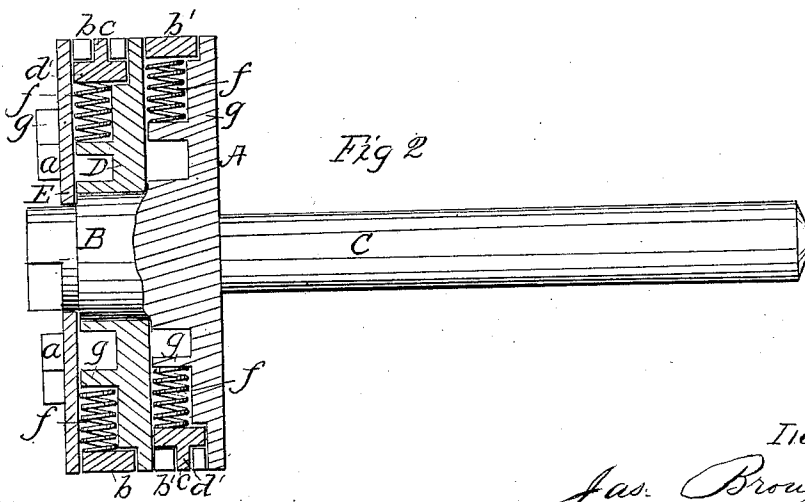
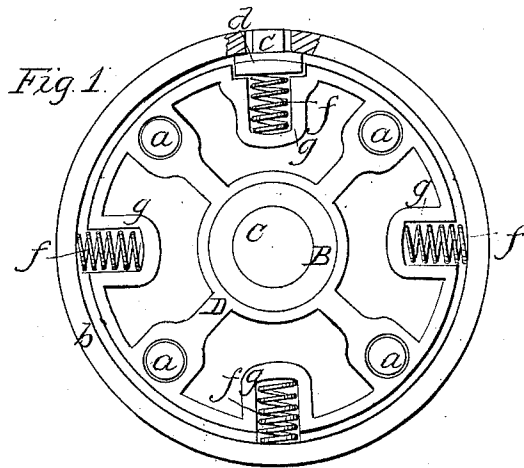


*J. Broughton,  
Piston Packing.*

*N<sup>o</sup> 58,766.*

*Patented Oct. 16, 1866.*



*Witnesses:*

*Wm Dean Russell  
Wm Jewell*

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# UNITED STATES PATENT OFFICE

JAMES BROUGHTON, OF LAMBERTSVILLE, NEW JERSEY.

## IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 58,766, dated October 16, 1866.

*To all whom it may concern:*

Be it known that I, JAMES BROUGHTON, of Lambertsville, Hunterdon county, State of New Jersey, have invented a new and Improved Piston-Packing; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a horizontal section of this invention. Fig. 2 is a transverse section of the same.

Similar letters of reference indicate like parts.

This invention relates to a piston which is provided with two sets of packing-rings, separated from each other by a partition-plate, and each provided with a separate steam-channel and with a separate set of springs. The steam-channels are formed in the outer portions of T-shaped keys insulated behind the joints of the packing-rings, and through these channels steam is admitted behind the rings, the division-plate preventing said steam from passing round to the exhaust side of the piston.

The springs are inserted in suitable recesses, one set in the division-plate and the other in the spider or body of the piston, and they serve to sustain the packing-rings when the same are relieved from the pressure of the steam on their inner surfaces.

A represents the spider or body of my piston, which is provided with a long hub, B, to reverse the piston-rod C. On this hub are fitted the division-plate D and the follower F, and suitable screws *a*, which pass through the follower and are tapped into the spider, fasten the whole together.

The packing of my piston is effected by two sets of packing-rings, *b b'*, which are situated one set between the piston-head and the division-plate and the other set between said division-plate and the follower. These rings are made of simple strips of brass or other suitable

material, and they are cut open, so that they can accommodate themselves to the inner surface of the cylinder, these joints being closed by T-shaped keys *c*. The heads of these keys fit nicely in between the follower and the division-plate and between said division-plate and the piston-head, and they are provided with grooves *d* in their outer parts, as clearly shown in Fig. 2.

To these grooves access is had through channels between the ends of the rings and the shanks of the keys, so that steam is admitted behind the rings. The shanks of the keys and the division-plate prevent the steam from passing from the steam to the exhaust side of the piston, so that only one set of packing-rings is acted on by the steam at a time, and said rings are held in close contact with the inner circumference of the cylinder.

Springs *f* sustain the rings when the steam does not act on the same, and prevent them from falling in when the steam is shut off. These springs are situated in recesses *g* formed in the division-plate D, and also in the spider A, as shown, and by these recesses they are securely held in position and their action is uniform.

The piston-packing is cheap and simple, and readily kept in order, and it is particularly intended for the pistons of locomotive-engines, although it is also applicable to pistons of stationary or of marine engines.

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

1. The arrangement of the body A, hub B, division-plate D, follower E, rings *b b'*, grooved T-shaped keys *c*, and springs *f* in the recesses *g*, combined and operating in the manner and for the purpose herein specified.

2. The grooves *d* in the keys *c*, which close the joints of the packing-rings, for the purpose set forth.

JAMES BROUGHTON.

Witnesses:

HIRAM HUGHES,  
SAMUEL GREEN.