April 20, 1948. E. WILLIAMS 2,439,997

WATER KEY FOR BRASS MUSICAL INSTRUMENTS

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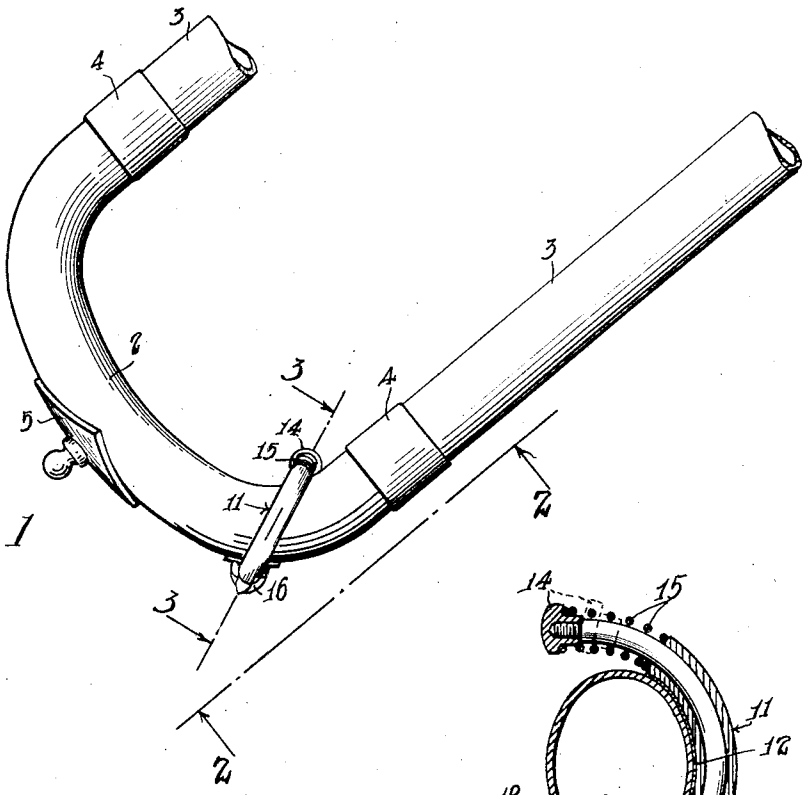

Fig. 1

Fig. 3

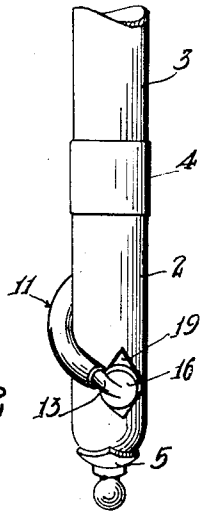

Fig. 2

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WATER KEY FOR BRASS MUSICAL INSTRUMENTS

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6 Claims. (Cl. 84—397)

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My invention relates to water keys for brass musical instruments and among the objects of my invention are:

First: To provide a water key or valve designed to be installed at an appropriate normally low point of a brass musical instrument to facilitate the drainage of moisture accumulated during playing of the instrument.

Second: To provide a water key or valve for musical instruments which is inherently well protected against damage, the water key being fitted into close conformity with the contour of the instrument and presenting a minimum of projecting elements to be hit should the instrument be dropped or strike an object.

Third: To provide a novelly arranged water key or valve wherein the valve stem is semi-circular and fits in a semi-circular guide conforming to and attached throughout to the musical instrument so as to provide a rigid, but compact and inconspicuous support.

With the foregoing and other objects in view, as may appear hereinafter, reference is directed to the accompanying drawings in which:

Figure 1 is a fragmentary end view of the slide tube of a trombone with my water key fitted thereon.

Figure 2 is a fragmentary side view thereof taken from the line 2—2 of Figure 1.

Figure 3 is an enlarged transverse sectional view taken in the plane of the water key, through 3—3 of Figure 1.

My water key is shown fitted upon a trombone slide tube. However, my water key is adaptable to many of the other types of musical instruments, particularly brass instruments. The trombone slide comprises of a U-shaped loop 2, the ends of which are joined to parallel tubes 3 by sleeve joints 4. The mid portion of the loop 2 is reinforced at its outer side by a rest and guard 5.

My water key includes a guide sleeve 11 which is arcuate in form and positioned obliquely across the normally lower portion of the U tube. The guide sleeve is secured thereto by solder 12 or other similar means. The guide tube slidably receives an arcuate stem 13. It is obvious that in order for the stem to move in the sleeve that the stem and sleeve must define arcs of circles whose centers coincide. In other words, the stem as it slides in the sleeve moves in an arcuate path about a fixed point, which point coincides with the centers of curvature of both the sleeve and the stem.

One protruding end of stem 13 is threaded and receives a push button 14. Between the push

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button 14 and the adjacent end of sleeve 11, is interposed a spring 15.

The opposite protruding end of stem 13 is equipped with a valve cap 16 having a recess facing toward the U-shaped tube. The recess receives a valve washer 17.

The portion of the U tube confronting the valve washer 17 is provided with a reinforcement 18 having an outwardly directed tubular washer and forms a valve seat element 19. An opening 20 is provided in the U tube in registry with the valve seat element 19.

The opening 20 is located at the normally lower point of the U tube 2 or conveniently adjacent such point so that moisture accumulating in the musical instrument can be readily drained therefrom. The position of the opening 20 varies with different musical instruments, but in any case, is located where moisture is apt to collect. The guide sleeve 11 is positioned so that one end terminates as close as possible to the valve seat element positioned over the opening 20 and extends obliquely in substantial conformity with the oblique section of the U tube to the inner side of the U tube. The push button and spring therefor are located within the boundaries of the U tube and are protected thereby. It will be observed in Figures 2 and 3 that the push button in its extended position is within, or at least is flush with, the plane defined, between legs of the U tube so that even though the slide were to lay on a flat surface, the push button would not be engaged. Thus accidental engagement is quite unlikely; however the push button is readily accessible to the player when he desires to open the water key.

Also, it should be noted that the distance between the valve washer and the adjacent end of the guide sleeve is extremely short so that this end of the stem 13 is fully supported to withstand any ordinary impacts without causing the valve cap or valve washer to be dislodged or bent out of proper registry with the valve seat element 19. By reason of the fact that stem 13 completely fills the guide sleeve, it has been found that blows which actually dent the surface of the guide sleeve are insufficient to bind the stem 13.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

I claim:

1. A water key for brass musical instruments, comprising: an arcuate stem, a valve element at one end of said stem; a push element at the other end of said stem; an arcuate guide sleeve for said stem, said guide adapted to be secured in

conformity with a tube forming a part of a musical instrument with said valve element in registry with a valve opening in said tube.

2. The combination with a musical instrument having a metal tube and a valve opening in the wall of said tube, of a water key for said opening, comprising: an arcuate sleeve positioned obliquely on said tube and curving in substantial conformity therewith; an arcuate stem slidable in said sleeve; a valve element on one end of said stem positioned to close the opening in said tube; and yieldable means urging said stem in a direction to close said valve element.

3. A water key for controlling a drain opening in the wall of a tubular musical instrument, comprising: an arcuate stem and guide sleeve therefor adapted to be set obliquely across said instrument with one end of said sleeve in proximity to said drain opening; a valve element carried by one end of said stem for controlling said drain opening; and yieldable means for urging said stem in a direction to close said valve element.

4. A water key for controlling a drain opening in the wall of a tubular musical instrument, comprising: an arcuate stem and guide sleeve therefor adapted to be set obliquely across said instrument with one end of said sleeve in proximity to said drain opening; a valve element carried by one end of said stem for controlling said drain opening; a push button at the other end of said stem; and a spring on said stem interposed between said push button and sleeve for urging said valve element in a direction to close said drain opening.

5. The combination with a musical instrument having a looped tubular element and a drain opening located at the outer side thereof at normally the lower end of the muscial instrument, of a water key for controlling said drain opening, comprising: an arcuate stem and guide sleeve therefor secured obliquely across said tubular element with one end of the sleeve in proximity of said drain opening and the other end of said sleeve terminating within the loop of said tubular element; a valve element carried by the outer end of said stem for controlling said drain opening; and yieldable means for urging said stem in a direction to close said valve element.

6. The combination with a musical instrument having a looped tubular element and a drain opening located at the outer side thereof at normally the lower end of the muscial instrument, of a water key for controlling said drain opening, comprising: an arcuate stem and guide sleeve therefor secured obliquely across said tubular element with one end of the sleeve in proximity of said drain opening and the other end of said sleeve terminating within the loop of said tubular element; a valve element carried by the outer end of said stem for controlling said drain opening; a push button at the inner end of said stem within said loop; a spring on said stem interposed between said push button and sleeve for urging said valve element in a direction to close said drain opening, the push button end of said stem being within the region embraced by the loop of said tubular element and thereby guarded by said loop against accidental engagement.

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The following references are of record in the file of this patent:

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