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O. M. HEATH  
FINGERED HARMONICAS  
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3,339,443

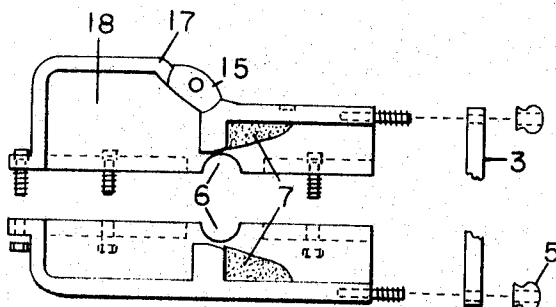


FIG. 2

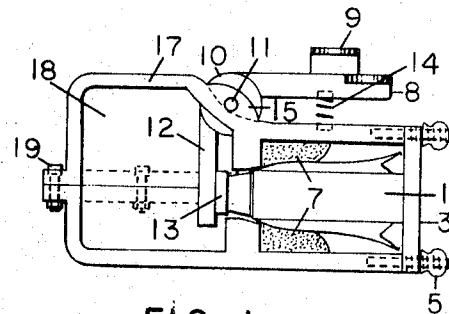


FIG. 1

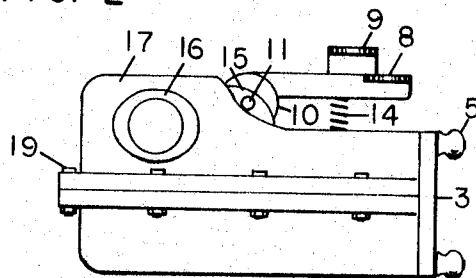


FIG. 4

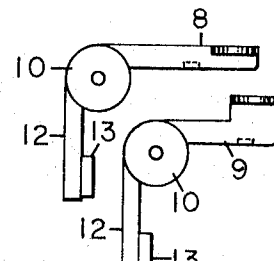


FIG. 3

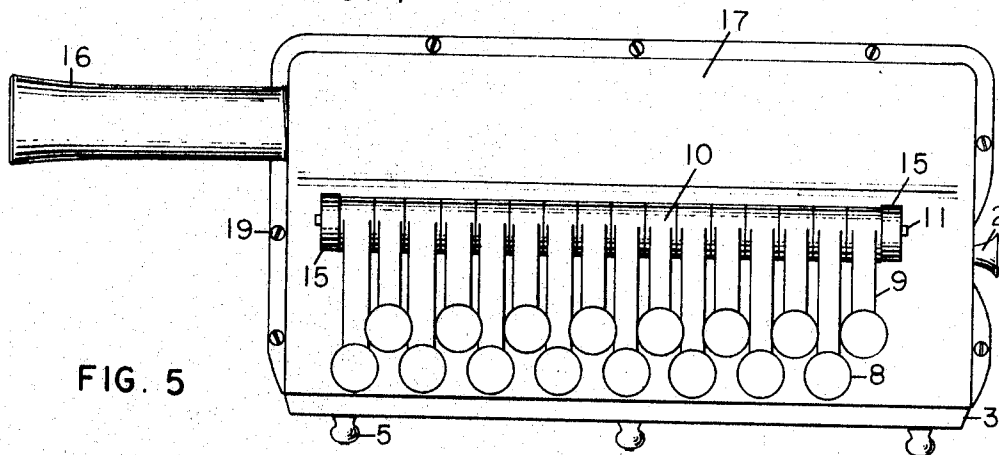


FIG. 5

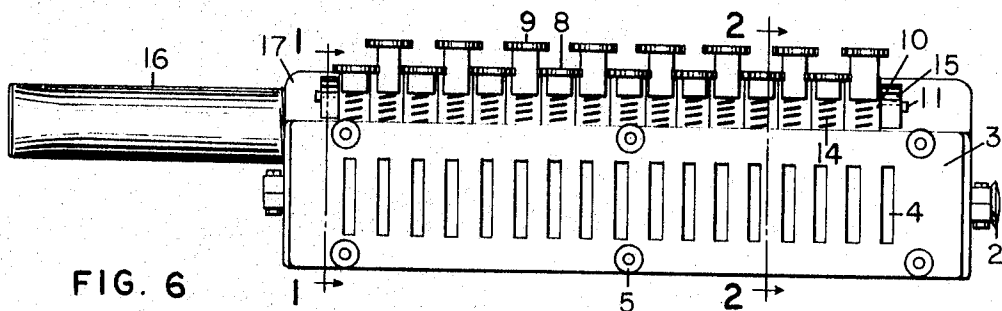


FIG. 6

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**FINGERED HARMONICAS**

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4 Claims. (Cl. 84-377)**

This invention relates to a fingered harmonica. Reference is made to my Patent No. 3,218,903 dated Nov. 23, 1965, in which the primary objects of the fingered harmonica are listed. That patent calls attention to the fact that a conventional harmonica cannot be fed directly through the valve system described. The reason is that air fed directly into the input holes of a harmonica will cause jamming.

A primary object of this invention is to provide a means whereby a commercially available harmonica may be used as the heart of a fingered harmonica.

Another object is to provide a mouthpiece which is more sanitary than the conventional mouthpiece.

Another object is to provide a case of special design for holding the harmonica, having in mind ease of manufacture, assembly, and harmonica insertion.

Another object is to provide a keyboard arrangement which will assist in playing the recessed harmonica.

Still another object is to provide specially designed finger keys which operate through the casing wall without permitting excessive air leakage.

With these and other objects in view, my invention consists in means for playing a standard harmonica by control of air fed through a single mouthpiece to a main air chamber, opening through valves upon the input holes of said harmonica, and having said valves controlled by the fingers.

In the drawings:

FIGURE 1 is a vertical transverse sectional view taken along the line 1—1 of FIGURE 6, showing a chromonica type harmonica recessed within the casing.

FIGURE 2 is a vertical transverse sectional expanded view of the casing only, taken along the line 2—2 of FIGURE 6.

FIGURE 3 is a side elevation of a finger control key of each type, with affixed valve closing members.

FIGURE 4 is a front-end elevation of an assembled instrument built according to these specifications.

FIGURE 5 is a top view of an assembled instrument.

FIGURE 6 is a side elevation of the instrument shown in FIGURE 5.

With reference to the drawings:

The harmonica preferred for this invention and chosen for purposes of illustration is the chromonica. While the invention is not limited to any particular type harmonica, special designing is required for any particular harmonica insert. However, exchanges may be freely made of harmonicas of like structure and design to the one chosen.

Chromonica 1 is a conventional four-octave harmonica fitted with a sharpening slide controlled by sharpening slide button 2, which is the only part of the recessed harmonica visible in FIGURES 5 and 6. Four chromonica input holes direct air to reeds covering an entire octave of the chromatic scale when the sharpening slide is used. The sixteen input holes cover four octaves placed end-to-end.

Side plate 3 is fitted with slotted vents 4 for air intake and exhaust. A filter over these slots is optional and is therefore not illustrated in the figures. Chromonica 1 may be removed, exchanged, or re-inserted in the casing recess by removal of side plate 3 after removal of knurled

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nuts 5. A circular end opening 6 in FIGURE 2, formed by bringing the upper and lower casing halves together, receives sharpening slide button 2. Recess padding 7 serves to eliminate air leakage around chromonica 1.

5 Finger keys are two types, forming a lower keyboard for the set of finger keys 8 and an upper keyboard for the set of finger keys 9. In addition to spacing gains, the double row of keys helps the player to locate the desired note. To blow notes on the lower keyboard with sharpening slide inactive are C-G-C-G-C-G-C-G. Thus, 10 it is twice as easy to locate the G, for example, if half the non-G's are on a different keyboard altogether. The finger keys are passed through the casing wall in a leak-free manner by use of cylindrical bearings 10 which are 15 mounted on bearing axle 11 in side-by-side fashion, having a lubricant such as petroleum jelly applied between and around bearings to facilitate movement and to form an effective air seal.

Finger keys 8 and 9 are affixed to valve control members 12 which carry valve closing pads 13. Springs 14 20 hold pads 13 against the input holes of chromonica 1 when no pressure is applied to finger keys. Bearing axle mounting 15 holds axle 11, keeping cylindrical bearings 10 aligned.

25 Mouthpiece 16 is of special design, being flared at the open end and large enough for partial insertion of the lips. This is more sanitary than the harmonica or the conventional small breath-operated reed instrument (which normally has a mouthpiece which is placed in 30 the mouth), since no excessive saliva flow is introduced into the mouthpiece or instrument. Mouthpiece 16 screws into casing 17.

Main air chamber 18 communicates with the mouthpiece 16 and opens directly upon the chromonica input 35 holes with their valve covers. The valve system illustrated is preferred for simplicity and facility of pad replacement. However, the invention is not limited to the valve system shown, since slide valves could be made to serve the same purpose.

Casing 17 is preferably of plastic, but may be of other 40 cast or molded materials. The two halves of casing 17 are fastened together with a set of nuts and bolts 19 to facilitate replacement of pads 13 and the initial insertion of valve control members 12 and springs 14.

I claim:

1. An air control system for a harmonica composing 45 a casing enclosing an air chamber and a harmonica-accommodating recess; a ventilated recess cover; valves positioned to open and close the multiple mouthpiece 50 holes of a recessed harmonica; valve control means for opening said valves; springs for closing said valves; finger keys membering with said valve control means; and a single mouthpiece communicating with said air chamber; and having said air chamber opening upon the valve-fitted 55 mouthpiece holes of said recessed harmonica, whereby said harmonica may be played by controlling the breath through said single mouthpiece while manipulating said finger keys.

2. A device as claimed in claim 1, having said finger 60 keys arranged in two rows of alternate keys, having one row positioned inwardly and upwardly from the other row.

3. A device as claimed in claim 2, having said mouthpiece flared at the open end to permit partial insertion of 65 the operator's lips.

4. A device as claimed in claim 3, having said valves and valve control means comprising cylindrical bearings

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having center bore normal to lateral surfaces; an axle passing therethrough; axle support members affixed to said casing; valve pads; and rigid members supporting said valve pads and affixed to said bearings; and having said casing slotted longitudinally with slot edges formed to join precisely and slideably with the surfaces of said cylindrical bearings.

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## References Cited

## UNITED STATES PATENTS

3,218,903 11/1965 Heath ----- 84-377

5 RICHARD B. WILKINSON, *Primary Examiner*.C. M. OVERBEY, *Assistant Examiner*.