Oct. 13, 1925.

L. R. MANN ET AL

MUSICAL WIND INSTRUMENT

Filed May 9, 1921

Inventors
Louis R. Mann
Donald I. Bohn

By: Gabriel Mueller

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.
To all whom it may concern:

Be it known that we, LOUIS R. MANN and DONALD I. BOHN, citizens of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented a certain new and useful Improvement in Musical Wind Instruments, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to musical instruments and more particularly to a reed instrument that is adapted to have the effective length thereof varied in any desired manner.

It is a purpose of the present invention to provide a musical instrument of the character described with means whereby the effective length thereof can be varied to any desired degree without the use of keys or similar members and without the provision of openings at fixed distances from the mouthpiece.

It is a further purpose of the invention to provide a musical instrument of the above mentioned character wherein the pitch can be varied continuously from a low to a high tone and vice versa, instead of in a step-by-step manner as is common in reed instruments at the present time.

It is still a further purpose of the invention to provide means for varying the effective length of a wind instrument having a tube with a bore of uniformly increasing diameter, without the use of keys or similar members, so that the effective length thereof can be varied to any desired degree.

It is another object of the invention to provide a reed instrument, such as a saxophone, with a slotted longitudinally elongated opening therein, and with a slidable member adapted to close said opening to any desired degree, so as to vary the effective length of said instrument in any desired manner.

It is also an object of the invention to provide means for obtaining an air tight closure between said slide and the walls of said slot to prevent leakage of air from said instrument between the mouth piece and the lower end of the slide.

It is a further and important object of the invention to provide a reed instrument with means whereby the tones produced thereby can be slurred or played without a break between them in a manner similar to that of a slide trombone or similar instrument.

Other objects and advantages of the invention will appear as the description of the accompanying drawings showing one form that our invention may take, proceeds. However, we desire to have it distinctly understood that we do not intend to limit ourselves to the exact detail shown or described, but that we intend to include as part of our invention all such obvious changes and modifications of parts as would occur to a person skilled in this art and as would fall within the scope of the claims.

In the drawings:

Fig. 1 is a side elevation of our improved musical instrument;

Fig. 2 is a side elevation thereof viewed from the opposite side to Fig. 1;

Fig. 3 is a section thereof on line 3—3 of Fig. 1;

Fig. 4 is a broken detail view of the octave key mechanism shown in Fig. 1; and

Fig. 5 is a fragmentary face view of said instrument with the slide and cover plate removed.

Referring in detail to the drawings, the improved musical instrument comprises a body portion 10 having a substantially conical bore and a mouthpiece 11 provided with a reed 12 held in engagement therewith in any well known manner. The tubular body portion 10 tapers substantially uniformly from the one end to the other thereof and is provided with an opening along one side thereof in the form of a slot 13. Mounted on the tubular member 10 is a guideway 14 having side flanges 15 and provided with slotted portions 16 aligning with the slot 13 in the tubular member 10, said slotted guide member being provided with transverse connecting webs 17 if desired. Mounted to operate in the guide member 14 is a slide 18 which is adapted to fit snugly between the flanges 15 so as to be guided thereby. The slide 18 is provided with a base plate 19 on which the handle 20 is mounted, the base plate 19 being secured to the slide 18 in any suitable manner, such as by means of screws, as shown in Figs. 2 and 3. The guide member 14 has secured thereto an angular cover member 21 having an overhanging flange portion 22 to the inside of which is secured a plurality of flat springs 110 having slightly recurved bearing portions 24 as shown in Fig. 2. The springs
23 bear against the slide 18 and hold the same snugly in engagement with the shelf-like shoulders 25 on the guideway 14, thus providing a substantially airtight joint between the slide and the guideway. It will be seen that as the slide 18 is manipulated by means of the handle 20, that the effective length of the tubular portion of the instrument will be varied in accordance with the position of the slide 18 as the entire portion of the tube above the lower edge 26 of the slide 18 will be closed and will operate to produce a wave length corresponding to the length of the tube in operation or the length of the tube above the lower edge 26 of the slide. The cover member 21 may be held in position in any suitable manner such as, for example, by means of the screws 27 entering the slots 28 as shown in Fig. 1.

In playing the instrument the slide 18 is moved to the proper position to obtain the tone desired, the movement of the slide being such as to play substantially an octave between the lowestest position of the slide and the uppermost position thereof. In order to play the second octave of the instrument, suitable octave keys similar to those in use on the ordinary saxophone, are provided, the octave key mechanism comprising a pair of spring pressed key members 29 and 29' which are secured to the body portion of the instrument by means of the clip 30 and which cover suitable openings in the body portion of the instrument between the mouthpiece and the slide by means of the felt covered members 31.

The operating rod or wire 32 operating through the eye 33 mounted on the body portion of the instrument and the perforated ear 34 secured to the cover member 21 in any suitable manner, is provided for operating the keys. This rod is provided with a guide finger or lug 35 and with laterally projecting portions 36 and 37 for receiving the finger of the operator to actuate the rod. Mounted between suitable enlargements 38 and 39 on the rod and the ear 34 are the coil springs 40 and 41, washers 42 being provided between the coil springs 40 and 41 and the ear 34, the coil springs acting to return the operating rod to its central or normal position. The upper end of the operating rod is provided with laterally projecting fingers 43 and 44 which are adapted to engage the keys 29 and 29' respectively to move the same away from the openings in the body portion of the instrument so as to uncover either one of the openings as desired, depending upon the direction of movement of the rod 32. The barrel or body portion 10 of the instrument is preferably of metal as are also the members 14 and 21. The slide 18 is preferably made of hard rubber. The instrument may be provided with a bell 45 if desired. From the above it will be seen that a reed instrument is provided which is adapted to play any tone within the range of the instrument whether the same be a whole tone or any fraction thereof as any tone can be obtained that is desired dependent upon the position of the slide.

It will also be noted that in providing a slide for operating an instrument of this character, slurring is made easy as successive tones can be played without a break with an instrument of this character. This is, of course, not possible except by difficult fingering and difficult blowing with an instrument provided with keys covering openings located at definite fixed distances from the mouthpiece as in such an instrument the variation of the effective length of the tube will ordinarily be in a step-by-step manner instead of in a continuous manner as would be easy to accomplish with the present instrument.

Having thus described our invention, what we desire to claim and secure by United States Letters Patent is:

1. A reed instrument of the character described comprising a mouthpiece carrying a reed, a flaring tubular body portion provided with a longitudinally extending elongated opening therein, and a suitably mounted closure member for said opening to vary the effective length of said instrument. said body portion being provided with a guideway for said closure member and with means for holding said closure member in snug engagement with said body portion.

2. A reed instrument of the character described comprising a mouthpiece carrying a reed, a tubular body portion having a guideway thereon, and means for varying the pitch of said instrument comprising a slide for opening any desired portion of said tubular member from one end thereof to the outer air, said tubular member being provided with resilient means for holding said slide in snug engagement with said guideway during movement thereof.

3. A reed instrument of the character described comprising a mouthpiece carrying a reed, a tubular body portion and means for varying the pitch of said instrument comprising a slide for opening any desired portion of said tubular member from one end thereof to the outer air, said tubular member being provided with resilient means for holding said slide in snug engagement with said tubular member during movement thereof.

In witness whereof we hereunto subscribe our names this 22nd day of April A. D. 1921.

LOUIS R. MANN.
DONALD I. BOHN.