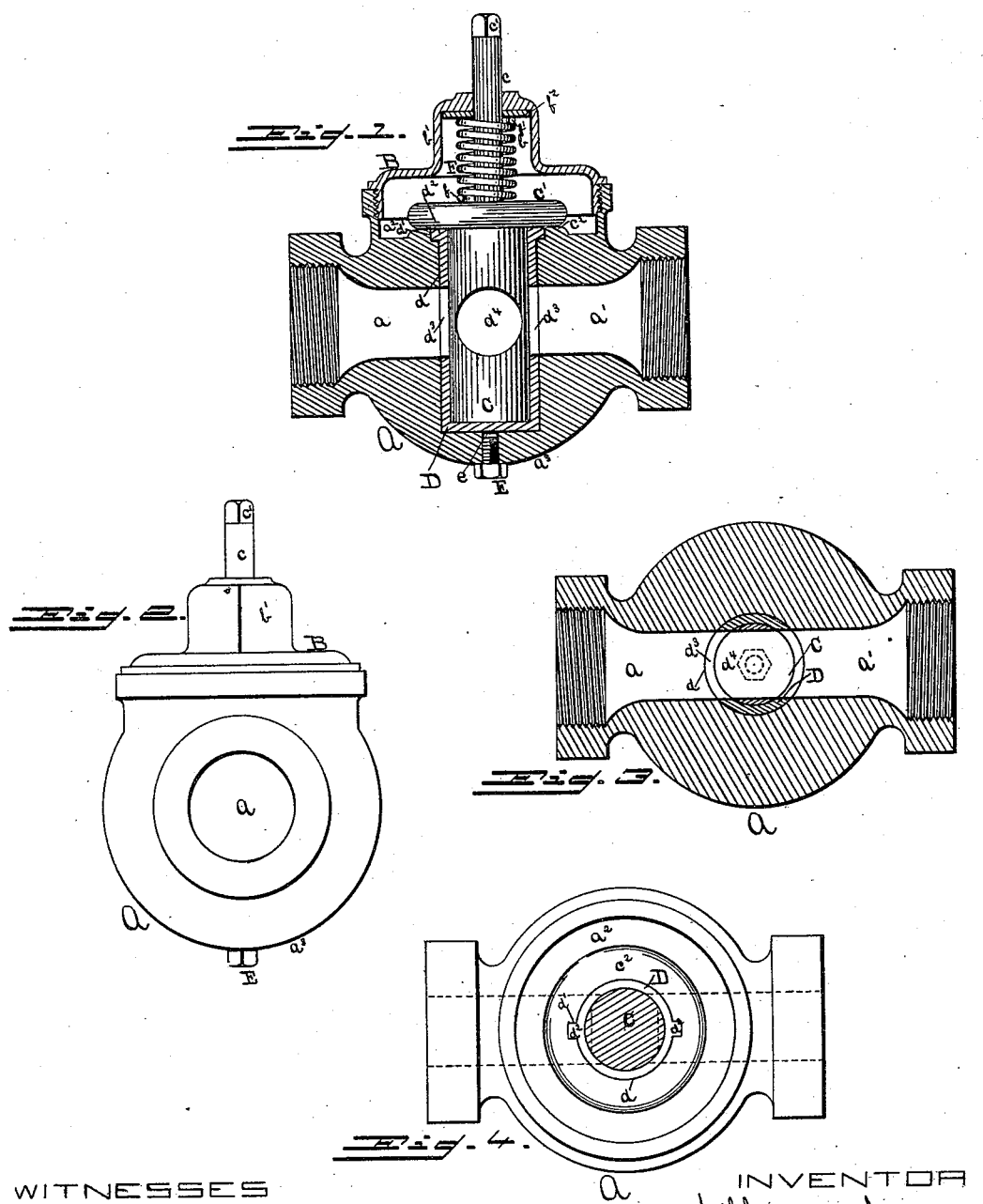


(No Model.)

W. NUGENT.
VALVE.

No. 419,471.

Patented Jan. 14, 1890.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM NUGENT, OF PHILADELPHIA, PENNSYLVANIA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 419,471, dated January 14, 1890.

Application filed March 2, 1889. Serial No. 301,778. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM NUGENT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Valves; and I do hereby declare that the following is a full, clear, and exact description of the invention.

10 This invention has relation to steam or water valves of the straight-way type, and has for its object to simplify and cheapen the construction and increase the efficiency of said valves.

15 My invention consists in the provision of a construction whereby when the valve-body or its seat becomes worn out or incapacitated the same can be readily removed and replaced by others without necessitating the disconnection of the valve-casing from the pipes to which it is secured, also necessitating but one-quarter of a full turn of the hand wheel or wrench in order to open or close the valve, and when said valve is open the steam or water will have a straight and unimpeded passage through the same; also, owing to the peculiar form of the complete valve, there is no packing of any character required to prevent leakage.

30 My invention further consists in the peculiar construction and combination of parts as hereinafter fully described and claimed.

Referring to the accompanying drawings, wherein Figure 1 is a vertical longitudinal sectional view of my improved valve; Fig. 2, an end view of the same; Fig. 3, a longitudinal transverse section through the center of the steam or water way, and Fig. 4 a plan view of the valve with its cap or bonnet removed and the valve-body in transverse section.

45 A represents the shell or valve-casing, having the threaded openings a a' for the reception of the inlet and outlet pipes, and is of globular form, as usual in valves of this character. Said shell is also formed at its upper part with an enlarged threaded opening a^2 for the reception of the cap or bonnet B, formed with a recess b , which is square in transverse section, so as to permit of the grasping of its outer walls b' by a wrench to

facilitate the screwing of the cap or bonnet B into its place in opening a^2 . The upper end of this recess is formed with a small opening b^2 for the passage of the stem c of the valve-body C, in order that the cap or bonnet may be passed down on said stem and allow the latter to project beyond the former when in place, and allow of grasping of the stem, when the valve is to be operated, by the usual hand wheel or wrench, stem c being formed with the squared end c' for this purpose.

It will be observed by reference to the drawings that the casting forming the valve-casing is solid throughout the greater portion thereof, with the exception of the openings a a' , which are formed in the casting operation. The upper threaded opening a^2 forms a recess, on the base of which is formed the valve-seat c^2 , which is slightly raised above said base. In the center of this raised portion is formed, by boring or otherwise, a deep socket d , which extends downwardly or transversely of the openings a a' to a point near the bottom a^3 of the globe of the casing and considerably below the lower plane of the inner diameter of said openings. This socket d is formed with small notches d' in its upper edge for the reception of corresponding lugs d^2 on the outer circumference of the upper end of the valve-body seat D, so that when said body-seat, which fits snugly in the socket d , is placed in its proper position, and when said lugs and sockets are in engagement the openings d^3 in said seat will register with the openings a a' . It will be observed that the upper edge d^5 of socket d is flush with the face of the valve-seat c^2 , and the two surfaces are ground off, so as to afford a flat and even bearing for the under surface of the flange or head C' of the valve-body C, which is also correspondingly ground or dressed off.

To facilitate the removal of the body-seat D from the socket d the lower end of the latter is formed with a threaded opening e , which is closed by means of a set-screw E and affords means of access to said body-seat from the outside, so that by inserting a suitable device therein and pressing the same against the base of said seat the same can be readily removed when occasion requires and another body-seat inserted in its place. Without this

opening it would be almost impossible to extract the body-seat from its socket, as said seat fits snugly in said socket.

As before suggested, the valve-body C is provided with a head C', which body is of a length equal to the depth of the socket d, so that when said body is in place the head C' will rest on the valve-seat c², and all the surfaces of said body will contact with the corresponding surfaces of the body-seat, and opening d¹ will be in a plane with openings d³. As will be noted, the stem c, which is cast integral with body C and head C', and which extends through the opening in the bonnet B, is encircled by a spiral spring F, which rests at its lower end f on the head C' and at its upper end f' bears against a washer f², of asbestos, leather, or other material, which receives the impact of the spring and lessens the friction thereof. Therefore, when the valve-body is placed in the socket and the bonnet in engagement with the threads in the opening a² the screwing inwardly of said bonnet will compress the spring F and produce a pressure on the head C'. Thus the said head is kept in constant contact with the valve-seat c² and leakage an impossibility.

With the above construction, the facility with which said valve can be manipulated is considerably greater than with ordinary valves, for the reason that the latter require a great many full turns in opening or closing the same, while the former requires but one-quarter of a full turn in either direction in the opening and closing operation; also, by the provision of the spiral spring the necessity for the use of packing is entirely avoided, owing to the fact that the valve-body fits snugly in its socket, and the head C' of said body perfectly fits on the valve-seat c², and said parts maintained in such position through the medium of said spring, as hereinbefore suggested; also, in case of their being any sediment collected on the blank surface of the valve-body, which is opposed to the openings a a' when the valve is closed, the same will be scraped off by the rotation of the said body, causing such sediment to come in contact with the edges of the openings d³ in the valve-body seat, and the valve-body thus secured against injury, while in valves as ordinarily constructed the sediment is crushed against the valve-seat and the accumulations thereof soon injure the said seat, and leakage is the result.

With the construction hereinbefore described, the valve-casing need never be discarded, while the removable portions may be changed as often as occasion may require.

What I claim as my invention is as follows:

1. In a steam or water valve, the combination of a cylindrical valve-body seated in a removable cylindrical shell secured in a corresponding socket in the valve-casing and having a flanged head flatly resting on the outer end of said shell and on an annular rim or flange on the edge of said socket, said head having a stem projecting through an opening in a bonnet or cap secured to said casing and encircled by a spiral spring intermediate said cap and head, said spring exerting a pressure on said head, keeping the same and said body in proper positions, substantially as shown and described.

2. In a steam or water valve, the combination of the valve-body C, seated in the shell D, secured in the socket d in the casing A, and having the flanged head C' resting on the end d⁵ of said shell and on the rim or flange c² on the edge of said socket, said head having the stem c, projecting through the opening b² in the bonnet B, screwed into the opening a² in said casing, said stem being encircled by the spring F, between said bonnet and head, as and for the purpose described.

3. In a steam or water valve, the combination of the casing A, having the inlet and outlet a a', opening e, closed by the screw E, threaded opening a², and socket d, with the rim or flange c² on its edge, with the notches d' therein, the shell D, secured in said socket, having the lugs d² in engagement with the notches d', and the openings d³ registering with openings a a', the valve-body C in said shell, having the head C', with the stem c, encircled by the spring F and washer f² and projecting through the opening b² in the recess b of the bonnet B, secured in said opening a², said body also having the opening or water-way d⁴ normally registering with openings d³, as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of February, A. D. 1889.

WILLIAM NUGENT.

Witnesses:

WILL H. POWELL,
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