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**LIMIT STOP FOR BRASS MUSICAL INSTRUMENT**

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This invention relates generally to wind musical instruments, and specifically to a valved brass instrument which is ordinarily supported by the left hand and played with the right hand. These instruments are well known and include a sectional or composite tube which is curved or bent back and forth to form an elongated unit having a mouthpiece at one end thereof and a bell at its other end. A horizontal series of three or more upstanding valves adjacent the central portion of the unit are used to produce the different notes with the instrument when played and the pitch or tone of the notes is controlled by U-shaped slides connected to each of the valves.

Due to certain inherent tuning characteristics of three-valve musical instruments, it has long been found necessary to adjust the tuning slides on either the first, third or both valves so that certain tones, usually low D and C sharp, can be adjusted if they are high or sharp. This adjustment is made by extending the slide positions, elongating the air path, and, as a consequence, lowering the pitch.

One of the principal objects of the present invention is to provide a means for limiting the amount of motion in the third tuning slide and at the same time allowing for complete control of the pitch of the instrument. Efforts to control this motion in the past have involved the use of screw rods having double nuts on the ends which are adjusted to control the length to which a slide can be pulled or simply to prevent the slide from falling off of the instrument. There has been some effort to eliminate the cumbersome screw rod devices by the use of a brace or permanent stop welded to the tubular part of the instrument and a permanent stop welded to the actuating rod.

Another object of the present invention is to provide a simple device for accomplishing the limiting action in the third valve tuning slide of a three-valve brass musical instrument.

A further object of the present invention is to provide an improved limit stop which can be quickly and easily removed from the instrument to allow for cleaning of the third valve slide at the time.

Still another objects of the present invention is to provide an improved limit stop for the tuning slide on the third valve of a brass musical wind instrument which is low in cost, easy to manufacture and practically indestructible.

A still further object of the present invention is to provide a limit stop for the third valve tuning slide of a brass musical wind instrument which requires no manufacturing steps in order to mount it on the instrument.

These objects are accomplished by cutting a flat plastic member to a width and length such that it can be inserted in the space between the parallel tuning tube sections. Vertical support posts are provided in the space between the tuning tube sections. The plastic member has a transverse slot at one end and a longitudinal slot at the other end which is opened to the exterior of the member

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by a second transverse slot substantially at the center of the member. The two transverse slots are located a distance apart equal to the distance between the posts on the tuning slide and the longitudinal slide is cut to a length slightly less than the length of motion of the tuning slide.

In mounting the limit stop on the instrument, the second slot is placed in alignment with the post on the third valve tuning slide tube sections, and the limit stop is pushed between the tuning slot until the post is aligned with the longitudinal slot in the limit stop. The limit stop is then rotated until the first transverse slot is aligned with the other post on the U-shaped tuning tube section and the limit stop pushed in until the post abuts the end of the slot. When the U-shaped tuning tube section is moved out to change the pitch of the third valve of the instrument, the limit stop will move with the tuning slide until the post abuts the end of the longitudinal slide. It will then be impossible to move the tuning slide any farther and it cannot fall off of the instrument.

If it is desired to remove the tuning slide from the instrument, it must be returned to its full inward position so that the limit stop member can be pulled off of the post on the instrument.

Other objects and advantages will become more readily apparent from the following detailed description when read in connection with the accompanying drawings, in which:

FIG. 1 is a left hand elevational view of a valve brass musical instrument, showing the arrangement of the members of the instrument.

FIG. 2 is taken on line 2-2 of FIG. 1, showing the location of the limit stop.

FIG. 3 is a projected view of the limit stop.

The instrument shown in the drawings is generally referred to as a trumpet and illustrates one form or type of valve brass instrument in which the present invention is useable. It is of standard construction and comprises a sectional or composite hollow tube of substantially a constant diameter which is curved or bent back and forth to form an elongated, normally horizontal unit and consists of an upper horizontally extending tube section 10, a vertically extending C-shaped section 12, a lower horizontally extending tube section 14, a third valve 16, a pair of vertically spaced horizontally extending tube sections 18 and 20, a U-shaped tuning slide 22 closing the open ends of the tube section for the third valve, a connecting tube section 24, a second valve 26, a pair of horizontally extending tube sections 27, a U-shaped slide 29 closing the open ends of tube sections 27, a connecting tube section 28, a first valve 30, a pair of vertically spaced horizontally extending tube sections 32 and 34, a U-shaped tuning slide 36 closing the open ends of the tube sections for the first valve, a horizontally extending tube section 38, a vertically extending C-shaped section 40 and an upper horizontally extending tube section 42 of progressively increasing diameter which terminates in a bell section 44. A U-shaped slide is also provided on the right hand side of the second valve for tuning the second valve and can be seen in FIG. 2 of the drawing.

The three valves 16, 26 and 30 extend vertically and are located adjacent to the central portion of the instrument between the tubular sections 10 and 42. They are arranged or disposed in a longitudinal series and each

consists of a vertically extending tubular housing 48 closed at its lower end with a vertically slidable piston-type valve (not shown) in each housing which is actuated by the buttons 50 which project above the upper horizontal tube section 42. Springs (also not shown) are generally used within the housing to hold the valves in the upper position.

A mouthpiece 52 is provided at the end of the upper horizontal tube section 10. When played with all valves in the upper position, air blown into the tube section will pass in series through each of the three valves and out through the bell. To change the notes which are being played, one or more of the buttons 50 are depressed to place the tube sections for each of the valves in series with the air flow path through the instrument. The addition of these various tube sections to the air flow path produces a different note of the scale. By lengthening or shortening the tuning tube sections, the pitch or tone of the instrument can be varied according to the wishes of the player.

The third valve has the longest tuning slide path and can produce the greatest variation in tones of the instrument which are played with the third valve depressed. The horizontally extending tube sections 18 and 20 are vertically spaced a short distance apart with a small vertical bar 54 secured in the space between the horizontal sections 18 and 20. A second bar 56 is secured in the space between the legs of the U-shaped tuning slide 22. When the U-shaped slide is pushed all the way into the horizontal sections 18 and 20, a known distance A will be established between the two bars. When the U-shaped slide is pulled out of the instrument to the distance shown dotted in FIG. 1, which is slightly prior to the U slide completely coming out of the horizontal sections, a known distance B will be established between the bars.

To prevent the U-shaped section from coming off of the end of the instrument, a flat plastic limit stop 70 is placed in the gap between the horizontally extending tube sections 18 and 20. This limit stop is cut from a piece of clear plastic material with a transverse groove 72 at one end and a longitudinal groove 74 at the other end with the end of the longitudinal groove opening outward along the edge of the limit stop through a groove 76. Each of the grooves 72 and 76 are cut slightly past the longitudinal center line of the members. The distance between the two grooves 72 and 76 is made equal to the distance A of the two bars on the instrument. When the limit stop is inserted in the gap between the horizontal sections, the two grooves are aligned with the two posts and the limit stop is pushed into the space until the two posts are seated at the end of the two transverse grooves substantially on the center line of the limit stop. The distance from the groove 72 to the end of the longitudinal groove 74 is made equal to the distance B of the instrument. When the slide is pushed outward it will be prevented from further motion when post 54 abuts the end 80 of the longitudinal groove 74. Since the distance B is slightly less than the amount of motion required to remove the U-shaped tuning slide from the instrument, it will not come off the instrument.

The U-shaped tuning slide is actuated by a rod 60 secured to the tuning slide by an adjustable screw 62 threaded into a housing 64 mounted on the top of the tuning slide. A finger loop 66 is provided at the end of the rod. This position of the finger loop is adjusted by loosening screw 62 so that the rod 60 can be moved in or out, placing the loop a comfortable distance from the third valve. The screw is then tightened to hold it in place. If the player wishes to adjust the slide to change the pitch or tone of the third valve, he merely has to move the finger which extends through the loop and the U-shaped slide will move in or out of the horizontally extending section.

It should be noted that the longitudinal groove 74 could extend from the first groove to the other end of the member if desired. It would be mounted on the instru-

ment by inserting one of the rods into the transverse groove and sliding the member forward until the transverse slot is aligned with the other post. The member could then be rotated until the other post abuts the end of the groove.

The limit stop has been disclosed and described as being cut from clear plastic. It should be noted that other materials such as wood, metal, or the like could also be used. It is only necessary to have a material that has sufficient strength to stand up under its intended use.

Although only one embodiment of the present invention has been shown and described, it should be obvious that various changes and modifications can be made herein without departing from the scope of the appended claims.

What is claimed is:

1. The combination with a brass wind musical instrument having at least one vertical valve and a tuning tube consisting of a pair of horizontally extending tube sections and a U-shaped slide section insertable within the horizontally extending tube sections, a vertical post connected to each of the tube sections and the U-shaped section, said posts being located a predetermined distance apart when the slide is inserted completely into the U-shaped sections, of means for limiting the motion of the slide with respect to the horizontally extending sections, comprising

an elongate flat member having a first groove located at one end extending transversely across the member a distance equal to slightly more than one-half the width of the member,

a centrally located longitudinal groove in the other end of the member having one end located a predetermined distance equal to the distance between the posts from the first groove in the member,

a second transverse groove connecting said one end of the longitudinal groove with the same edge of the member as the first groove, whereby said member can be inserted on the instrument by sliding the posts into the grooves with one of the posts being moveable in the longitudinal groove.

2. A limit stop member according to claim 1 wherein the other end of said longitudinal groove is located a distance from the first post equal to the distance between the posts on the member when the U-shaped slide is extended slightly less than the distance required to remove it from the instrument.

3. A valved brass musical instrument adapted to be supported by the left-hand of the player and played with the right-hand and comprising the combination of

a sectional tube curved back and forth to form an elongated normally horizontal unit having a mouthpiece at the rear end thereof and a bell at the front end and embodying a horizontal series of side-by-side upstanding valves adjacent to the central portion of the unit,

a pair of parallel spaced apart tube sections extending forward of the forwardmost valve and a U-shaped tuning tube insertable into the open ends of said horizontally extending units, said horizontally extending units and said valve having a rod member secured between the units,

of means for limiting the motion of the U-shaped tuning tube in the horizontally extending tube sections comprising an elongate member having a width equal to less than the diameter of the horizontally extending tube sections and a length equal to less than the length of the space between the U-shaped slide member and the third valve, said member having a transverse groove in one end and a longitudinal groove in the other end, whereby on insertion of the rod members into the grooves of the limit stop, said U-shaped member will be limited in its movement in the tube sections.

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4. A valved brass musical instrument according to claim 3 wherein said plastic member includes a second groove connected to one end of the longitudinal groove and opening outward of the member.

5. A valved brass musical instrument according to claim 4 wherein said second groove is spaced from said first groove a distance equal to the distance between the posts when the U-shaped tuning slide is inserted completely into the tube sections.

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## References Cited

## UNITED STATES PATENTS

1,141,960	6/1915	Higgins	-----	84—394
1,185,905	6/1916	Higgins	-----	84—394
1,197,058	9/1916	Panduba	-----	84—394

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