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CHROMATIC HARMONICA WITH TONE CONTROLS

Borrah Minevitch, New York, N. Y.

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This invention relates to musical instruments and more particularly to a harmonica, one object of the invention being to provide a harmonica of such construction that by proper adjustment its tone may be controlled.

Another object of the invention is to provide the harmonica with an improved mouth piece of such construction that tight joints may be formed between the mouth piece and casing plates and leakage of air between the mouth piece and plates prevented.

Another object of the invention is to so form the mouth piece that when it is in place, inner and outer plates and a slidable plate disposed between the inner and outer plates will be held in their proper positions between the mouth piece and body of the harmonica with one end of the slidable plate projecting for engagement by a finger whereby this plate may be easily moved to an adjusted position varying the tone of the harmonica.

Another object of the invention is to provide improved means for yieldably holding the slidable plate in a normal position and returning it to the normal position after being forced inwardly by pressure applied to its outer end.

A still further object of the invention is to provide the harmonica with means for insuring proper holding of the same while playing, the said means also serving as means for securing the harmonica and preventing it from slipping out of a pocket when not in use.

Still another object of the invention is to provide a harmonica having cups associated therewith at its back through which air passes after vibrating the reeds, elements being mounted in the cups for imparting tremor to notes.

Another object of the invention is to so construct the cups that they can be easily applied to or removed from a harmonica and when in place thereon will not be liable to accidentally slip out of place.

With these and numerous other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawing forming a part of this application:

Figure 1 is a perspective view of the improved harmonica;

Figure 2 is a sectional view taken transversely through the harmonica along the line 2—2 of

Figure 1;

Figure 3 is a view looking at the front of the harmonica with the finger engaging elements in retracted position against the body of the instrument and the slide plate in its normal position;

Figure 4 is a view similar to Figure 3 but showing the finger engaging elements extended and the slide plate pressed inwardly;

Figure 5 is a perspective view of the mouth piece;

Figure 6 is a view of the outer plate;

Figure 7 is a view of the inner plate; and

Figure 8 is a view of the slidable plate.

In describing the invention, I shall refer to the drawing in which similar reference characters designate corresponding parts throughout the several views. The improved harmonica constituting the subject matter of this invention has a body 1 formed of wood or other suitable material and opposed faces of the body are formed with grooves or recesses 2 and 3 constituting air passages which open through the front edge face of the body. Reed holding plates 4 and 5 carrying reeds 6 and 7 are fixed to side faces of the body with their reeds disposed in operative relation to the passages 2 and 3 and there has also been provided casing plates 8 and 9 having flanges at their ends formed with hinge ears 37 to receive a pin 36. At the other end of the harmonica the plates have other flanges formed with openings or sockets to receive studs 38 projecting from an anchoring plate 39 secured against the body 1 by a screw 40. By this arrangement the plates will be firmly held in place but can be released and swung away from the body to expose the reeds and allow thorough cleaning. The casing plates extend rearwardly in diverging relation to the reed holders as shown in Figure 2, in which position they are held by the pins 9 to provide air passages 10 and 11 through which air passes during playing of the instrument. It should also be noted that the casing plates are offset or grooved as shown at 8' to serve as guides for the lips when playing.

Referring to Figures 1 and 3, it will be seen that each casing plate carries a ring which is elliptical in shape and has one end engaged by an eye 13 formed of a strip struck from the plate. These rings extend longitudinally of the harmonica and are located out of opposed relation to each other in such positions that when the instrument is held for playing, fingers may be engaged through the rings. This will cause the harmonica to be properly held when it is played. It should be noted that the tongues forming the eyes 13 are resilient and have binding engage-

ment with the rings. Therefore, the rings will be frictionally held in either the position shown in Figure 3 or that shown in Figure 4. During playing of the instrument, the rings are swung to the extended position of Figure 4 so that fingers may be engaged through the rings but when not in use the rings are moved to the retracted position of Figure 3 and can then be used as clips to engage a pocket or other portion of a person's clothing and prevent loss of the harmonica.

A mouth piece 14 extends across the front of the body where it is secured by screws 15 and referring to Figures 2 and 5, it will be seen that the mouth piece is hollowed from its rear or inner face to form a pocket 16 in which are disposed plates 17, 18 and 19. The inner plate 17 and outer plate 19 fit snugly within the pocket but the intermediate plate is of greater length than the pocket and has one end portion projecting therefrom and reduced in width to form a neck 20 terminating in a head or button 21. The end wall of the pocket at the end of the mouth piece from which the intermediate plate projects is reduced in depth, thereby providing a passage 22 through which this plate projects. Referring to Figures 6, 7 and 8, it will be seen that openings 22, 23 and 24 are formed through the plates to receive the screws 15, the openings 24 being in the form of slots extending longitudinally of the plate so that the intermediate plate may be slid longitudinally from the extended or normal position of Figure 3 to the retracted position shown in Figure 4. The slidable plate is to be yieldably held in its normal position and in order to do so there has been provided a leaf spring 25 secured against the rear edge face of the body and extends longitudinally thereof with an end portion projecting from the body and bent forwardly to bear against the inner face of the head or button 21. The spring yieldably holds the slide strip in its normal position with its openings 26 registering with the openings 27 and 28 of the plates 17 and 19 and when the slide plate is forced inwardly by pressure applied to the button 21, the openings 29 of this plate register with the openings 30 and 31 of the inner and outer plates. The openings 32' of the mouth piece are of sufficient size to expose both the upper and lower rows of openings of the outer plate and openings of one row formed in the slide plate are in staggered relation to its other row. Therefore, under normal conditions, the openings of one row will register with the upper row of openings formed through the inner and outer plates and when the slide plate is forced inwardly against action of the spring strip 25, the upper row of openings formed through the inner and outer plates will be blocked and the lower rows of openings will be exposed. It will thus be seen that air can be caused to pass through either set of air passages formed in the body and cause music to be played by the reeds 6 or the reeds 7. Note indicators 41 in the form of consecutive numbers are stamped in the plate 18 adjacent the openings 26 and 29 and are displayed through the openings 32 according to the position of the slide plate.

Referring now to Figures 1 and 2, it will be seen that at the rear of the harmonica, there have been provided cups 32 which are formed of metal and are open at their inner ends and also along their front sides. These cups have their front edge portions overlapped by rear edges of the casing plates and are cut to form tongues 33 which overlap the casing plates. Therefore, the cups will be firmly held in engagement with the cas-

ing plates but may be slid longitudinally thereof and a person playing the harmonica can slide the cups towards or away from each other to dispose them close together or relatively far apart and also cause them to be located back of reeds which are in use. Coils of resilient metal 34 and 35 extend longitudinally in the cups and each is soldered at one end to a wall of a cup. The coil 35 is of finer gauge than the coil 34 and may be referred to as a treble coil while the coil 34 constitutes a base coil. These coils are vibrated by air which passes through the cups and serve to impart tremor to notes when the harmonica is played. The cups may have their open ends facing each other or directed towards ends of the harmonica. If so desired only one cup may be used instead of two.

When this harmonica is in use, it is held in the usual manner and under normal conditions, air passes through the openings 27 and 28 of the inner and outer plates, thereby causing music to be played from the reeds 7. By pressing upon the head or button of the slide plate, this plate will be forced inwardly to close the openings 27 and 28 and expose the openings 30 and 31. Air will then pass through these openings and music will be played from the reeds 6. When these reeds are in use, the air passes through the cups and in so doing causes the coils to be vibrated and impart tremor to the notes played. Sliding the cups towards and away from each other will also effect tone of the notes and impart a pleasing effect to the music. By sliding the cups along the casing plates, they can be removed if so desired.

From the foregoing description of the construction of my improved harmonica, the operation thereof and the method of applying the same to use will be readily understood. It will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention, what is claimed is:

1. In a harmonica, a body formed with air passages, reeds mounted in operative relation to said passages, casing plates carried by said body at opposite sides thereof and having their rear edges spaced from the body, cups at the rear of said body engaged with rear edge portions of said plates and slidable longitudinally of the body, said cups being open along their inner sides and having open ends facing each other, and means in said cups for imparting tremor to notes as air passes through the cups during playing of the harmonica.

2. In a harmonica, a body formed with air passages, reeds mounted in operative relation to said passages, casing plates carried by said body at opposite sides thereof and having their rear edges spaced from the body, cups at the rear of said body engaged with rear edge portions of said plates and slidable longitudinally of the body, said cups being open along their inner sides and having open ends facing each other, and strips of resilient material formed into helical coils, the said coils being disposed within said cups and extending longitudinally thereof with each fixed at one end to a cup and having its other end

free whereby the coils may vibrate and impart tremor to notes as air passes through the cups.

3. In a harmonica, a body formed with air passages, reeds mounted in operative relation to said passages, casing plates carried by said body at opposite sides thereof and having their rear edges spaced from the body, cups at the rear of said body engaged with rear edge portions of said plates and slidable longitudinally of the body, said cups being open along their inner sides and having open ends facing each other, and resilient coils in said cups having helical convolutions, each coil being fixed at one end to a cup and one coil being of finer gauge than the other to provide base and treble coils for imparting tremor to notes as air passes through the cups.

4. In a harmonica, a body formed with air passages, reeds mounted in operative relation to the air passages, casing plates at opposite sides of said body having their rear edges spaced from the body and cups extending rearwardly from said body and formed separate from each other, said cups having open inner ends facing each other and being independently slidable along the rear of the harmonica.

5. In a harmonica, a body formed with air passages, reeds mounted in operative relation to the air passages, casing plates at opposite sides of said body having their rear edges spaced from the body and cups extending rearwardly from said body and formed separate from each other, said cups having open inner ends facing each other and each being open at its front, walls of the cup being overlapped by rear edges of the casing plates and the cups being provided with tongues overlapping the casing plates whereby said cups will be slidably mounted for movement longitudinally of the harmonica.

6. In a harmonica, a body formed with air passages, reeds mounted in operative relation to the

air passages, casing plates at opposite sides of said body having their rear edges spaced from the body and cups extending rearwardly from said body, said cups having open inner ends facing each other and each being open at its front, means being provided for slidably mounting the cups for adjustment longitudinally of the harmonica, and coiled springs in said cups, each spring being secured at one end and serving to impart tremor to notes as air passes through the cups.

7. In a harmonica, a body formed with air passages, reeds mounted in operative relation to the air passages, casing plates at opposite sides of said body having their rear edges spaced from the body and cups extending rearwardly from said body, said cups having open inner ends facing each other and each being open at its front, and coiled springs in said cups to impart tremor to notes as air passes through the cups.

8. In a harmonica, a body formed with air passages, reeds mounted in operative relation to the air passages, casing plates at opposite sides of said body having their rear edges spaced from the body and cups extending rearwardly from said body, said cups having open inner ends facing each other and each being open at its front, and coiled springs in said cups to impart tremor to notes as air passes through the cups, said springs extending longitudinally of the cups and each secured at one end, one spring being of coarser gauge than the other.

9. In a harmonica, a body formed with air passages, reeds in operative relation to said passages, casing plates at opposite sides of said body, a cup extending rearwardly from said body, and means in said cup for imparting tremor to notes as air passes through the cups.