

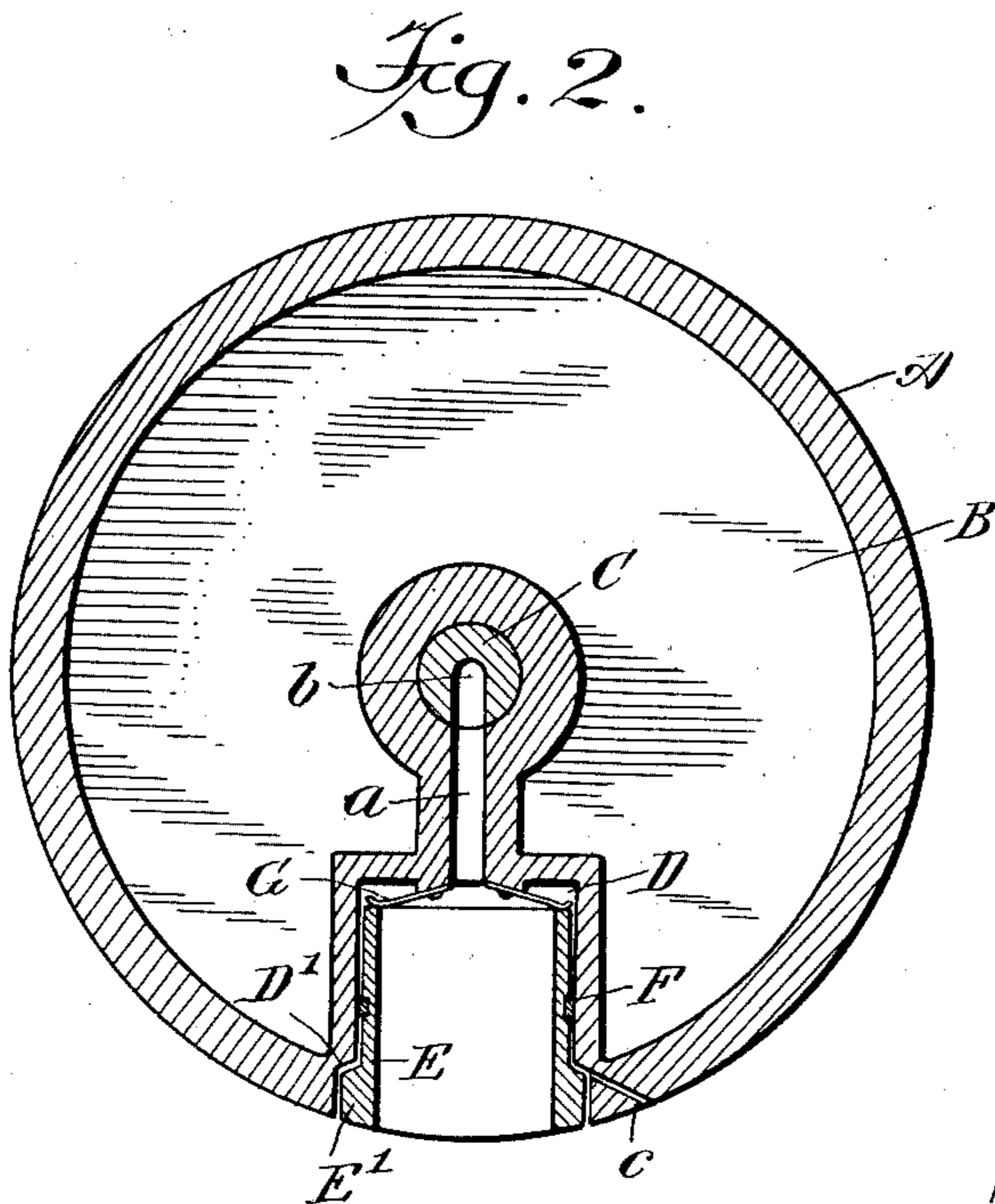
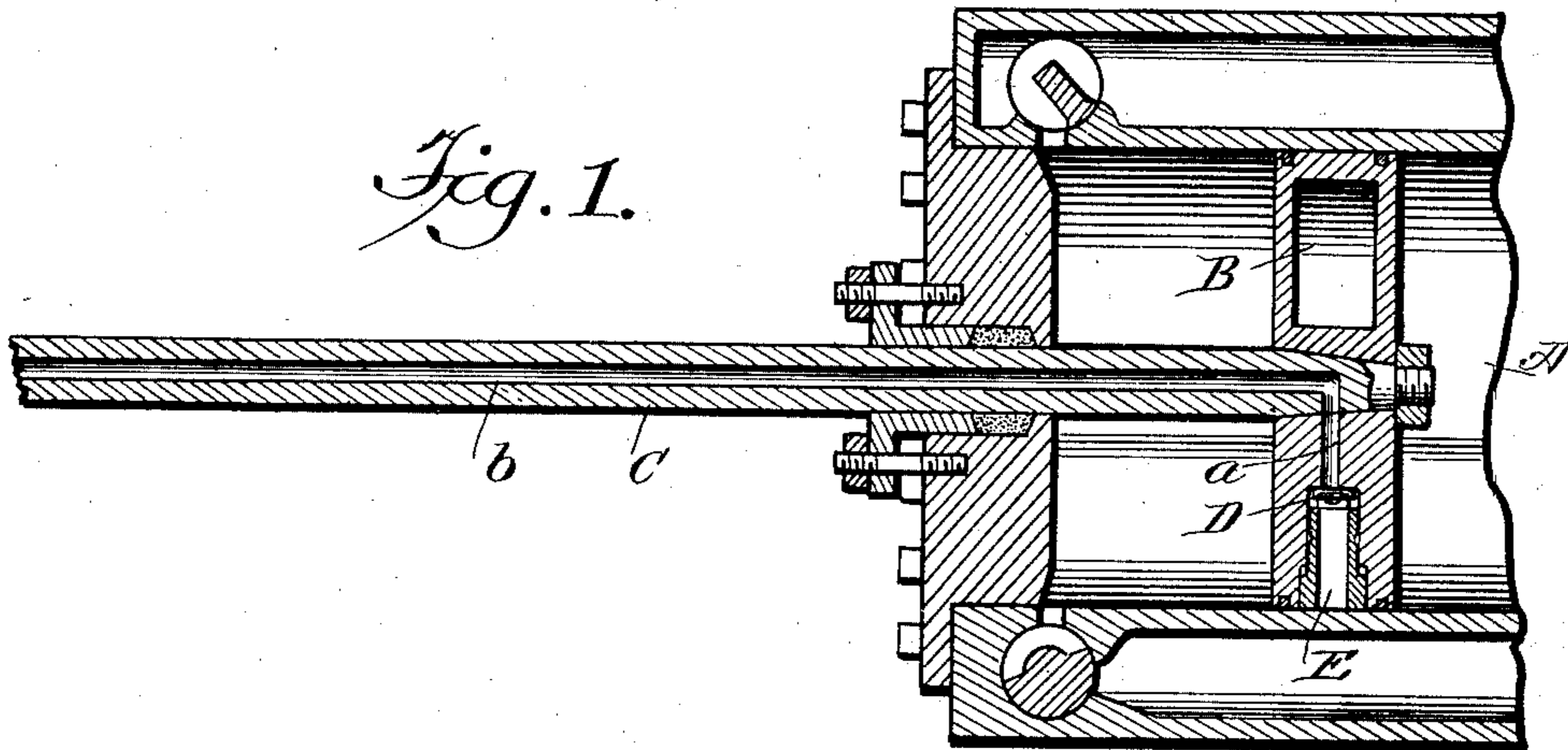
No. 736,735.

PATENTED AUG. 18, 1903.

J. C. JUNKIN.  
PISTON.

APPLICATION FILED MAR. 28, 1903.

NO MODEL.



WITNESSES

*A. Kappelman*  
*Rev. H. H. H. H.*

INVENTOR

*John C. Junkin*

BY

*Wm. H. H. H.*

ATTORNEYS.

## UNITED STATES PATENT OFFICE.

JOHN C. JUNKIN, OF GRAFTON, NORTH DAKOTA.

## PISTON.

SPECIFICATION forming part of Letters Patent No. 736,735, dated August 18, 1903.

Application filed March 28, 1903. Serial No. 149,971. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. JUNKIN, a subject of the King of Great Britain, and a resident of Grafton, in the county of Walsh and State of North Dakota, have invented a new and Improved Piston, of which the following is a full, clear, and exact description.

The invention relates to horizontal engines and pumps; and its object is to provide a new and improved piston arranged to sustain its own weight in the cylinder by the use of a fluid under constant pressure, so that the friction incident to the piston reciprocating in the cylinder is reduced to a minimum and the cylinder is prevented from wearing oval and causing leakage of steam, water, or other fluid from one side of the piston to the other.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the appended claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the improvement as applied, and Fig. 2 is an enlarged transverse section of the same.

In the horizontal cylinder A is mounted to reciprocate a piston-head B, provided with a piston-rod C, connected at its outer end in the usual manner with the power-transmitting parts of the engine, and in the lower portion of the said piston-head B is arranged a pressure-chamber D, opening at its lower end onto the peripheral face of the piston-head B at the bottom thereof, and the upper end of the said pressure-chamber D is connected by a port *a* with a passage *b*, extending lengthwise in the piston-rod C, so that a fluid under pressure can pass by way of the passage *b* and port *a* into the pressure-chamber D to press against the top thereof, and thereby sustain the weight of the piston in the cylinder A.

The passage *b* is connected at the outer end of the piston-rod C by a flexible connection with a fluid-pressure supply—such as steam, compressed air, or the like—and the pressure supplied by way of the passage *b* and port *a* to the pressure-chamber D is maintained con-

stant by a suitable reducing-valve or the like, and the pressure is about equal to the weight of the piston B, so that the latter is floatingly suspended in the cylinder A, and hence the wear of the piston B and cylinder A is reduced to a minimum.

In order to prevent escape of the fluid from the pressure-chamber D, the latter is provided with a sleeve E, having a packing-ring F and an enlarged lower portion E' adjacent to a vent-groove *c*, formed in the piston-head and leading to the peripheral face thereof to lessen the pressure per square inch on the bottom of the cylinder. Now by the arrangement described the pressure on the top edge of the sleeve E will force the same downward for the outer end to engage the cylinder, so that the pressure cannot escape from the pressure-chamber to either face of the piston. The sleeve E is also pressed on on the top edge by springs G, secured to the pressure-chamber, as plainly indicated in the drawings.

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

1. In a piston, a hollow piston-rod adapted to be connected with a pressure-supply, and a piston-head to which the piston-rod is secured, said head having a pressure-chamber in its periphery and a port leading from the inner end of the chamber to the bore of the piston-rod, as set forth.

2. In a piston, a piston-head provided with a pressure-chamber in its periphery, means for supplying the chamber with a fluid under pressure, and a sleeve in the said chamber and adapted to be forced outward by pressure, as set forth.

3. A piston having a piston-head provided in its lower portion with a pressure-chamber opening onto the peripheral face of the piston, a hollow piston-rod connected with a pressure-supply and in communication with the upper end of the said pressure-chamber, and a spring-pressed sleeve fitted in the said pressure-chamber and in contact at its lower end with the cylinder, as set forth.

4. An engine or pump having a horizontal cylinder, a piston-head mounted to reciprocate in the said cylinder and provided with a pressure-chamber in its lower portion, the

bottom of the said pressure-chamber opening  
onto the bottom of the said cylinder, a hol-  
low piston-rod connected with a pressure-  
supply and in communication with the said  
5 chamber, to supply the latter with a fluid  
under constant pressure, and a spring-pressed  
sleeve, fitted in the said pressure-chamber  
and in contact at its lower end with the said  
cylinder, as set forth.

10 5. A piston having a piston-head provided  
in its lower portion with a pressure-chamber,  
means for supplying the pressure-chamber  
with a fluid under constant pressure, a sleeve  
in the said pressure-chamber and having an  
15 enlarged bottom end adjacent to a vent-  
groove in the piston-head, to lessen the pres-  
sure per square inch on the bottom of the

cylinder in which the piston reciprocates, as  
set forth.

6. In a piston, a hollow piston-rod adapted 20  
to be connected with a pressure-supply, a pis-  
ton-head provided with a pressure-chamber  
in its periphery, and with a port leading from  
the said chamber to the bore of the piston-  
rod, and a sleeve fitting in the pressure-cham- 25  
ber and adapted to be forced outward by pres-  
sure, as and for the purpose set forth.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

JOHN C. JUNKIN.

Witnesses:

T. D. CASEY,  
HENRIETTA NELSON.