

R. T. CRANE.
STEAM-VALVE.

No. 177,925.

Patented May 30, 1876.

Fig. 1.

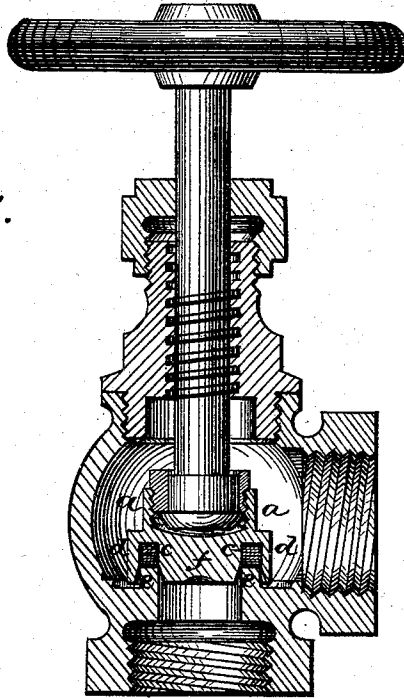


Fig. 2.

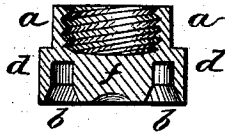


Fig. 3.



WITNESSES:

E. A. West
Chas. Bond

INVENTOR:

Richard T. Crane

UNITED STATES PATENT OFFICE.

RICHARD T. CRANE, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN STEAM-VALVES.

Specification forming part of Letters Patent No. **177,925**, dated May 30, 1876; application filed November 4, 1875.

To all whom it may concern:

Be it known that I, RICHARD T. CRANE, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Steam-Valves, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section. Figs. 2 and 3 details, showing the valve and valve-seat in section and separated one from the other.

The objects of this invention are to so construct the valve that the packing to be used therewith shall be suitably supported, and so that the escape of steam shall not cut away and injure the face of the valve-seat as rapidly as with the present construction.

I accomplish these objects by recessing the face of the valve, so that a suitable packing can be inserted, leaving a solid outer wall to support the same, as well as an inner wall for the same purpose, by extending these walls a little below the face of the packing, and, preferably, by also beveling that portion of these walls which extends below the packing.

The several parts of the device shown in the drawings, which are not described herein, are constructed in the usual manner.

In the drawings, *a* represents the valve. Its face is provided with a deep recess, *b*, as shown in Figs. 1 and 2, to receive a suitable packing, *c*, which is shown in Fig. 1 and omitted in Fig. 2. This construction leaves a solid wall, *d*, upon the outside of the packing, and also a solid wall upon the inside thereof, which packing is annular. These walls extend below the face of the packing, and, as shown, that portion below this face of the packing is beveled. *e* is the valve-seat; it is raised so that it can enter the recess in the valve, and the projecting walls of the recess will not interfere with the operation of the valve. I use a packing made of hemp or other fibrous material, and it will be always held in place by the walls of the recess. It can be easily renewed whenever necessary. The central part *f* of the valve might be cut away to the depth of the recess, and a washer or other piece of metal of proper size and shape could be se-

cured in place instead thereof, but no advantage would be gained.

In use the packing is firmly supported and confined in the recess, and it cannot spread out or wear away at the edges, and if the packing should wear away somewhat by use it will still fit tightly upon the seat, as the walls of the recess pass over the seat, and do not come in contact therewith. When the valve is opened a little way, which in use is usual, the space for the passage of steam over the edges of the seat will be less than the space between the seat and the packing, so that the pressure under which the steam passes over the face of the valve-seat will be less than that under which it passes at the edges; hence, the cutting and wear upon the face will be less than if the full pressure were exerted while passing over the face of the seat.

The result last mentioned can also be secured by making the inside of the walls of the recess straight instead of beveling, but extending a little below the face of the packing and passing over the seat, leaving only a small space between the walls of the recess and the walls of the seat, so that the space between the face of the seat and that of the valve-packing, will, when the valve is opened, be greater than that at the edges of the seat.

It is evident that this result can be accomplished by making one wall only of the recess extend below the face of the packing.

What I claim as new, and desire to secure by Letters Patent, is as follows:

The valve *a*, having recess *b*, and having the lower portions of the walls beveled and extended downward, as shown, in combination with a raised valve-seat, so fitting the lower part of the walls and the packing, that the space for the passage of steam over the edges of the seat will be less than the space between the seat and the packing, substantially as and for the purpose set forth.

RICHARD T. CRANE.

Witnesses:

E. A. WEST,
O. W. BOND.