W. A. COGSWELL.

Improvement in Governor-Valves for Steam-Engines.

No. 130,481. Patented Aug. 13, 1872.

Fig. 1.

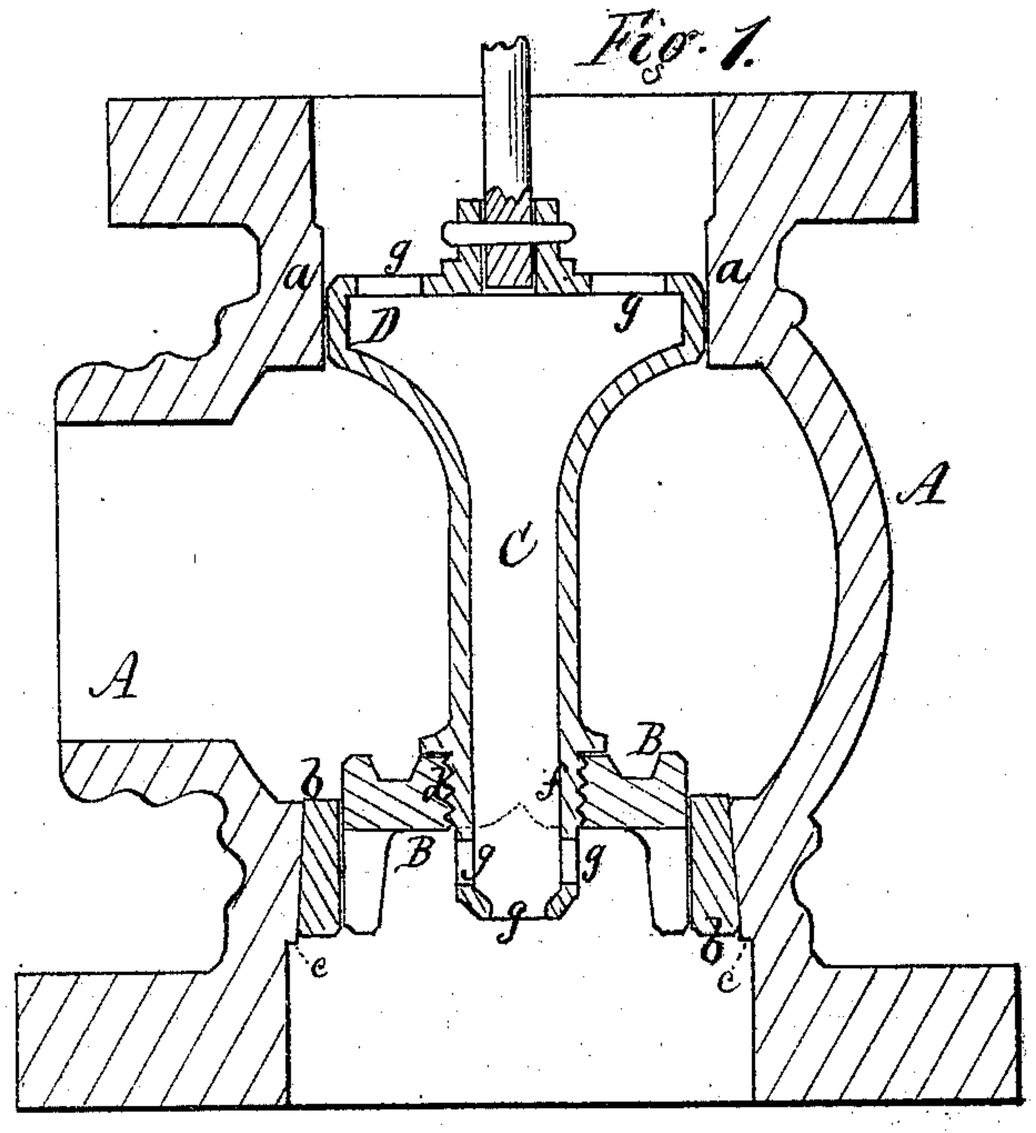


Fig. 6

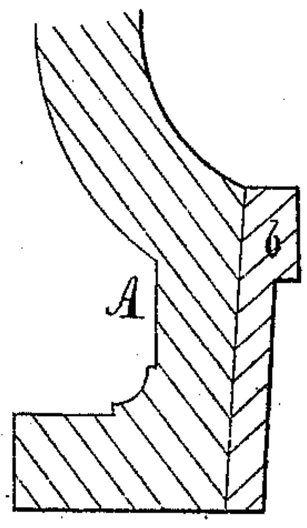


Fig. 5

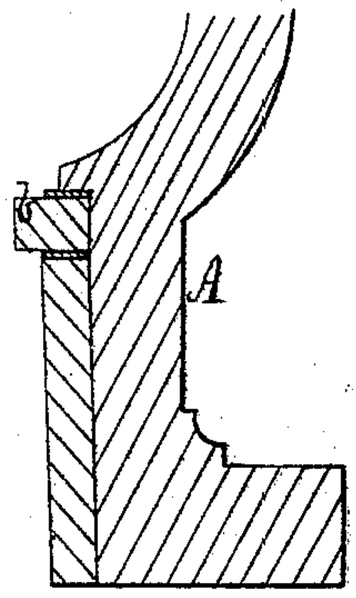


Fig. 2.

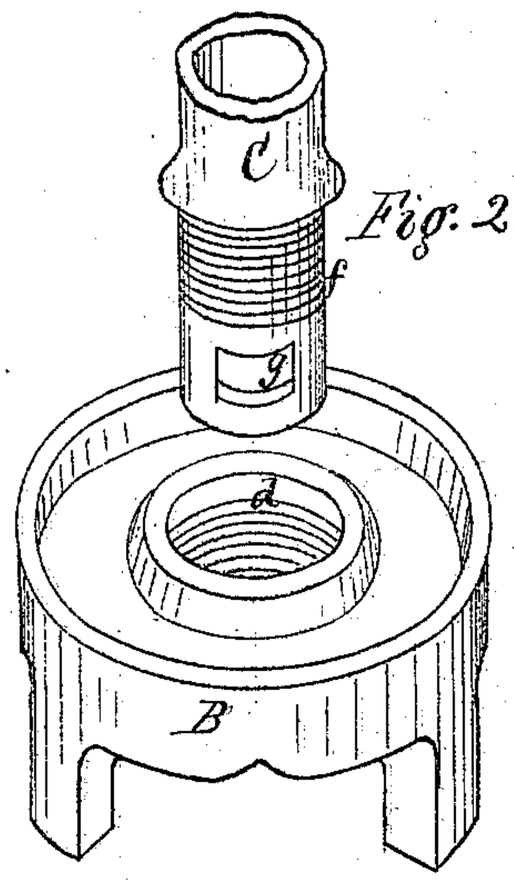


Fig. 3.

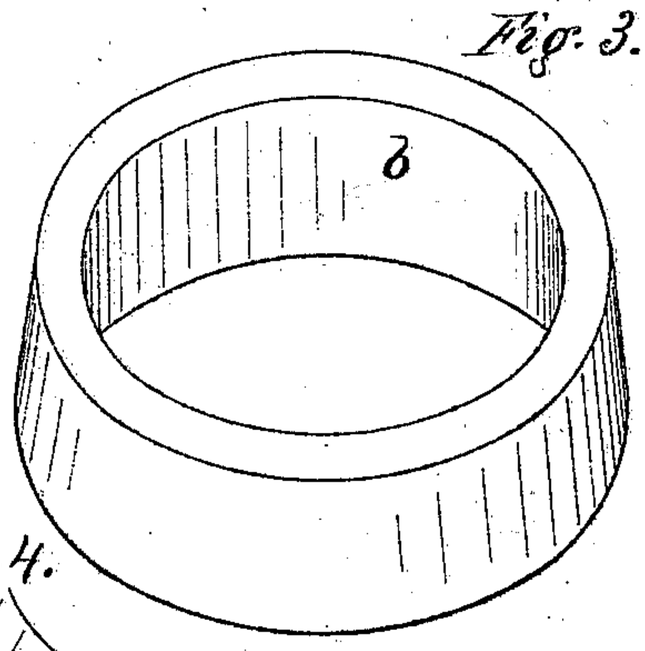
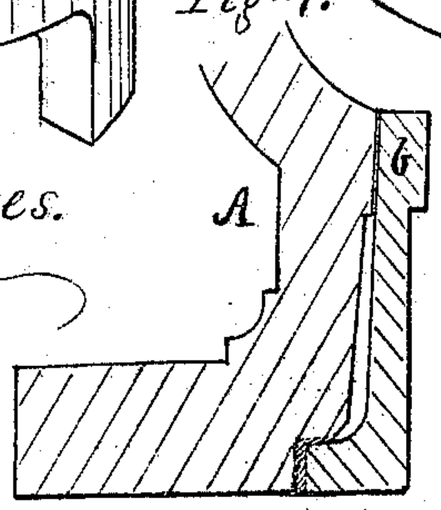


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM A. COGSWELL, OF ROCHESTER, NEW YORK, ASSIGNOR TO JUNIUS JUDSON, OF SAME PLACE.

IMPROVEMENT IN GOVERNOR-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **130,481**, dated August 13, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, WILLIAM A. COGSWELL, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Governor-Valves for Steam-Engines, of which the following is a specification:

Nature of the Invention.

My invention consists in applying a hardened seat of tapering form in the casing and the employment of a hardened removable piston-head; also in the formation of a shoulder in the casing for calking down upon the seat to make it steam-tight; and, furthermore, in the construction of the piston-body, all as hereinafter described.

General Description.

In the drawing, Figure 1 is a section of a governor-valve with my improvement applied thereto. Fig. 2 is a detached view of the piston-head and the stem to which it screws. Fig. 3 is a detached view of the hardened ring forming the valve-seat. Figs. 4, 5, and 6, detail views.

A represents the casing or cylinder, which is of the usual form. The upper seat *a* is cast solid with the casing. The lower seat *b* is a separate ring. This ring is first formed of refined metal and then hardened, of tapering or conical form, and fits the correspondingly-shaped socket or bed in the casing, as clearly shown in Fig. 1. It is driven or pressed tightly into this socket, and the shoulder or offset *c*, which is formed in the casing, is then punched tightly around the joint to calk it and make it steam-tight. Before being hardened and inserted in place the ring is turned perfectly true outside and inside, so that it fits in place very accurately, and the interior surface forms a perfect bearing for the piston-head, which fits and plays therein. The great advantage of this arrangement is that a perfectly-hardened seat is produced which will resist steam-cut almost indefinitely. Heretofore the seats have been cast solid with the casings, or else separate iron rings have been applied on the core and cast into the casing. The objection to the former is that good seats cannot be produced, as they are filled with blow-holes, and any imperfection requires the throwing away of the whole casing. There is also great difficulty from undue hardness or softness. If made sufficiently hard to insure good seats, then the casings (which have the same texture) cannot be turned and finished with facility. If soft enough to allow easy finishing of the casings, then the seats are worthless against steam-cut. The use of separate rings cast in partially avoids the above-named difficulties; but in the act of casting the heat of the molten iron around them anneals them more or less, and many are so soft that they cannot be used. In such case the whole casing has to be discarded and remelted. By my present improvement I avoid all these difficulties. By hardening I can make the rings impervious to steam-cut, and as they are applied after the casing has been cast, this hardness is never impaired. The seats thus formed are never affected by steam, but will stand wear as long as the casing itself. If at any time any repairs are required the seat can be driven out and a new one put in its place. Much difficulty can thus be saved to users, as they can replace the seats themselves, whereas now they have to ship their governors to the manufacturer for such repairs, leaving their engines idle during the time, and frequently losing the time of their employés. The piston-head B I also make separate, and form it with a female screw, *d*, which fits on a screw-stem, *f*, of the piston-body C. This head is also hardened, so that both surfaces which come in contact will resist steam-cut. Heretofore the head has been cast solid with the body of the piston. If it becomes worn or broken it must then be thrown away, with the entire body. In my invention the piston-head can be replaced at any time by simply unscrewing, which is a great advantage. In case of acid in the water, it is desirable to use steam-metal seats and pistons. In such cases the seat and the piston-head may be made of such metal, in the manner I have before described. The removable head of the piston is of special service in such cases, as, when it is worn out, it can be replaced without discarding the body of the piston. The piston is also much cheaper to make, as a smaller quantity of steam-metal

is used. The upper head D of the piston is formed solid with the body. This body is made hollow, as shown, to allow steam to pass above the piston to balance it. Ports or holes *g g* are made above and below for this purpose. If desired, the ring *b* might be extended down so that its bottom would come flush with the bottom of the cylinder and rest on top the steam-chest, as shown in Fig. 4, and be made tight by a copper or other packing pounded in at the joint, between the edges. Another form, as in Fig. 5, would be to insert the ring against an upper shoulder, with a packing on top and bottom, and secure it in place by a following-ring driven in behind it. Other equivalent forms might also be used.

Claims.

I do not claim, abstractly, inserting a loose seat in a casing, as I am aware that it is not new, having been screwed in; but

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

1. In the governor-valve herein described, the hardened ring *b*, when arranged and applied substantially as and for the purpose set forth.

2. The combination of the separate hardened piston-head B and piston-head C, when constructed and arranged substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

W. A. COGSWELL.

Witnesses:
R. F. OSGOOD,
ARCHIBALD BAINE.