

CHARLES S. BARRY.
Improvement in Piston-Packing.

No. 127,833.

Patented June 11, 1872.

Fig. 1.

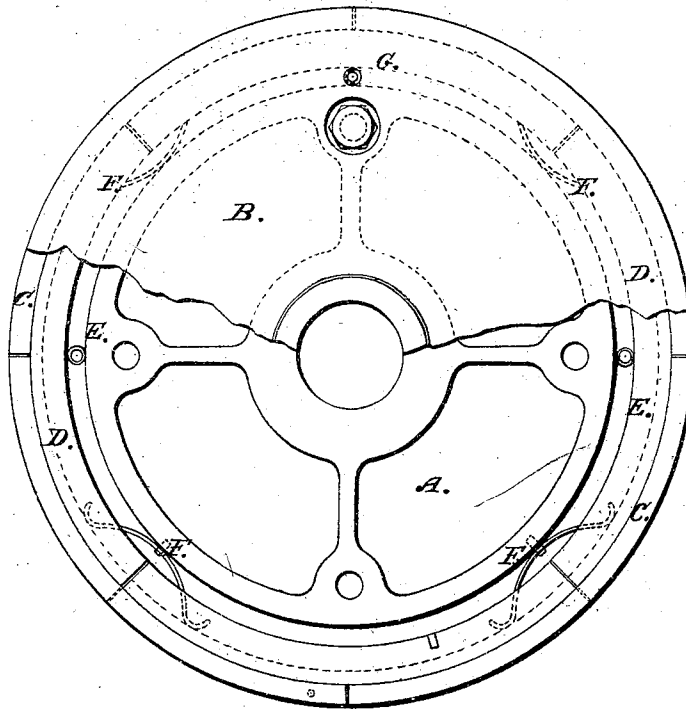


Fig. 4.

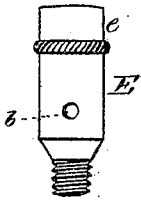


Fig. 5.

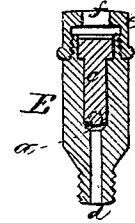


Fig. 2.

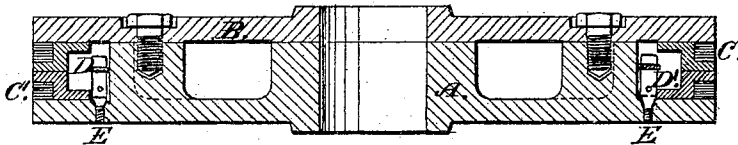
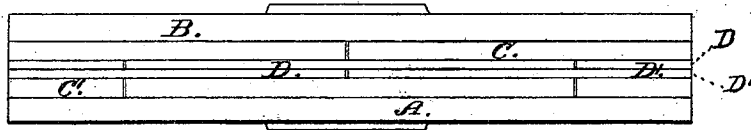


Fig. 3.



Scale of Feet for Figs 1.2.3.

WITNESSES

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CHARLES S. BARRY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO HENRY BLUNDELL, AGENT, OF SAME PLACE.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 127,833, dated June 11, 1872.

To all whom it may concern:

Be it known that I, CHARLES S. BARRY, of the city and county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Metallic Steam-Piston Packing.

My improvements relate to that general class of metallic piston-packing in which the pressure of steam is employed between the piston-head and a follower to force the metallic segmental sections outward against the interior of the cylinder. My improvement relates to a novel construction and arrangement of the segmental sections, by means of which the several sections are not only forced by the steam against the cylinder, but also against the interior adjacent surfaces of the piston-head and the follower; and I do hereby declare that the following specification, taken in connection with the drawing furnished and forming a part of the same, is a clear, true, and exact description of a piston-head complete, which embodies my invention.

Figure 1 represents a top view of a piston, with a portion of the follower removed to expose the interior. Fig. 2 represents the same in diametrical vertical section. Fig. 3 represents the same in edge view. Fig. 4 represents one of the automatic valves on an enlarged scale. Fig. 5 represents the same in longitudinal section.

In all the figures, A denotes the piston-head proper. It is provided with the usual skeleton for sustaining the follower, and also the springs which are employed for holding the packing-rings in general position. B denotes a follower or "cover" of the usual form, which is connected to the head by bolts when in position. There is between the head and the follower an annular space for receiving the packing. The whole interior space between head and follower constitutes a common chamber within the piston for the reception of steam. C and C' denote the outer metallic packing-rings, to be made of any suitable metal. Each is composed, in this instance, of four segmental sections, each being in the form of a bent square bar. D and D' denote the two interior metallic packing-rings. Each is composed, in this instance, of four segmental sections. Each section is cast in one piece, and from the end view of

each they may be described as having two parallel arms, separated and projecting in opposite directions from a certain point, and connected at their adjacent ends by a bar which is at right angles to both arms. On each side of the connecting-bar is a recessed space. One of the recesses—the outer—is fitted to receive one of the outer packing-rings. The reverse side of the interior rings presents a surface against which the steam within the piston-head presses when in operation. These two interior packing-rings are so placed side by side between the adjacent or inner faces of the follower and the piston-head that their two outer parallel surfaces will be in contact respectively with the follower and the piston-head, and their two inner parallel surfaces will be in contact with each other. At the same time the outer packing-ring C will be recessed between the outer arm of the packing-ring D and the follower, and the packing-ring C' between the outer arm of the packing-ring D' and the piston-head. E denotes in each case an automatic valve located within the piston-head. It is represented on a larger scale and in detail in Figs. 4 and 5. Each consists of a valve-chamber, *a*, which is screwed into an aperture in the piston-head. It is provided with two eduction-ports, *b*, entering the valve-chamber at opposite sides. A plunger or valve, *c*, of two diameters, is fitted to the interior of the valve-chamber, and, when well advanced toward the inlet *d*, it guards the ports *b*. On the inner end of the valve-chamber is a screw-cap, *e*, which is provided with an end port, *f*. Between the screw-cap and the head of the valve-plunger *c* there is sufficient space for the latter to move longitudinally for uncovering the ports *b*. A spring-valve will as well perform the required service in this connection. F in each case denotes a holding-spring, by which the inner rings are held to their position, and they, in turn, sustain the outer packing-rings.

The operation of my improved packing and valve is as follows: If a piston-head complete, of the character described, be combined with a cylinder and in actual use, it will be readily understood that, before steam is introduced into the cylinder, the packing will be held in general position by the springs F. When the

steam is admitted it forces its way through the valve E at inlet *d*, drives back the plunger, uncovers the ports *b*, and fills the space within the piston. It acts upon the interior packing-rings, and forces them and the exterior rings outward radially against the interior of the cylinder, and, at the same time, it forces the inner ring D against the side of the follower and the ring D' against the side of the piston-head, and thus, by its general pressure, induces a steam-tight joint between the packing and the cylinder in one direction and between the packing and the piston-head and follower in two opposite directions. The valves E remain open until the change of stroke. As soon as steam ceases to enter at *d* the pressure of the steam within the piston, entering the end port *f* in the screw-cape, acts upon the valve-plunger *c* and closes the ports *b*, preventing any further escape of steam from within the piston. By this means the packing will be held at a practically-uniform degree of pressure against the bearing-surfaces.

I am aware that it is not new to employ steam within a piston-head for the purpose of holding metallic packing to the bearing-surfaces, and that valves have heretofore been employed

with a view to maintaining within the piston, at all times, a practically-uniform degree of pressure. I am not aware, however, that before my invention a metallic packing was ever so constructed that the steam, by direct contact therewith, would not only force it against the bearing-surfaces, but also against the co-incident faces of the piston-head and follower.

I therefore claim as my invention—

1. The packing-rings D and D', in combination with a piston-head and follower, constructed and arranged substantially as described, in order that the direct pressure of the steam within the piston will not only cause the rings to move out radially and pack with the cylinder, but also press at right angles to the radial line and pack with the piston-head and follower.

2. The combination of the outer packing-rings C and C', the inner packing-rings D and D', and the piston A B, substantially as and for the purposes specified.

CHARLES S. BARRY.

Witnesses:

CHARLES SELDEN,
JOHN C. PURKES.