(No Model.)

A. WEBER.

VALVE.

No. 413,216. Patented Oct. 22, 1889.

Fig. 1

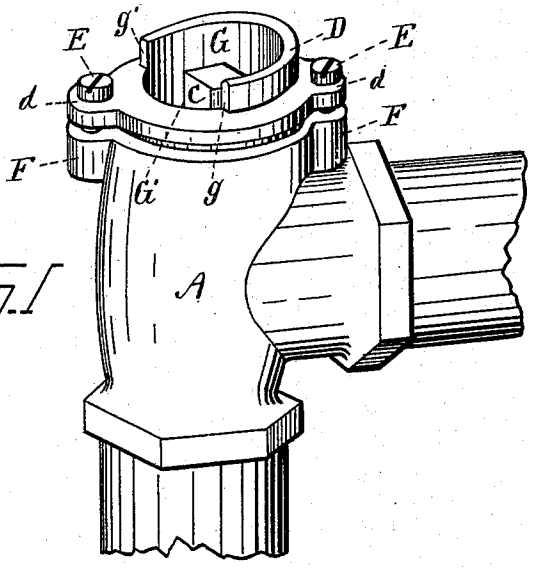


Fig. 3

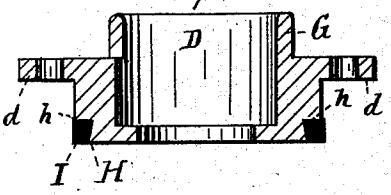
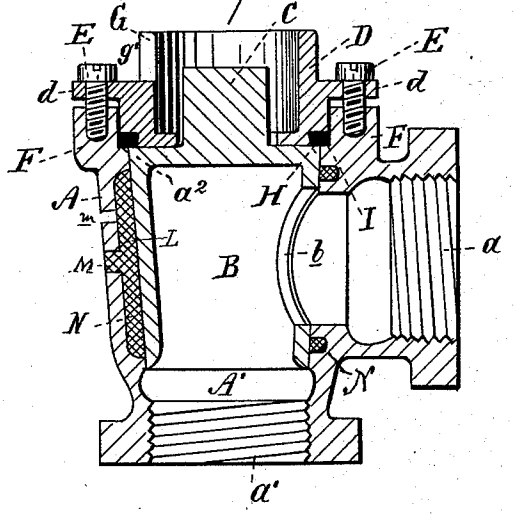


Fig. 2



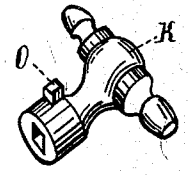


Fig. 4

Witnesses
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UNITED STATES PATENT OFFICE.

ADOLPH WEBER, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO WILLIAM L. E. MAHON, OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 413,216, dated October 22, 1889.

Application filed April 24, 1889. Serial No. 308,396. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH WEBER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Valves; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of steam or water valves in which the valve is opened and closed with a key, and in which the steam or water is prevented from leaking from the valve when either opened or closed.

The object of my invention is to so construct the valve as to require a key or wrench to open or close it, and to limit the motion of the key or wrench to opening or closing the valve, and also to provide a valve-seat of soft metal to receive the valve and make a true valve-seat without grinding in the valve; and it consists in extending the cap of the valve in a tubular form to such a height above the nut on the valve-stem by which the valve is turned that only a circular key or wrench can be inserted to turn the valve, and in the means to arrest the motion of the key and with it that of the valve when fully opened or entirely closed, and in seating the valve in a soft-metal valve-seat.

Figure 1 is a perspective view of my valve. Fig. 2 is a vertical sectional view. Fig. 3 is an enlarged sectional view of the cap of the valve. Fig. 4 is a perspective view of the key of the valve.

In the drawings, A is the valve-case having the induction-port *a* and the eduction-port *a'*, leading into the orifice A'. This orifice A' is counterbored at its upper portion above the upper end of the valve to form the shoulder a^2. The ports are screw-threaded for the reception of the water or steam pipes.

B is a conical valve seated in the orifice A' in the valve-case and provided with the water-way *b*. The ports may be on opposite sides of the valve-case, and the water-way through the valve changed to suit the ports, thus forming a straight water-way through the valve.

C is a square or rectilinear valve-stem projecting from the top of the valve, with which the key or wrench engages to operate the valve.

D is a cap or gland inserted in the upper end of the valve-case, cored out for the passage of the valve-stem, and provided with the wings *d d*, which are perforated for the insertion of the screws E E. Two projections F F are thrown out on the upper side of the valve-case, in which perforations are made, which are interiorly screw-threaded to engage with the screws E E. This gland or cap may be secured to the valve-case by any other convenient means, if desired.

G is an annular flange on the upper face of the gland D of sufficient height to require a circular key or wrench to reach the valve-stem C. This annular flange is cut away for about one-third of its circumference, forming a recess G' with the shoulders *g g'*. An annular recess H is cut in the lower face and on the outer edge of the gland for the reception of the elastic packing I. This recess forms a shoulder *h* on the lower face of the gland, which is cut away upward and inward in order to seat the packing more securely, and retains it on the gland and removes it from the valve-case and the valve whenever the cap is taken off from the valve. This packing rests its outer edge on the shoulder a^2 in the valve-case and the inner edge on the valve. By thus resting on the shoulder on the valve-case and on the valve the packing closes the outlet of any opening there may be between the valve and the valve-seat and prevents all leakage of either steam or water.

K is a circular key or wrench having a proper handle. A rectangular recess is cored out in the under face of the key, which engages with the square head of the valve-stem.

O is a stud projecting from one side of the key, which falls in the recess G' on the cap of the valve when the key is inserted to open or close the valve. This stud O as the key is turned and the valve opened comes in contact with the shoulder *g* and arrests the motion of the key and the valve and leaves the valve open. By reversing the motion of the key to close the valve the stud comes in contact with the shoulder *g'*, and the further move-

ment of the key and valve in that direction is arrested and the valve is left closed. This valve is opened to its full extent or closed by a quarter-turn of the key or wrench, while the ordinary radiator-valve, actuated by a screw on the valve-stem, requires several turns of the head to open the valve to its full extent. These ordinary valves require to be tightly packed around the valve-stem to prevent leakage, and in many cases the packing sticks to the valve-stem and the cap. In such cases the cap is often loosened and permits the escape of both water and steam, often to the great damage of the user. This leakage is totally avoided by my method of packing and by avoiding the use of a tightly-packed cap and valve-stem.

To avoid leakage and to insure a perfect valve-seat for the valve, a recess L is cored out entirely around the interior of the valve-case, leaving an annular flange *b* around the induction-port *a*. M and *m* are orifices through the valve-case and opening into the recess L. In the drawings these orifices are shown opposite to the port *a;* but they may be made at any convenient point. For the purpose of forming a true and perfect valve-seat without the tedious and costly process of grinding the valve in its seat, the valve is inserted in the valve-case and so arranged that the entrance into the water-way will open into the port *a*. A soft metal in a fluid state is poured into the orifice M until the recess L and the orifice M are completely filled. When the soft metal is cool, it forms the valve-seat N, which is perfectly true, and the leakage is proportionately diminished.

What I claim as my invention is—

1. The combination of the valve-case A, containing the valve B, with the valve B, seated in the valve-case, the rectangular valve-stem C, turning the valve B, the cap D, retaining the valve in the valve-case and perforated to allow the passage of the valve-stem, the annular flange G, projecting from the upper face of the cap D as high as the valve-stem, the recess G′, cut in the annular flange to permit the insertion of the key H, the shoulders *g g′* on the flange G, limiting the movement of the key H, the circular key H, having the rectangular aperture to engage with the rectangular valve-stem, and the stud O on the key, limiting its movement by contact with the shoulders *g g′*, all substantially as described.

2. The combination of the valve-case A, having the shoulders a^2, with the valve B, seated in the valve-case, the cap D, retaining the valve in its seat and carrying the packing I, the recess H, cut out on the under side of the cap to receive the packing, the shoulder *h*, formed by the recess H, holding the packing on the cap, and the packing I, held on the cap by the shoulder *h*, all substantially as set forth.

3. The combination of the valve-case A, containing the valve B, with the valve B, the recess L, cored out of the valve-case to receive the soft-metal valve-seat, the annular flange around the port *a* to prevent the outflow of the fluid soft metal, the orifice M, through which the fluid soft metal is poured to form the valve-seat, and the soft-metal valve-seat, all substantially as set forth.

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Witnesses:
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J. L. BOND.