G. H. REYNOLDS.

PISTON-PACKING.

No. 169,586. Patented Nov. 2, 1875.

Fig: 1

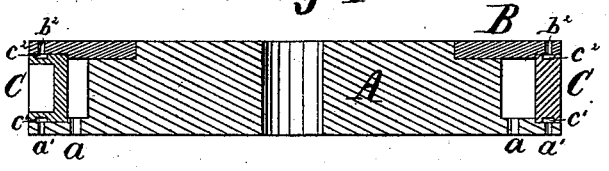


Fig: 2.

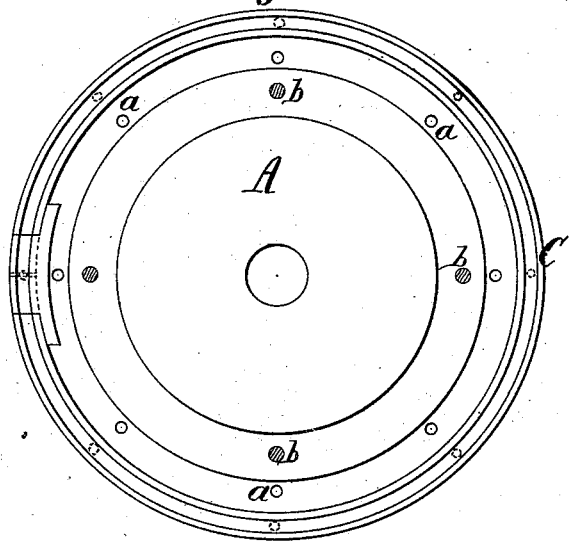
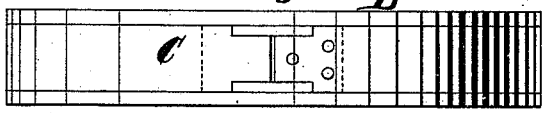


Fig: 3.



Witnesses:

Henry Gartner

Wm. C. Dey.

Inventor:

Geo. H. Reynolds

by his attorney

Thomas D. Stetson

UNITED STATES PATENT OFFICE.

GEORGE H. REYNOLDS, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, C. H. DELAMATER, AND GEORGE H. ROBINSON.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. **169,586**, dated November 2, 1875; application filed September 2, 1875.

To all whom it may concern:

Be it known that I, GEORGE H. REYNOLDS, of New York city, in the State of New York, have invented certain new and useful Improvements relating to Piston-Packing, of which the following is a specification:

My improvements apply only to pistons employed in single-acting engines, pumps, presses, and analogous machines, in which the packing has to resist the motion of the fluid in only one direction.

My invention provides, by very simple means, for expanding the packing by the force of the steam, water, or other fluid, and for insuring against leakage, even after the packing has become considerably worn.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical section through my piston. Fig. 2 is a top view with the follower-ring taken off. Fig. 3 is a side elevation.

Similar letters of reference indicate like parts in all the drawings.

A is the body of the piston, made of cast-iron or other suitable material, in a single piece. B is a follower-ring, fixed firmly thereon by means of bolts *b*, in the usual manner. C is a packing-ring, fitting nicely in the recess represented, and extending quite around the piston, with the ordinary provision for preventing the leakage of steam at the joints, as indicated in Figs. 1 and 3. A recess of inconsiderable depth, and of only a little less width than the packing-ring C, extends around within the packing-ring, as indicated. A series of passages, *a*, communicate from the steam side of the piston to this recess, and allow the fluctuations in the pressure of the steam to be instantly felt on the inner surface of the packing-ring C.

It is impracticable to make the packing-ring C of exactly the proper width to fill tightly the space between the nicely-fitted faces adjacent thereto. There will always be, either at the commencement or after a little use, a little play or room for steam to flow between the packing-ring and the adjacent surface of the follower B.

Little or no harm results from allowing the steam to flow between the packing-ring C and the adjacent surface of the piston A, because in practice there will always be steam on the outside of the piston at this point, as well as on the inside, and there is no tendency of the steam to move through an opening in either direction; but if the joint on the other edge of the packing-ring C is open, mischief will result.

I make two provisions to insure that the packing-ring C is always promptly forced over into contact with the follower B, which provisions, although resembling each other in appearance, are directly opposite in their functions.

A plus-pressure is provided along the whole of the edge adjacent to the piston-rim, and effective provisions are made for freely exhausting any steam which may happen to lie between the faces on the opposite edge. A series of small holes, *a'*, are drilled through the piston opposite the edge of the packing-ring C, and a channel, which may be somewhat shallower than represented, is formed in the adjacent edge of the ring C, as indicated by c^1.

The steam on the steam side of the piston flows through the opening *a'*, fills the channel c^1, and presses on the packing-ring C, with the full force of the steam on that extended surface; but, for fear the packing-ring C will linger, by reason of a pressure accumulating from some cause against the opposite face, I provide a corresponding cavity, extending quite around on the opposite faces, as indicated by c^2, and a series of corresponding holes through the follower B, as indicated by b^2. These provisions always insure the same vacuity on that edge of the piston and the packing-ring C as obtains on the corresponding face of the piston.

My piston-packing and its mode of operation are very simple, and avoid all the complications which are necessary in duplicating steam-packing.

The force and firmness with which the packing-ring C is urged forward against the fol-

lower-ring is practically no objection to its expansion, because it can in no case occur in advance of, but always simultaneously with, the radial pressure of the steam received through the passages *a*.

Although I have shown the grooves in the packing-ring, the same result may be accomplished by having them in the body of the piston and the follower.

I claim as my invention—

In combination with the single-acting piston A and expansible packing C, the series of apertures *a*, on one face of the piston only, admitting steam to the space within the packing, and the double series of apertures a' b^2, against the respective edges of the packing, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand.

GEO. H. REYNOLDS.

Witnesses:
PHILLIPS ABBOTT,
CHAS. C. STETSON.