

Nov. 1, 1938.

C. V. GARDNER

2,134,783

CYLINDER CUP

Filed Nov. 30, 1935

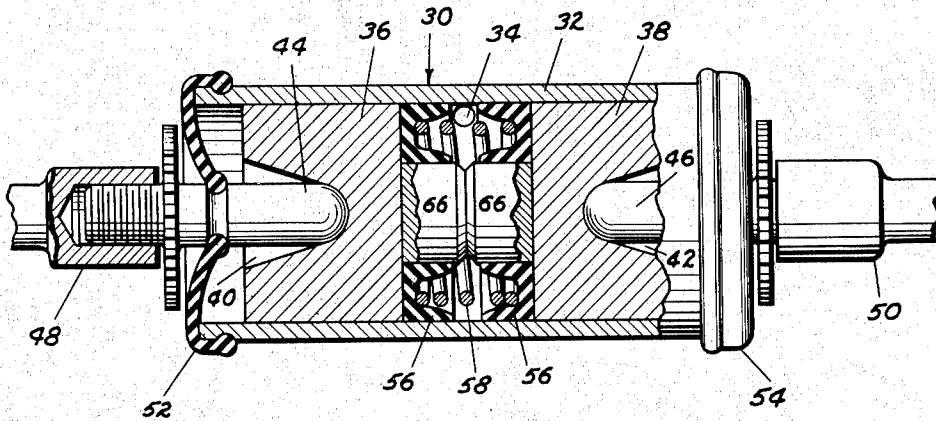


FIG. 2.

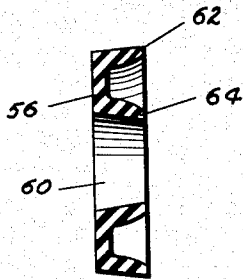


FIG. 3.

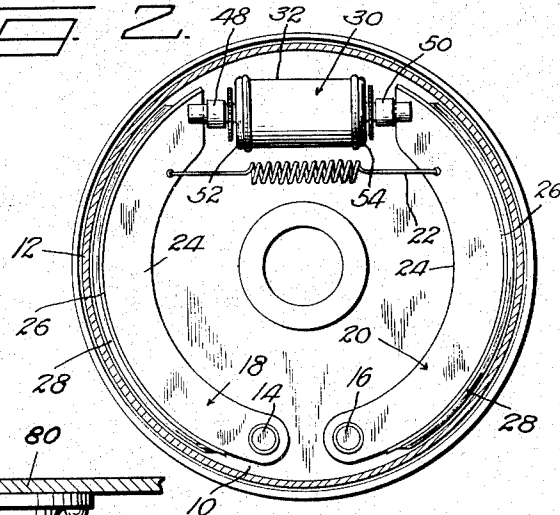


FIG. 4.



FIG. 5.

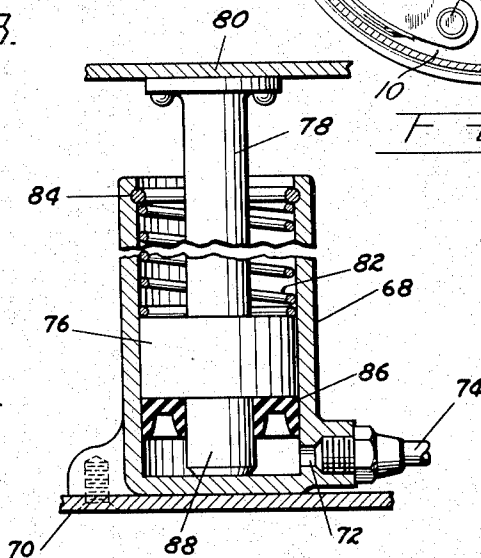


FIG. 6.

INVENTOR.

CLARENCE V. GARDNER

BY

Williams, Bradbury, McCall & Hinkle

ATTORNEYS.

UNITED STATES PATENT OFFICE

2,134,783

CYLINDER CUP

Clarence V. Gardner, Detroit, Mich., assignor to
Hydraulic Brake Company, Detroit, Mich., a
corporation of California

Application November 30, 1935, Serial No. 52,391

2 Claims. (Cl. 60—54.6)

This invention relates to hydraulic brakes, and is particularly concerned with fluid pressure actuated motors and leak-proof cups therefor.

Broadly the invention comprehends a fluid pressure actuated motor including a cylinder and a piston reciprocable in the cylinder having on its head a full floating leak-proof cup carrying a stop for limiting the movement of the piston. Heretofore leak-proof cups have been fitted on concentric extensions on the heads of pistons, and such structures have not proved generally satisfactory because the cups, due to imperfect construction and assembly, are inhibited from floating to insure perfect centering of the cups on the pistons. The present invention aims to overcome this objection.

An object of the invention is to provide a full floating leak-proof cup for the piston of a fluid pressure actuated motor provided with concentric lips, the inner lip being arranged to support a stop for limiting the movement of the piston, and the other lip arranged for engagement with the wall of the cylinder to prevent seepage of fluid from the cylinder past the piston.

Further objects and advantages of the invention reside in the various combinations herein-after described and claimed as will be apparent upon reference to the following specification and to the drawing, in which,—

Fig. 1 is a vertical sectional view of a brake structure embodying the invention;

Fig. 2 is an enlarged longitudinal sectional view of the fluid pressure actuated motor;

Fig. 3 is a sectional view of the leak-proof cup;

Fig. 4 is a side elevation of the stop; and

Fig. 5 is a vertical, sectional view of a modified form of the invention.

Referring to the drawing for more specific details of the invention, 10 represents a fixed support such as a backing plate which may be secured to an axle, not shown, and associated with the backing plate is a rotatable drum 12 which may be secured to a wheel, also not shown.

The backing plate has thereon spaced anchors 14 and 16 on which are pivotally mounted interchangeable frictional elements or shoes 18 and 20, the separable ends of the shoes being connected by a retractile spring 22. Each of the shoes includes a web 24 supporting a rim 26 to which is suitably secured a friction lining 28 adaptable for cooperation with the drum.

A fluid pressure actuated motor indicated generally at 30 is suitably mounted on the backing plate 10 between the separable ends of the fric-

tion elements or shoes 18 and 20. This motor includes a cylinder 32 opened at its respective ends and provided centrally of its length with a port 34 which may be connected to any suitable fluid pressure producing means, not shown.

Opposed pistons 36 and 38 reciprocable in the cylinder 32 have in their respective backs recesses 40 and 42 for the reception of thrust pins 44 and 46 adjustably connected to clevises 48 and 50 connected to the respective ends of the shoes 18 and 20, and sleeved on the thrust pins are flexible shields 52 and 54 embracing the open ends of the cylinders so as to preclude dust and other foreign substances from the cylinder.

The pistons have upon their respective heads floating leak-proof cups 56 held against displacement by a spring 58 interposed between the cups. Each of the cups includes a flexible member having an axial opening 60 and concentric lips 62 and 64. The lip 62 is of the character of an annular marginal flange and is adapted to engage the wall of the cylinder to inhibit the seepage of fluid from the cylinder past the piston, and the lip 64 is formed on the inner perimeter of the cup defining the opening 60 and is adapted to embrace a cylindrical stop 66, and the respective stops abut one another when the pistons 36 and 38 are in fully retracted position.

In a modification of the invention illustrated in Fig. 5, a cylinder 68 is suitably secured to a fixed support 70. This cylinder has a port 72 adjacent its head connected by a fluid pressure delivery pipe 74 to a fluid pressure producing means, not shown, and a reciprocable piston 76 in the cylinder has a rod 78 extending outwardly from the open end of the cylinder and suitably connected to the rod is a movable member 80. A compression spring 82 is sleeved on the rod between the back of the piston head and a retaining ring 84 seated in a circumferential groove in the open end of the cylinder.

Positioned on the head of the piston is a full floating leak-proof cup 86 corresponding to the leak-proof cup 56, and a cylindrical stop 88 embraced by the cup seats on the head of the cylinder when the piston is in fully retracted position.

Although this invention has been described in connection with certain specific embodiments, the principles involved are susceptible of numerous other applications that will readily occur to persons skilled in the art. The invention is, therefore, to be limited only as indicated by the scope of the appended claims.

Having thus described the various features of

the invention, what I claim as new and desire to secure by Letters Patent is:—

1. A flexible cup including an annular base having concentric lips and a cylindrical plug embraced by the base and the adjacent lip, said
5 plug having its base flush with the base of the cup and a part extending beyond the lips.
2. In a hydraulic brake, the combination of a

cylinder, a piston reciprocable therein, said piston having a flat face, a flexible cup associated with said face, said cup having an axial opening extending entirely therethrough, and a stop for said piston embraced within said opening and
5 guided by said cup.

CLARENCE V. GARDNER.