G. Weinman,

Piston Head.

No. 104,909. Patented June 28. 1870.

Fig. 1

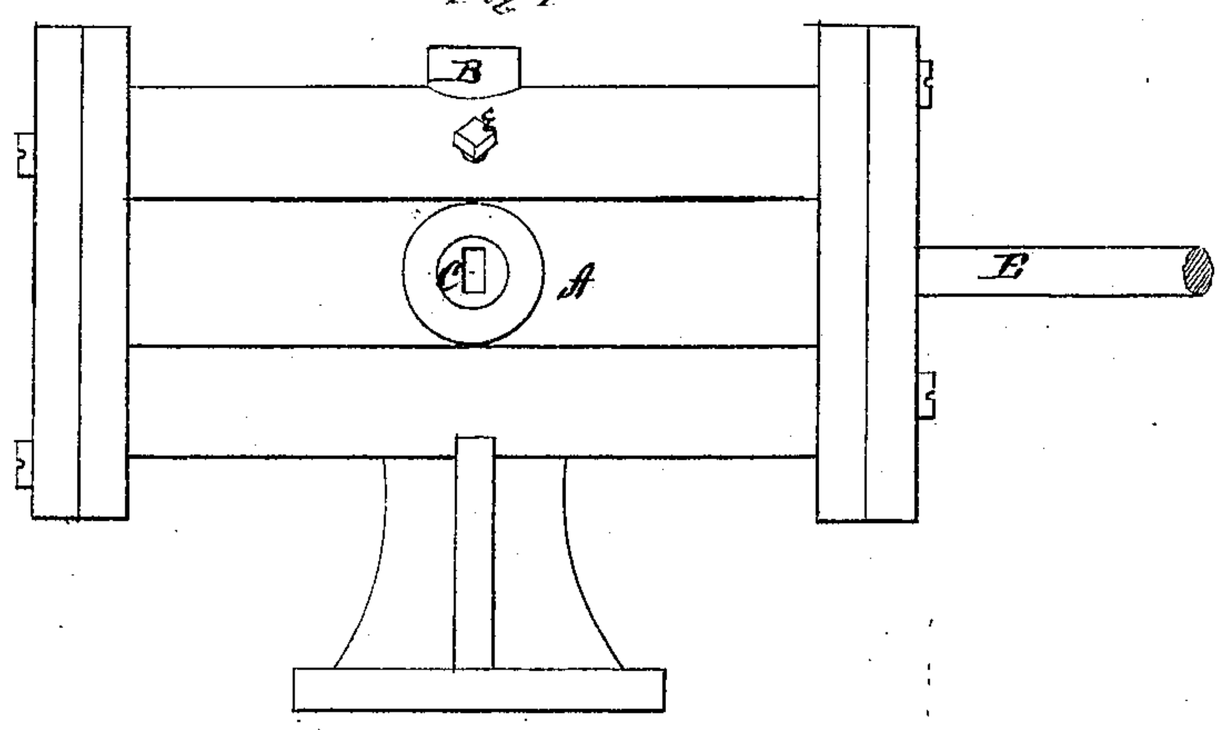


Fig. 2

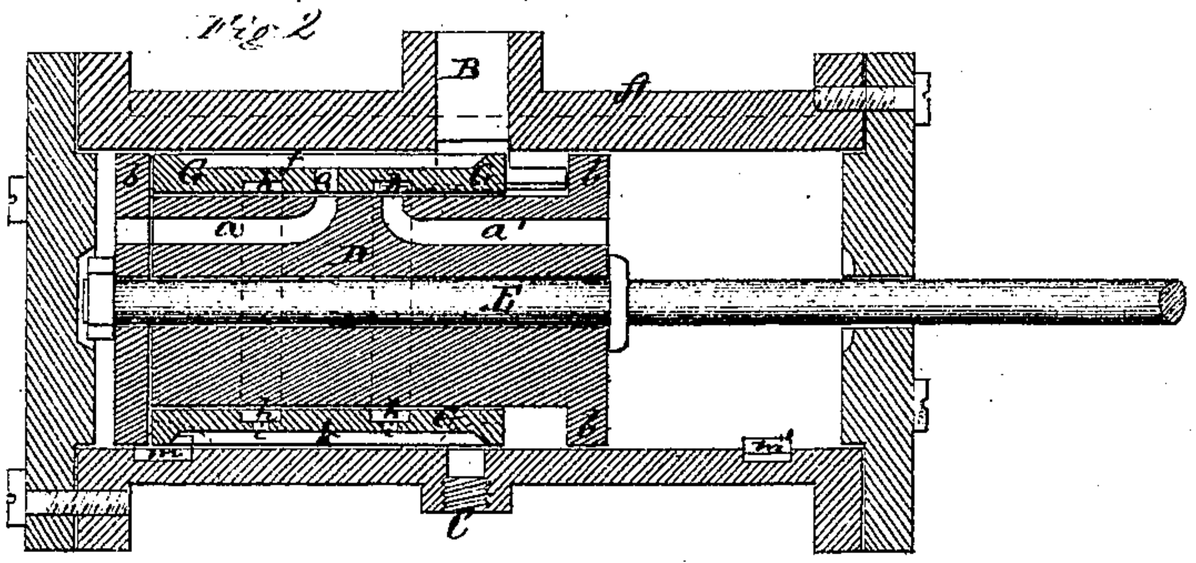
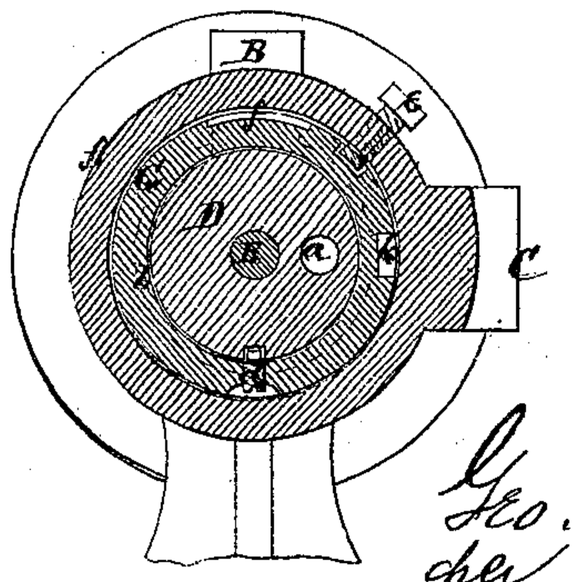


Fig. 3



Witnesses

Harry King.

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United States Patent Office.

GEORGE WEINMAN, OF COLUMBIA, OHIO.

Letters Patent No. 104,909, *dated June* 28, 1870.

COMBINED PISTON-HEAD AND VALVE.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, GEORGE WEINMAN, of Columbia, in the county of Franklin and in the State of Ohio, have invented certain new and useful Improvements in Piston-Heads; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction of a valve surrounding the piston-head of a steam-cylinder.

In order to enable others skilled in the art to which my invention appertains to made and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of a steam-cylinder, and

Figure 2 is a horizontal section of the same, showing the piston and valve surrounding the same.

For better reference and easier understanding of my invention, I have, in this view, represented the steam-inlet and outlet as being directly opposite each other.

Figure 3 is a transverse vertical section taken through the center of fig. 1.

A represents a horizontal steam-cylinder constructed in any of the known and usual ways.

On top of the cylinder A is the steam-inlet B, and on the side is the outlet or exhaust C.

In fig. 2 of the drawing I have represented the exhaust C as being directly opposite the inlet B, this being only done for easier reference, figs. 1 and 3 of the drawing showing that the proper place for said exhaust is on the side of the cylinder.

D is the piston, in the center of which the rod E is firmly secured, said rod passing through one head of the cylinder A.

The piston D is provided with two passages *a a'*, leading one from each end to near the center of the piston, as shown in fig. 2.

At each end of the piston D is a circumferential projecting flange, *b*, which fits close to the inner surface of the cylinder, or rather the portions marked *b* are the heads of the piston, leaving the body of the piston of smaller diameter, which smaller body is surrounded by a cylinder, G, not quite as long as the body of the piston between the flanges or heads *b b*; said cylinder forming the valve for the piston.

The valve G can move from end to end on the piston D, but is prevented from turning on the same by means of a screw, *d*, passing through the side of the valve into a groove in the body of the piston; and the piston and valve together are prevented from turning in the cylinder by means of a screw, *e*, which passes through the side of the cylinder into a longitudinal groove on the outside of the valve, thus allowing the piston to move from end to end within the cylinder.

In the outside of the valve G, directly underneath and against the inlet B, is a longitudinal groove, *f*, extending to near the ends of the valve, and in the center of this groove is an opening, *g*, corresponding in size with the inner ends of the steam-ports *a a'* in the piston.

On each side, a suitable distance from the passage *g*, in the inside surface of the valve G, is a circumferential groove, *h*, forming the exhaust-ports, which open into a longitudinal groove, *k*, in the outside of the valve, directly opposite and against the exhaust C of the cylinder.

i i are the exhaust-holes from the exhaust-ports *h h*, which holes correspond in size with the exhaust C of the cylinder.

m m' are the valve-exhausts.

The valve, as shown in fig. 2, has just moved, and will throw the piston in the opposite direction. The valve-exhaust *m* has just exhausted. When the piston reaches the other end of the cylinder, *m'* will exhaust the valve.

The steam enters through the pipe B, passing through the port *a*, pressing against the cylinder-head, which propels the piston in the opposite direction. As the piston-head approaches the other end of the cylinder, the steam-pipe B extends over the end of the valve, or rather a passage or groove in the inside of the cylinder from the steam-pipe extends over the end of the valve, which allows the steam to enter behind the valves, moves the valve over the other steam-port *a'*, and reverses the motion of the piston-head. After the valve is moved, the steam is exhausted through the port *a* and exhaust-port *h*. The exhaust-holes *i i* exhaust through the main exhaust on the side of the cylinder.

The exhaust steam from the valve passes from the exhaust-port *m* (or *m'*) into the groove *k* on the valve, and from thence out with the other exhaust steam through the port C.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The valve G, upon the outside of the piston-head, acting substantially as described, and for the purposes set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 25th day of March, 1870.

GEORGE WEINMAN.

Witnesses:

T. E. MOORE,

L. G. BYRNE.