

ORIGINAL

ABSTRACT

MAIN BRAKE CYLINDER FOR A HYDRAULIC VEHICLE BRAKE SYSTEM AND METHOD FOR OPERATING SAME

Described herein is a main brake cylinder for a hydraulic brake system (1) of a motor vehicle comprising an electric machine (2). The main cylinder (1) comprises two pistons (10, 11) for a brake circuit (II) and a driver mechanism (12), which carries a second piston along with a first piston after displacement of the first (10) of the two pistons on a predefined piston stroke (s), and wherein an effective piston area of both the pistons (10, 11) is greater than an effective piston area of the first piston (10) for forcing out the brake fluid out of the main brake cylinder (3), and a hydraulic accumulator (20), which communicates with the main brake cylinder (3).

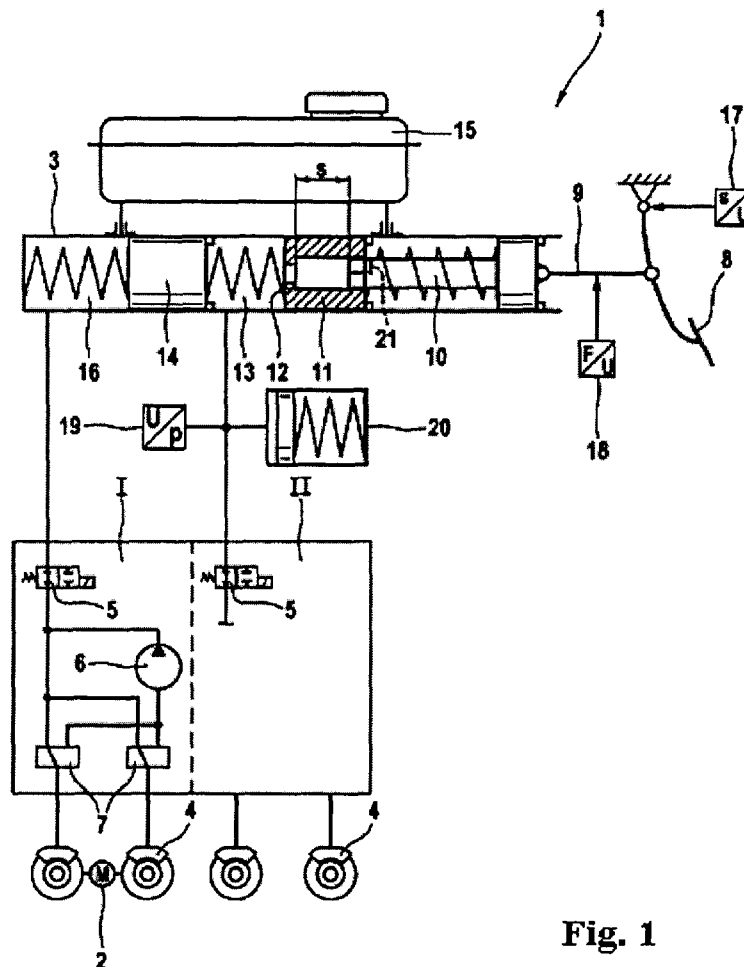


Fig. 1

I/We claim:

1. A main brake cylinder (3) for a hydraulic brake system (1) of a motor vehicle, wherein the hydraulic brake system (1) comprises an electric machine (2) that is operable as a generator for decelerating the motor vehicle, wherein the main brake cylinder (3) comprises:

two pistons (10, 11) for a brake circuit (II);

a driver mechanism (12) that carries a second piston (11) along with a first piston (10) after displacement of the first piston (10) of the two pistons (10, 11) on a predefined piston stroke (s), wherein an effective piston area of both the pistons (10, 11) for forcing out the brake fluid out of the main brake cylinder (3) is greater than an effective piston area of the first piston (10) for forcing out the brake fluid out of the main brake cylinder (3); and

a hydraulic accumulator (20) that communicates with the main brake cylinder (3);

characterized in that,

the hydraulic accumulator (20) has a preloading, so that the hydraulic accumulator (20) absorbs a brake fluid from the main brake cylinder (3) only if the pressure in the main brake cylinder (3) is greater than a maximum design pressure of the vehicle brake system (1).

2. The main brake cylinder (3) as claimed in claim 1, wherein the first piston (10) is enclosed inside the second piston (11).

3. The main brake cylinder (3) as claimed in claim 1, wherein in non-operated main brake cylinder (3), a pressure chamber (13) of the main brake cylinder (3) communicates with a brake fluid reservoir (15) by a small displacement, and wherein the brake fluid reservoir (15), by a small displacement of the first piston (10), is isolated from the pressure chamber (13)

4. The main brake cylinder (3) as claimed in claim 1, wherein the main brake cylinder (3) is a tandem--circuit main brake cylinder (3) or multi-circuit main brake cylinder (3) for a dual-circuit vehicle brake system (1).

5. A method for operating a hydraulic vehicle brake system (1) of a motor vehicle having a main brake cylinder (3) with two pistons (10, 11) for a brake circuit (II) of the vehicle brake system (1) and a driver mechanism (12) that displaces a second piston (11) along with a first piston (10) after displacement of the first piston (10) of the two pistons (10, 11) on a predefined piston stroke (s), wherein an effective piston area of both the pistons (10, 11) for forcing out the brake fluid out of the main brake cylinder (3) is greater than an effective piston area of the first piston (10) for forcing out the brake fluid out of the main brake cylinder (3), and wherein the braking circuit (II) of the vehicle brake system (1) is connected to both the pistons (10, 11) of the main brake cylinder (3) by an isolation valve (5), which is closed during a service braking;

characterized in that,

the vehicle comprises an electric machine (2) that is operated as a generator during the service braking to decelerate the vehicle, wherein the vehicle brake system (1) comprises a hydraulic pump (6), by which a braking pressure is generated during the service braking, and wherein a pressure of the wheel brake is controlled in at least one wheel brake (4) of the vehicle brake system (1) in dependency of an actuation of the main brake cylinder (3) and by a decelerating effect of the electric machine (2) operated as a generator.

6. The method as claimed in claim 5, wherein the vehicle brake system (1) comprises at least one wheel brake pressure control valve (7) for controlling the wheel brake pressure in at least one wheel brake (4) of the vehicle brake system (1).

7. The method as claimed in claim 5, wherein the main brake cylinder (3) is a tandem circuit main brake cylinder (3) or multiple circuit main brake cylinder (3) and that the vehicle brake system (1) comprises at least one more braking circuit II, which remains connected to the main brake cylinder (3) during the service braking.

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To
The Controller of Patents
The Patent Office at New Delhi

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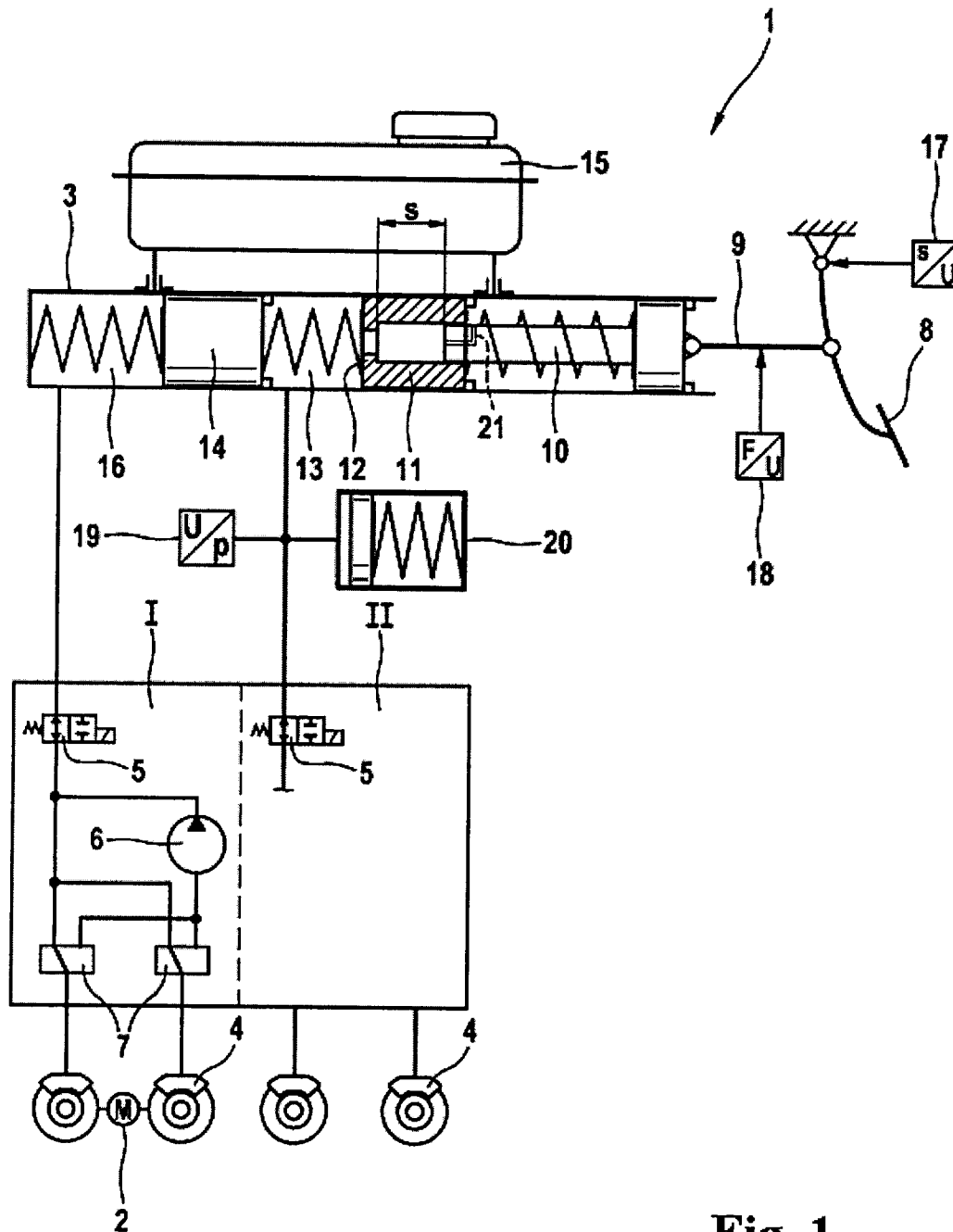


Fig. 1

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