PATENT SPECIFICATION

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Improvements in Reservoirs for Hydraulic Braking Systems

We, GIRLING LIMITED, a British Company, of Kings Road, Tyseley, Birmingham 11, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to improvements in reservoirs for hydraulic braking systems.

An hydraulic braking system incorporates a reservoir for working liquid from which the master cylinder draws liquid as and when required and which has to be kept substantially full of liquid. The reservoir may be a separate unit connected to the master cylinder by a pipe line or it may be formed integrally with the master cylinder.

According to our invention a reservoir for an hydraulic braking system is closed by a removable cap which is translucent or has a translucent panel in it so that the level of liquid can be checked without removal of the cap, and the cap incorporates a vent which provides communication between atmosphere and the interior of the reservoir by way of a path of considerable length so that while air can pass freely into the reservoir to keep it at atmospheric pressure the escape of liquid is prevented.

One embodiment of our invention as applied to a reservoir integral with a master cylinder is illustrated by way of example in the accompanying drawings which shows the reservoir and cap in section.

In the embodiment illustrated a master cylinder for an hydraulic braking system has integral with it a reservoir 10 which is in communication with the master cylinder through a passage 11 adjacent to the bottom of the reservoir. The reservoir is substantially cylindrical and is open at its upper end on the outer surface of which is formed a screw-thread. The master cylinder and reservoir will usually be produced by die-casting.

The upper end of the reservoir is closed by a cap 12 moulded from nylon or other transparent or translucent plastic, and over the centre of its area it is reduced in thickness, as shown at 13, sufficiently to allow the contents of the reservoir to be seen through it. On its underside the cap has a flat peripheral portion 14 which seats on an annular flange 15 on a filter 16 depending into the reservoir, and the flange 15 in turn seats on a rubber sealing washer 17 resting on the upper end of the reservoir. The cap and filter are secured to the reservoir by a flanged ring 18 which fits over the periphery of the cap and is screwed on to the external screw-thread on the reservoir.

To maintain the interior of the reservoir at atmospheric pressure an annular groove 19 is formed in the underside of the flat peripheral portion 14 of the cap and this groove communicates at one point with the interior of the reservoir by way of a radial groove 21 in the upper surface of the flange 15 on the filter. At another point the groove 19 is in communication with atmosphere by way of a small port 22 leading from the groove to the upper surface of the cap. The cap is provided with a downwardly projecting peg 23 adapted to engage in a complementary hole in the flange 15 of the filter to ensure that when the parts are assembled the groove 19 is diametrically opposite the port 22 so that there is a very long path for the air between atmosphere and the reservoir and there is no appreciable risk of liquid escaping from the reservoir.

The filter is conveniently moulded from nylon and is preferably of the inverted

[Price 4s. 6d.]

conical shape shown in the drawing. With a filter of this shape the level of the liquid can be readily seen against the inclined wall of the filter.

WHAT WE CLAIM IS :—

1. A removable closure cap for the reservoir of an hydraulic braking system comprising a moulded plastic cap which is translucent or incorporates a translucent panel in it so that the level of liquid in the reservoir can be checked without removal of the cap, and which incorporates a vent which provides communication between atmosphere and the interior of the reservoir by way of a path of considerable length so that while air can enter freely into the reservoir to keep it at atmospheric pressure the escape of liquid is prevented.

2. A reservoir for an hydraulic braking system in combination with a closure cap which is removably secured to the reservoir and is translucent or has a translucent panel in it through which the level of liquid in the reservoir can be observed, and the assembly incorporates an air vent path of considerable length between atmosphere and the interior of the reservoir.

3. A reservoir assembly as claimed in claim 2 in which the cap has a flat peripheral portion adapted to seat on an annular flange on a filter depending into the reservoir, and the flange on the filter in turn seats on a sealing washer resting on the upper end of the reservoir to which the cap and filter are secured by a flanged ring fitting over the periphery of the cap and screwed on to the reservoir, an annular groove being formed in the underside of the flat peripheral portion of the cap and the groove being in communication at circumferentially spaced points with atmosphere and with the interior of the reservoir.

4. A reservoir assembly as claimed in claim 3 in which the communication between the annular groove and the interior of the reservoir is provided by a radial groove in the upper surface of the flange on the filter.

5. A reservoir as claimed in claim 3, in which the communication between the annular groove and atmosphere is provided by a port extending from the groove to the upper surface of the cap.

6. A reservoir assembly as claimed in claims 3 and 4 in which co-operating means are provided on the cap and filter to ensure that when the parts are assembled the radial groove in the filter flange and the port in the cap are diametrically opposite.

7. A reservoir as claimed in claim 2 incorporating a filter of inverted conical form depending into the reservoir.

8. A reservoir assembly as claimed in any of claims 3 to 5 in which the filter is of inverted conical form.

9. A reservoir assembly for an hydraulic braking system substantially as described with reference to the accompanying drawing.

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conical shape shown in the drawing. With a filter of this shape the level of the liquid can be readily seen against the inclined wall of the filter.

WHAT WE CLAIM IS:—

1. A removable closure cap for the reservoir of an hydraulic braking system comprising a moulded plastic cap which is translucent or incorporates a translucent panel in it so that the level of liquid in the reservoir can be checked without removal of the cap, and which incorporates a vent which provides communication between atmosphere and the interior of the reservoir by way of a path of considerable length so that while air can enter freely into the reservoir to keep it at atmospheric pressure the escape of liquid is prevented.

2. A reservoir for an hydraulic braking system in combination with a closure cap which is removably secured to the reservoir and is translucent or has a translucent panel in it through which the level of liquid in the reservoir can be observed, and the assembly incorporates an air vent path of considerable length between atmosphere and the interior of the reservoir.

3. A reservoir assembly as claimed in claim 2 in which the cap has a flat peripheral portion adapted to seat on an annular flange on a filter depending into the reservoir, and the flange on the filter in turn seats on a sealing washer resting on the upper end of the reservoir to which the cap and filter are secured by a flanged ring fitting over the periphery of the cap and screwed on to the reservoir, an annular groove being formed in the underside of the flat peripheral portion of the cap and the groove being in communication at circumferentially spaced points with atmosphere and with the interior of the reservoir.

4. A reservoir assembly as claimed in claim 3 in which the communication between the annular groove and the interior of the reservoir is provided by a radial groove in the upper surface of the flange on the filter.

5. A reservoir as claimed in claim 3, in which the communication between the annular groove and atmosphere is provided by a port extending from the groove to the upper surface of the cap.

6. A reservoir assembly as claimed in claims 3 and 4 in which co-operating means are provided on the cap and filter to ensure that when the parts are assembled the radial groove in the filter flange and the port in the cap are diametrically opposite.

7. A reservoir as claimed in claim 2 incorporating a filter of inverted conical form depending into the reservoir.

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9. A reservoir assembly for an hydraulic braking system substantially as described with reference to the accompanying drawing.

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