

O.P. & H.D. Dunbar,

Steam Balanced Valve.

N^o 84,175.

Patented Nov. 17, 1868.

Fig. 1

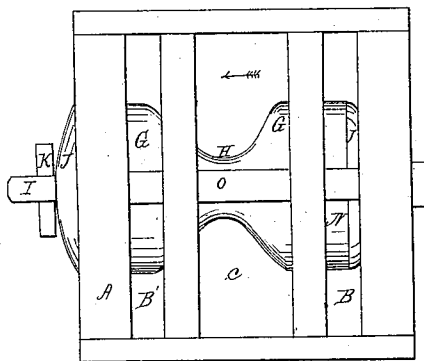


Fig. 2

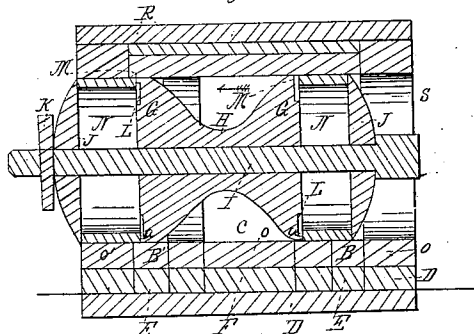


Fig. 3

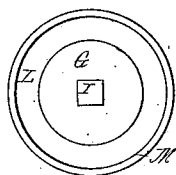
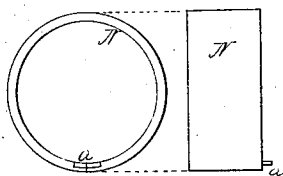


Fig. 4



Witnesses

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United States Patent Office.

O. P. DUNBAR, OF NORWALK, OHIO, AND H. D. DUNBAR, OF HARTLAND, VERMONT.

Letters Patent No. 84,175, dated November 17, 1868.

IMPROVEMENT IN STEAM-VALVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that we, O. P. DUNBAR, of Norwalk, in the county of Huron, and State of Ohio, and H. D. DUNBAR, of Hartland, in the county of Windsor, and State of Vermont, have invented a certain new and improved Steam-Valve ; and we do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of the valve and seat.

Figure 2 is a longitudinal section.

Figures 3 and 4 are detached sections.

Like letters of reference refer to like parts in the views.

The nature of this invention relates to a circular steam-valve, so constructed that the packing-rings of said valve are made steam-tight without the application of springs for that purpose.

In fig. 1, A represents the valve-seat. Said seat is placed in the steam-chest, and in such relation to the induction and exhaust-ports of the cylinder that the induction-ports B and exhaust-ports C are in exact relation thereto, as shown in fig. 2, in which D represents a section of the cylinder, and E the induction-ports, and F the exhaust, with which the ports B C are seen to agree in open relation.

The valve or valves referred to is a piston-valve, and consists of two heads, G, an end view of which is shown in fig. 3.

These valves are connected to each other by a neck, H, and through which passes a bolt, I, whereby the followers J are each respectively secured to the head by means of a key or nut, K.

It will be observed that on the end of each head is constructed an annular chamber, L, whereby is formed a flange or rim, M, the purpose of which will hereafter be shown.

N is the ring or packing, which, as will be seen, consists of one entire piece, placed between the head and follower, as shown in the drawing, and which, together with the heads, is constructed as follows :

The ends of the head, being properly faced and chamfered, as above described, the ring is fitted to them by carefully turning and facing the edges, thereby reducing the ring to the proper width.

On turning the inner edge of the ring, a rabbet is cut down from the outer edge and side, leaving a projecting flange proceeding out from the inner side of the ring.

The ring is now sawn through, and then placed on the head, with the flange-spring on the inside of the rim M. The followers J are now adjusted, and the whole bolted together by the bolt I, above referred to, which is now put into a lathe, and turned and fitted to the valve-seat, as shown in fig. 1. This being done, the ring is removed, and the flange is all cut away, with the exception of a narrow section, a, fig. 4, which is left projecting outward as a nib, and through which the ring is cut.

On placing the valve in the seat, care is taken to so adjust it that the joint or cut in the rings shall lie upon the bridge O, so that the openings thereby made, by the expansion of the rings, shall be covered by the bridge, and thereby prevent steam from passing in back of the ring through said cut, which it would do were it not thus protected.

It will be obvious that, as a section of the nib is left attached to each end of the ring, the ends of the ring cannot be pushed out beyond the edge of the head and follower.

The face of the ring, near the joint, will be flush with the follower and heads, three of which, resting and sliding upon the bridge, must, of necessity, prevent any steam from getting in back of the packing, or passing, through the cut along the bridge, to the opposite side of the head, into the exhaust-port C.

By this means, the joint or cut in the packing is made perfectly steam-tight, without any inside arrangement of supplementary rings or linings, supported and expanded by screw and springs, as ordinarily practised in this class of valves, the bridge being all-sufficient to guard against the admission of steam to the back of the packing, and the head and follower against its passage through from the induction-port to the exhaust.

The operation of this valve is as follows :

As above said, it is placed in the steam-chest, upon the ports of the cylinder. A cover, R, is placed over it, whereby the valve is relieved from the direct pressure of the steam from above. Steam, on being admitted into the chest, finds its way into the cylinder, through the valve-seat at S, by driving the valve in the direction of the arrow. The port B, being now uncovered by the valve, gives free admission to the steam to the cylinder, driving the piston therein to the opposite end. Now, on the reverse action of the valve, steam is admitted to the opposite end of the cylinder, through the port B', which impels the piston again to the opposite end, the exhaust steam escaping around the neck of the valve, through the port C, to the outside, and so on alternately, thus taking steam through the ports B B', and exhausting around the neck of the valve.

We are aware that piston steam-valves have been and still are in use, and that said valves are placed in the steam-chest, over the ports of the cylinder, in the manner as above described ; but this we do not claim.

What we do claim as our improvement, and desire to secure by Letters Patent, is—

1. The herein-described steam-valve, consisting of the heads G, flange M, ring N, and nib a, when constructed substantially as set forth.

2. The bridge O, as arranged in relation to the valve, for the purpose specified.

H. D. DUNBAR.
O. P. DUNBAR.

Witnesses :

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RALPH LABAREE.