

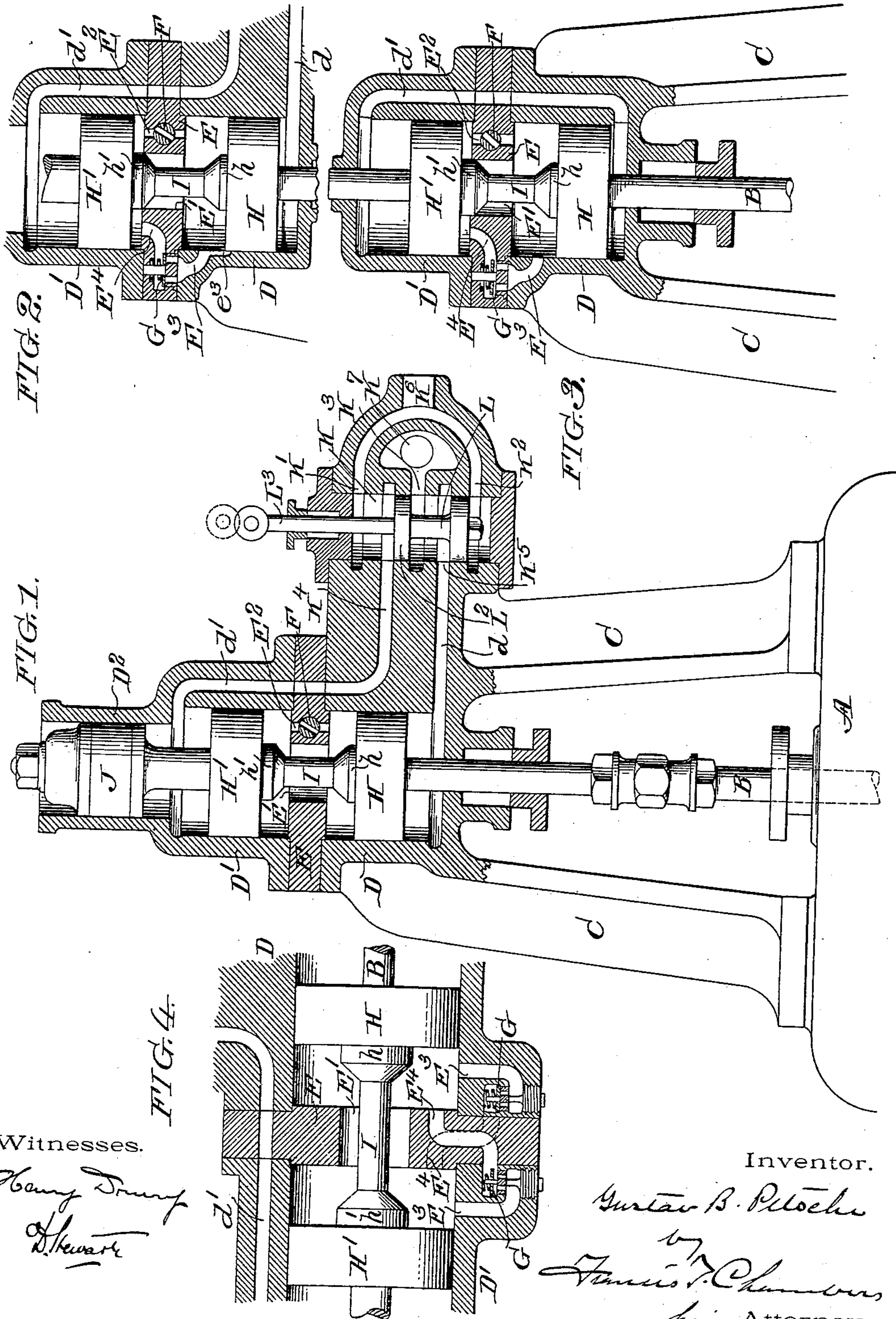
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G. B. PETSCHÉ.
DASH POT AND ACTUATING CYLINDER.

(Application filed July 31, 1897.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

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DASH-POT AND ACTUATING-CYLINDER.

SPECIFICATION forming part of Letters Patent No. 632,744, dated September 12, 1899.

Application filed July 31, 1897. Serial No. 646,634. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV BERNHARD PETSCHÉ, a subject of the Emperor of Germany, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Dash-Pots and Actuating-Cylinders, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to a novel construction of dash-pot particularly, though not exclusively, adapted for use in connection with an actuating-cylinder, which, together with the pistons working therein, is designed to transmit motion to some mechanical device—such, for instance, as a valve.

The nature of my improvements will be best understood as described in connection with the drawings, in which they are illustrated, and in which—

Figure 1 is a sectional elevation showing the valve-actuating mechanism especially designed by me for operating slide-valves controlling the suction and delivery of water from the pump. Fig. 2 is a fragmentary view showing the actuating-pistons in a somewhat different position from that indicated in Fig. 1. Fig. 3 is a sectional elevation showing an application of my invention to use as a dash-pot pure and simple, and Fig. 4 is a sectional elevation showing an adaptation of my device for use as an actuating device for horizontally-moving valves or other mechanism.

A, Fig. 1, indicates the valve-chamber containing the valve, (not shown,) operated by the valve and piston rod B.

C C indicate portions of the framing securing the actuating-cylinder to the valve-casing.

D and D' indicate separate parts of a cylinder pivoted by an inwardly-extending flange E, having a central opening E' of considerably greater area than that of the valve-stem I extending through it. A perforation E² is formed in the flange E, and a plug or cock F is situated therein, by means of which the effective area of the passage can be nicely controlled. I also preferably provide a second by-pass or by-passes E³ E⁴, the portion E³

leading from a point in the said walls of one of the cylinder portions, as D, to a point in the other cylinder portion, as D', which will not be closed by the piston moving in that portion, and in this by-pass I place a non-return valve, as indicated at G, which will permit the passage of liquid from the cylinder-section D to cylinder-section D', as shown in Figs. 2 and 3, but will not permit the fluid to move backward through the by-pass. Where a similar control of fluid from both cylinder-sections is necessary or desired, I provide the two by-passes, as indicated in Fig. 4.

H and H' are pistons moving in the cylinder portions D and D' and connected by the stem I. In the construction shown in Fig. 1, which is adapted for carrying and moving a very heavy valve, I provide a contracted cylindrical extension D² at the top of the cylinder-section D', in which moves a piston J, connected with a piston H', as shown, and acting to partially balance any pressure exerted on the piston H' to depress it.

d and d' are ports, which, as indicated in Figs. 1, 2, and 4, connect through a valve-casing K with a source of liquid under pressure, as indicated at K⁵, and an exhaust-passage, as indicated at K⁶, the exhaust-passage connecting with the valve-casing, as shown, by ports K' and K² and the pressure-main by a port K³, while K⁴ and K⁵ indicate ports connecting, as shown, with the passages d' and d.

L is a piston-valve moving in the valve-casing K, connected in any convenient way through its stem L³ and having the rings L' and L², by which the admission and exhaust of the cylinder D and D' are controlled in a familiar way.

In cases where only the dash-pot feature of my invention is utilized the ports d and d' may be connected together, as indicated in Fig. 3.

h' and h indicate plungers attached, respectively, to the sides of the pistons H' and H and adapted to fit neatly in and close the opening E' in the flange E at the end of each piston movement toward such flange. It will be obvious of course that upon the entrance of the plunger into the opening E' the flow of

liquid therethrough will be immediately cut off, the liquid remaining between the face of the approaching piston and the flange being forced to escape through the opening E^2 and the plug-cock F, which is adjusted to afford just a proper amount of resistance to take the shock of the moving parts connected with the pistons, while permitting the pistons and the parts connected therewith to make their proper stroke. The length of the plungers h and h' is of course proportioned to the work which they have to do, and in the case such as indicated in Fig. 1, where a heavy weight is alternately lifted and lowered, the upper plunger h' should be, as shown, longer than the lower plunger h , as the shock of the descending weight is necessarily greater than when it is ascending.

The function of the by-pass and valve is to permit the motion of the piston-weight from the flange without the resistance which would be offered by the contracted passage through the plug at the beginning of the stroke, and while the opening E' is closed by one of the plungers the action of the by-pass is during this stage of the motion to permit a free flow of liquid from before the distant piston to beneath the piston which lies close to the flange. As the approaching piston will cover the port E^3 before its plunger enters the opening E' , the operation of the dash-pot feature of the construction will not be interfered with. As the liquid contained between the pistons H and H' is subjected at certain periods to very great pressure, there will be a tendency to a diminution in its quantity, as a portion may escape between the piston and the walls of the cylinder. By providing the port E^3 with an extension, as indicated at e^3 , which will extend below the outer face of the piston H when in its uppermost position, a flow of fluid from the outer portions of one or both cylinders D or D' will make up for any such loss and keep the space between the pistons full of liquid.

In another application filed by me July 31, 1897, Serial No. 646,629, I have shown and described the actuating mechanism illustrated herein in Figs. 1 and 2 and have included in the said application certain claims for its combination with pump-valves. My present application, however, is to cover these features of the device, which I believe to be entirely new *per se*.

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

1. A dash-pot comprising a cylinder D D' having a central inwardly-extending flange E and ports d d' for the entrance and exit of fluid from its ends, in combination with connected pistons H H' moving in the portions of the cylinder below and above the flange, supplemental plungers h and h' secured to the pistons H and H' and adapted to enter and fit neatly in the inner periphery of the flange E as the main pistons approach said

flange and a restricted passage for fluid through flange E.

2. A dash-pot comprising a cylinder D D' having a central inwardly-extending flange E and ports d d' for the entrance and exit of fluid from its ends, in combination with connected pistons H H' moving in the portions of the cylinder below and above the flange, supplemental plungers h and h' secured to the pistons H and H' and adapted to enter and fit neatly in the inner periphery of the flange E as the main pistons approach said flange, a restricted passage for fluid through flange E, one or more by-passes E^3 E^4 connecting the parts of the cylinder above and below the flange E and opened or closed by the movements of the main piston or pistons as described and a non-return valve situated in each said by-pass as and for the purpose specified.

3. A dash-pot comprising a cylinder D D' having a central inwardly-extending flange E and ports d d' for the entrance and exit of fluid from its ends, in combination with connected pistons H H' moving in the portions of the cylinder below and above the flange, supplemental plungers h and h' secured to the pistons H and H' and adapted to enter and fit neatly in the inner periphery of the flange E as the main pistons approach said flange, a restricted passage for fluid through flange E, one or more by-passes E^3 E^4 , the part E^3 entering the side of one section of the cylinder as D at a point lying slightly below the outer edge of the piston as H when in its innermost position and the part E^4 entering the other section as D' at a point where it will not be closed by the piston H' moving in it and a non-return valve situated in each said by-pass as described.

4. An actuating-cylinder having independent ports as d d' leading to its ends for the admission and exhaust of motive fluid and having two independent pistons as H and H' secured together but each operating in a separate part of the cylinder in combination with an inwardly-extending flange E situated at the center of the cylinder in a zone not crossed by either a piston-plunger h attached to the inner face of a piston and adapted to close the passage between the piston-rod and flange E at the end of its inner stroke and a restricted passage E' extending through flange E as specified.

5. An actuating-cylinder having independent ports as d d' leading to its ends for the admission and exhaust of motive fluid and having two independent pistons as H and H' secured together but each operating in a separate part of the cylinder, in combination with an inwardly-extending flange E situated at the center of the cylinder in a zone not crossed by either piston-plungers h and h' attached to the inner faces of both pistons and adapted to close the passage between the piston-rod and flange E at the end of each piston-stroke

and a restricted passage E' extending through flange E as specified.

6.- An actuating-cylinder having independent ports as d d' leading to its ends for the
5 admission and exhaust of motive fluid and having two independent pistons as H and H' secured together but each operating in a separate part of the cylinder, in combination with
10 an inwardly-extending flange E situated at the center of the cylinder in a zone not crossed by either a piston-plunger h and adapted to

close the passage between the piston-rod and flange E at the end of its inner stroke, a restricted passage E' extending through flange E as specified a by-pass E³ E⁴ connecting the
15 sections of the cylinder and a non-return valve situated therein as and for the purpose specified.

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Witnesses:

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