A. W. HARRIS.

Improvement in Piston Packing.

No. 125,132. Patented April 2, 1872.

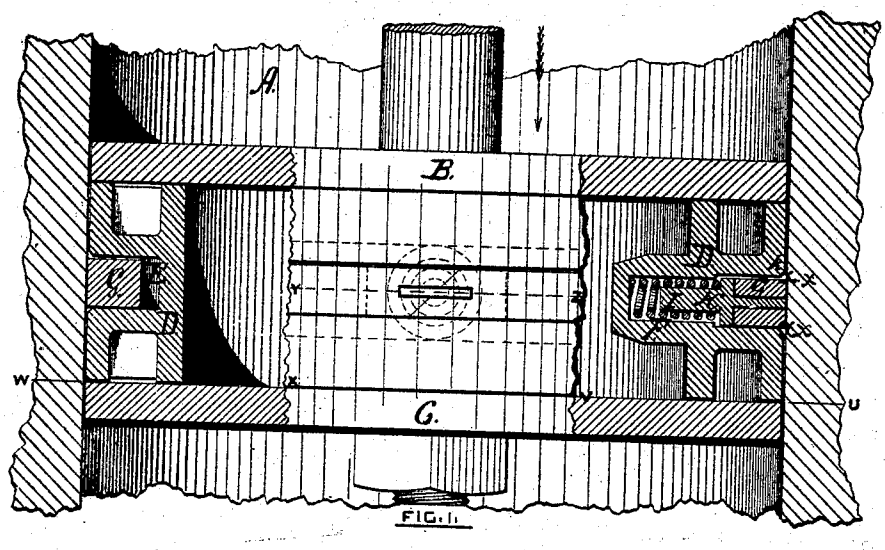

FIG. 1.

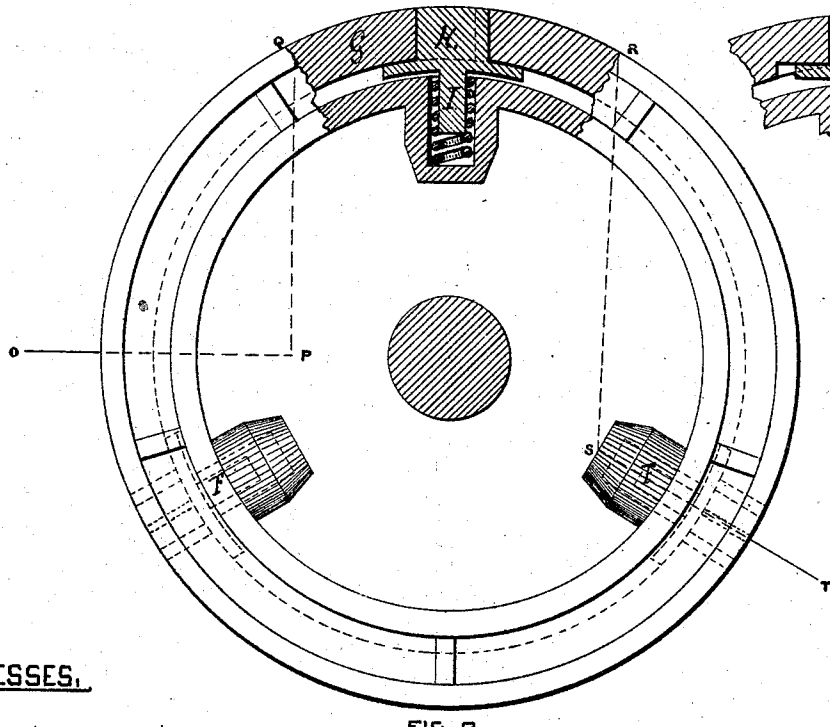

FIG. 2.

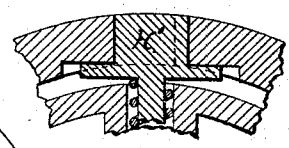

FIG. 3.

WITNESSES,

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ABRAHAM W. HARRIS, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 125,132, dated April 2, 1872.

To all whom it may concern:

Be it known that I, ABRAHAM W. HARRIS, of the city and county of Providence, in the State of Rhode Island, have made certain new and useful Improvements in "Steam Piston-Packing;" and I do hereby declare that the following specification, taken in connection with the drawing making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a horizontal section on broken line *o p q r s t*, Fig. 2. Fig. 2 is a vertical section on broken line *w x y z v u*, Fig. 1. Fig. 3 is a section of the packing-ring.

The object of my invention is to produce a packing which shall be more effective than those now in use, and at the same time lessen the weight of the piston to which it is attached; and consists in the improvements hereinafter described.

In my invention, A is a steam-cylinder; B, the piston; C, the follower; and D, the "chunk"-ring. The chunk-ring D is provided with an annular groove, E, within which are three holes, F F F, extending toward the center. G is a single packing-ring, which is made in three sections, and operates within the annular groove E, the joints coming directly over the holes F F F. To break these joints, the ends of the packing-ring coming together are mortised, and receive a T-shaped piece, H, which rests upon a spring in the hole F. The construction, arrangement, and operation of the T-shaped piece H constitutes the first feature of my invention, which I will now proceed to describe.

In the packings now in use the bottom of this T-shaped piece H is curved to correspond with the outer circle of the packing-ring, and presents a smooth surface to the action of the spring. It not unfrequently happens, however, that this T-shaped piece slips from its position directly over the spring, and, not receiving the full or proper action of said spring, the packing is not sufficiently forced out, and the steam is allowed to blow through. To overcome this difficulty I construct the T-shaped piece H with a tail-piece, I, as shown in Figs. 1 and 2, which projects downward within the spring, and prevents it from moving in either direction. The packing-ring being necessarily in sections, the tendency of the parts to slide downward, especially after the cylinder has become enlarged by constant wear, results in closing tightly the two lower joints, while the third or upper one is correspondingly separated. It is necessary, in order that the packing shall perform its work in the most satisfactory manner, to preserve the relative distances of the different sections from each other. To effect this object, and to overcome the difficulties above mentioned, I make the bottom of the T-shaped piece H′ straight instead of curved, and cut away the under side of the packing to receive it, as shown in Fig. 3. It will now be readily seen that the movement of the sections of the packing-ring in either direction will be effectually prevented, and, though the cylinder increase in size from constant wear, they must maintain the relative positions at all times.

The construction and operation of the "chunk"-ring D and the packing ring G constitute the second feature of my invention. It is well understood that, in order to set out the packing, it is necessary to admit the steam to the under side of the packing-ring, so that an equal pressure of steam may be secured and the spring thus left free to act. I make use of a single packing-ring, G, which projects slightly beyond the circumference of the chunk-ring, and is fitted loosely to the annular groove E, so as to leave a narrow space, *k*, between the ring and the side of the groove for the passage of the steam. I also chamfer the edges *x x* of the chunk-ring D, as shown in Fig. 1. Taking the parts in the position shown in Fig. 1, and the piston moving in the direction indicated by the arrow, it will be seen that the packing-ring G, while it is pressed outwardly by the springs, is also pressed closely against one side of the annular groove, while between the said ring and the other side there is an open passage for the steam. As soon as the piston has completed its movement in this direction and the steam-port opened at the other end of the cylinder, the steam rushing in strikes against that portion of the packing-ring G which the chamfering of the chunk-ring exposes to its action and carries it forward, closing the passage *k*, and opening a similar one on the other side, which admits the steam under the packing, for the purposes already described. This change in the position of the packing-ring may also be effected by

closing the exhaust-valve early in the stroke, thus producing compression. Thus the packing-ring G changes its position with each change in the movement of the piston, and is constantly opening a narrow passage to admit the steam, and closing a similar one on the other side. The edges of the chunk-ring being chamfered, as before described, and a portion of the surface of the packing-ring exposed to the pressure of the steam, it is held against the side of the annular groove E with sufficient force to prevent the steam from blowing through. The packing-ring G may, however, be held in place by exposing a similar portion of its surface to the action of the steam, by drilling one or more holes into the chunk-ring upon each side, or in any other desired way.

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

In the construction of steam-pistons, I claim the combination of the within-described shanked and spring-actuated T-shaped pieces H I with the sectional ring G and the chunk-ring D, substantially as and for the purpose herein set forth.

ABRAHAM W. HARRIS.

Witnesses:
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