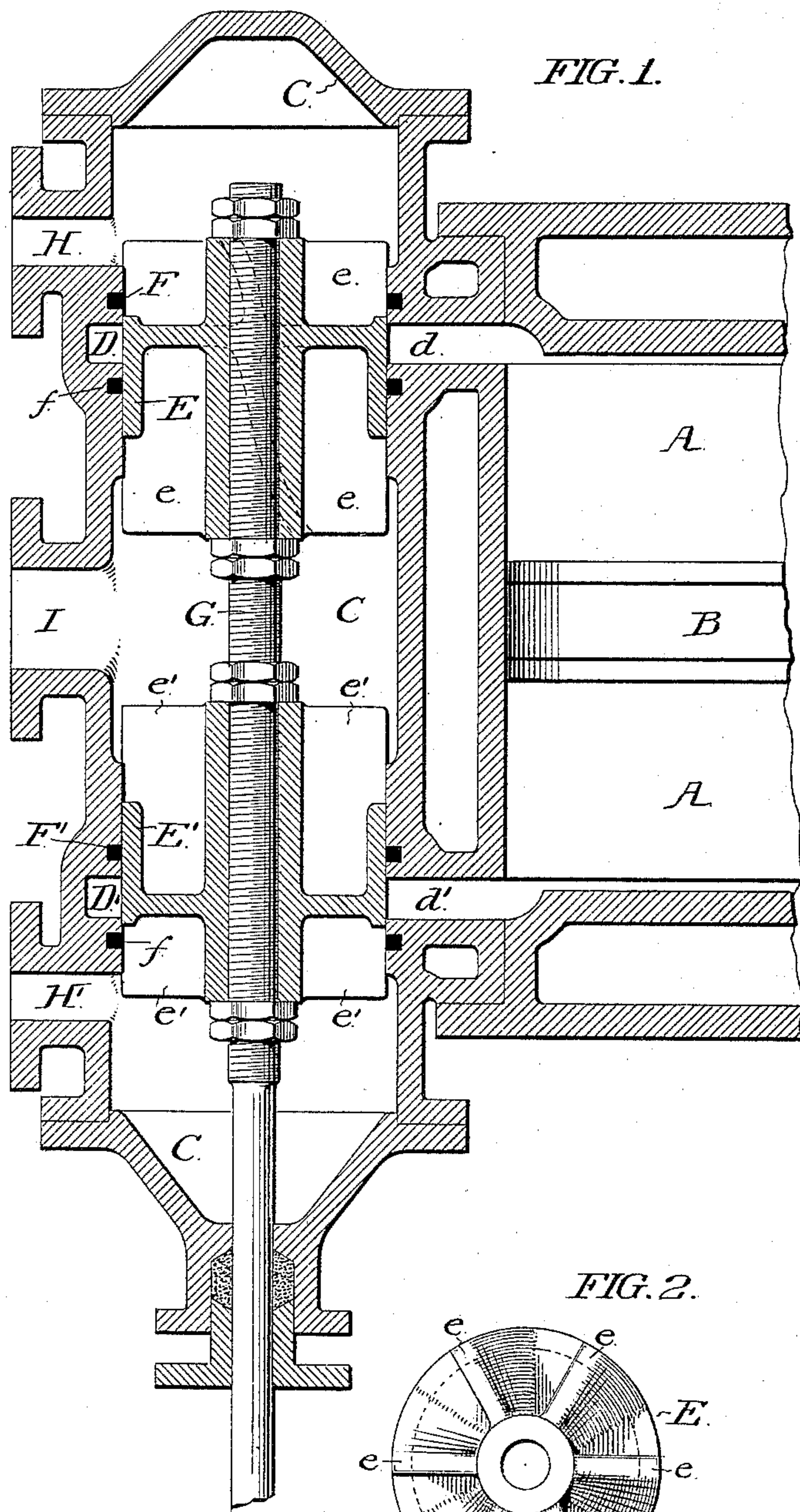


(No Model.)

W. DE C. MAY.  
PISTON VALVE.

No. 453,017.

Patented May 26, 1891.



WITNESSES:

*J. E. Page*  
*James H. Bell*

INVENTOR

*William DeConey May*  
*By Holliforth & May*  
*Attorneys*



# UNITED STATES PATENT OFFICE.

WILLIAM DE COURCY MAY, OF PHILADELPHIA, PENNSYLVANIA.

## PISTON-VALVE.

SPECIFICATION forming part of Letters Patent No. 453,017, dated May 26, 1891.

Application filed January 12, 1891. Serial No. 377,445. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM DE COURCY MAY, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Piston-Valves for Steam-Cylinders, &c., whereof the following is a specification, reference being had to the accompanying drawings.

In said drawings, Figure 1 represents a central longitudinal section through the valve-chest and pistons, showing also in section the adjacent side of the cylinder. Fig. 2 is a top or plan view of the valve-piston.

Heretofore in valves of this character where a large area was necessary in the steam-port it has been customary either to use no packing-ring in connection with the piston or in cases where such rings were used they were placed around the piston itself, and a liner or bushing was interposed between the piston and the adjacent surface of the valve-chest. The former method of construction was liable to leak, or if made with a sufficiently close joint to prevent leakage the valve was liable to stick, owing to unequal expansion of the seat, &c. The use of a liner was intended to obviate this difficulty; but in order to retain the packing-rings in position as they respectively passed the opening of the annular port used it was necessary to provide the liner with a series of bars extending across the port and leaving only the interposed spaces between said bars for communication therewith. This reduced the available area of the port usually by about one-third, and consequently the dimensions of the entire valve had to be increased. Furthermore, it was open to the objection that the liner was liable to crack at the bars, and the cost of the structure as a whole was considerably increased.

The object of my invention is to overcome these disadvantages and permit the use of a packed piston in connection with this class of valves without increasing the dimensions of the parts or in any way complicating their structure. To this end I mount packing-rings on each side of the port, seating them in the valve-chest itself, and to retain them in position after they are cleared by the piston I provide the latter with longitudinal wings of the same radial extent as the pe-

riphery of the valve itself and of such length that some portion of the wing shall always bear against the packing-rings, no matter what may be the position of the piston.

I will now proceed to describe my invention in its preferred form.

In the accompanying drawings, A represents the steam-cylinder, and B the piston thereof, the valve-chest C being mounted upon the side of the cylinder and being provided with annular ports D D', which communicate, respectively, at *d d'* with the upper and lower portions of the cylinder A. G represents the valve-rod upon which the piston-valves E E', respectively, are mounted in the proper relation to said ports. The valve-chest communicates at I with the source of steam-supply, and is provided with outlets H H', arranged at top and bottom, respectively.

Adjacent to the steam-ports D D' and on each side thereof annular grooves are formed upon the inner periphery of the valve-chest, and in these grooves the packing-rings F *f* of the upper piston and *f'* F' of the lower piston are seated, so as to form a close joint with both pistons on both sides of each port. To maintain these rings in position, as before stated, I provide the pistons E E' with radial wings *e e'*, respectively. In the preferred form these wings are arranged spirally or transversely to the axis of the piston, as indicated by the dotted lines of Fig. 1, and as shown by the shading in Fig. 2. The purpose of this is to obviate unequal wear upon the packing-rings, which otherwise might occur by the constant reciprocation of straight wings at the same point only, and to produce the best result it is desirable that the top of one wing should overlap or overhang the bottom of the next one, so that all parts shall be subject to the same amount of wear.

The operation of the device will be obvious from the foregoing description.

As the pistons reciprocate and open the ports they of course pass by the packing-ring upon one side or the other; but since the wings extend both directions to a distance which conforms to the range of movement of the pistons there is no tendency of the rings

to leave their seats, and thus the object sought for is attained.

I claim—

1. In a piston-valve, the combination of a  
5 valve-chest having an annular port, packing-rings arranged on each side of said port, a piston mounted to reciprocate in proper relation to said port, and wings upon said piston adapted to bear against said packing-rings  
10 throughout the range of clearance movement of the piston, substantially as set forth.

2. In a piston-valve, the combination of a valve-chest having an annular port, packing-

rings arranged on each side of said port, a piston mounted to reciprocate in proper relation to said port, and wings upon said piston adapted to bear against said packing-rings throughout the range of clearance movement of the piston, said wings being inclined to the direction of movement of the piston, substantially as set forth. 15 20

WILLIAM DE COURCY MAY.

Witnesses:

JOS. C. FRALEY,  
JAMES H. BELL.