

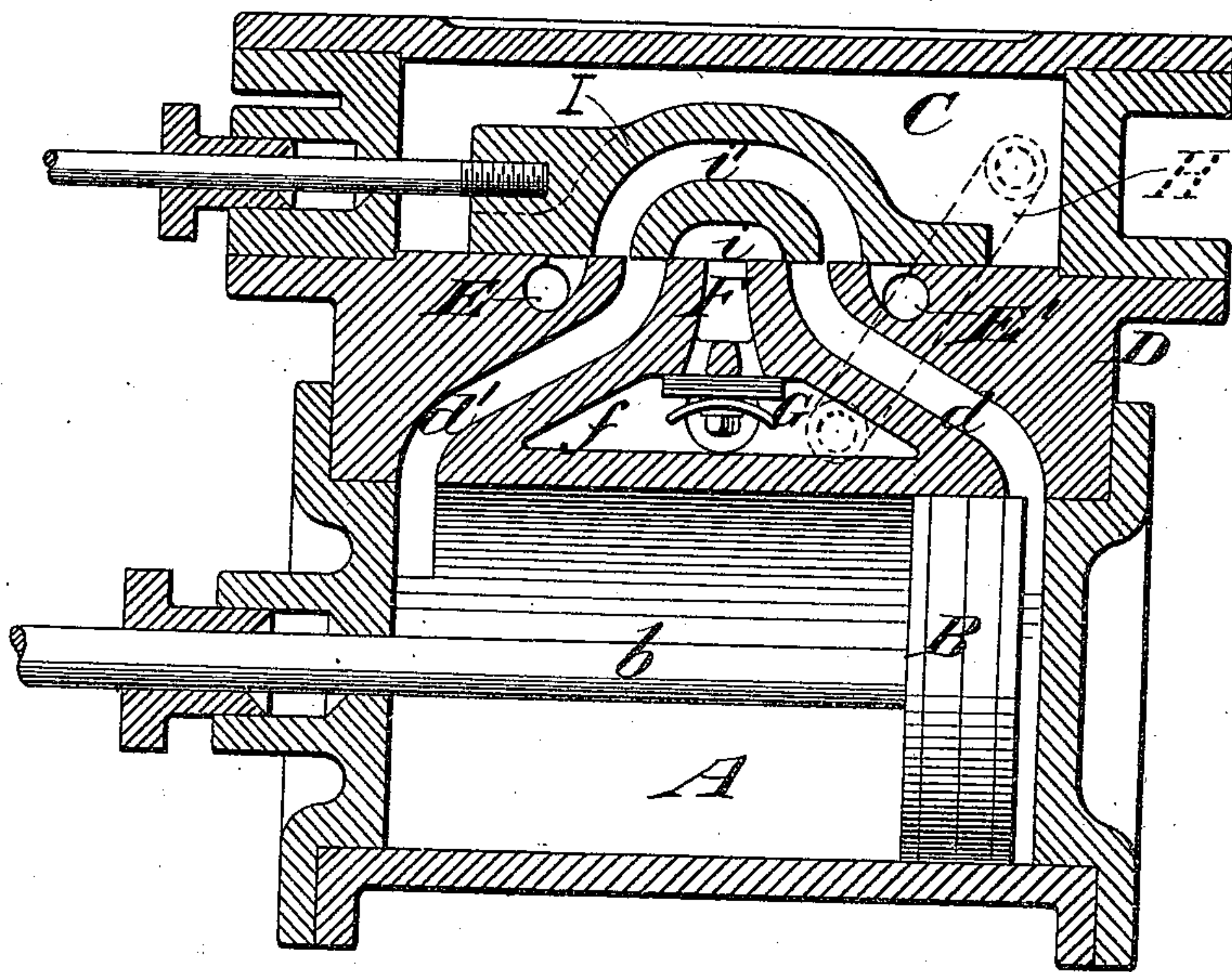
(No Model.)

W. F. GARRISON.  
PUMP FOR MOVING GASEOUS BODIES.

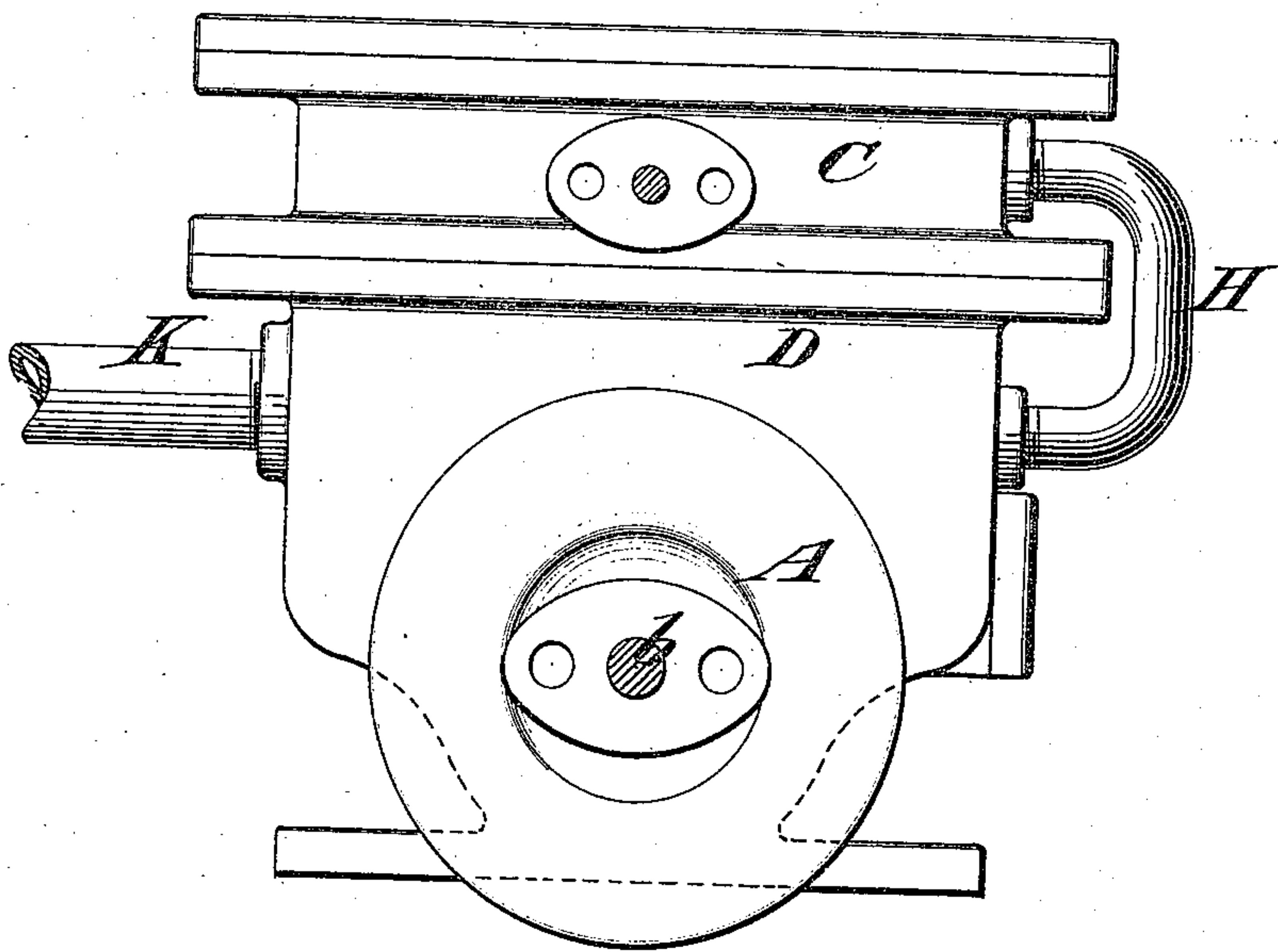
No. 501,614.

Patented July 18, 1893.

*Fig. 1.*



*Fig. 2.*



*Witnesses:-*  
*R. N. Haywood*  
*C. Sundgren*

*Inventor:-*  
*William F. Garrison*  
*by attorneys*  
*Brown & Peward*



# UNITED STATES PATENT OFFICE.

WILLIAM F. GARRISON, OF BROOKLYN, NEW YORK.

## PUMP FOR MOVING GASEOUS BODIES.

SPECIFICATION forming part of Letters Patent No. 501,614, dated July 18, 1893.

Application filed July 12, 1892. Serial No. 439,770. (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 Pumps for Moving Gaseous Bodies, of which the following is a specification.

My invention relates to an improvement in pumps for moving gaseous bodies the object being to produce an equalization of pressure upon the opposite sides of the pump piston through a port in the slide valve which regulates the admission and discharge of the fluid and providing for the discharge through a self acting valve into a compression chamber in communication with the valve chamber.

A practical embodiment of my invention is represented in the accompanying drawings in which—

Figure 1 is a view of the pump in vertical longitudinal section and Fig. 2 is a view of the same in end elevation.

The pump cylinder is represented by A, its piston by B, and its piston rod by *b*. The pump cylinder communicates with a valve chamber C through passage-ways *d*, *d'* leading from the opposite ends of the cylinder A through an intermediate plate D and gradually approaching each other as they reach the valve chamber C. Inlet ports E, E' are provided in the plate D and communicate with the valve chamber on opposite sides of the ports *d*, *d'*, as clearly indicated in Fig. 1. A discharge port F is located between the passage-ways *d*, *d'* and communicates through a self-acting valve G with a compression or discharge chamber *f*. The discharge or compression chamber *f* is in open communication with the valve chamber C through a connecting pipe H for the purpose of equalizing the pressure in the two chambers and holding the valve I to its seat.

The valve for controlling the entrance and discharge of the fluid is denoted by I and is arranged to slide back and forth along the bottom of the valve chamber C on the plate D. It is provided with a central cove *i* for connecting the passage-ways *d*, *d'* alternately with the discharge port F, and it has also a port *i'* for opening communication between the inlet ports E, E' and the passage-ways *d*, *d'*. The arrangement of the port *i'* with re-

lation to the passage-ways *d*, *d'* is such that when the piston B approaches the limit of its stroke in either direction, the valve I will be centered in position to open communication between the opposite ends of the cylinder A through the passage-ways *d*, *d'* and the port *i'*. Such position of the valve and piston is represented in sectional view, Fig. 1. As the pressure in the discharge or compression chamber *f* and in the valve chamber C is the same, because of the open communication between the two, the discharge pipe K leading from the pump may lead either from the compression chamber *f*, as herein shown, or it might lead from the valve chamber C. As the piston B moves from its position shown in Fig. 1 toward the opposite end of the cylinder, the valve I will move toward the left sufficiently to open communication through the passage-way *d* and port *i'* in the valve with the inlet port E, and at the same time the cove *i* in the valve will open communication between the passage-way *d'* and the discharge port F. The result will be that the fluid will pass from the inlet E into the cylinder A filling the space left by the piston, while the fluid which was in the cylinder will be forced through the passage-way *d'*, cove *i*, discharge port F and valve G into the discharge or compression chamber *f*. As the piston B nears the opposite end of the cylinder, the valve I will promptly move into the position shown in Fig. 1, equalizing the pressure upon opposite sides of the piston and as the piston returns on its stroke to the right, the valve I will move to the right sufficiently to open the inlet passage from the port E' through the port *i'* in the valve and the passage-way *d'* to the cylinder and at the same time the cove *i* in the valve will open communication between the passage way *d* and discharge port F.

What I claim is—

1. The combination with the cylinder and valve chamber, of passage-ways connecting the opposite ends of the cylinder with the valve chamber, a compression or discharge chamber intermediate of said passage-ways and in communication with the valve chamber, a valve for controlling the passage of the fluid from the valve chamber to the discharge or compression chamber, inlet ports in communication with the valve chamber, and a



valve provided with a cove and port arranged to alternately open communication between the opposite ends of the cylinder and the inlet ports and between the opposite ends of the cylinder and the discharge chamber, the said valve being so arranged that when the piston nears the end of its stroke, the valve opens communication through its port between the opposite ends of the cylinder, substantially as set forth.

2. The combination with the cylinder and valve chamber, of passage-ways connecting the valve chamber and cylinder, a discharge port, inlet ports, a sliding valve and a self-acting valve supported independently of the slide valve to control the discharge, the said passage-ways, inlet and discharge ports being all located on one side of the slide valve and

under the control of the sliding valve to open and close communication between them, substantially as set forth.

3. The combination with the cylinder and valve chamber, of passage-ways leading from the valve chamber to opposite ends of the cylinder, a slide valve located within the valve chamber, a discharge or compression chamber in communication with the valve chamber beneath the valve, inlet ports and a passage-way leading from the discharge or compression chamber to the valve chamber exterior to the valve, substantially as set forth.

WILLIAM F. GARRISON.

Witnesses:

FREDK. HAYNES,

I. B. DECKER.