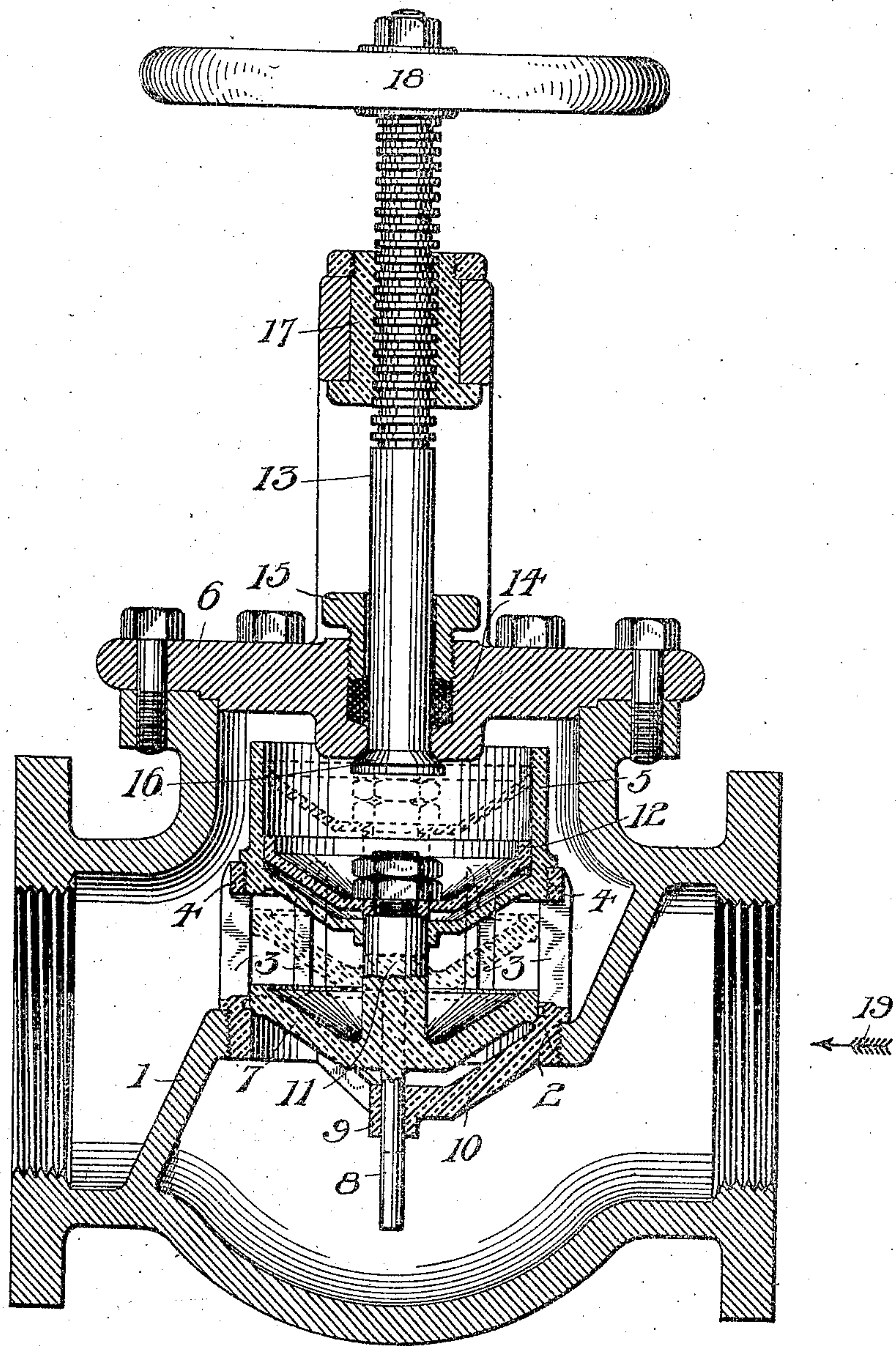


No. 840,174.

PATENTED JAN. 1, 1907.

J. R. TANNER.  
NON-RETURN VALVE.

APPLICATION FILED JUNE 13, 1905.



WITNESSES:

*J. P. Hoffman,*  
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INVENTOR  
*J. R. Tanner,*

*by Purce & Barber,*  
ATTORNEYS



# UNITED STATES PATENT OFFICE

JULIUS R. TANNER, OF PITTSBURG, PENNSYLVANIA.

## NON-RETURN VALVE.

No. 840,174.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed June 13, 1905. Serial No. 265,021.

*To all whom it may concern:*

Be it known that I, JULIUS R. TANNER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Non-Return Valves, of which the following is a specification.

My invention relates to non-return valves which are a kind of check-valve which is constructed to be unaffected by sudden change in the flow or pressure of the fluid-current passing through the valve, thus preventing the hammering of the valves on their seats.

It is the object of my invention to provide a valve of this description which can be applied to any globe-valve or other valve with accessible valve-seat without any modification in the valve casing or seat.

My invention consists of an attachment which is preferably wholly supported by the valve-seat, which necessitates no change whatever in the valve-stem or the opening in which the bonnet is attached.

The figure of the drawing shows a longitudinal section through my improved valve, the dotted lines showing the valve open and the full lines the valve closed.

Referring now to the drawing, 1 represents the bridge or partition in which is screwed the valve-seat proper, 2. Supported on the top of the annular valve-seat 2 are several posts 3, having their upper ends joined by the ring or band 4, which is threaded on its inner surface. Screwed into the threads of the band 4 is the dash-pot cylinder 5, open at its upper end, which is seated a short distance below the bonnet or cap 6.

Slidable toward and from the valve-seat 2 is the valve proper, 7, which fits tightly at its edges on the upper inner portion of the valve-seat, so as to be movable upwardly from its seat to the dotted position shown on the drawing. The valve is guided in its movements by the central post or pin 8, which extends downwardly therefrom through an opening in the hub or center 9 of the spider 10, secured to or integral with the valve-seat 2. The upper side of the valve is provided with the post or projection 11, which is guided in a central opening in the bottom of the dash-pot cylinder 5.

I screw to the upper end of the post 11, above the bottom of the cylinder 5, the piston 12, which fits the said cylinder.

The valve-stem 13 extends through the cap 6 in alinement with the post 11. The cap is provided with the usual stuffing-box 14 and gland 15. The lower end of the valve-stem is provided with a head or flange 16, having its upper face beveled so as to fit a seat in the under side of the cap 6, so that when the stem is withdrawn to such an extent that the head or flange 16 fits its seat no steam or other fluid can pass along the valve-stem, thus permitting the stuffing-box to be repacked even when the valve is wide open. The stem is screw-threaded at its upper end and operates in the nut 17 supported in any approved manner.

18 represents a hand-wheel by which the valve-stem may be rotated.

It will be seen that when the valve is open and the valve-stem is being turned down it will force the valve onto its seat and hold it there until again released by a reverse movement of the valve-stem. When the valve-stem is raised, the fluid-pressure, which enters the valve in the direction of the arrow 19, lifts the valve from its seat and maintains it lifted so long as the flow remains in this direction. When, however, the flow of fluid is reversed, the valve will be automatically closed by the returning fluid; but this return of the valve will be retarded by the action of the dash-pot, which was filled during the opening of the valve, owing to the suction of the piston within the cylinder 5. The return of the valve will be made slow by reason of the time required for the fluid between the piston and the bottom of the cylinder 5 to escape. The above-described action would be that occurring when the reverse action of the fluid was sufficiently prolonged to cause enough of the liquid in the dash-pot to escape; but in the case of momentary or very short reversal of the fluid through the valve the dash-pot would not be appreciably moved because there would not be sufficient time for the escape of any appreciable quantity of fluid from the dash-pot. When it is desired to cut off the flow of steam or other fluid through the valve, the valve-stem is operated in the manner described to force the valve tightly upon its seat.

The advantages of my invention will become apparent when it is seen that there is no modification whatever of the usual valve-casing. All that is necessary to do to apply my invention is to remove the cap or bonnet from the valve and to unscrew the annular



valve-seat from the bridge or to internally thread the valve-seat, provided it has no threads, and to screw in my improvement. My invention does not have to be made to fit any particular form of valve-seat or any particular size or shape of the opening which is closed by the cap or bonnet. It is a unitary compact attachment, which only has to be screwed into the position when it is ready for immediate use.

I do not desire to be restricted to the details shown and described, but claim protection for all mechanical equivalents.

Having described my invention, I claim—

1. In a non-return valve, an insertible valve-seat in combination with a dash-pot member supported by said valve-seat member, a piston in the dash-pot, and a valve between the dash-pot and the seat.

2. In a non-return valve, a valve-seat member insertible in the same, a dash-pot member carried by said valve-seat member outside the valve-seat opening, a valve, and a second dash-pot member carried thereby, the valve and dash-pot both being the same side of the valve-seat.

3. In a non-return valve, a valve-seat member, a dash-pot cylinder supported thereby, a dash-pot piston therein, a valve secured to said piston and adapted to said seat, the said cylinder and valve both being on the same side of said valve-seat member.

Signed at Pittsburg, Pennsylvania, this 8th day of June, A. D. 1905.

JULIUS R. TANNER.

Witnesses:

ALICE E. DUFF,  
F. N. BARBER.