

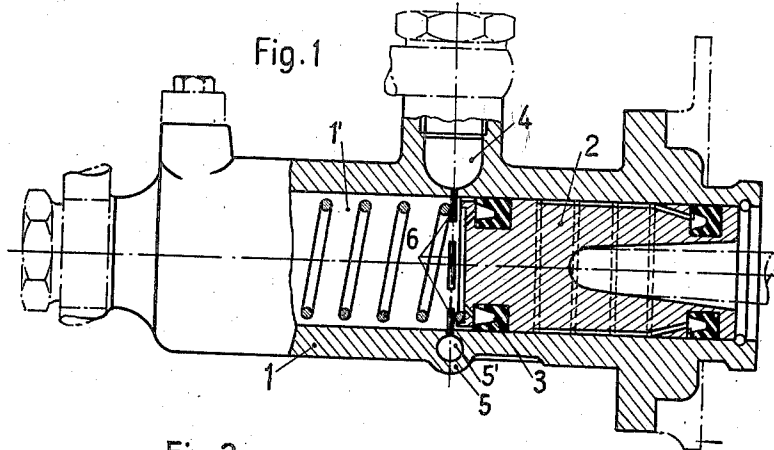
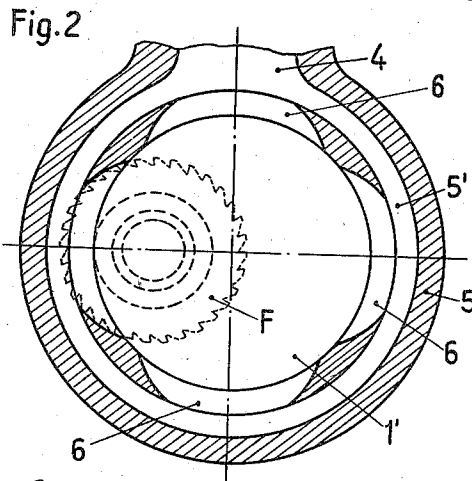
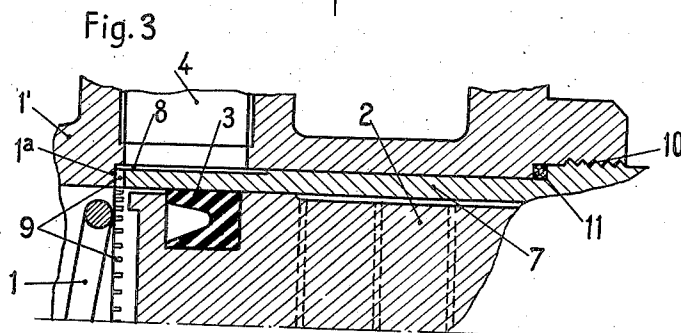
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HYDRAULIC BRAKE MECHANISM

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HYDRAULIC BRAKE MECHANISM

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4 Claims. (Cl. 60—54.6)

In hydraulic brake mechanisms known heretofore, at the end of the return stroke of the piston of the master cylinder circular bores are uncovered in the wall of the master cylinder for the return of the liquid, said bores being of course covered by the piston at the beginning of the pressure stroke. In heavy duty vehicles, in which the brake is mechanically actuated for instance by means of pressure air, the pressure stroke starts violently and a very high pressure is suddenly created on the piston face which strongly presses the edge of the rubber cup of the piston against the cylinder wall and consequently produces a rapid wear of said cup as a result of the deformations it undergoes as it passes over the circular bores which are always of substantial width.

It is an object of this invention of reducing or eliminating this drawback.

With this and incident objects in view, the invention comprises some novel constructions of master cylinders for hydraulic brake mechanisms regarding the shape of the bores for the passage of the liquid.

The accompanying drawing shows by way of example two constructions according to this invention.

Figure 1 is a longitudinal section of a master cylinder made of one piece.

Figure 2 is a sectional view thereof on a larger scale on line II—II of Fig. 1.

Figure 3 is a longitudinal section on an enlarged scale of a divided master cylinder construction having numerous longitudinally directed short slots.

Referring to Figures 1 and 2, the master cylinder 1 with the piston 2 is provided with the ordinary rubber packing 3. Near the piston and directly in front of same when in its inoperative position a slot 4 is cut in the cylinder wall for establishing communication between the cylindrical chamber 1' and the liquid reservoir through the connection 4. The cylinder 1 is slightly enlarged at 5 opposite this slot and inside the enlargement an annular chamber 5' is formed which opens into the connection 4. Further slots 6 are cut in the wall between the annular chamber 5' and the cylindrical chamber 1'; all the slots 6 are less than $\frac{1}{8}$ millimeters in width and in number such as to give a total open area sufficient for the flow of the liquid. Instead of two or more slots one slot measuring 360°, that is a circular slot may be provided. The slots or slot are obtained by means of a very thin milling cutter F (Figure 2) smaller in diameter than the

cylindrical chamber 1' into which it is introduced.

The same result may be obtained by cutting numerous short longitudinal slots. This may be obtained in a practicable manner by cutting notches in the edge of a tube by means of a very thin milling cutter and clamping this edge against the edge of a tubular member having the same inner diameter. The construction shown in Figure 3 has been obtained by this method. In this construction the cylinder 1 is formed in the region of the passages of the liquid with a shoulder 1a against which is tightly pressed the edge of a tube 7 having the same inner diameter (obtained by reaming after assembly) as the chamber 1'. The tube 7 is tightly screwed to the opening of the cylinder 1, both members being screw-threaded at 10 at their rear ends and provided with a packing ring 11. Before assembly very narrow notches 9 are cut in the edge of the tube 7, which in combination with the shoulder 1a form slots opening into the annular channel 8 obtained at the connection 4 by reducing the outer diameter of the tube 7.

The constructions shown in Figures 1 and 3 are equivalent, for both employ very narrow slots, smaller in width than $\frac{1}{8}$ millimeters for the passage of the liquid; in the construction shown in Figure 1 further slots might be cut beside the slots 6 to slightly extend the zone of the passages in a longitudinal direction as in the construction shown in Figure 3.

This slight extension of the zone of the passages in a longitudinal direction may be advantageous when rubber cups 3 are employed which easily elongate in use.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

What I claim is:

1. A ram comprising a cylinder, a piston slidable in said cylinder, flexible cup-shaped packings for said piston, said cylinder being provided with inlet slots having a width of the order of $\frac{1}{8}$ millimeters to prevent the edge of said cup-shaped packing from bulging in said slots under the action of high pressure.

2. A ram, comprising a cylinder, a piston slidable in said cylinder, flexible cup-shaped packings for said piston, a conduit for supplying fluid to said cylinder, when the piston reaches the end of its return stroke, a peripheral collector formed in the cylinder and communicating with said conduit, the cylinder being provided with at least

one slot not exceeding $\frac{3}{8}$ millimeters in width connecting the inside of the cylinder with said collector.

5 3. A ram as claimed in claim 2 in which a plurality of narrow slots are formed transversely of the cylinder axis.

10 4. A ram, comprising a cylinder formed by an external section having an inner abutment and an internal section one end of which has short radial cuts not exceeding $\frac{3}{8}$ millimeters in width and a reduced outer diameter, said internal sec-

tion being fitted on the external section so as to bring said end against said abutment, an inlet conduit communicating with the space formed between the external section and said reduced end of the internal section and, through said cuts, 5 with the inside of the cylinder, a piston slidably mounted in said cylinder and flexible cup-shaped packings for said piston cooperating with said cuts.

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