

A. RITTERSBACH.
PISTON SUPPORT.
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1,064,542.

Patented June 10, 1913.

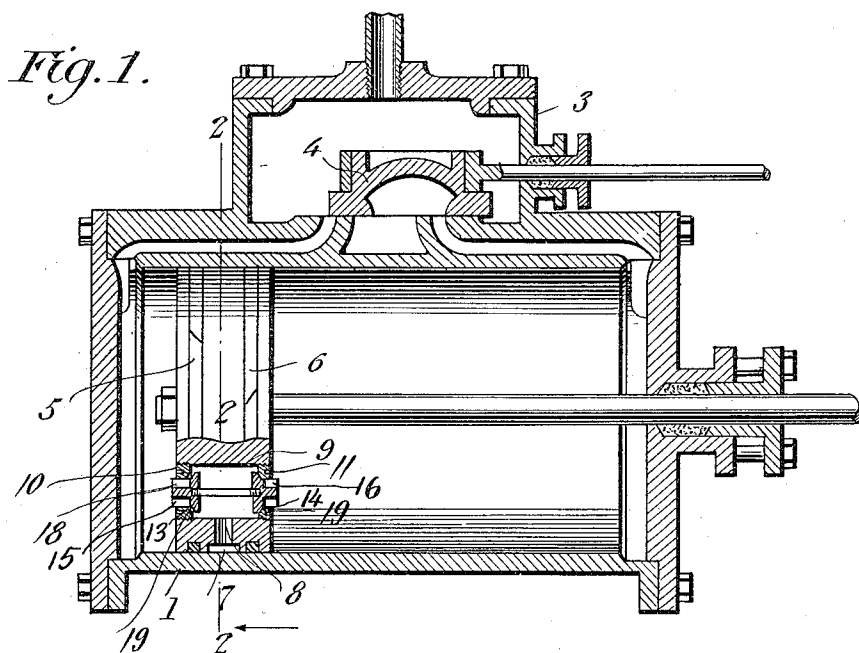


Fig. 2.

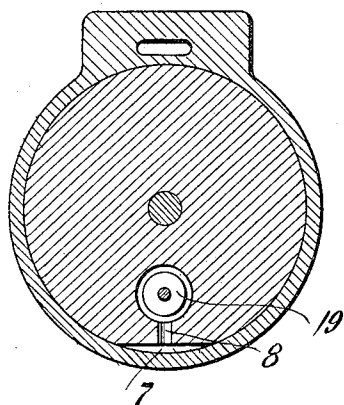
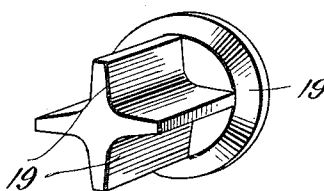


Fig. 3.



Witnesses
E. A. Schmanke
D. W. Gould

Inventor
Albert Rittersbach

By *Victor J. Evans*
Attorney

UNITED STATES PATENT OFFICE.

ALBERT RITTERSBACH, OF PHILADELPHIA, PENNSYLVANIA.

PISTON-SUPPORT.

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To all whom it may concern:

Be it known that I, ALBERT RITTERSBACH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Piston-Supports, of which the following is a specification.

This invention relates to pistons of horizontal engines and has for its general object the provision of an automatically operated valve by means of which pressure is introduced alternately from the opposite ends of the piston into a pocket formed at the lowest point in the periphery of the piston.

Further objects will appear as the following specific description is read in connection with the accompanying drawings, which form a part of this specification, and in which:—

Figure 1 is a sectional view of a reciprocating steam engine cylinder and piston of the usual pattern, in which is also shown a sectional view of one form of my invention. Fig. 2 is a sectional view through the cylinder and piston on the line 2—2 of Fig. 1. Fig. 3 is a perspective view of one member of the double acting valve.

Referring more particularly to the drawings, 1 represents the cylinder of a reciprocating engine of the ordinary type, and 2 is the piston which slides therein. Secured to one side of the cylinder is the usual steam chest 3, containing a reciprocating valve 4 by means of which steam is admitted alternately to opposite ends of the cylinder to reciprocate the piston. The piston here shown is provided with the customary packing rings 5 and 6, and located mid-way between these rings at the lowest point on the periphery of the piston is a pocket 7 opening against the adjacent surface of the interior of the cylinder. Communicating with the said pocket 7 by means of the vertical passage 8 is a horizontal bore 9, threaded at either end to contain the heads 10 and 11, both of these heads being removable.

Reciprocating horizontally within the openings in the heads 10 and 11 is the double-ended valve member 12, provided with beveled surfaces 13 and 14 to contact with the beveled faces of the heads 10 and 11. The ends of the heads 15 forming the valve member project in cruciform shape of a size to fit within the openings in the heads 10 and 11, the form of these projections providing

ports or passages 16 through which the steam is admitted when the valve is in open position.

The mode of operation of the valve which I have illustrated and described is as follows:—When steam is admitted from the steam chest 3 to one end of the cylinder 1 to drive the piston 2, a like pressure is exerted on the projecting end of the valve member 12, driving said valve member 12 horizontally toward the opposite end of the piston, and consequently opening the ports on the pressure end of said member 12. It is obvious that the steam pressure will exert its force through ports 16 into the bore or chamber 9 and thence downward through the vertical passage 8 to the pocket 7.

It has been demonstrated in experimental use of this invention that the pressure applied within the pocket 7 to the surface of the cylinder is sufficient to cushion the piston in its operation in the cylinder with undoubtedly a tendency to slightly lift the piston when such movement is possible. When the piston has traveled to the opposite end of the cylinder and pressure is applied to force a return of the piston, a movement of the double-acting valve member 12 similar to that above described will occur, but in a reverse direction. Thus again pressure is applied to the pocket 7 to exert a cushioning effect on the piston. In every instance pressure applied to one end of the piston will operate to open the valve on the same side of the piston, at the same time closing the valve on the opposite end of the piston, and permitting the application of pressure direct to the pocket 7. Since this pressure is practically continuous and uniform throughout the movement of the piston, a like pressure will be exerted within the pocket 7 to maintain the piston cushioned throughout its entire movement from end to end of the cylinder.

While I have shown a preferred method of applying my invention to a piston to relieve the surrounding cylinder of frictional contact therewith, I do not desire to be limited to the exact form which I have here indicated, but may make alterations in the various component parts within the scope of the appended claim.

Having thus described my invention, I claim:—

In a reciprocating engine a piston having a transverse bore, heads closing the respec-

tive ends of the bore to form a chamber, and each formed with a central opening of less diameter than the similar dimension of the bore, a pocket formed in the periphery of the chamber and a port to establish communication between said pocket and chamber, and a valve member operating in the chamber and comprising valve sections to cooperate with the opening in the heads, and a connection between said valve members of less length than the distance between the proximate surface of the head and projec-

tions from the valve members at all times seated in the openings in the heads and guiding the valves in a movement, said projections being cruciform to at all times form ports between the projections and the walls of the head openings. 15

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

ALBERT RITTERSBACH.

Witnesses:

HELEN G. DALEY,
NORMAN J. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."