

J. W. HILL.
Piston-Packing.

No. 159,675.

Patented Feb. 9, 1875.

Fig. 1.

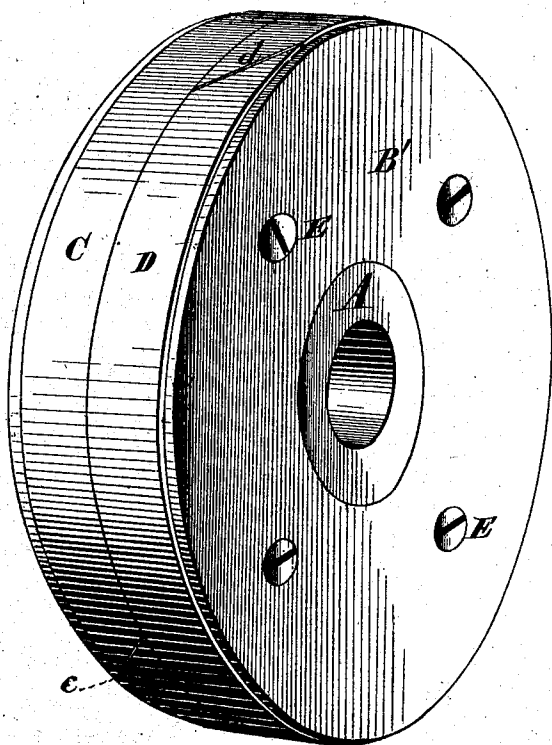
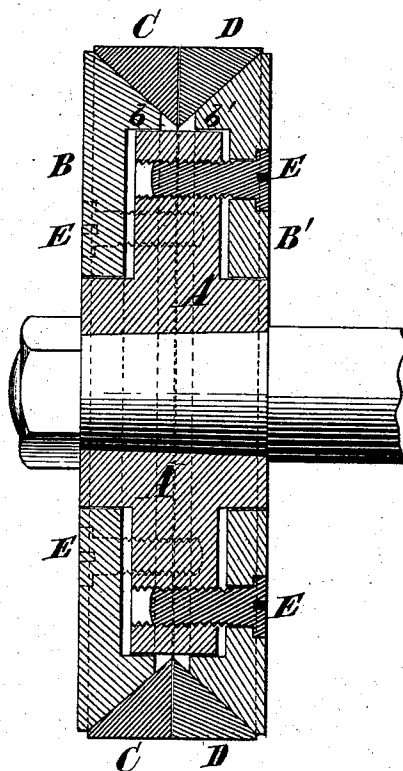


Fig. 2.



Witnesses.
A. Ruppert,
Thos. Jewell

John W. Hill
Inventor.
by *Edw. J. Bick*
his Att'y

UNITED STATES PATENT OFFICE.

JOHN W. HILL, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO
HERRMAN & HERCHELRODE MANUFACTURING COMPANY, OF SAME
PLACE.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. **159,675**, dated February 9, 1875; application filed
January 6, 1875.

To all whom it may concern:

Be it known that I, JOHN W. HILL, of Dayton, in the county of Montgomery and State of Ohio, have invented a certain Improved Piston-Packing, of which the following is a specification:

The nature of my invention consists in combining, with the core of the piston and its split packing-rings, which are made of approximately triangular form in cross-section, two circular followers, having inclined circumferential surfaces, matching like surfaces of the packing-rings, and so connected to the core that pressure applied to their exterior faces will cause them to move thereon, so as to expand the packing-rings and set them out properly against the cylinder.

In the annexed drawings, Figure 1 is a perspective view of a piston embodying my improvement. Fig. 2 is a transverse axial section thereof.

The same letters of reference are used in both figures in the designation of identical parts.

The core A is a cylindrical disk, with a central hub projecting on either side, and bored for the reception of the piston-rod, as usual. B and B' are two circular followers, snugly fitting over the respective collars forming the hub of the core, and also provided with inwardly-projecting shoulders, *b* and *b'*, in part embracing the core at its peripheral surface. The packing-rings C and D, split at *c* and *d* in the ordinary manner, are placed around the core, which they fit rather loosely, between the followers, the diameter of which is somewhat less than that of the packing-rings unexpanded. The rings are about triangular in cross-section, and their slanting sides are in contact with correspondingly-inclined surfaces of the followers, as clearly shown in Fig. 2. The followers are connected to the core by screw-bolts E, the heads of which fit snugly in recesses formed in the followers, so as to permit no steam to pass. In fact, all the joints are made steam-tight.

The bolts, while they prevent the followers from pressing outward, permit sufficient movement thereof on the core to alternately expand the rings, as pressure is applied to one

side or the other of the piston, by acting with their inclined surfaces upon the matching surfaces of the rings like wedges.

This piston is adapted for use in pumps, as well as in steam and other gas engines.

It is evident that it is immaterial upon which side of the piston the pressure is applied, both packing-rings being always equally expanded.

Some of the advantages due to the herein-before-described construction of the piston may be stated as follows:

No steam can enter the interior of the piston, condense there, and cause corrosion of the parts, as is the case in every known piston where the rings are set out by the direct action of the steam. The friction of the piston is governed by the load on the engine; whereas in all other steam-packed pistons the friction is dependent solely upon the pressure of the steam, and is as great under a light as under a heavy load, the pressure being the same. A readjustment of the parts of this piston is never required, for the automatically-wedging followers, having the proper extent of longitudinal play, will always expand the rings, and in degrees varying with the resistance, as already stated.

I do not claim, broadly, the use of wedging-followers, or, rather, plates, to set out the packing-rings of a piston, being aware that they have been known for many years; but I am the first to so combine wedging-followers with the packing-rings and core of a piston that the steam, or other motive agent, may press them inward alternately to set out the rings. In other words, I am the first to use automatically-wedging followers.

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

A piston composed of a core, A, automatically-wedging followers B and B', and split rings C and D, substantially as and for the purpose specified.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

JOHN W. HILL.

Witnesses:

C. HERCHELRODE,
WILLIAM R. MARSHALL.