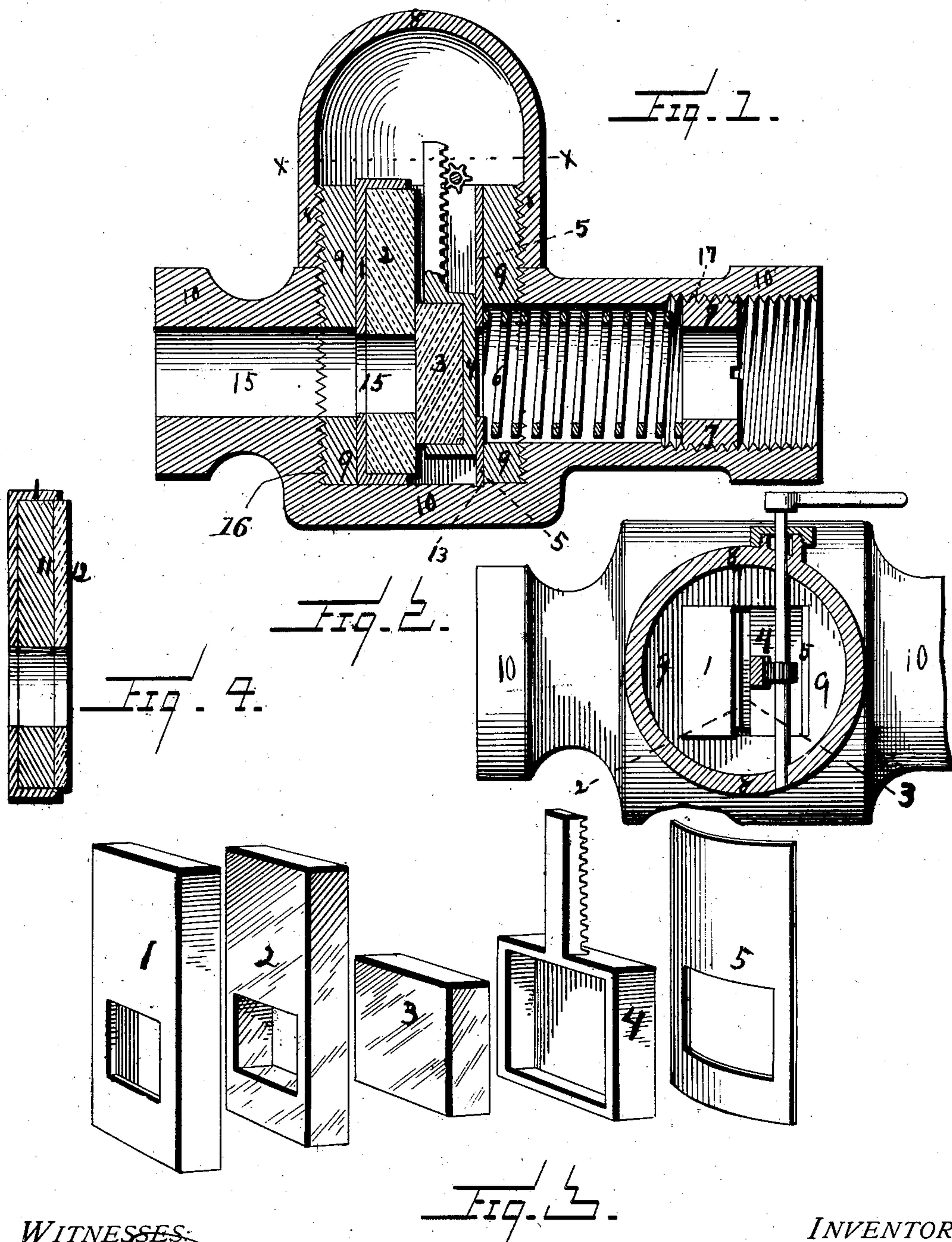


No. 828,280.

PATENTED AUG. 7, 1906.

W. P. FIREY.  
VALVE.

APPLICATION FILED JULY 2, 1904.



WITNESSES:

*W. P. Firey*  
D. M. Firey

INVENTOR

*W. P. Firey*



# UNITED STATES PATENT OFFICE.

WILLIAM PAYSON FIREY, OF ROANOKE, VIRGINIA.

## VALVE.

No. 828,280.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed July 2, 1904. Serial No. 215,172.

*To all whom it may concern:*

Be it known that I, WILLIAM PAYSON FIREY, a citizen of the United States, residing at Roanoke, State of Virginia, have invented a new and useful Improvement in Valves, of which the following is a specification.

My invention consists of means for carrying out the above object; and it further consists in the use of novel materials and construction of parts having the general mode of operation as hereinafter more generally set forth in the accompanying specification and drawings, in which—

Figure 1 is a longitudinal view of my improved valve, valve-case, and mechanism. Fig. 2 is a sectional view on the dotted line X X. Fig. 3 is a detailed view of the several parts constituting the valve-seat container, the non-metallic hard valve-seat, the non-metallic hard valve-face piece, the carrier for valve-face piece, and the tension-spring. Fig. 4 is a detailed view of a valve-seat.

Similar numerals refer to similar parts throughout the several drawings.

Referring to the drawings, 1 is a metallic cup or container designed to hold and strengthen the non-metallic hard piece 2. 1 has a port 15, as shown, corresponding to the port 15 in piece 2. The cup 1 may be secured to the piece 9 or to the valve-body 10 when 9 is not used by solder or any suitable means. It may also be discarded in certain modifications of the invention.

2 is a block of non-metallic hard substance, such as porcelain, stone, glass, hard rubber, or similar substance. It has the port 15 through it and may have the extended bearing-surface, as shown. The object of the extended bearing-surface is to prevent any abrasive material coming into contact with the valve-face, thereby preventing wear, and also to keep the valve in line with the valve-seat.

3 is a block of non-metallic hard substance, similar to 2. Its general shape is not confined to any particular design, except that it has a plain bearing-surface against the valve-seat. It may be secured to its carrier by cement or any suitable means.

The piece 4 is a metallic carrier for the valve-face piece 3 and has a recess into which the piece 3 is held. A valve-stem of any suitable kind may be secured to the piece 4. It is deemed advantageous that the piece 3 should have its face extend beyond the edges

of the carrier 4 to secure a permanent contact with the valve-face.

5 is a metallic spring designed to keep the valve and valve-face in constant contact and tension. There is a port 15 through the piece 5, as shown. In case the spring 6 is used the piece 5 need not be a spring, but may be a rectangular flat piece of metal having the port 15.

6 is a coiled spring through which liquid may pass and by compression serves to keep the valve face and seat in constant contact and tension.

7 is an annular nut having the port 15. Its outer surface is threaded to engage threads in the valve-case. The nut serves to adjust and maintain tension in the spring 6.

8 is a dome inclosing the valve parts, as shown.

9 is a circular barrel having its outer surface threaded for engaging the valve-case 10 and dome 8. It has an aperture for containing the pieces 1, 2, 3, 4, and 5 or piece Fig. 4 instead of 1 and 2 in certain modifications of the valve.

10 represents a valve-case having the straightway 15, the threaded circular section 16, the recess 13, and the extended threaded section 17. The case is not limited to any particular design.

In Fig. 4 is represented a modification of the part 2, in which 2 is shown as a block of metal 11, having a face 12 of vitreous enamel. This same modification applies equally well to the valve-face 3 and holder 4. The advantage of this form of construction is principally in allowing thinner pieces and a somewhat cheaper construction.

As ordinarily constructed the non-metallic hard blocks would be a certain variety of porcelain. In all cases the valve face and seat are brought to a perfect surface and are parallel to each other.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A tension apparatus for a sliding valve-gate, consisting of a plate of metal, in contact with said gate; a waterway through said plate; a coiled spring in contact with said plate; a tension-nut having a port through same, said nut being in contact with said coiled spring, and engaging the valve-case substantially as shown.

2. A valve comprising a casing having a bore and a recess intersecting said bore, a



barrel in said recess and formed with a transverse opening to aline with the bore in said casing, and a longitudinally-extending recess or opening intersecting said transverse opening, a valve-seat in the recess in said barrel, and a sliding valve in said recess to coact with said valve-seat.

3. A valve comprising a casing having a bore and a recess intersecting said bore, a barrel in said recess and formed with a transverse opening to aline with the bore in said casing, and a longitudinally-extending recess or opening intersecting said transverse opening, a removable valve-seat in said longitudinally-extending recess, a sliding gate-valve in said recess to coact with said valve-seat, means for operating said gate-valve, and a spring for forcing said valve against its seat.

4. A valve comprising a casing having a bore and a recess intersecting said bore, said recess being screw-threaded, a barrel screwed into said recess and having a transverse opening to aline with the bore in said casing and a longitudinally-extending recess or opening intersecting said transverse opening, an apertured valve-seat removably mounted in said longitudinal recess, a sliding gate-valve in said recess to coact with said valve-seat, a spring for holding said valve upon its seat, means for operating said valve and a dome or cap upon the projecting threaded end of said barrel.

5. A valve comprising a casing having a bore and a recess intersecting said bore, said recess being screw-threaded, a barrel screwed into said recess and having a transverse opening to aline with the bore in said casing and a longitudinally-extending recess or opening intersecting said transverse opening, an apertured metallic valve-seat carrier in said longitudinal recess, an apertured valve-seat of a

non-metallic hard substance in said carrier, a metallic carrier for a sliding gate-valve in said recess, a valve of a non-metallic hard substance seated in said carrier and coacting with said valve-seat, a spring-plate in said recess for holding said valve against its valve-seat, means for operating said valve and a dome or cap upon the threaded outer end of said barrel.

6. A valve comprising a casing having a bore and a recess intersecting said bore, said recess being screw-threaded, a barrel screwed into said recess and having a transverse opening to aline with the bore in said casing and a longitudinally-extending recess or opening intersecting said transverse opening, an apertured metallic valve-seat carrier in said longitudinal recess, an apertured valve-seat of a non-metallic hard substance in said carrier, a metallic carrier for a sliding gate-valve in said recess, a valve of a non-metallic hard substance seated in said carrier and coacting with said valve-seat, a spring for forcing said valve upon its seat, an annular nut in the bore of said casing for varying the tension of said spring, means for operating said valve and a dome or cap upon the outer threaded end of said barrel.

7. A sliding gate-valve comprising a casing having a longitudinal bore therein and a transverse recess intersecting said bore, a valve-seat in said recess, a valve proper slidable in said recess and coacting with said valve-seat, and an apertured spring-metal plate in said recess for forcing said valve upon its seat.

WILLIAM PAYSON FIREY.

Witnesses:

D. M. FIREY,  
J. S. FIREY.