(No Model.) 2 Sheets—Sheet 1.

J. REICHMANN.

DEVICE FOR OPERATING VALVES.

No. 300,131. Patented June 10, 1884.

Fig. 1.

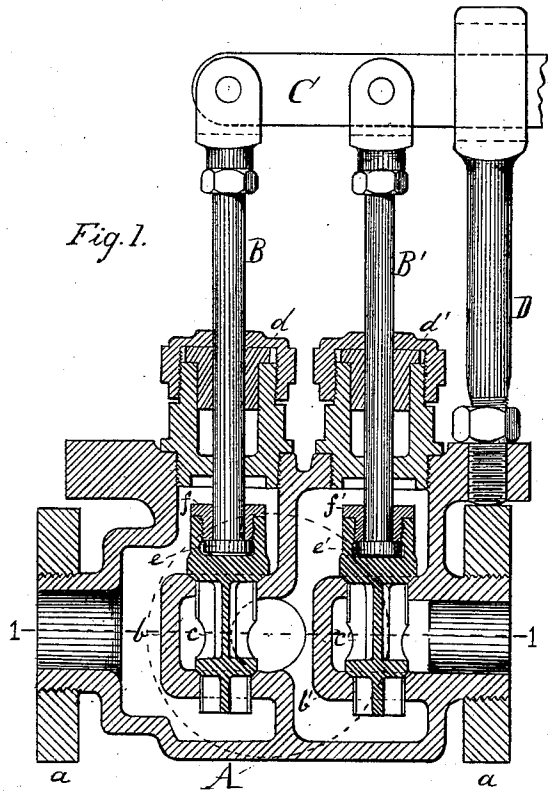


Fig. 4.

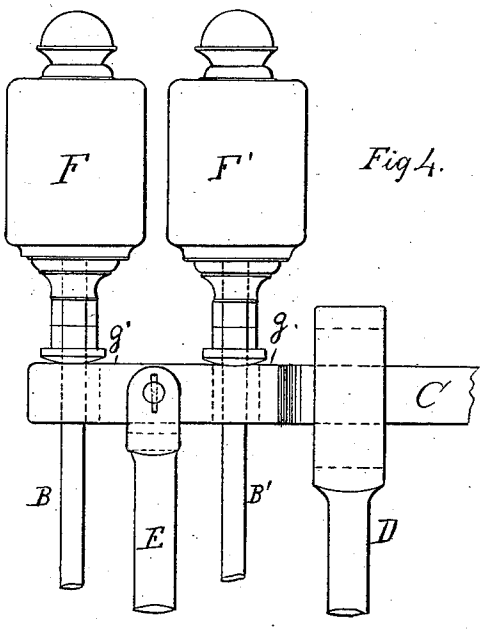


Fig. 5.

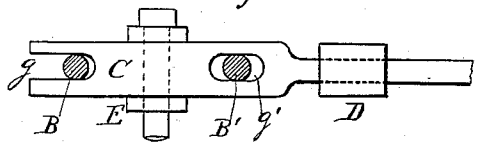


Fig. 2.

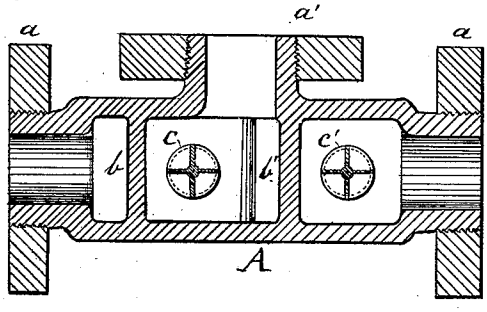
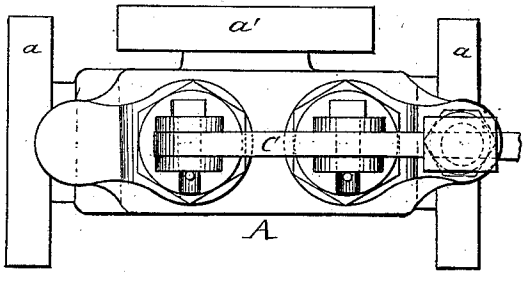


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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DEVICE FOR OPERATING VALVES.

No. 300,131. Patented June 10, 1884.

Fig. 6.

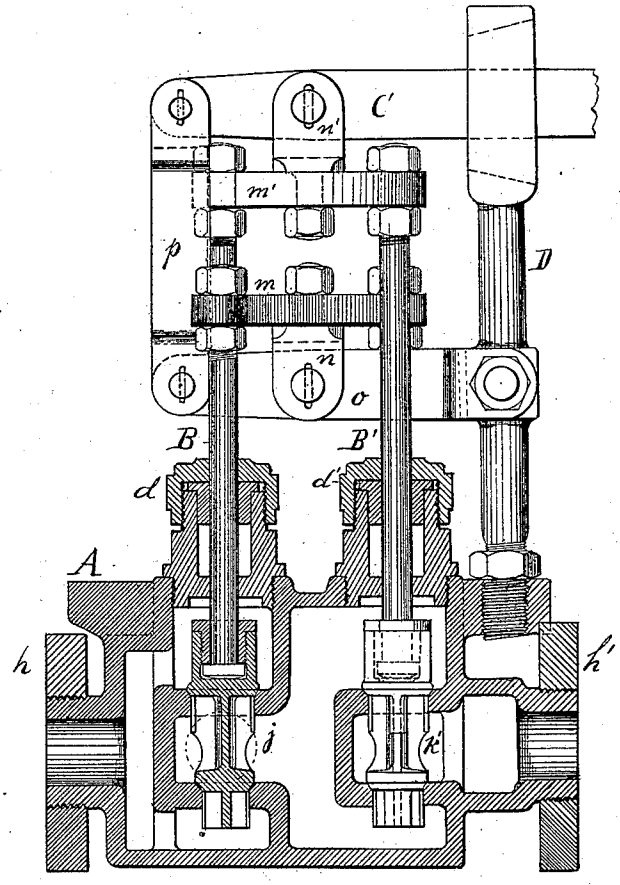


Fig. 7.

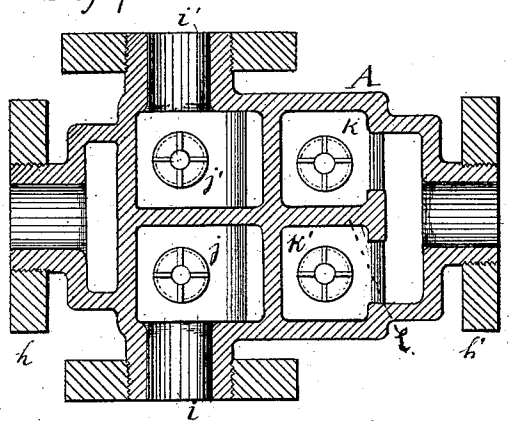
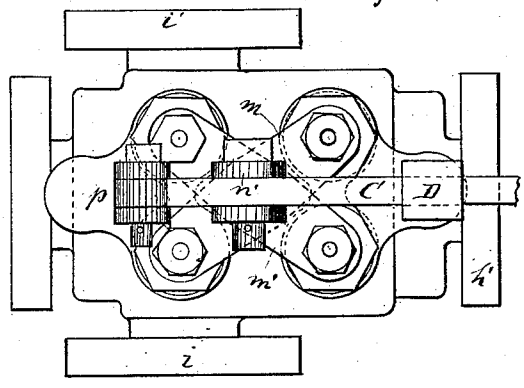


Fig. 8.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR OPERATING VALVES.

SPECIFICATION forming part of Letters Patent No. 300,131, dated June 10, 1884.

Application filed September 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH REICHMANN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Devices for Operating Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved device for regulating the flow of liquids under high pressure.

The object of the invention is to so arrange the induction and eduction valves of such an apparatus that they will both be connected to and operated by the same mechanism, one at least being always closed; and to the accomplishment of the above the invention consists in the novel construction and arrangement of certain of the parts, and in certain combinations of such parts, as will be described and claimed.

Reference will be made to the accompanying drawings, in which Figure 1 is a vertical section showing the valves and their connections; Fig. 2, a section on line 1 1 of Fig. 1; Fig. 3, a top plan view; Fig. 4, a side elevation showing a modified arrangement of the valve-rods; Fig. 5, a top plan of the same; Figs. 6, 7, and 8, views of a modification of the invention.

Like letters refer to like parts in each view.

A represents a casing provided with suitable induction and eduction pipes, *a*, for the admission and expulsion of the motive agent, and a pipe, *a'*, connecting such casing with the apparatus to be driven.

Formed within casing A are partitions *b b'*, through which suitable openings are formed for the admission of the motive agent to and its expulsion from pipe *a'*. These openings are closed by double-headed valves *c c'*, the horizontal portions of partitions *b b'* serving as seats for said valves.

B B' represent the valve-rods, which pass through suitable stuffing-boxes, *d d'*, and have cast on their lower ends rings or flanges *e e'*, which enter the upper heads of valves *c c'*, and are secured thereto by screw-threaded caps *f f'*, as shown. Valve-rods B B' have forked upper ends, into which a lever, C, is inserted, said rods being pivoted to this lever by suitable pins, as shown. Lever C also passes between the forked upper end of a standard, D, which is mounted upon the upper face of casing A, and said lever extends out a sufficient distance to be conveniently operated.

The operation of the device is as follows: When the motive agent is to be supplied to operate the apparatus, pressure is applied to the outer end of lever C, and the short end of said lever is raised, the fulcrum being at the point where valve-rod B' is connected to said lever. This motion raises valve *c*, admits the motive agent through the openings in partition *b*, formerly closed by said valve, and through pipe *a'* to the apparatus to be operated. When it is desired to reverse the action of the apparatus, the lever C is raised to its normal position, which carries the valve *c* back to its seat and shuts off the supply, and, the lever being still further raised, the fulcrum thereof is formed at the point where valve-rod B is connected thereto, and the valve-rod B' and its valve *c'* raised. This opens the ports made in partition *b'*, and allows of the escape of the exhaust therethrough, and through the outlet-pipe *a*. While either valve is open the friction upon its rod, where said rod passes through the stuffing-box referred to, is sufficient to keep it in its elevated position; but when it is desired to close such valve and open the remaining one, the overpressure upon the closed valve is such, owing to the fact that the upper heads of both valves are of larger area than the lower heads, that such closed valve will be pressed and held firmly to its seat until the open valve is completely closed, thus preventing all danger of having both valves open at the same time; and, further, when the open valve has been closed and it is desired to open the remaining one, a moderate amount of power must be exerted to overcome the overpressure on such valve, and the valve just closed is pressed firmly to its seat thereby.

In Figs. 4 and 5, I have shown a modified form of the manner of connecting the valve-rods to the lever. In this construction the rods are passed through slots *g g'*, made in the lever C, and said lever pivoted in the upper end of an auxiliary standard, E, as shown, the fulcrum of said lever being always at the

point where it is pivoted in this standard E. Upon the upper ends of valve-rods B B′ are formed weights F F′. When the handle end of lever C is depressed, the valve-rod B is raised by said lever coming in contact with the under face of its weight F, the valve *c′* of valve-rod B′ being at the same time held firmly on its seats by the weight F′. When the lever is again brought to its normal position, the valve-rod B is lowered by gravity, and as the handle end of said lever is raised valve-rod B′ is carried up and the exhaust allowed to escape.

In Figs. 6, 7, and 8, I have shown a construction by means of which my invention may be adapted to admit the motive agent to both ends of a cylinder to operate the piston from opposite sides. As shown in this connection, casing A is provided with pipes *h h′*, for the supply and exhaust of the motive agent, and with pipes *i i′*, for connecting said casing with opposite ends of the cylinder. *j j′* are the valves for regulating the flow of the supply, and *k k′* valves regulating the exhaust, each of such valves having suitable seats in the partitions formed within the casing, and the supply-valves being separated from one another by a partition, *l*, as also are the exhaust-valves, said partition extending the entire length of the casing. At their upper ends the rods of valves *j* and *k′* are connected by a yoke, *m*, so as to cause these two valves to rise and fall together, the rods of valves *j′* and *k* being likewise connected by a yoke, *m′*, as shown. The yoke *m* is connected by an arm, *n*, to an arm, *o*, pivotally connected to standard D. Yoke *m′* is connected by arm *n′* to the lever C, the free end of said lever being connected by a link, *p*, with the free end of arm *o*, as shown in Fig. 6. By applying pressure to the handle end of lever C, the fulcrum is formed at the point where said lever is connected to arm *n′*, and, through the medium of link *p*, valves *j* and *k′* are raised and the motive agent supplied to one end of the cylinder, while the exhaust escapes from the other. The handle end of the lever being then raised, the fulcrum is formed at the point where the arm *n* is connected with arm *o*, and the valves *j′* and *k* are opened, the valves *j* and *k′* being first closed and held firmly to their seats by the overpressure, as described in connection with the main invention, and thus the supply and exhaust is admitted to and expelled from the opposite ends of the cylinder.

Having thus described my invention, what I claim as new therein, and that for which I desire to secure Letters Patent, is—

The combination, with the double-headed valves *c c′* and their rods B B′, of the lever C, fulcrumed in the upper ends of said rods, whereby in opening one valve the fulcrum of said lever is transferred to the other valve, substantially as and for the purpose set forth.

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

JOSEPH REICHMANN.

Witnesses:

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