J. H. ROLLINGS.

Piston-Packing.

No. 162,693. Patented April 27, 1875.

Fig. 1.

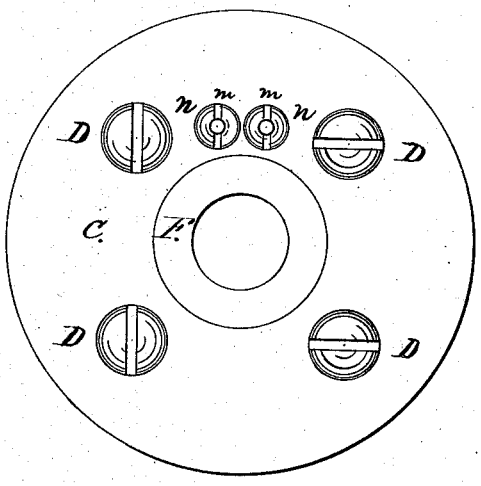


Fig. 2.

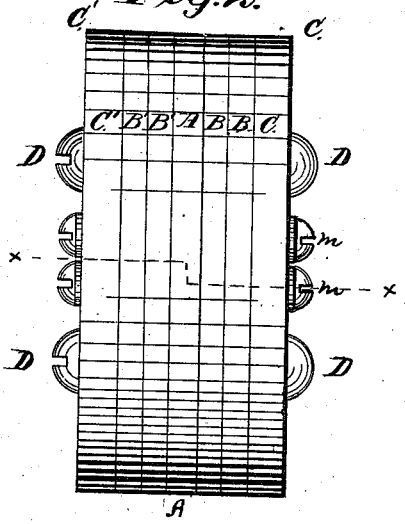


Fig. 3.

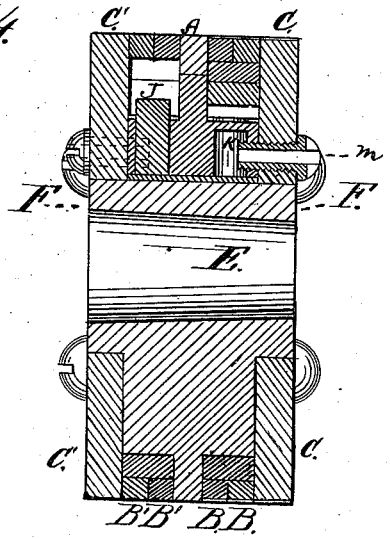
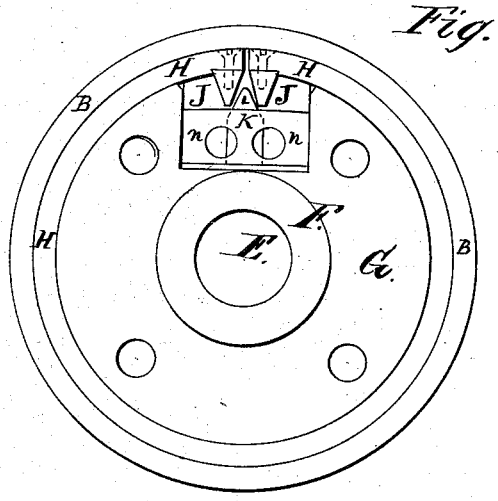


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN H. ROLLINGS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. **162,693**, dated April 27, 1875; application filed September 16, 1874.

To all whom it may concern:

Be it known that I, JOHN H. ROLLINGS, of the city of Brooklyn, county of Kings and State of New York, have invented a new and useful Mechanism for Packing Pistons in Cylinders; and I do hereby declare that the following is a full, clear, and exact description and specification of the same, referring to the accompanying drawings, making part of this specification.

My invention relates to pistons adapted to move in cylinders containing steam or other fluid under pressure, and provided with rings, which may be expanded by said pressure against the inside surface of the cylinder, for the purpose of preventing the passage of said steam along between the cylinder and the piston.

The object of my invention is to provide an efficient and practical means of packing said pistons, and at the same time reduce the friction between the piston-rings and the interior of the cylinder to the least possible amount; and to this end my invention consists in a certain combination and arrangement of the auxiliary cylinder and piston-rings and V-shaped pieces located in the piston, which combination and arrangement are specifically set forth at the end of this schedule.

In order that persons skilled in the art may understand, make, and use my invention, I will proceed to describe the means I have employed, referring to the annexed drawing.

Figure 2 is a side elevation of a piston made according to my invention, in duplicate—that is to say, I have provided one set of packing-rings, auxiliary cylinder, piston, &c., on each side of the central portion A of the main piston. Thus B B is one set of packing-rings, and B′ B′ is another set. C is one follower. C′ is another.

Fig. 1 is an end or face view of the piston, showing the follower C, the follower bolts or screws D, and the small screws N N, which are bored through with small holes for a passage of steam from the cylinder to the inside of the auxiliary cylinder K and piston L.

Fig. 3 is a vertical longitudinal section through the piston on the line *x x*.

Fig. 4 is an end view of the piston with the follower C removed. E is the hole through the piston, to the sides of which the piston-rod is united. G is the solid metal of the piston, extending up in the center to the surface of the cylinder at A, and to each end of the piston at F, which is turned and forms a hub for the purpose of centering and sustaining the followers C C′. Two rings, B B, are let in between the follower C and the part A. They are turned to the same diameter as the inside surface of the cylinder, and are then cut open, so that they may contract in the usual manner, and so that they may be expanded by the pressure from the inside when applied. Under these split rings B B I place another ring, H, which is also cut open, and on each side of the cut V-pieces J J are attached, which project toward the axis of the piston, as shown. Under these pieces J J, and between them, I locate a small auxiliary cylinder, K, provided with a piston, L, the exterior and upper end of which is V-shaped, to fit the V-shaped pieces J J. The other end extends into the cylinder to receive the pressure of the steam or other fluid which flows into it from the main cylinder through the small holes M M in the screws N N.

The operation of the mechanism is very simple: When pressure is applied to the follower C the steam or other fluid contained in the cylinder, and in connection with said follower, passes through the holes M M into the auxiliary cylinder K, and acts against the bottom of the piston L. As said piston fits the upper portion of the cylinder the steam cannot escape, and consequently the piston must rise, forcing the taper or V-shaped top to drive apart the V-shaped pieces J J, and with them the ends of the ring H, causing the whole ring to expand. This ring in turn spreads the rings B B against the surface of the cylinder. As the sides of the rings fit the part A and the follower, no steam can get around the rings, and, as they are made to press the sides of the cylinder, no steam can pass between the rings and the cylinder, and thus the piston is tight. As the pressure against the head of the piston is reduced, a corresponding reduction takes place on the piston L, and the rings contract, relieving the inside surface of the cylinder from pressure; consequently, all the pressure thrown on the cylinder is that

from the force exerted by the small piston L, and, by proportioning the piston to the requirements in each case, the friction may be reduced to a minimum.

I am aware that piston-rings have been before expanded by steam, and I do not claim doing that.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, substantially as hereinbefore set forth, of the auxiliary cylinder with its piston, having a V-shaped end, and split ring provided with V-shaped projections, each side of said opening, as described, so arranged that the ring may be spread endwise by the said piston acting in lines perpendicular to the circumference of the ring, for the purposes set forth.

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Witnesses:
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