

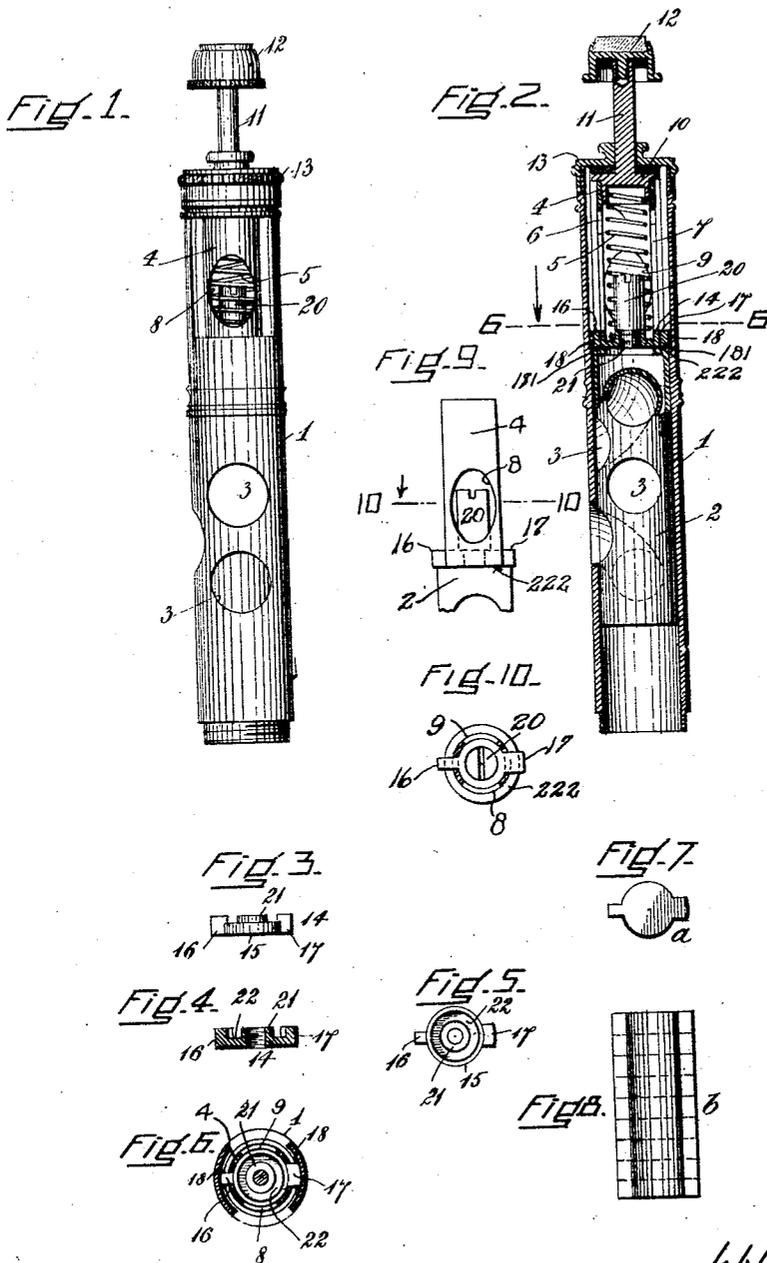
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VALVE FOR MUSICAL INSTRUMENTS

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UNITED STATES PATENT OFFICE.

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VALVE FOR MUSICAL INSTRUMENTS.

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To all whom it may concern:

Be it known that I, PETER TOTTLE, of Somerville, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Valves for Musical Instruments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The present invention relates to an improvement in valves for musical instruments of the wind type. The invention relates more especially to a valve in which there is employed a movable piston controlled by a spring contained within the stem of the piston and which spring is retained in part by a "star" so called. This star, owing to the customary mode of its retention, is apt to become tipped and not properly seated especially during the assembling of the parts of the valve and when tipped the star prevents proper action of the piston and the valve may cease to function.

The object of the invention is to provide a member whereby tipping of the star will be prevented and its proper seating insured, especially when the parts of the valve are assembled; also, whereby such members will permit of the star being easily manufactured and applied, together with its retaining member, to the valve during the assembling of its parts.

The invention can best be seen and understood by reference to the drawings, in which—

Figure 1 is a front elevation of the improved valve.

Fig. 2 is a vertical section thereof.

Fig. 3 is a side elevation of the star.

Fig. 4 is a vertical cross section of the star.

Fig. 5 is a plan of the star.

Fig. 6 is a cross section on the line 6—6 of Fig. 2.

Fig. 7 is a plan of the star in blank.

Fig. 8 is a side elevation of a cast or formed piece from which the blanks shown in Fig. 7 are severally cut.

Fig. 9 is a front elevation of a detail of construction to which special reference will later be made, and

Fig. 10 is a cross section on the line 10—10 of Fig. 9.

Referring to the drawings:—

1 represents the casing or tube of the valve. 2 is the piston movable through the casing for controlling its usual ports 3. The piston is provided with a hollow stem 4 affixed to the top end of the piston. The stem is of slightly less diameter than the piston leaving the top end of the piston forming an annular edge or shoulder 222 around the bottom end of the stem. Within the hollow of the stem is contained a coiled spring 5 which is retained as will later be explained. The stem is also provided on opposite sides thereof with the usual slots 6 and 7 and oppositely-arranged side openings 8 and 9.

The top end of the stem 4 is fitted with a screw cap 10. From this cap extends a stem extension 11 bearing upon its top end a thumb piece 12. Arranged upon the stem extension 11 between the cap 10 and the thumb piece 12 is a cap 13 which threads onto the top end of the casing. Thus arranged the piston is movable through the casing within defined limits. The piston is maintained in a normal raised position and returned to such position when depressed, by the spring 5 contained within the cavity of the stem 4 and is otherwise retained as follows: At the top end the spring bears against the interior of the cap 10 on the top end of the stem 4. At its bottom end the spring bears against a star 14.

The star 14 comprises a body portion 15 which lies within the cavity of the stem 4 at its bottom where the stem joins the body of the piston, the body of the star resting on the top end of the piston. Projecting from the body of the star are wings 16 and 17, respectively, which pass through the slots 6 and 7 in the opposite sides of the stem and outwardly beyond the same to rest upon the annular edge or shoulder 222 at the top end of the piston. The extension of the wings is also beyond the opposite side walls of the piston and when the piston and stem and combined star are placed within the casing or tube 1 of the valve the outer ends of the wings will become seated in slots 18 cut within the interior wall of the casing, the wings resting upon shoulders 181 forming the bottom ends of these slots.

It is this star 14 which is apt to become tipped and assume an inclined position preventing its proper seating and when thus

tipped and unseated it causes the piston to stick and necessitates a disassembling of the entire valve before the star can be restored to its proper position.

5 The tipping of the star is prevented by affixing to it a centering post or stud 20 which extends upwardly therefrom at substantially right angles thereto to lie within the coil of the spring 5 and interior of the stem 4, and against the coils of which spring 10 backed by the surrounding wall of the stem the post has lateral bearing.

The centering post 20 is fixed to the star by providing the body of the star with an 15 annular slightly raised bushing 21 internally threaded and into which the lower threaded end of the post is screwed. Surrounding this bushing the body of the star is provided with an annular socket 22 forming 20 a seating for the lower end of the spring 5.

The centering post 20 is of a size or thickness diametrically as to have but a limited lateral play within the coil of the spring 5 25 and surrounding wall of the stem 4 and accordingly by reason of the limited play afforded it prevents tipping of the star or such tipping or displacement as would cause the piston to stick.

30 The star and post are made as separate elements, the post being attached to the star during the assembling of the parts. The star is inserted within the hollow of the stem 4 by passing it through the slots in the side of the stem in the usual manner and 35 afterward the star is moved to the top end of the stem within the limit afforded by the slots, when the post may be screwed onto the star by inserting it through the open top 40 end of the stem.

The means thus provided for preventing displacement of the star is such as will enable the star to be easily manufactured. In

fact, blank stars *a* may be cut from a cast or formed piece *b* and the blank stars easily 45 machined into finished stars. The center posts are cut from a rod and easily machined or threaded to screw onto the star.

Having thus fully described my invention, I claim and desire to secure by Letters Patent 50 of the United States:—

1. A valve of the type specified comprising a casing, a piston, a hollow slotted stem to the piston, a spring within the hollow stem, a star within said stem with a wing 55 projection extending through the slotted wall of the stem and against which the spring has bearing, and a centering post affixed to said star and extending therefrom into the hollow of said stem. 60

2. A valve of the type specified comprising a casing, a piston, a hollow slotted stem to the piston, a coiled spring within the hollow stem, a star within said stem with a wing 65 projection extending through the slotted wall of the stem and against which the star the spring has bearing, and a centering post affixed to said star and extending therefrom to be contained within the coil of said spring and hollow of the stem. 70

3. A valve of the type specified comprising a casing, a piston, a hollow slotted stem to the piston, a coiled spring within said hollow stem, a star within said stem with a wing projection extending through the 75 slotted wall of the stem and against which the star the spring has bearing, and a centering post having a threaded end affixed to said star whereby the post may project from the star and be contained within the coil of said spring and hollow of the stem, said star 80 having a body with an internally threaded bushing for receiving said stem and surrounding said bushing an annular seat for said spring.

PETER TITTLE.