J. F. S. ALSCHAUSKY.

TROMBONE.

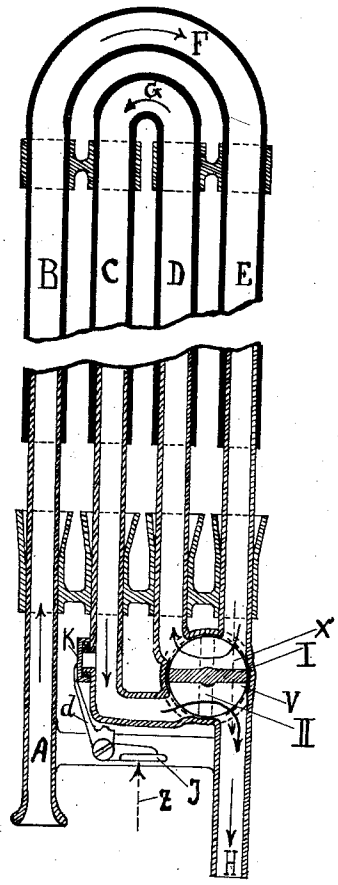
APPLICATION FILED OCT. 21, 1920.

1,428,675.

Patented Sept. 12, 1922.

2 SHEETS—SHEET 1.

FIG. 1.



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FIG. 2.

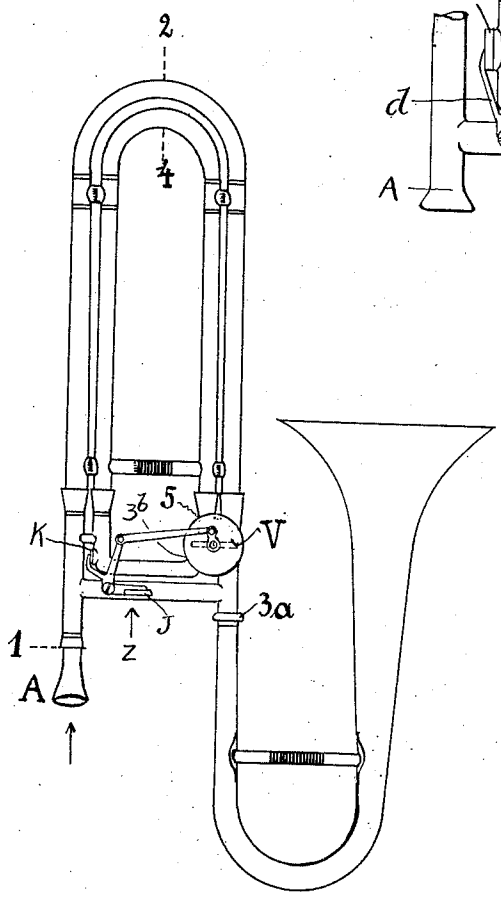
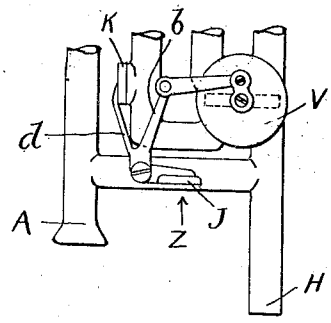


FIG. 3.



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UNITED STATES PATENT OFFICE.

JOSEF FRANZ SERAFIN ALSCHAUSKY, OF GAUTZSCH, NEAR LEIPZIG, GERMANY.

TROMBONE.

Application filed October 21, 1920. Serial No. 418,609.

To all whom it may concern:

Be it known that I, JOSEF FRANZ SERAFIN ALSCHAUSKY, a citizen of the German Republic, residing at Gautzsch, near Leipzig, Germany, have invented certain new and useful Improvements in Trombones, of which the following is a specification.

The B-tenor trombones of known construction present the inconvenience that with extreme extension of the instrument the playing of the same is very fatiguing, the passage from one note to the other being rendered extremely difficult.

This invention has for its object, to improve the construction of the B-tenor trombone so that it is easier to play and the use of a separate upper alto-trombone is rendered unnecessary. There have already become known trombones in which a slide is inserted which consists of a valve tube whereby the trombone becomes adapted for the playing of some lower tones. With the insertion of a sliding piece of this type the problem mentioned above cannot be solved.

The solution of the problem consists in providing the trombone with a double slide so that in place of the slide which has hitherto been formed by two long tubes connected by a U-shaped connecting piece four shorter tubes are substituted connected by means of two U-shaped connecting pieces.

Fig. 1 shows in elevation, partly in section the tube of the improved B-tenor trombone.

Fig. 2 shows in elevation, on a smaller scale than Fig. 1, the complete improved B-tenor trombone.

Fig. 3 shows the key mechanism.

In the drawing: A designates the mouth piece. B, C, D and E designate the four main tubes which form double slides, B being connected with E through the U-shaped slide F, and C being connected with D through the U-shaped slide G. The bell is arranged in the well known manner at H.

The device which has just been described represents a B-tenor trombone which is much shorter than the tenor trombones of the same type and of known construction.

The air flows from mouth piece A through tube B, the U-shaped slide F, tube E, tube D, the U-shaped slide G, tube C and from there through the tube E, the bell tube as indicated in the drawing by the arrows drawn in full lines. In order to permit the use of this shorter B-tenor trombone (as an alto-trombone which in pitch is higher than the tenor trombone) a three port valve V is provided which can be actuated through a lever transmission *a*, *b* and through the pressure plate J. If the pressure plate J is pressed in the direction of the arrow *z* (shown in dotted lines) the valve turns from the position I shown in hatched lines, which corresponds with the hereinbefore described flow of air of the B-tenor trombone, into the position II indicated in broken lines shutting off the tube D. The air current flows now from mouth piece A through tube B, U-shaped slide F, tube E directly into the bell H in the direction of the arrow X (shown in broken lines). The inner tubes C, D are thus shut off as they are not wanted for the smaller alto instrument. At the one end, e. g. at the lower end of tube C according to the drawing, an air valve K is provided which, when the B-tenor trombone is being played, is closed through the arm *d* of the lever *b*. If however the instrument is used as an alto trombone owing to the pressure plate J being pressed in the direction of the arrow *z* (shown in broken lines), the forked arm *d* releases the air valve K and the air compressed in the tubes C and D escapes when the tubes are pulled in, air being admitted into the tubes C and D when the same are being drawn out. This is necessary as otherwise the slides would be braked when the instrument is being played as alto trombone.

The improved double slide trombone shown by Fig. 2 has a range of over four octaves from contra E to the F note of the fourth octave. The fundamental pitch of the instrument is B but it can be altered to the next higher fundamental pitch F by depression of the plate of valve V whereby the two inner tubes are cut out. By this cutting out of the two inner tubes the instrument can play six low pedal bass tones from the large F to the contra H and seven additional high alto tones from the B note of the third octave to the F note of the fourth octave. According to the capability of the player the range of pitch can however be increased upward to the B note of the third octave. If for example a trombonist has to play deep bass parts he can master easily all deep chromatic bass parts in operating the valve, this being impossible with the usual B-tenor trombones in which

the range of pitch does not extend in the deep bass pitch beyond the large E. But when a trombonist has to play high tenor- and alto-parts, which is very fatiguing he can, by operating the valve, execute easily without any fatigue all high parts, even those which do not exist on the old B-tenor trombone and with good lip power even up to the pitch range of the B-trumpet.

The middle pitch of the double trombone remains that of the usual B-tenor trombones and the valve is not required for playing these tones.

The instrument combines three types of trombones: the bass-trombone, the tenor-trombone and the alto-trombone.

The invention can also be applied to deep bass-trombones, if these trombones are constructed in the fundamental pitch Es-B (large octave) or F-C (large octave) or to contra trombones in B-F (contra octave). The manner of playing is the same as described.

In the form of construction of the trombone shown on Fig. 2 the length of the sliding tube is as follows: from 1 to 2 58 centimeters, from 2 to 3^a 60—61 centimeters, from 3^b to 4 54 centimeters, from 4 to 5 49 centimeters and the bell tube in all 70—74 centimeters.

If the parts of the instrument are at the position shown in Fig. 2 the pitch is high F. The two inner slides are idle and the air valve K is open.

The advantages of the double extension trombone are as follows:—

The playing of the higher notes is greatly facilitated for the first B-tenor trombonist. The alto-trombone, which has not a good sound, is no longer required for the playing of the high pitched notes difficult to play and this is particularly agreeable as most trombonists do not like this instrument owing to its very small size and to its incommodious mouth piece. The compass is enlarged in height and depth without any variation of the pitch and of the manner of playing the tenor slide. This enlargement of compass prevents undue exertion of the lungs and reduces, owing to the narrower arrangement of the double tube, the technical difficulties of the deep positions from B to H and so on. A further advantage consists in a chromatic enlargement of the deep tones down to the deep pedal tones. Any player can play perfectly upon this double slide trombone from contra E or B to the Es or B note of the fourth octave. The easier normal compass consists of three octaves and of one fifth; the more difficult compass with pedal tones consists of four octaves and of one fourth. Chromatically the instrument contains 44 easy and, besides these, 11 more difficult tones. The manner in which the instrument is played is similar to the manner of playing the old tenor trombone only in the upper pitches from the G note of the third octave the position of the sliding tubes is modified from that of the B-tenor trombone to that of the alto trombone.

I claim:—

1. An improved trombone comprising in combination with the mouth piece and the bell tube, four main tubes, two U-shaped slides connecting said tubes into an outer pair and an inner pair, a three port valve located to connect at will either an outer tube or an inner tube directly to the bell tube, and means for operating said valve so that the two inner main tubes are shut off, the instrument being thus transformed into an alto-trombone.

2. An improved trombone comprising in combination with the mouth piece and the bell tube, four main tubes, two U-shaped slides connecting said tubes into an outer pair and an inner pair, a three port valve located to connect at will either an outer tube or an inner tube directly to the bell tube, and means for operating said valve so that the two inner main tubes are shut off, the instrument being thus transformed into an alto-trombone, an air valve upon the inner side of the second inner main tube counted from the bell tube, a forked lever system connecting said air valve with said three port valve, and a pressure plate for operating said fork-shaped lever.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEF FRANZ SERAFIN ALSCHAUSKY.

Witnesses:
Dr. HIRBAR BERGER,
ALBERT STRICKERT.