J. K. Burke,

Casting Valve Chamber Seats.

No. 107,867. Patented Oct. 4. 1870.

Fig 1.

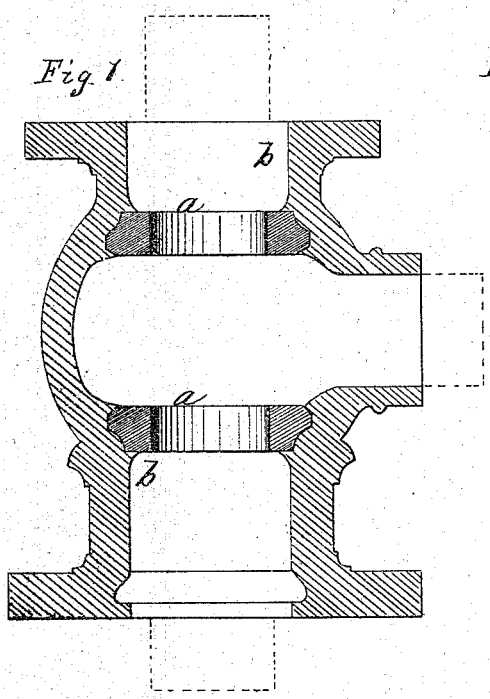


Fig 2.

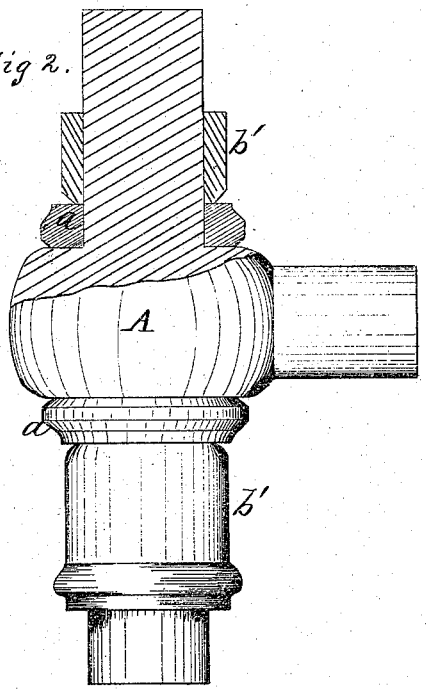
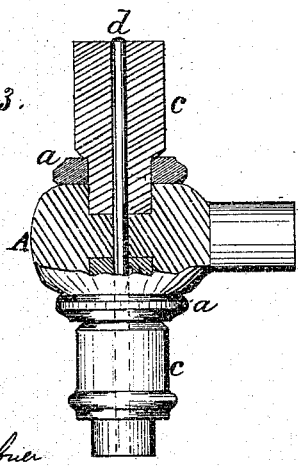


Fig 3.



Witnesses:

Gilman A. Scribner

D. L. Johnston

Inventor:

John K. Burke

By M. S. Longfellow & Co

Attys

United States Patent Office.

JOHN K. BURKE, OF ROCHESTER, NEW YORK.

Letters Patent No. 107,867, dated October 4, 1870.

IMPROVEMENT IN CASTING VALVE-CHAMBERS AND SEATS.

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

I, JOHN K. BURKE, of Rochester, in the county of Monroe and State of New York, have invented a certain "Improved Method of Casting Valve-Chambers and Seats," of which the following is a specification.

My invention relates to a peculiar method of introducing a previously-made valve-seat or seats into the shell of their chambers during the process of casting.

It is well known that in the use of steam and other valves where a stream of fluid or liquid, at a high pressure, is passing rapidly, the seats or bearings of the valves soon become grooved or "cut out" by such action, rendering them useless till repaired. This is particularly the case with steam-governors and throttle-valves, in which seats are formed upon internal portions of the shell, since it is difficult, and sometimes impossible to cast such shells so as to leave the seats of the requisite degree of hardness, and expensive, moreover, to introduce separate seats by any of the ordinary methods.

In the accompyaning drawing I have represented my invention as applied to the casting of a governor-globe or shell, but it is equally valuable in a large class of similar constructions.

Figure 1 is a vertical section of a governor-globe and valve-seats.

Figure 2 is a sectional elevation of the core.

Figure 3 shows a modification of the latter.

The rings or valve-seats *a* are previously prepared from metal of the requisite degree of hardness, bored out, or otherwise made of proper size, and placed upon the core A, fig. 2, so as to be supported in suitable positions in the mold during the process of casting.

Since, however, in nearly all valve-chambers, it is necessary to provide recesses, *b*, fig. 1, upon one or both sides of the seat, for the purpose of limiting the length of bearing of the valve, and, consequently, to make the core larger at those points, as shown at *b'*, fig. 2, it is obviously impracticable to place the rings upon a core of ordinary formation.

To obviate this difficulty, I make the core A in two or more sections, according to the number of valve-seats introduced, the portion *b'* forming the recesses *b*, being in the form of a hollow cylinder, and sliding over the portion of the core designed to receive it, as indicated in fig. 2. Thus the ring or seat *a*, the internal diameter of which corresponds to the external diameter of the core at that point may be placed upon the core in its proper position, the section *b'* pushed on behind it, and the whole laid in the mold. After casting, it is plain that the core can be removed in the usual manner, while the metallic ring remains in and forms that portion of the shell constituting the valve-seat.

An equivalent plan, by which the same object is accomplished, is shown in fig. 3, in which the entire end *c* of the core is made separately from the central portion, the parts being afterward put together, with the ring in the same position as before, and held in place by a rod, *d*, passing through the whole. This plan, however, is more expensive, and not so uniformly sure to produce good castings as the former.

The periphery of the seats *a* may be provided with grooves or ledges, for the purpose of obtaining a more secure attachment to the metal of the shell. In practice, no difficulty is found in the leakage of the fluid around the seats, since the metal soon becomes oxidized in the joint, and the latter thus perfectly closed.

By my invention I obtain the following advantages:

The expense of casting the shells and seats is but little more than by the old method, while the danger of losing castings by flaws is largely reduced; the seats may be made of metal of any degree of hardness, and bored out nearly to the requisite size before being introduced into the mold, thus giving the workman an opportunity to detect flaws, which, however, are far less liable to occur than when cast with the shell; the process of boring, in the manner just described, is less expensive than by the usual method.

What I claim as my invention is—

The method of casting the shells of valve-chambers by means of a core, upon which is placed an annular metallic seat or seats, to be left in such shells, for the purposes set forth.

JOHN K. BURKE.

Witnesses:
D. L. JOHNSTON,
F. H. CLEMENT.