# United States Patent

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H. BERNARD

MUSICAL INSTRUMENT

Filed March 8, 1921

Fig. 1.

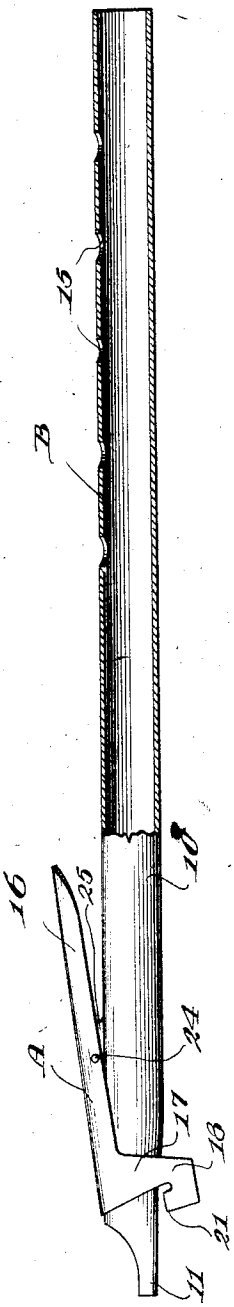



Fig. 2.

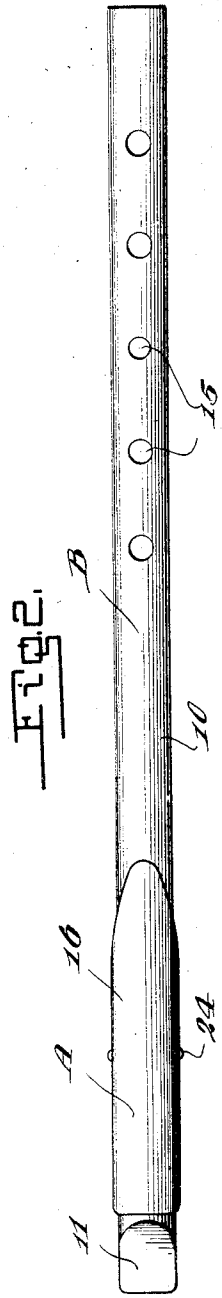



Fig. 4.

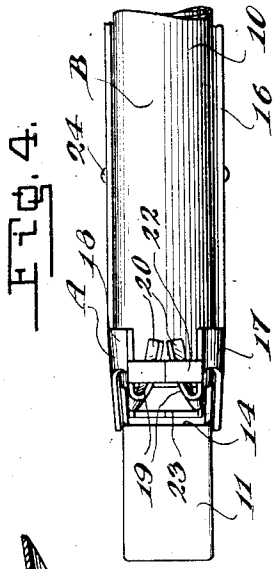
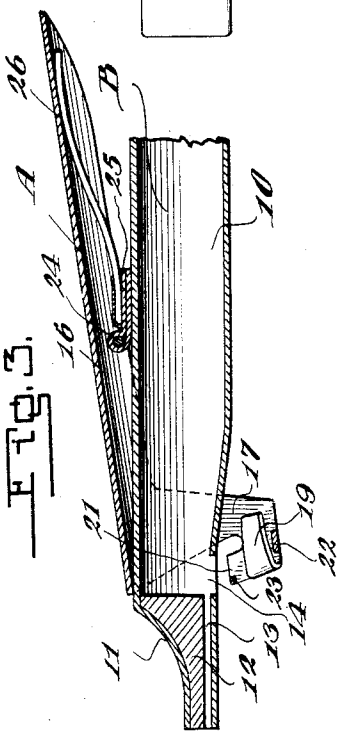



Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## MUSICAL INSTRUMENT.

Application filed March 8, 1921. Serial No. 450,729.

This invention relates to wind musical instruments, and the primary object of the invention is to provide a novel means for permitting the playing of the chromatic scale minus the heretofore customary number of openings and keys for making the tones and half tones, and the consequent difficult fingering (half tones in this application refer to semitones, or half-steps of tempered chromatic scale).

Another object of the invention is to provide a novel means for permitting the playing of the complete chromatic scale with no lateral shifting of fingers, said means permitting the playing of the half tones at any point and by the same operation, emitting one of the chromatic intervals (one half tone) only when the music demands it.

A further object of the invention is to provide novel means for playing the chromatic scale on wind instruments by altering the reed or air-"reed" (air-current) in contradistinction to my patent of 1907 No. 845,998, which involved changing of the openings or resonant lengths of air. All of my instruments need the operation only of a single member for playing the half tones desired between the normal all whole-tone progressions that distinguish my various instruments from others.

A further object of the invention is to provide an attachment for wind instruments, such as the flageolet, ocarina, octavet, and the like, (fife or flute with mouth piece applied to "blow hole" being practically a "flageolet") for playing of the complete chromatic scale by an easily actuated tone altering device, said device rendering a clear distinction between the chromatic intervals, and eliminating "sliding" or "slurring" between half tones composing the couplets into which the chromatic scale tones are grouped throughout in my system of playing (and notation).

A further object of the invention is to provide an attachment for musical wind instruments for altering of pitch by one half tone rapidly in the regular production of a scale by the actuation of a single member in connection with a normal standard fingering.

A still further object of the invention is to provide an improved attachment for ordinary wind instruments of the above character, which is durable and efficient in use, one that is simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, forming a part of this specification, in which drawings;

Figure 1 is a side elevation of a wind instrument partly in section with the improved attachment connected thereto.

Figure 2 is a plan view of the same.

Figure 3 is an enlarged fragmentary longitudinal section through the instrument and attachment.

Figure 4 is a fragmentary bottom plan view of the instrument and attachment.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A indicates the improved attachment and B an instrument with which it is associated, while the invention has been shown in use in connection with an instrument of the flageolet type, it is to be understood that the same routine of fingering may be used with other instruments and that the same has been shown with a flageolet merely for the purpose of illustrating a principle in achieving a routine of fingering.

The instrument B is of the ordinary construction and includes the tubular body 10 having the usual mouth piece 11, in which is positioned the plug or block 12, which forms the restricted wind passage 13. Directly in rear of the wind passage 13 is formed a rectangular opening 14, termed "mouth." The body 10 is provided with the usual line of tone regulating or scale holes 15, by means of which the playing of the whole tones is controlled.

The attachment A includes the body member 16, which is preferably curved transversely to conform to the contour of the instrument, and the forward end thereof is provided with the laterally extending supports 17, which are disposed on opposite sides of the body 10. The terminals of the supports 17 are bent slightly inwardly as at 18, and are provided with inwardly inclined ears 19, which gradually converge toward each other as at 20. These ears 19 are adapted to be moved over the mouth 14 for restricting the

size thereof, which consequently lowers the pitch and the ears are so shaped as to help lower pitch of any tones emitted from the holes 15, when the ears are moved to an operative position. The inner ends of the ears 19 are offset as at 21 and are arranged to be moved into engagement with the side walls of the mouth opening 14 when the ears 19 are moved to an operative position in relation to the mouth opening and 19 and 21 surfaces combine to form a removable ear similar to organ pipe practice. The bent ends 18 of the supports 17 are provided with reinforcing lugs 22, that form approximation to an organ-pipe "beard" which extend inwardly toward each other, and also help lower pitch. In fact these lugs and preceding converging parts are the mechanical equivalent of a thumb and index finger meeting over the mouth of the flageolet and sealing the sides of the mouth as would the "ears" applied to an organ pipe. The resultant arch partakes of nature of ears and beard, and lowers pitch of holes 15. In order to give a sharp distinction between the components of the pairs of chromatic tones, a transversely extending bar 23 is provided, and the same is formed on the offset portion 21 of the ears 19 and will momentarily cut off the flow of air through the wind passage 13 during the initial positioning of the ears over the openeing 14. This prevents the "sliding" or the "slurring" in playing when changing from one tone to another of the grouped pairs of chromatic tones under each scale controlling finger.

In order to facilitate the operation of the attachment A, the body 16 is mounted upon the transversely extending pivot pin 24 which is carried by the attaching plate 25 secured to the body 10. A leaf spring 26 is also secured to the plate 25 and engages the inner surface of the outer end of the body 16 and normally holds the ears 19 and the cross bar 23 away from the mouth opening 14. When it is desired to operate the attachment to play a half tone lower, it is merely necessary to press down upon the body 16 which will move the ears 19 in correct position in relation to the opening 14, which will lower the pitch a half tone. During the initial positioning of the ears 19, the bar 23 will momentarily interrupt passage of air 13 and thus give a clear distinction between the tones of coupled chromatics arranged to be emitted from a given hole 15. It is understood that chromatics can be coupled up on a different plan whereby depressing 16 might raise the pitch; or 16 can be a simple flapper on top of an ordinary "mouth-up" flageolet without the fulcrum and lever action shown.

I claim:

1. A musical instrument of flageolet type with five finger controlled vents for altering by 12 consecutive half tones the fundamental tone of the open-end body in connection with means located remote from said vents, near the wind lay or mouth, acting in a manner common to all said vents, to cause said vents to emit instantly at will either their normal whole-tone intervals apart, or the tones intermediate commonly referred to as half-tones.

2. In a musical instrument including a body provided with a series of digitally controlled vents, all of which are for producing whole tones, the combination of means for producing half tones, said half tone producing means being common in all whole tone intervals.

3. In a wind musical instrument with five lateral finger controlled vents in its body giving only whole-tone progressions, the combination of means for producing half-tones in a manner common to all the whole-tone intervals, said means being instantly removable structures that, when in operative position, alter the normal flow of air currents after their exit from the wind lay of the mouth piece of instrument.

4. In a musical instrument including a body provided with a series of finger controlled intervals, all for producing whole tones, a manually operated member cooperating with any selected whole tone interval for producing a half tone.

5. A musical instrument of flageolet type with finger-controlled vents giving intervals of whole-steps principally, provided with means comprising a plurality of pitch altering devices including "ears" and "beard" and a "cross bar," mounted for simultaneous operation to control the mouth opening.

6. In a musical instrument, including a body having finger controlled openings that emit whole tone intervals normally when fingers operate in rotation, and a mouth piece; combination of means movably or flexibly mounted intermediate the mouth piece and the finger controlled openings, arranged to be operated by a single motion of limb or other bodily member for producing the half tones of a chromatic scale between such whole tones in a manner common to all such whole tones.

7. In a flageolet with whole tone finger controlled openings, combination of a half tone attachment including a member arranged to be brought across the mouth opening quickly for producing a chromatic scale.

8. In a flageolet, a body having mouth piece, and whole tone finger controlled openings, of a half tone attachment including a single member movably connected to the body having ears arranged to be brought in contact with instrument's mouth at sides, and out of contact, at will.

9. In a flageolet, a body having a mouth piece, a vent opening, and whole tone finger controlled openings, use of a half tone attachment therefor including a member flexibly or

movably connected to the body having ears arranged to be brought to sides of the mouth opening, and means for rendering a sharp distinction between adjacent chromatics of a scale of half tones.

10. In a flageolet including a body having a mouth piece with usual wind lay, a mouth opening arranged in rear of the wind lay and whole tone finger controlled openings, use of a half tone attachment for the instrument including a movably mounted member carried by the body including ears adapted to be brought over the mouth opening on opposite sides thereof and a cross-bar adapted to momentarily obstruct the wind lay when the ears are being moved into their operative or inoperative positions.

11. In a flageolet including a body having a mouth piece, provided with wind lay, a mouth opening arranged directly in rear of the wind lay and whole tone finger controlled openings, use of a half tone attachment for the instrument, for playing of selected half tones without any changing of the fingering of the whole tone openings, comprising a member flexibly connected to the body the member having inwardly extending, converging or convex ears arranged to be quickly brought on opposite sides of the mouth opening, and a transversely extending cross-bar connected to the inner ends of the ears intended to momentarily interrupt the exit of air from wind lay during the bringing of the ears into and out of operative relation with the mouth opening.

12. In a flageolet including a body having a mouth piece provided with a wind lay and a mouth opening in rear thereof, and a plurality of whole tone openings, use of an attachment for playing of half tones without the addition of tone openings, including a transversely curved body, means flexibly connecting the body to the musical instrument body, inwardly extending supports formed on the opposite sides of the body at the inner end thereof arranged to extend along the sides of the body of the musical instrument, inwardly extending converging convex or concave ears formed on the supports adapted to be brought on opposite sides of the mouth opening, offset portions formed on the ears arranged to be moved to their operative positions, a cross-bar connecting said offset portions with the ears adapted to be momentarily brought across the exit of wind lay, and spring means engaging the body portion of said member for normally holding the ears and the cross bar in whatever is adapted as a position of rest.

13. A musical instrument of flageolet type giving substantially whole tone intervals, provided with means comprising a plurality of pitch-altering devices including "ears" and "beard" mounted and operated to control the mouth-opening.

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