

(No Model.)

F. H. RICHARDS.
VALVE GATE.

No. 476,313.

Patented June 7, 1892.

Fig.1

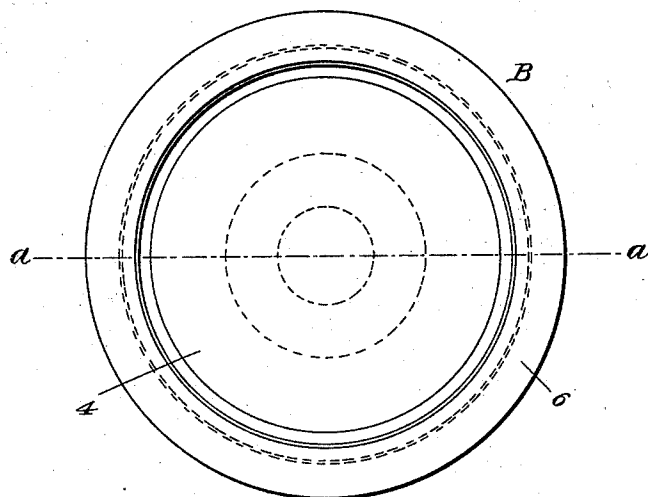


Fig.2

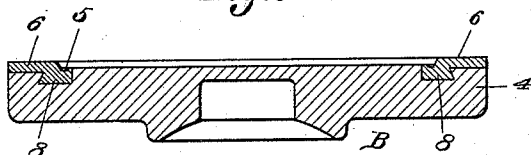


Fig.3

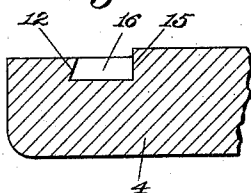


Fig.4

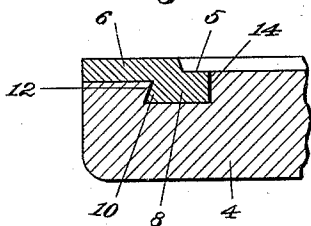


Fig.5

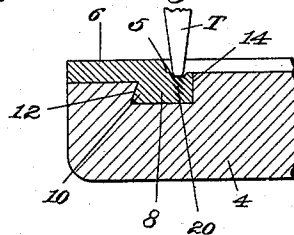
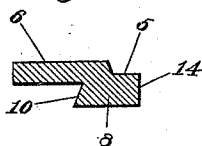


Fig.6



Witnesses.

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VALVE-GATE.

SPECIFICATION forming part of Letters Patent No. 476,313, dated June 7, 1892.

Application filed November 23, 1891. Serial No. 412,863. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Valve-Gates, of which the following is a specification.

This invention relates to valve-gates for that class of valves used for water and steam, the object being to furnish an improved iron valve-gate having a non-corrosive seat ring or face firmly fixed in place.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a valve-gate made according to my present invention. Fig. 2 is a vertical section in line *aa* of Fig. 1. Fig. 3 is an enlarged sectional view similar to a portion of Fig. 2, showing a partial section of the valve-gate disk or plate with the seat-ring removed. Fig. 4 is a view similar to Fig. 3, showing the seat-ring in place before the calking operation. Fig. 5 is a similar view illustrative of the calking operation. Fig. 6 is a section of the seat-ring drawn on the scale of Figs. 3, 4, and 5.

Similar characters designate like parts in all the figures.

This invention is in the nature of an improvement upon the valve-gate described and claimed in Letters Patent No. 467,955, granted to me February 2, 1892.

The valve-gate (designated in a general way by B) comprises the disk or plate 4 and the seat-ring 6, fixed to said plate. The plate 4 is usually made of cast-iron, while it is considered necessary to make the seat-ring of brass or like non-corrosive composition. Said ring consists, according to my present improvements, of the seat-ring proper (designated by 6) and the downwardly-projecting lock-rim 8, whose projecting inner edge forms the calking-ring 14 and whose beveled or inclined outer edge 10 locks the seat-ring in place by engaging the undercut lip or edge 12 of the plate 4. The upper side 5 of the calking-ring 14 should be below the upper surface of the seat-ring, so that the calking operation will not tend so much to distort that face. The lock-rim (including the calking-edge 14) is widest on its lowerside, so as to

fit into the plate 4 after the manner of dovetailing, substantially as shown. The beveled lip 10 of the lock-rim, being on the outer edge thereof, as set forth, holds down the seat-ring on a line directly underneath the face thereof, thereby holding it in place in the most direct and effective manner and preventing the lifting of the outer edge of the seat-ring by the calking of the inner edge thereof.

The method of providing the valve-gate with the seat-ring is to first cast the seat-ring in its finished form of suitable composition. This ring is then laid in the valve-gate mold, with the lock-rim uppermost. Next the plate is cast over the lock-rim and the two parts removed from the mold locked together, as indicated in Fig. 2. At this time the seat-ring, for various reasons, including the well-known difference in shrinkage of the different metals, is imperfectly joined to said plate, as indicated by the slight spaces shown in Fig. 4 at the edges of the lock-rim. To overcome this defect and make the joint perfectly firm and also water-tight, the calking-tool indicated at T, Fig. 5, is set and driven against the calking-face 5 of the calking-ring 14, thereby expanding said calking-edge inwardly throughout the length thereof, and thereby displacing and condensing the metal, as illustrated by the darker shading at 20, Fig. 5, to closely fill the groove 16, Fig. 3, and thereby rigidly fix the seat-ring to the plate 4.

Since the seat-ring stands above the plane of the calking-ring, it is not distorted by the calking operation, the effect of which, as indicated by the darker shading at 20, Fig. 5, is thus confined, substantially, to the space between the inner vertical surface at 15 and the outer inclined or undercut surface 12 (see Fig. 3) of the lock-rim groove 16. This operation forces the lock-rim metal down against the bottom of the groove 16 and spreads it sidewise to firmly fill said groove, thereby making a close water-tight joint between the plate and the seat-ring.

The improved valve-gate seat-ring herein described is adapted to be made and sold as a separate article of manufacture, since these rings are usually of brass and may be manufactured by the brass-foundryman and by him furnished to the manufacturers of iron valves.

Having thus described my invention, I claim—

1. The improved valve-gate herein described, consisting of the combination, with
5 the plate having a lock-rim groove undercut on the outer side thereof, of the seat-ring having a downwardly-projecting lock-rim fitting into said groove, which lock-rim has the inwardly-projecting calking-ring adapted to be
10 calked independently of the seat-ring face and is beveled or inclined on one side thereof to engage the undercut side of said groove, substantially as described.

2. The improved valve-gate seat-ring herein described, consisting of the disk-shaped ring
15 or seat having a downwardly-projecting lock-rim which projects on the inner side thereof below the plane of the seat-ring face to form the calking-ring and has the projecting edge
20 directly underneath the seat-ring face, substantially as described.

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