SAFETY HYDRAULIC BRAKE SYSTEM

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ABSTRACT

Many drivers prefer the fuel efficiency and fuller control of manual transmission in their vehicle. Driving with a manual transmission on hilly terrain can present challenges, though. Some drivers struggle to simultaneously work the clutch, brake and accelerator pedals to prevent rolling back after stopping on a steep hill. When you stop on a hill, you fully depress the clutch pedal and brake pedal. As long as you keep the brake pedal fully depressed, a link mechanism works the locking chamber, braking force is retained by this system and you can remove your right foot from the brake pedal without fear of the vehicle rolling backward. When it’s time to go, your right foot will be free to depress the accelerator pedal as you pull away. As you gradually press the accelerator, the brakes release automatically. This system can be through locking chamber or through the solenoid valve whichever is preferred. Here it is a table model with actual brake drum, hub, brake pedal and the working of braking with locking chamber and accelerator lever to show the actual working of the system. When brake is applied, the brake fluid moving to the wheel cylinder through the locking chamber and in that condition we operate a lever to lock the return path of the fluid back and when we press the accelerator, this lock opens through a link mechanism which helps us to monitor the brake, clutch and accelerator smoothly.

KEYWORDS

- Locking Chamber
- Master Cylinder
- Brake Pedal
- Brake Drum

INTRODUCTION

This system can be through locking chamber or through the solenoid valve whichever is preferred. Here it is a table model with actual brake drum, hub, brake pedal and the working of braking with locking chamber and accelerator lever to show the actual working of the system. When brake is applied, the brake fluid moving to the wheel cylinder through the locking chamber and in that condition we operate a lever to lock the return path of the fluid back and when we press the accelerator, this lock opens through a link mechanism which helps us to monitor the brake, clutch and accelerator smoothly. To fabricate a frame with one-wheel housing with brake liners and wheel cylinder for effecting the braking, to have the brake pedal master cylinder by which the braking is shown, a brake fluid container with proper piping. To fabricate the accelerator pedal which operates the brake fluid locking chamber through the link mechanism when activated to work in that way and in normal without activation, clutch and brake locking are not linked.

OBJECTIVES
To fabricate a frame with one-wheel housing with brake liners and wheel cylinder for effecting the braking, to have the brake pedal master cylinder by which the braking is shown, a brake fluid container with proper piping.

To fabricate the accelerator pedal which operates the brake fluid locking chamber through the link mechanism when activated to work in that way and in normal without activation, clutch and brake locking are not linked.

To design and fabricate the fluid locking chamber which locks the fluid flow from the master cylinder to the wheel cylinder and opens the line when delinked. The fluid locking chamber locks by the link mechanism being provided when activated only.

METHODOLOGY
We are making a frame with mild steel angle with one side placing the wheel hub with wheel cylinder and master cylinder with oil container, the usual piping We are making a fluid lacking chamber through the fluid flows to the wheel Cylinder for effecting the braking. This is connected with the link mechanism for operating the locking and opening mechanism. This locking s normally open condition. We cannot use the normal valve in this place since the oil has to be cut off instantly without giving place for escaping during the valve operating which results in pressure drop on braking which does not affect the forceful braking When the brake pedal is pressed the hydraulic braking system works as usual which is used in the normal automobile.

During the uphill drive, this system of safety brake system for uphill will work with the lever pressing which effects the locking chamber to lock the line. This system works when the brake is held pressed effecting the full braking of the wheels and then pressing the lever for locking Now the wheels are jammed by the brake fluid oil. When we are pressing the accelerator for the start of the ride, the link connecting the locking chamber will pull down the other side of the link which makes the fluid locking. Release which makes the wheel free for the ride and the accelerator effecting the raising of the rotations the leg used for brake pedal pressing can be used for accelerator, the clutch when released the lever will pull the link which connects the locking chamber to open the locking chamber oil line with the wheel cylinder effecting the release of the brakes.

When you stop on a hill you fully depress the clutch pedal and brake pedal. As long as you keep the clutch fully depressed a link mechanism works the locking chamber, braking force is retained by this system and you can remove your right foot from the brake pedal without fear of the vehicle rolling backward When it's time to your right foot will be free to depress the accelerator pedal as you pull away As you gradually press the accelerator pedal, the brakes releases automatically.

The need for the locking chamber instead of using the general ball valve or any other valve available in the market
Ball valve or any other valve available in the market is normally blocking the way and not taking care of the back release or back escaping of the fluid. In this brake locking, since the fluid is very volatile and due to the surface finish and the rotary action and the back-release type of design it will release the pressure in the brake drum due to which the braking is released slightly.

Here in this locking chamber which we are designing, there is a small port opening of 4mm diameter and 2.5mm diameter and the contacts of cut off is lapped properly and always the contact is maintaining the pressure on each other by the spring pressure, which is not making the way for back release of pressure and cuts off the fluid line instantly without any back escaping of the fluid which gives our proper output.

Work in Process

Line Diagram
OUTCOME OF THE PROJECT
The system is designed to help in parking or at the uphill drive by the hydraulic oil and also will help anti-theft. The locking chamber designed withstands the working pressure and also will not give way for oil escape during the locking making the wheels to get jammed as required.

CONCLUSION
Mathematical analysis of this device has proved that it can withstand the pressure in hydraulic fluid brake lines, on the application of brakes. Hence this innovation can be safely fitted in all hydraulic brake system to save the strain of holding the brakes. It can also be safely used as parallel substitute for parking barkers particularly when vehicle is stopped on gradients and above all this device can be used as an anti-theft safety device.

SCOPE FOR FUTURE WORK
- Reduce the size and width of the device by using lighter and stronger material.
- Develop an attachment instead of the nipple-adapter assembly so that this device can be commercialized and be used on any kind of vehicle.
- Test the device on different vehicle at different load conditions and standardize.