I. G. Ives,

Steam Balanced Valve.

No. 48,070. Patented June 6, 1865.

Fig. 2.

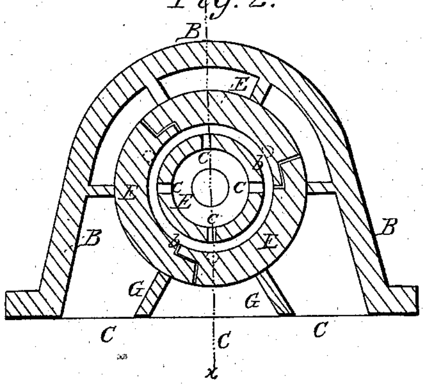


Fig. 1.

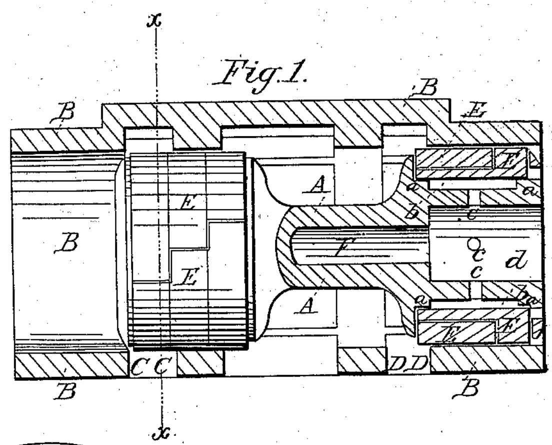
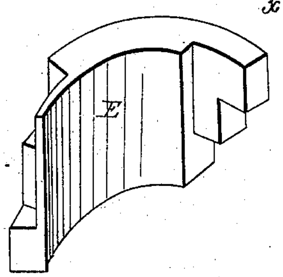


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN G. IVES, OF SPRINGFIELD, ILLINOIS.

IMPROVEMENT IN SLIDE-VALVES.

Specification forming part of Letters Patent No. **48,070**, dated June 6, 1865.

To all whom it may concern:

Be it known that I, JOHN G. IVES, of Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Improvement in Slide-Valves for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The present invention relates to certain new and useful improvements in the construction of slide-valves for steam-engines, which consist in a peculiar manner of forming the valves in rings or sections, which rings from their inside are acted upon by the expansive force of steam admitted to the same, and thus always made to form a steam-tight joint with the cage or chamber in which the valves play.

In the accompanying plate of drawings my improvements are represented.

Figure 1 is a central longitudinal vertical section, showing a slide-valve in part section; Fig. 2, a transverse vertical section in plane of line *x x*, Fig. 1; Fig. 3, a detail view, showing one section of packing-rings to valves.

Similar letters of reference indicate corresponding parts.

A A in the accompanying drawings represent a piston slide-valve, placed within a proper-shaped cage or cylinder, B; C C and D D, steam and exhaust ports, which are to be placed in opposition to the same ports of the main cylinder of the engine. Each end of the slide-valve A is formed in distinct and separate sections or rings, E E E, of the same external diameter as the internal diameter of the cage B, but free to play back and forth within the same. These rings are formed and jointed as represented in the drawings, and may consist of any desired number, they resting at each end upon shoulders *a a* of the valves. Within the rings, and extending entirely around the same, is a chamber, *b b*, to which steam is admitted from the steam-chest through small apertures *c c c*, opening into the space *d d* in each end of the slide-valve A A.

F is a socket extending entirely through the axis of the slide-valve, in which is fastened the ordinary valve-stem.

From the above description it is evident that by forming the slide-valve in jointed rings or sections, and admitting steam to the interior of the same, as specified, the rings are continually operated upon by the expansive power of the steam, thereby necessarily always conforming to the interior periphery of the valve-cage, and making a perfect steam-tight packing to the valve in its play back and forth within the cage as the engine is operated. Across the steam and exhaust ports C C and D D, before referred to, and in the same direction with the play of the valve, I have placed supporting bars or bridges G G, which may consist of any desired number, and have their inner sides or edges flush with the interior surface of the cage.

By thus bridging the ports which serve as supports to the valve in its passage over the same I entirely prevent the abutting of the rings against their edges, and thereby am enabled to use slide-valves with expansible wings or sections, the advantages of which are evident to all conversant with steam-engines.

I claim as new and desire to secure by Letters Patent—

The combination of the sections or rings E E, composing the valve, the chamber or space *b*, and the apertures *c*, for admitting steam to the said space *b* from the space *d*, the whole being constructed and arranged to operate in the manner and for the object specified.

JOHN G. IVES.

Witnesses:

T. M. AVERILL,

D. CROUCH.