Jan. 25, 1938. J. SATTLER 2,106,281

WIND MUSICAL INSTRUMENT

Filed Aug. 15, 1936

Fig. 1.

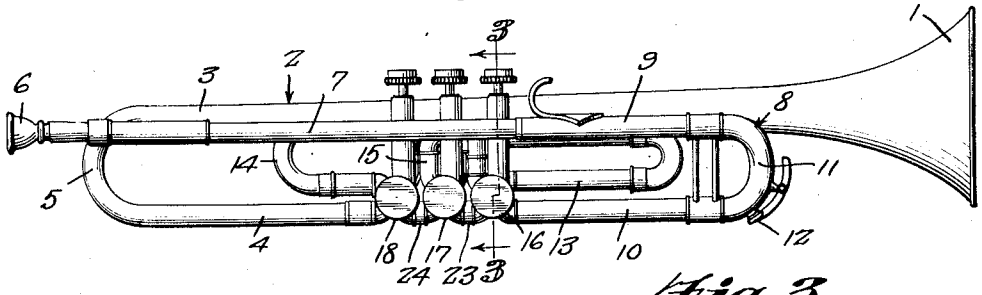


Fig. 2.

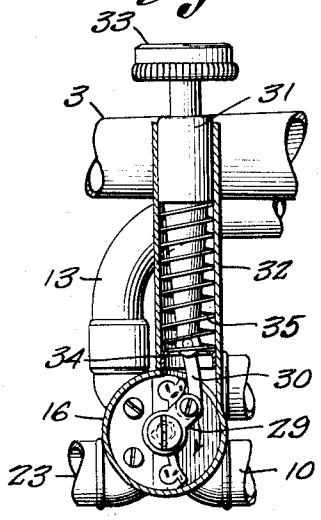


Fig. 3.

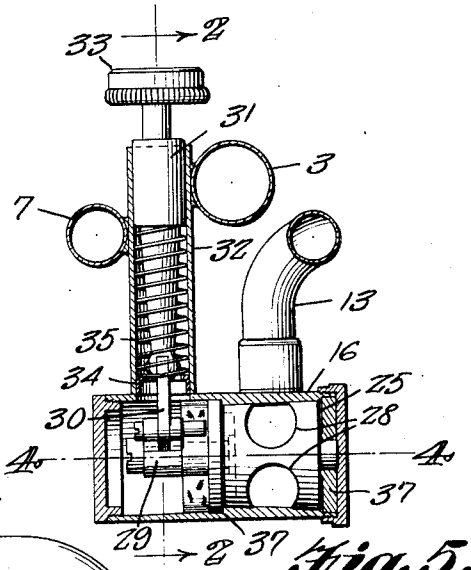


Fig. 4.

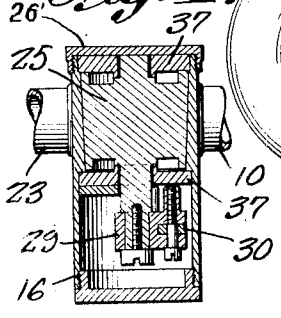
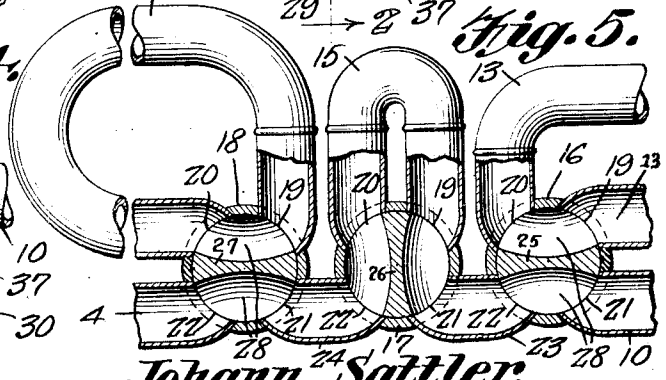


Fig. 5.



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WITNESS

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WIND MUSICAL INSTRUMENT

Johann Sattler, Bohemia, Czechoslovakia

Application August 15, 1936, Serial No. 96,273
In Czechoslovakia November 1, 1935

1 Claim. (Cl. 84—390)

This invention relates to wind musical instruments and has for the primary object the provision of a device of this character which will require on the part of the musician less effort to play and has the draws thereof arranged as to materially decrease the accumulation of saliva therein and to reduce to a minimum the resistance to air passing therethrough and also provides protection to the valves of the instrument.

Another object of this invention is the provision of a device of this character having oscillating valves and improved operating means therefor so that finger movements will be materially shortened whereby tone variations may be materially improved.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which

Figure 1 is a side elevation illustrating a wind musical instrument constructed in accordance with my invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 3.

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a fragmentary sectional view showing the arrangement of the valves relative to the draws and the bell and mouth piece tubes of the instrument.

Referring in detail to the drawing, the numeral 1 indicates a bell of the instrument formed integrally with a bell tube 2 consisting of upper and lower runs 3 and 4 which are joined by a curved portion 5. The runs 3 and 4 and connecting portion 5 form a continuous air passage to the bell 1.

The character 6 indicates a mouth piece of a conventional type which is connected to one end of a mouth piece tube 7 paralleling the run 3 of the bell 1. One end of a draw 8 is slidably connected to the mouth piece tube 7 and includes upper and lower runs 9 and 10 connected by a curved portion 11. The connecting portion 11 is slidably connected to the runs 9 and 10 and cooperate therewith in forming an air passage leading from the mouth piece 6 by way of the mouth piece tube 7. The connecting portion 11 has a drain valve 12 so located that any saliva collecting therein may be readily drained by opening the valve. The instrument also includes draws 13, 14 and 15. The draw 8 is of the maximum length, the draw 13 is slightly shorter than the draw 8 and the draw 14 is slightly shorter than the draw 13, while the draw 15 is the shortest of all of the draws. The runs of the draws 13 and 14 are disposed horizontally while the runs of the draw 15 are disposed vertically. The runs of the draws 13, 14 and 15 are grouped between the bell tube 2 and the runs 4 and 10.

Tubular valve casings 16, 17 and 18 are arranged transversely of the draws and each have ports 19, 20, 21 and 22. The run 10 of the draw 8 is connected with the port 21 of the valve casing 16. One run of the draw 13 is connected to the port 19 of the valve casing 16 and the other run of the draw 13 is connected to the port 20 of said valve casing 16. A tube 23 connects the port 22 of the valve casing 16 to the port 21 of the valve casing 17. A tube 24 connects the port 22 of the valve casing 17 to the port 21 of the valve casing 18. The tubes 23 and 24 are in alignment with the run 10 of the draw 8 and with the run 4 of the bell tube 2 and provide between the draw 8 and the bell tube a substantially unobstructed air passage, thereby eliminating to a minimum resistance to the flow of air from the draw 8 to the bell tube 2.

One end of the draw 15 is connected to the port 19 of the valve casing 17 and the other end of said draw 15 is connected to the port 20 of the valve casing 17. One end of the draw 14 is connected to the port 20 of the valve casing 18 and the other end of the draw 14 is connected to the port 19 of the valve casing 18. The connection between the draws and the valve casings is such as to reduce obstructions to air flowing through the draws and valve casings to a minimum.

Mounted for oscillatory movement in the valve casings 16, 17 and 18 are valve elements 25, 26 and 27, each having a port 28 therethrough. The interior walls of the valve casings are slightly tapered and the valve elements are correspondingly shaped for the purpose of taking up wear between the valve casings and the valve elements. Detachably secured to the ends of the valve elements are arms 29 and pivoted to said arms are links 30 and they in turn are pivoted to plungers 31. The plungers are slidably mounted in tubular guides 32 forming an integral part of the valve casing and are disposed vertically. The plungers protrude outwardly of the guides 32 and terminate in finger pieces 33 located in a plane slightly above the upper run 3 of the bell tube 2. The

guides 32 pass between the bell tube 2 and the mouth piece tube 7. Seats 34 are provided in the guides and engaging said seats are coil springs 35 to also contact the plungers for urging the plungers upwardly and to position the valve elements to close the draws 13, 14 and 15 to the draw 8 and bell tube 2. By referring to Figure 2 it will be seen that the links 30 when the valve elements are in closed position are slightly offset from dead center so that when the finger pieces are depressed the valves move into open position requiring only a very short movement of the plungers. The short movements of the plungers permit quicker opening and closing of the valve elements and consequently permit tone variations to be materially improved.

As shown in Figure 5, the valve element 26 is positioned to permit the flow of air from the draw 8 through the draw 15 to the bell tube, the other valve elements, namely 25 and 27, being in closed position. However, when the finger pieces of the valve elements 25 or 27 are depressed said valve elements 25 and 27 will move into positions similar to that shown relative to the valve element 26.

The valve casings have removable end caps 26' so that the valve elements may be easily removed when detached from the links. Also bearing discs are provided in the valve casings for the valve elements they being indicated by the character 37.

The positioning of the finger pieces and guides for the plungers as described, permits this instrument to be played by either right or left hand musicians. Also the arrangement of the runs 4 and 10 and 9 and 3 afford a maximum protection to the valves in case the horn is dropped.

Having described the invention, I claim:

A musical instrument comprising a mouth piece, a mouth piece tube connected to the mouth piece, a bell, a bell tube integral with the bell and including upper and lower runs and a curved connecting portion and having the upper run paralleling the mouth piece tube, a draw connected to the mouth piece tube and including upper and lower runs and a connecting portion and having the lower run aligning with the lower run of the bell tube, valve casings and one of said valve casings connected to the lower run of the bell tube and with the valve casing connected to the lower run of the draw, tubes connecting the valve casings and located in a plane with the lower runs of the bell tube and the draw, a series of draws connected to the valve casings and each varying as to length and all shorter than the first-named draw, valve elements having passages mounted in the valve casings for oscillatory movement, vertically arranged plungers operatively connected to the valve elements for oscillating the latter during the reciprocation thereof, vertical guides for supporting said plungers and formed on the valve casings, finger pieces for said plungers and located in a plane slightly above the upper run of the bell tube, springs located in the guides for acting on the plungers for urging the valves into closed position, said valve casings being disposed transversely relative to the draws, bell tube and mouth piece tube and in a plane above the lower runs of the first-named draw and the bell tube.

JOHANN SATTLER.