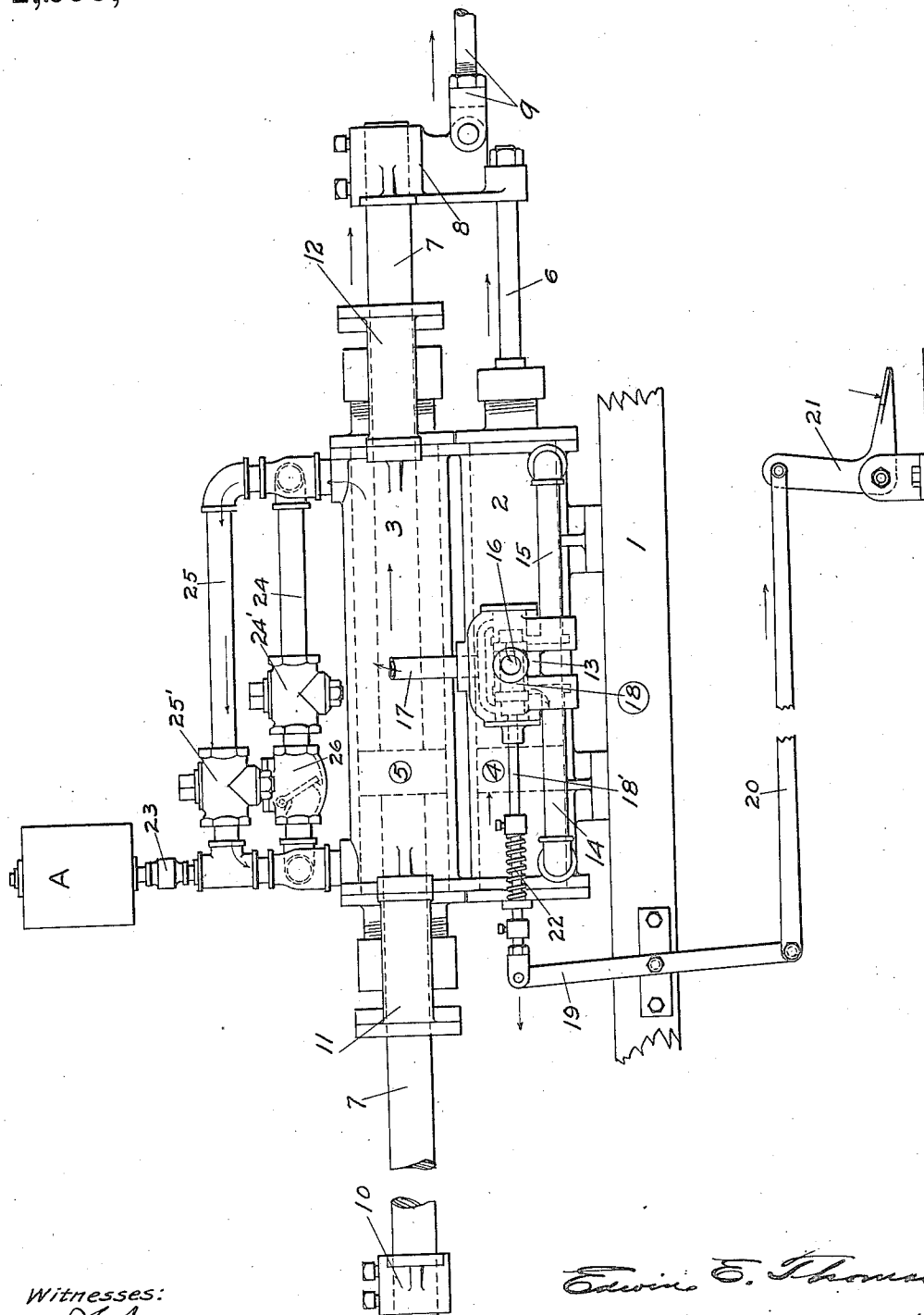


E. E. THOMAS.
DASH POT.
APPLICATION FILED JULY 5, 1913.

Patented Nov. 21, 1916.

1,205,818.



Witnesses:

W. Strong
W. Strong.

Edwin E. Thomas

Inventor.

By *D. P. Lingenberg* Atty.

UNITED STATES PATENT OFFICE.

EDWIN E. THOMAS, OF PORTLAND, OREGON, ASSIGNOR TO HARRY O. TENNEY, OF
PORTLAND, OREGON.

DASH-POT.

1,205,818.

Specification of Letters Patent.

Patented Nov. 21, 1916.

Application filed July 5, 1913. Serial No. 777,485.

To all whom it may concern:

Be it known that I, EDWIN E. THOMAS, a citizen of the United States, residing in the city of Portland, county of Multnomah, and State of Oregon, have invented certain new and useful Improvements in Dash-Pots, of which the following is a specification.

My invention relates to power cylinders with oil control, and more particularly to improvements whereby I am able to get a steady and uniform forward thrust with a quick return of the operating piston. I accomplish this by means of a double cylinder construction, one of which cylinders is the power cylinder with its piston working therein, and the other cylinder of which is provided with a piston and has its opposite ends connected, whereby a heavy fluid filling the same is forced from one end of the cylinder to the other and back again with each stroke of said piston. A limited or restricted passageway permits the fluid to pass from one end of the cylinder to the other in one direction, while a more open passageway permits its return, thereby affording a retarding or controlling effect upon the piston when traveling in one direction, and permitting a free and quick return of the piston in the opposite direction.

In order that others may fully understand my invention, I have illustrated one practical embodiment thereof on the accompanying sheet of drawings, which I will now describe. The view is a side elevation of this embodiment of the invention, and illustrates such a power cylinder as might be used in operating a reciprocating saw, or the like.

Referring now to the drawings, the invention is mounted upon a suitable base or support 1, and comprises a double cylinder structure with a steam cylinder 2 and an oil cylinder 3, having pistons 4 and 5, respectively, shown in dotted lines, working therein. The steam piston 4 operates a piston rod 6, while the oil piston 5, operates a piston rod or shaft 7, projecting from said oil cylinder 3 at both ends thereof, as indicated, said piston rods 6 and 7 being connected with an operating head 8, with which is connected any suitable driving rod, as 9. The oil piston rod 7, is provided with an adjustable bumper block, as 10, adapted to engage a bumper head, as 11, provided on its outer face with a rubber or other suitable cushioning material. At the opposite

end of said oil cylinder 3, is another bumper head 12, against which the upper part of the connecting head can operate as a bumper block, and to this end said head is also made adjustable upon the piston rod 7, as indicated.

Mounted upon the side of said steam cylinder 2, is a steam chest and valve mechanism, as 13, having connecting pipes, as 14 and 15, to the opposite ends of said steam cylinder, with a steam supply pipe 16 leading thereto, and an exhaust pipe, as 17, leading therefrom, as indicated. A valve member 18 in said steam chest controls the admission of steam therefrom to the opposite ends of said steam cylinder, and this valve member is operated by a valve rod 18', connected at its outer end with a rocking lever 19, which is connected at its lower end by means of a rod or link 20, to a foot lever 21. A coiled spring 22, upon said valve rod 18', operates to normally return and hold said valve rod and the valve within said steam chest in position to admit steam to one end of said steam cylinder, whereby to drive the steam piston to the opposite end thereof. By pressing upon the foot lever 21, said valve can be moved so as to admit steam to the opposite end of said cylinder and to open the other end thereof to the exhaust, as will be understood from the dotted line showing of the valve member and the connecting parts. These features, however, are old and are not claimed as a part of this invention, except as they perform their regular functions in combination with the features now to be described.

Referring now to the upper part of the drawing, A designates an oil tank connected with the oil cylinder 3 in a direct line by the use of standard fittings, as indicated, 23 being a check valve interposed therein. The opposite end of said oil cylinder, 3, is connected by means of a double pipe line, as 24—25, said pipes having interposed therein cocks, as 24' and 25', adapted to be adjusted so as to regulate the size of the passageway through said pipes connecting the opposite ends of said oil cylinder. In the pipe 24 is a check valve, as 26, adapted to permit the oil to flow therethrough to the right, or in one direction only, in said pipe 24, while in pipe 25 the oil can pass in either direction, controlled only by the cock 25'. As the steam piston is thrust forwardly, or to the

right, as shown in the drawings, this being the power stroke, the oil piston, being connected therewith must also move with it. This movement of said pistons is more or less retarded and made steady and even by reason of the oil in the oil piston being forced through pipe 25, only, to the opposite end of said cylinder, as indicated by the arrows. The cock 25', it will be understood, can be regulated so as to give the right retarding effect upon the forward or power stroke of the pistons. As the pistons are returned, the oil is free to pass through both pipes 24 and 25 from the left hand end of the oil cylinder to the right hand end thereof, and by reason of this greater passageway, the oil passes freely and affords practically no retarding effect, thereby permitting a quick return stroke of the pistons. With each operation of the foot lever, which moves the controlling valve member in the steam chest, this operation is repeated. A supply of oil in the tank A above, operates by gravity to keep the cylinder 3 and the connecting pipes 24 and 25 properly filled with oil and the check valve 23 prevents the oil from being forced upwardly into the tank during the stroke of the pistons.

Thus by means of a construction where a quantity of oil must be forced through a restricted opening from one point to another, and is returnable through a more open passageway, I am able to control the forward or power stroke of a power cylinder and to permit of a quick return of the piston thereof, as hereinbefore described.

I am aware that changes can be made in the construction here shown for purposes of illustration without departing from the spirit of the invention, and I do not, therefore, limit the invention to this showing, except as I may be limited by the hereto appended claims, forming a part hereof.

I claim:

1. A cushioning means for power-actuated mechanism, comprising in combination a cylinder, a piston therein, a fluid in said cylinder, ports at opposite ends of said cylinder, means connecting said ports with each other around said piston and forming two passageways therebetween, and a check valve in one of said passageways, whereby to permit passage of fluid therethrough in one direction only.

2. A cushioning means for power-actuated mechanism, comprising in combination a cylinder, a piston therein, a fluid in said cylinder, a port through the side of said cylinder at each end thereof, and two pipes connected together at their opposite ends and connected into said ports, one of said pipes being provided with a check valve

therein, whereby to permit the passage of fluid therethrough in one direction only, substantially as described.

3. A cushioning means for power-actuated mechanism, comprising in combination a cylinder, a piston therein, a fluid in said cylinder, a port through the side of said cylinder at each end thereof, two pipes connected together at their opposite ends and connected into said ports, one of said pipes being provided with a check valve therein, whereby to permit the passage of fluid therethrough in one direction only, and the other of said pipes being provided with a valve for regulating the size of the passageway therethrough, substantially as described.

4. A cushioning means for power-actuated mechanism, comprising in combination a cylinder, a piston adapted to work therein, a fluid in said cylinder, outlet pipes from the opposite ends of said cylinder, two connecting pipes of less area connecting said outlet pipes together to form a double by-pass between said outlet pipes, one of said connecting pipes being provided with a check valve, whereby to prevent passage therethrough in one direction, while permitting passage therethrough in the opposite direction, and the other of said connecting pipes being provided with a controlling cock, substantially as described.

5. A cushioning means for power-actuated mechanism, comprising in combination a cylinder, pipe connecting ports at opposite ends of said cylinder, means forming a double passageway and connecting said ports together, one of said passageways being provided with a check valve to prevent passage therethrough in one direction, and a reservoir for fluid connected with said pipes with a check valve interposed in said connection, whereby to maintain a proper supply of fluid in said pipes and said cylinder, substantially as described.

6. A cushioning means for power-actuated mechanism, comprising a cylinder, a piston adapted to work therein, a fluid in said cylinder, outlet pipes from the opposite ends of said cylinders, two connecting pipes of less area connecting said outlet pipes together to form a by-pass from one end of the cylinder to the other, one of said connecting pipes being provided with a check valve, whereby to prevent passage therethrough in one direction, while permitting passage therethrough in the opposite direction, substantially as described.

EDWIN E. THOMAS.

In presence of—

G. A. NICHOLS,
OMAR L. DAY.