

UNITED STATES PATENT

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June 10, 1941.

E. W. DAVIS

2,245,432

MUSICAL INSTRUMENT

Filed Jan. 22, 1940

Fig. 1.

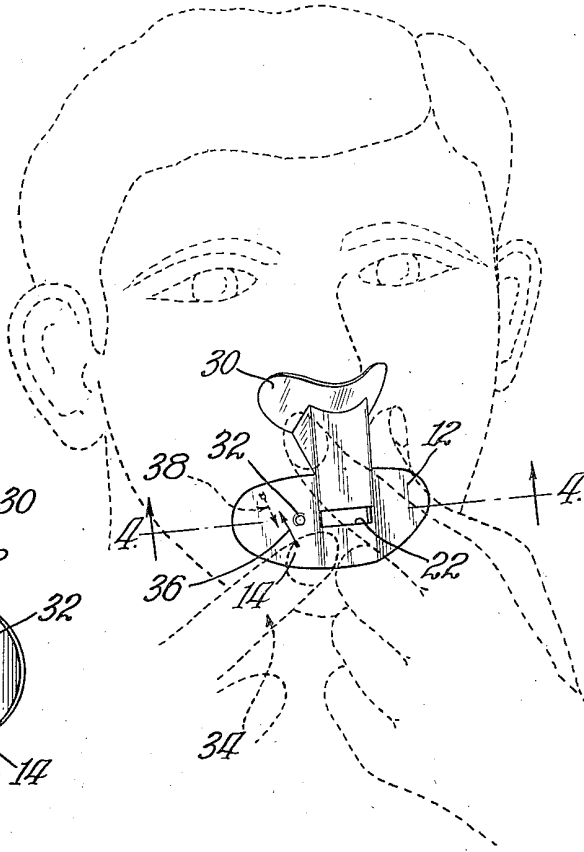


Fig. 2.

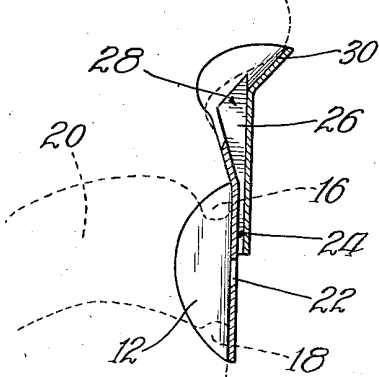
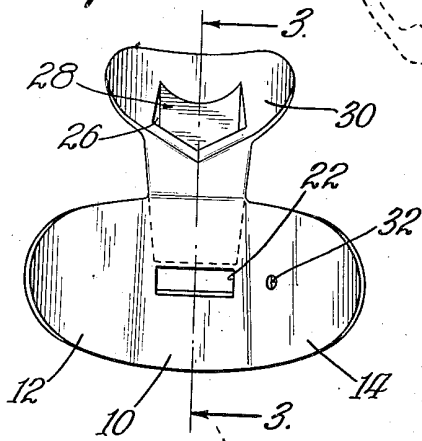


Fig. 3.

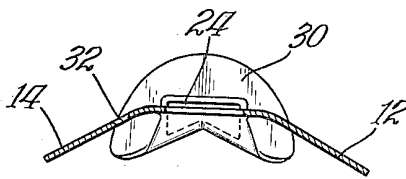


Fig. 4.

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UNITED STATES PATENT OFFICE

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MUSICAL INSTRUMENT

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Application January 22, 1940, Serial No. 314,967

3 Claims. (Cl. 84-330)

My invention relates to musical instruments and includes among its objects and advantages an extension of the pitch range and an improvement in tone quality, especially at higher pitches, in the type of musical instrument in which pitch variation is obtained by varying the volume of a cavity defined primarily by the oral cavity of the player, and, to a minor extent, by the instrument itself.

A specific object is to enable the player to produce a true tremolo tone at will. Further objects and advantages will be apparent as the description proceeds.

In the accompanying drawing:

Figure 1 is a front perspective view of a device according to the invention with the position of the head and hands of the user indicated in dotted lines;

Figure 2 is an elevation of the instrument from the side juxtaposed to the face of the player in use;

Figure 3 is a section on line 3-3 of Figure 2; and

Figure 4 is a section on line 4-4 of Figure 1.

In the embodiment of the invention selected for illustration, the instrument comprises a barrier shaped to overlie the partly opened mouth of the user and made up of a central panel 10, a left wing 12, and a right wing 14. The wings lie at a slight angle to the body and the junctions are somewhat rounded to define a substantially curved barrier conforming approximately to the undistorted contour of the lips and cheeks of the user. Sufficient pressure against the user's face to secure a seal, readily distorts the lips and adjacent cheek portions of the user to fit perfectly against the barrier. It will be noted that the barrier is perfectly straight in vertical cross section as shown in Figure 3, and thus imposes no limitation to up and down movement of the upper lip indicated at 16 or the lower lip indicated at 18 in connection with the movement of the user in enlarging or lessening the size of the oral cavity 20, part of which is indicated in Figure 3 in dotted lines. As it is the size of this cavity that determines the pitch of the resultant tone, this freedom enables the user to attain a range of pitches limited primarily only by the anatomy of the player. The position indicated in dotted lines in Figure 3 is for a relatively low note, though not necessarily the lowest, and it will be evident that the lips 16 and 18 could be moved together to be separated by about one-fourth as much space as is shown in Figure 3 and still be symmetrically

spaced with respect to the main aperture 22 which is centrally positioned in the panel 10.

To activate the air in the oral cavity, I provide a passageway including a straight portion 24 terminating closely adjacent the sound aperture 22, and a tapered portion 26 opening at 28 through a curved nose piece or shield 30 adapted to lie against the nostrils of the user and receive air breathed out by the user, which air issues across the sound aperture 22 and generates the sound. In the right wing 14 I provide a tapered tremolo aperture 32, with its large end outermost. This makes a large enough dimple in the outer surface so that the user's finger can readily find it. With the parts of the player's mouth in a given position and the aperture 32 open, the air in the oral cavity will vibrate at a slightly lower frequency than when the aperture is closed. Thus the user, as clearly indicated in Figure 1, may use one finger, such as the index finger 34 of the right hand, to cover and uncover the aperture 32, and when this is done rapidly as by vibrating the finger across the aperture as indicated by arrows 36 and 38 in Figure 1, a tremolo, or periodic oscillation in pitch may be obtained, the frequency of the oscillation depending on the speed of vibration of the finger 34. It will be apparent that this is a true tremolo as distinguished from a vibrato. With the aperture 32 either covered or uncovered, the player can produce a vibrato by varying the force used to produce the sound, although with such an instrument as this, the tremolo is a much more desirable musical effect.

The instrument is customarily used by placing it in the position of Figure 1, and holding it in position with the left hand, leaving the right hand free to cover or uncover the aperture 32 as desired. However, when a tremolo effect is not wanted, either hand may be used to hold it in place.

It is noted that the shape of the passageway 24-26 is such that a core defining the space occupied by the passageway, can be withdrawn upwardly. Accordingly, the device can readily be produced by casting in metal in a single piece or by molding in plastic material in a single piece.

I am aware that musical instruments of this general type have been made and used prior to my invention but, so far as I am aware, they projected into the user's mouth or at least were of irregular vertical contour so that it was difficult for the user to move his lips with freedom in adjusting the tone. And I am not aware that

any such instrument has been produced in the past capable of producing a true tremolo tone. With an instrument according to the invention, it requires only slight practice to play three full octaves, and because the lips can be drawn together to make appropriate changes in the shape of the oral cavity as the pitch goes up, the high notes can be made quite clear and harmonious.

Without further elaboration the foregoing will so fully explain my invention that others may, by applying knowledge current at the time of application, readily adapt the same for use under various conditions of service.

I claim:

1. A musical instrument comprising a nose piece conformed to the general shape of that portion of a human nose which surrounds the nostrils; a barrier plate conformed to the general shape of that portion of a human face which surrounds the lips, said barrier plate having a sound aperture therein positioned to register with a performer's mouth when said nose piece is in contact with the performer's nose, and said barrier plate having a tremolo aperture therein in close proximity to said sound aperture; and an air passageway extending downwardly from said nose piece and terminating in a position to discharge air across said sound aperture; the length of the overall space occupied by both said apertures as measured in a horizontal direction being less than the length of an average human mouth.

2. A musical instrument comprising a nose piece conformed to the general shape of that portion of a human nose which surrounds the nostrils; a barrier plate conformed to the general

shape of that portion of a human face which surrounds the lips, said barrier plate having a sound aperture therein positioned to register with a performer's mouth when said nose piece is in contact with the performer's nose; and an air passageway extending downwardly from said nose piece and terminating in a position to discharge air across said sound aperture; the rear surface of said barrier plate being concave and the walls thereof being formed parallel with a vertical axis, whereby the resulting vertical walls permit a performer to move his lips freely and separate them to varying degrees without hindrance while maintaining contact between his lips and said barrier plate.

3. A musical instrument comprising a nose piece conformed to the general shape of that portion of a performer's nose which surrounds the nostrils; a barrier plate conformed to the general shape of that portion of a human face which surrounds the lips, said barrier plate having a sound aperture therein positioned to register with a performer's mouth when said nose piece is in contact with the performer's nose; and an air passageway extending downwardly from said nose piece and terminating in a position to discharge air across said sound aperture; said air passageway extending in a single direction throughout its entire length, with the walls of said passageway and said nose piece diverging in the same direction throughout their extent, whereby said passageway may be formed by means of a withdrawable core; said nose piece, barrier plate, and air passageway being integral.

ERNEST W. DAVIS.