

(No Model.)

W. F. GARRISON.

PRESSURE RELIEF REGULATOR FOR SLIDE VALVES.

No. 497,020.

Patented May 9, 1893.

Fig. 1.

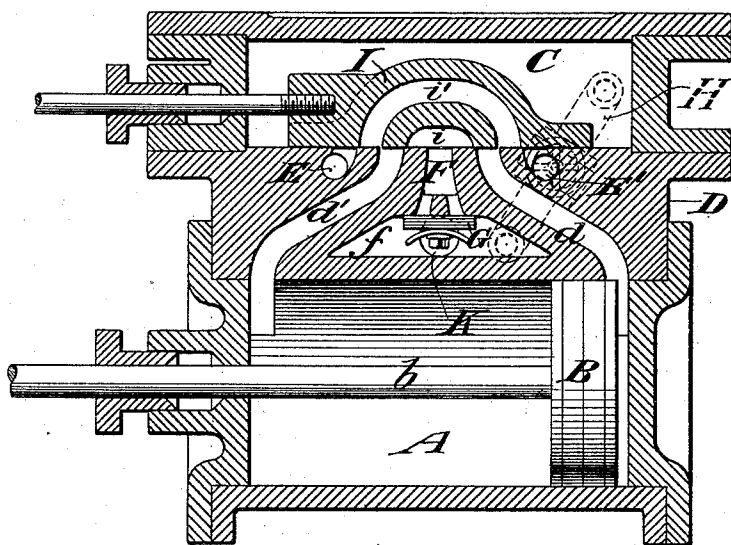
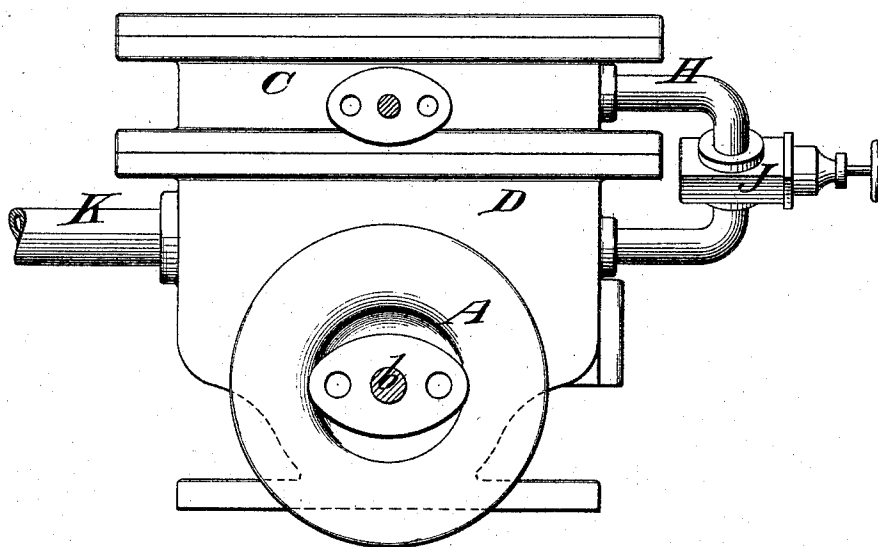


Fig. 2.



Witnesses:-
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PRESSURE-RELIEF REGULATOR FOR SLIDE-VALVES.

SPECIFICATION forming part of Letters Patent No. 497,020, dated May 9, 1893.

Application filed July 12, 1892. Serial No. 439,771. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. GARRISON, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Pressure-Relief Regulators for Slide-Valves, of which the following is a specification.

My invention relates to an improvement in pressure relief regulators for slide valves in which provision is made for reducing the pressure in the valve chamber to a point where it will be sufficient to keep the valve seated but not sufficient to cause it to press heavily upon its seat, while at the same time the pressure within the cylinder may be raised to any desired degree.

I have chosen to illustrate my invention a pump for moving gaseous bodies in which the inlet and discharge ports and the passage-ways leading from the valve chamber to the cylinder are located at one side of the valve chamber and underneath the valve. The same principle as will be observed from the following explanation might however be applied in other arrangements of pumps and where the pressure instead of being produced by the action of the piston within the cylinder is employed to drive the piston within the cylinder as in the steam engine, which would be in effect a simple reversal of the form which I have herein chosen.

In the accompanying drawings: Figure 1 represents a vertical longitudinal section of the pump and Fig. 2 is an end elevation of the same.

The cylinder is denoted by A, its piston by B and piston rod by *b*. The cylinder is surmounted by a plate D which forms the bottom of the valve chamber C and through which passage ways *d, d'* lead from the opposite ends of the cylinder A to the valve chamber C. A discharge port is denoted by F and communicates with the valve chamber intermediate of the passage-ways *d, d'* and leads to the discharge or compression chamber *f* through a self-acting valve G. Inlet ports E, E' are formed in the plate D and communicate with the interior of the valve chamber C upon opposite sides of the passage-ways *d, d'*. A slide valve I is located in the valve chamber C and is provided with a port *i* for opening communication between the inlet ports E, E'

and the passage-ways *d, d'* and with a central cove *i* for opening communication between the passage-ways *d, d'* and the discharge port F. A passage-way, in the present instance a pipe H, leads from the compression or discharge chamber *f* to the valve chamber C and said passage-way is intercepted by a reducing pressure valve J of any well known or approved form.

In the form which I have chosen, the pump is used either as a vacuum or compression pump, the piston B being operated by a source of power not shown. As it moves back and forth within the cylinder A, it forces the fluid from that side toward which it is moving out through the passage-way at that end of the cylinder toward which it is moving through the cove *i* in the valve and the discharge port F and valve G into the discharge or compression chamber *f* and thence through a discharge pipe K to the point where the compressed fluid is to be utilized or, in the case of its use as a vacuum, it may be discharged into the open air. That portion of the cylinder A in which a vacuum is formed by the movement of the piston B is filled with fluid through the one or the other of the inlet ports E, E', port *i* in the valve and the one or the other of the passage-ways *d, d'* leading to the opposite ends of the cylinder. There is therefore a filling of the cylinder A upon one side of the piston B and the discharge of the fluid from the other side of the piston B at each stroke of the piston and this may take place without any communication between the cylinder and the valve chamber exterior to the valve itself. It is desirable, however, that there should be sufficient pressure upon the valve I to keep it seated and that this pressure should be exerted by the fluid within the valve chamber exterior to the valve rather than by any arrangement of guides or weights in order that the pressure upon the valve may be varied to suit the different pressures under which the pump may be operating without producing undue pressure upon the valve and the wear resulting therefrom. To this end, I provide a passage-way H leading from the discharge or compression chamber *f* to the valve chamber C exterior to the valve with a reducing pressure valve J which may be set to any desired degree of tension so that while sufficient

pressure is transmitted from the chamber *f* to the valve chamber to hold the valve to its seat, there may not be transmitted the full pressure within the chamber *f* or enough to
5 overburden the valve and cause it to unduly cut away its seat.

What I claim is—

The combination with a cylinder, a valve chamber, a slide valve within the chamber, a
10 high pressure chamber and the inlet and discharge ports under the control of the valve,

of a passage-way in communication with the valve chamber exterior to the valve and with the high pressure chamber and a reducing pressure valve interposed in said passage-way for regulating the pressure within the valve chamber exterior to the valve, substantially as set forth.

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Witnesses:

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