No. 609,556. Patented Aug. 23, 1898.

J. J. NEUMANN.

VALVE FOR WIND INSTRUMENTS.

(Application filed Oct. 4, 1897.)

(No Model.)

Fig. 1.

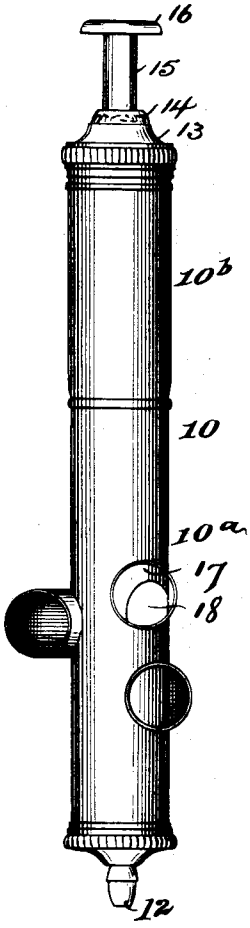


Fig. 2.

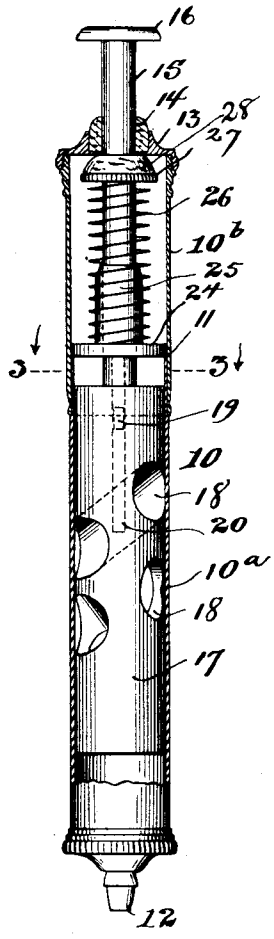


Fig. 4.

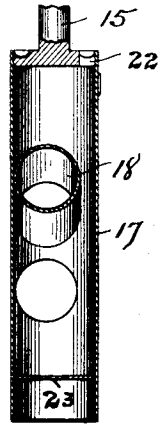
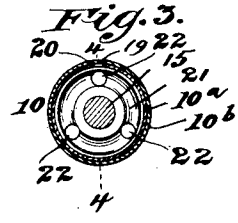


Fig. 3.



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UNITED STATES PATENT OFFICE.

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VALVE FOR WIND INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 609,556, dated August 23, 1898.

Application filed October 4, 1897. Serial No. 653,990. (No model.)

To all whom it may concern:

Be it known that I, JULIUS J. NEUMANN, of Chicago, Illinois, have invented certain new and useful Improvements in Valves for Wind Instruments, of which the following is a specification.

This invention relates to valves for wind instruments, and more particularly to piston-valves such as are employed in cornets and other brass instruments, and has for its object to provide a construction whereby the water of condensation may be prevented from entering the upper portion of the cylinder, where the valve-spring is located, and attacking the spring, thereby causing it to deteriorate and be destroyed.

To this end my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a valve embodying my invention. Fig. 2 is a similar view, the cylinder or valve casing being in vertical section to show the internal construction. Fig. 3 is a plan section taken on the line 3 3 of Fig. 2. Fig. 4 is a central vertical sectional view of the piston, taken on the line 4 4 of Fig. 3.

In the said drawings, 10 represents the cylinder or casing of the valve, which is provided with an internal seat 11 for the valve-spring abutment. This seat is preferably provided by constructing the cylinder of two sections, the lower one of which, 10^a, extends some distance into the upper section 10^b, its upper edge forming the seat 11. The cylinder 10 is provided at its lower end with the usual vent 12 and is closed at its upper end by the usual screw-cap 13, having a central apertured cushion 14, of cork or other suitable cushioning material, through which the valve-stem 15 passes and against which the valve-stem head 16 abuts when depressed. The piston 17 has the usual ports or passages 18 and is prevented from rotating in the cylinder by a lug 19, engaging a groove 20 in the cylinder. The piston is hollow and is provided with a groove 21 in the top face of its upper head and with apertures 22, extending from said groove through the head to the hollow exterior of the piston. The piston also has an aperture 23 in its lower head, so that there is provided a passage-way or conduit from the space in the cylinder above the piston to the space below the same.

24 represents the lower or stationary abutment for the valve-spring, consisting of a disk resting on the seat 11 and apertured for the passage of the valve-stem, said disk closing the space between the cylinder and stem and forming between said disk and the cap 13 a chamber for the valve-spring. The disk 24 is provided with a sleeve 25, extending upward therefrom about one-half the length of the valve-chamber and embracing the valve-stem, which fits said sleeve and the aperture in the disk 24 with a close sliding fit. The valve-spring 26 abuts at its lower end against the disk 24 and at its upper end against a collar 27 on the valve-stem, which collar not only serves as an abutment for said valve-spring, but also as a stop to limit the upward motion of the parts by reason of its contact with the under side of the cap 13, being provided with a cushion 28 of cork or the like for this purpose. This collar is so located that when the parts are at their upward limit of motion the top of the piston will be some distance below the disk 24, thus forming a chamber or space between said piston and disk.

In devices of this character as heretofore constructed the water accumulating in the cylinder passes up between the adjacent walls of the cylinder and piston and, entering that part of the cylinder in which the valve-spring is located, attacks the same and causes it to deteriorate, even to the point where its usefulness is destroyed by fracture. This is due not only to the fact that the upper end of the piston comes into contact with the lower spring-abutment when the parts are at their upward limit of motion, but also to the lack of provision of means for preventing the water from passing said abutment and entering the portion of the cylinder occupied by the spring, and, further, to the fact that there is no provision for permitting the water to pass through the piston to the lower end of the cylinder. By reason of my construction there is provided positive means for preventing the water from having access to the spring, the disk 24 not only serving as an abutment for

the spring, but also preventing the water from passing above said disk into the valve-spring chamber formed between it and the cap 13. The sleeve 25 further aids this exclusion of the water, and in practice, the valve-stem being lubricated with vaseline or other similar material, said lubricant, filling the extended space between the said sleeve and valve-stem, effectually prevents any moisture "creeping" up along the valve-stem into the spring-chamber. Furthermore, the provision of a space or chamber between the disk and piston-head precludes the water or moisture from reaching the disk by following the space between the piston and cylinder, and such moisture or water as reaches the top of the piston will be conducted by the groove 21 to the apertures 22 and passing by gravity through said apertures and the hollow body of the piston will pass through the aperture 23 into the lower end of the cylinder, from which it will be discharged in the usual manner. This downward discharge of the water from above the piston is facilitated by the compression of the air in the chamber between the piston and disk as the piston rises. It will thus be seen that the spring is protected from moisture and its durability and that of the instrument thus increased.

I claim—

1. In a valve for wind instruments, the combination, with a cylinder or casing and its cap, and a piston-valve and its stem, of an apertured disk seated in the cylinder, closing the space between the cylinder and valve-stem, and provided with an upwardly-extending sleeve fitting the valve-stem, a collar on said stem, and a spring abutting against said disk and collar and located in the chamber formed between the disk and cap, substantially as set forth.

2. In a valve for wind instruments, the combination, with a cylinder or casing and a valve-spring therein, of a piston-valve fitting said cylinder or casing below the spring and having a passage or conduit through its body from top to bottom through which water may pass, substantially as set forth.

3. In a valve for wind instruments, the combination, with a cylinder or casing and a valve-spring therein, of a piston-valve fitting said cylinder or casing below the spring and having a hollow body, apertures in the heads or ends thereof and a groove in its upper end, substantially as set forth.

4. In a valve for wind instruments, the combination, with a cylinder or casing and a piston-valve having a water passage or conduit in its body from top to bottom, and provided with a valve-stem, of an apertured disk in said cylinder or casing closing the space between said cylinder or casing and the valve-stem, a spring above said disk for lifting the piston, and means for limiting the upward movement of the piston to a point some distance below the disk, whereby a space or chamber is provided between said disk and the upper end of the piston at its upward limit of motion, substantially as set forth.

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