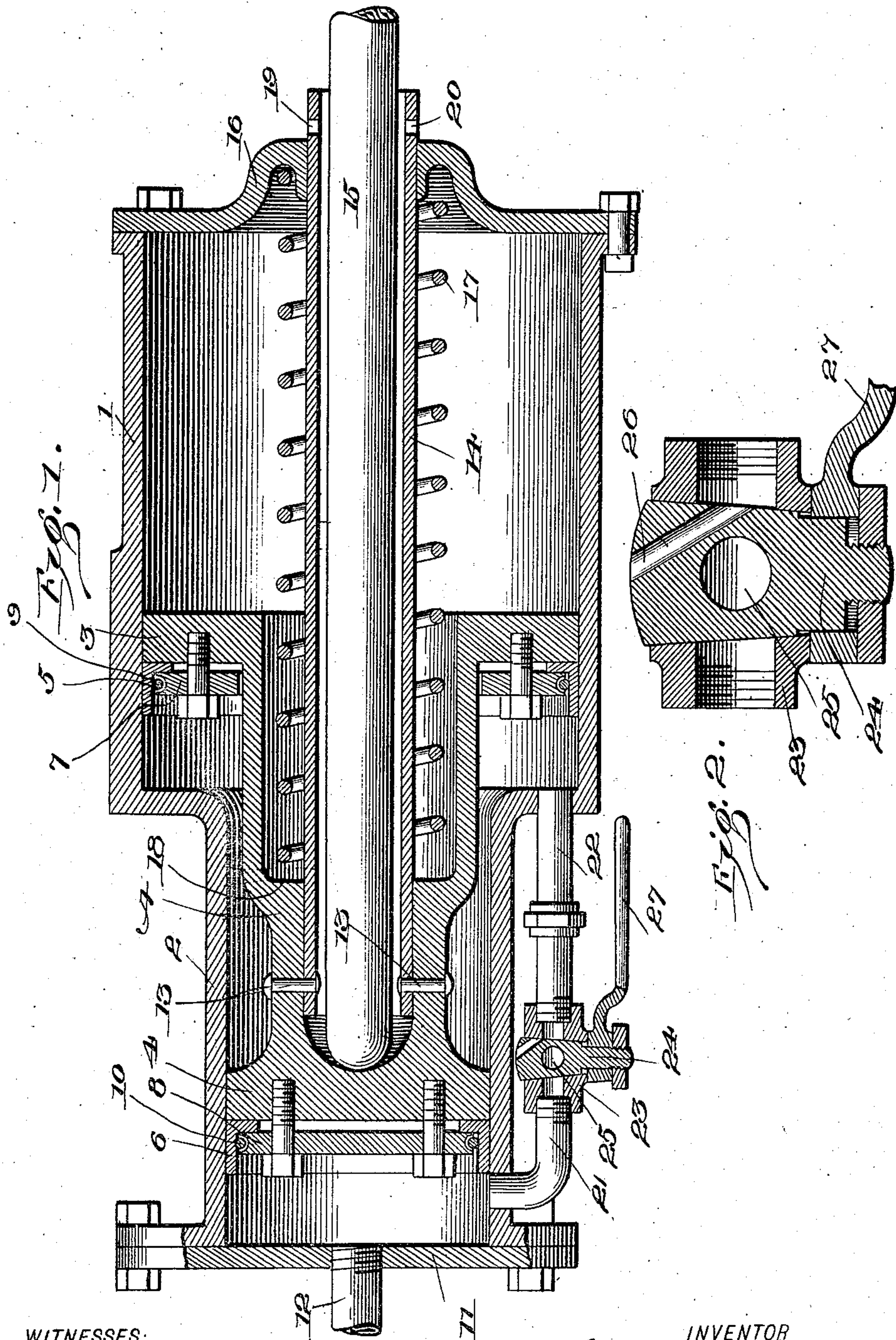


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R. L. RICKMAN.
COMPOUND BRAKE CYLINDER.
APPLICATION FILED FEB. 25, 1903.

NO MODEL.



WITNESSES:

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ROBERT L. RICKMAN, OF VANCOUVER, CANADA, ASSIGNOR OF ONE-HALF TO CHARLES O. WHITE, OF VANCOUVER, BRITISH COLUMBIA, CANADA:

COMPOUND BRAKE-CYLINDER.

SPECIFICATION forming part of Letters Patent No. 747,772, dated December 22, 1903.

Application filed February 25, 1903. Serial No. 144,976. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. RICKMAN, residing at Vancouver, in the county of Vancouver, British Columbia, Canada, have invented certain new and useful Improvements in Compound Brake-Cylinders, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a compound brake-cylinder; and its object is to provide an improved means for transmitting power to a brake mechanism, such that the pressure exerted on the brake mechanism may be varied.

The invention is capable of a variety of uses. For example, with a brake-cylinder constructed in accordance with this invention and interposed in the path of transmission of power to the brake mechanism of a car, the braking pressure applied to such car may be adjusted to suit the load carried by the car. The invention will be especially useful on a mixed freight-train—that is, a train of freight-cars, of which some are empty and some are loaded. The system now in use makes no provision for a mixed train, inasmuch as the empty cars have the brakes applied by the same power with the same pressure as do those that are loaded. Under such circumstances it is often necessary to apply such a braking force or pressure that the wheels on the empty cars will be locked, whereupon they are skid to the detriment both of the wheels and the rails, as is well known. The present invention obviates such disadvantage by providing means whereby the braking pressure applied to a particular car may be varied to suit the load on that car, and it is especially advantageous in that this may be done without the necessity of any changed or modified action of the power-supplying means.

An embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a brake-cylinder and related parts construct-

ed in accordance with my invention. Fig. 2 is a sectional view, on an enlarged scale, of a detail.

As shown, the brake-cylinder has two sections 1 and 2, which are of unequal diameters. The plunger or piston (designated generally by A) is provided with two heads 3 and 4 of diameters corresponding to the sections 1 and 2 of the cylinder, respectively. These piston-heads are, as shown, preferably provided with packing leathers or gaskets 5 and 6, which are clamped to the piston-heads by means of the plates 7 and 8, said plates being connected to the front faces of the piston-heads by screws, as shown, or otherwise. Expanding rings 9 10, bearing against the inner surfaces of the packing-leathers, may also be used, if desired. The front end of the cylinder is closed by head 11, to which is connected the supply-pipe 12. The piston A has an open recess extending from the rear toward its front end, in which is secured by rivets 13 or otherwise one end of a guide pipe or tube 14. The push-bar 15, which is adapted to be connected in a well-known manner to one of the levers or other operating parts of an ordinary brake mechanism, works loosely within the guide-pipe 14. The rear end of the cylinder is closed by a head 16, which is provided with an aperture through which the guide-pipe 14 slides when the piston is pushed to the rear. Surrounding the pipe or tube 14 is a retractile spring 17, one end of which bears against the inner face of the head 16, while the other end bears against a shoulder in the recess of the piston A, as at 18. As a convenient means for holding this spring in position when the head is removed for the purpose of cleaning or otherwise I provide two diametrically opposite holes 19 20 in the end of the pipe 14. When the head 16 is removed, the workman by dropping a pin through the holes 19 and 20 may retain the spring in position until the head is replaced, thus obviating the disadvantage of having to recompress the spring upon replacing the head. The smaller and larger sections of the cylinder are connected by a pipe composed of sections 21 and

22, between which is located a coupling 23, which is provided with an air valve or cock 24, having therein a passage 25, adapted in one position to register with the pipes 21 and 22 and open the connection between the two sections of the cylinder and when in a second position to close said connection. The plug of the cock 24 has also a hole 26 therein at an angle to the main passage 25 in such position as to open communication between the outer air and the larger section of the cylinder when the cock is closed. A lever 27 is shown as a convenient means for turning the cock 24.

15 In operation the actuating medium, which may be compressed air, steam, or other similar power adapted to be used in connection with a cylinder and piston, is admitted through the pipe 12 or through any other suitable pipe or valve connection against the front face of the piston. If it is desired to supply a comparatively reduced amount of braking pressure to the particular brake mechanism connected to push-bar 15, as in the case of an empty car, the connection to the larger section of the cylinder is closed and the braking pressure which is transmitted through the push-bar 15 will be proportional to the area of the smaller piston-head 4. If, however, it is desirable to increase the effective braking pressure, as in the case of a heavily-loaded car, the connection between the two cylinder-sections is opened, and the pressure transmitted to the braking mechanism will then depend upon the area of the two piston-heads. The advantages of such construction in providing means whereby the braking pressure applied to each car or to any braking mechanism under the control of a single cylinder may be varied or adjusted without reference to the other cars or the other brake-cylinders or to the source of power will be obvious. It will also be obvious that many changes may be made in detail without departing from the spirit of this invention. As the relative position, number, and arrangement of the cylinder-sections and piston-heads may be varied, the connection or connections between the various cylinder-sections may be made in a variety of ways, and the control of such connection or connections may be by hand or may be under the control of automatic mechanism depending for its operation upon the comparative load upon the car in order to provide against the negligence of trainmen.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

60 1. In combination, a brake-cylinder having a plurality of sections, a piston-rod carrying piston-heads corresponding to each of said sections, means for supplying power to one

of said sections, and a power-transmission connection between said sections.

2. In combination, a brake-cylinder having a plurality of sections, a piston-rod carrying piston-heads corresponding to said sections, means for supplying power to one of said sections, a power-transmission connection between said sections, and means for controlling said power-transmission connection independently of the power-supply.

3. In combination, a brake-cylinder having a plurality of sections of unequal diameter, a piston-rod carrying piston-heads corresponding to said sections, means for supplying power to the one of said sections of least diameter, and a connection from said section to the other or others of said sections.

4. In combination, a brake-cylinder having a plurality of sections of unequal diameter, a piston-rod carrying piston-heads corresponding to said sections, means for supplying power to the one of said sections of least diameter, and a connection from said section to the other or others of said sections, said connection being controllable independently of the power-supply.

5. In combination, a brake-cylinder having two sections of unequal diameter arranged in tandem with the smaller of said sections in advance, a piston-rod carrying piston-heads corresponding to said sections, means for supplying power to the first and smaller of said sections, and means for connecting the two sections whereby power may be transmitted from the first to the second.

6. In combination, a brake-cylinder having two sections of unequal diameter arranged in tandem with the smaller of said sections in advance, a piston-rod carrying piston-heads corresponding to said sections, means for supplying power to the first and smaller of said sections, means for connecting the two sections whereby power may be transmitted from the first to the second, and means for controlling said connection independently of the power-supply.

7. In combination, a brake-cylinder having two sections, a piston having piston-heads corresponding to each of said sections, a connection between said sections, a valve controlling said connection, said valve having two passages at an angle the one to the other, such that by turning the valve, communication may be established between the two cylinder-sections, or such communication closed and one of the cylinder-sections opened to the atmosphere.

In testimony whereof I affix my signature in the presence of two witnesses.

ROBERT L. RICKMAN.

Witnesses:

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N. C. SAWERS.