are connected by means of the rods 7 and 8 to the crosshead 9, so arranged that when the operating pedal 10 is depressed, equal pressure is applied to the pistons 5 and 6. The pistons 5 and 6, when completing their active stroke, are returned to position by the springs 10. Liquid in the cylinders 3 and 4 is forced by the movement of the pistons 5 and 6 through the openings 11 and 12 into the transverse cylinder 13, in which travels the floating piston 14, which is normally balanced in a medial position by the springs 15 and 16. The ends of the cylinder 13 are tightly closed by the screw plugs 17. The discharge of the cylinders is through the tubes 18 and 19, each leading to the independently actuated rear and front hydraulic brakes 20 and 21. The brakes are of the usual piston-operated type.

A liquid receptacle or chamber 22 is provided directly over the cylinders 3 and 4 and is kept constantly full of operating liquid to the exclusion of air by means of the filling plug 23.

Ports 24 and 25 provide communication between the liquid receptacle 22 and the cylinders 3 and 4, and the first movement of pistons 5 and 6, put into action through the piston rods 7, by means of pressure on the foot pedal, is to close the said ports 24 and 25, thus insuring that the cylinders 3 and 4 are kept constantly filled with liquid.

The receptacle 22 is divided by a web or partition extending full length of the receptacle and from bottom to within one-fourth inch of the cover 27, thus preventing drainage of both cylinders 3 and 4, should either piston 5 or 6, or line 18 or 19 become defective. This partition is so constructed that it will not interfere with the filling of the receptacle.

Ports 26 are for return of liquid that might have been forced behind the pistons 5 and 6, also providing a softening of the back slap of pistons and pedal assembly.

The wearing surfaces of the cylinders 3 and 4 are protected from abrasion from dust by the rubber packing 32.

Normally, while the braking system is at rest, ports 24 and 25 will insure free flow of filling fluid to cylinders 3 and 4. Should the pressure on one cylinder be slightly greater than on the other, the pressure would be equalized by the action of the floating piston 14.

Mounted in each plug 17 is a contact 29 projecting into the cylinder 13 and normally spaced from the piston 14 by the springs 15 and 16. Circuit wires 30 lead to a suitable signal device adjacent the driver (not shown).

Should a leak occur in part of the braking system, for example that part controlled through the tube 18, the lessened pressure in cylinder 4 and the continued pressure in cylinder 3 applied through port 12 to the equalizing piston 14 will move piston 14 into contact with contact 29. This action flashes a warning light on the instrument panel of the vehicle, showing the braking mechanism 5 and 18 to be at fault. When this happens, all of the braking power will be exerted upon that portion of the brakes operated through the tube 19.

Thus, any leak in the braking system causing a loss of pressure and braking power can only effect that part of the braking system fed by one cylinder.
Having thus fully described my invention I claim:

A brake-operating control mechanism for fluid pressure braking systems comprising a plurality of cylinders, a fluid filled chamber having controlled connections to the cylinders, brake pedal-actuated pistons adapted to apply pressure to the fluid contained therein, a transverse cylinder having communication with the first-named cylinder, and having brake lines leading therefrom adjacent the outer ends thereof, a balanced pressure-operated piston in the last-named cylinder adapted to balance the pressure in the brake lines, a partition in the chamber of a height less than the height of the walls of the chamber to provide free communication throughout the chamber when the same is filled with liquid and limiting flow of liquid to the respective cylinders connected with the chamber when liquid in the chamber at either end of the partition drops below the level of the upper edge of the partition, an electric contact in each end of the transverse cylinder and disposed in the path of movement of the opposite ends of the last named piston for engagement thereby upon a predetermined movement of such said last named piston, said contacts being included in an electric circuit with a signalling device, and said last named piston closing one of the brake lines leading from the transverse cylinder when moved in either direction into a position for engaging an adjacent contact.

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