PUBLISHED
MAY 4, 1943.
BY A. P. C.

K. SCHERER

CHROMATIC HARMONICA

Filed June 16, 1941

Serial No.
398,349

2 Sheets-Sheet 1

Fig. 1.

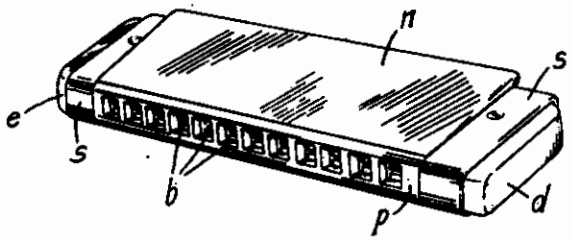

Fig. 2.

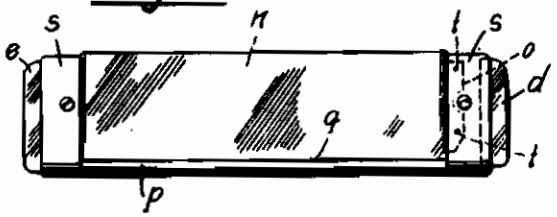

Fig. 3.

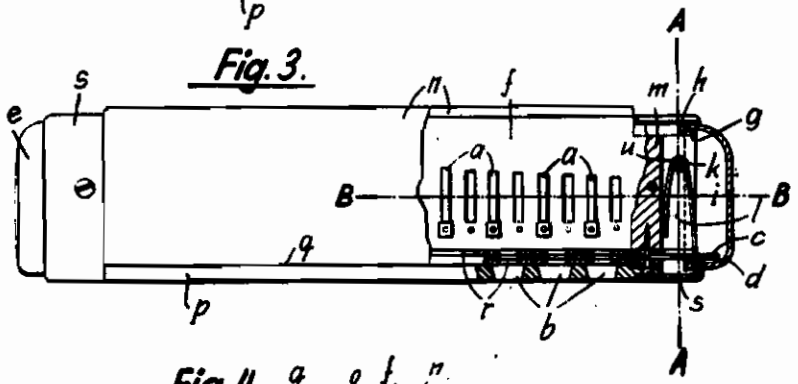

Fig. 4.

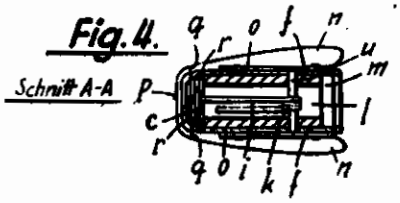

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Fig. 5. Schnitt B-B

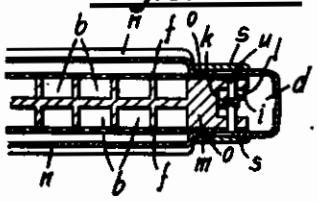

Fig. 6.

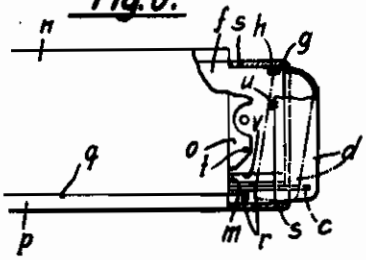

Fig. 7.

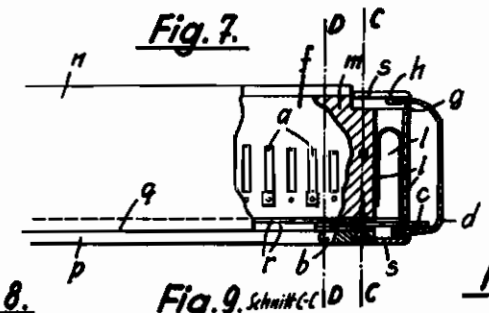

Fig. 8.

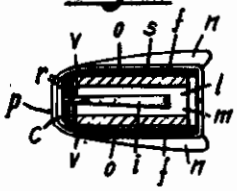

Fig. 9. Schnitt C-C

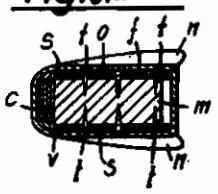

Fig. 10. Schnitt D-D

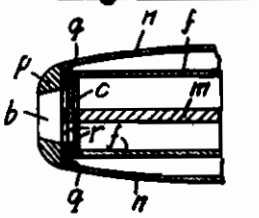

Fig. 11.

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Published May 4, 1943 Serial No. 398,349

ALIEN PROPERTY CUSTODIAN

CHROMATIC HARMONICA

Karl Scherer, Trossingen (Wurtemberg), Germany; vested in the Alien Property Custodian

Application filed June 16, 1941

This invention relates to a chromatic harmonica.

The harmonica according to the invention possesses a slide for alternately changing over to different successions of tones in the usual manner and differs from the known instruments of this class in that it can be more conveniently handled during playing both as to operating the slide and to general manipulation owing to its hand-fitting shape.

In the harmonica according to the invention the slide is controlled not by a button or knob as usual but with the aid of a cap movably disposed at one end of the instrument and serving as handle for operating the slide with the palm. For this purpose the rounded cap is adapted to the position of the palm occupied in playing. To the other end of the harmonica a stationary cap of similar type is attached. The use of such caps which softly hug the palm permits convenient operation of the slide and, in connection with other features, facilitates the general manipulation of the instrument. The invention thus affords the considerable advantage that the cap which has a relatively large surface compared with the small button disposed in the extension of the playing surface of the instrument and which occupies the entire front side thereof, can be reached much more quickly and securely for changing over, or held permanently in the palm, than is possible with a button.

The general manipulation of the harmonica is improved by a particularly advantageous construction of its outer shape. Projecting parts, edges, etc. found in the prior art types and frequently causing injuries to the mouth or hands of the player and damaging pockets, etc. are avoided, and the covers and the mouthpiece are formed so that the portion of the harmonica contacting with the mouth is adapted to the position thereof occupied in playing.

The caps, particularly the movable cap, are, moreover, arranged so that metal contacts with metal, whereby mounting is facilitated, since every part positively and permanently fits the other, whilst mounting on wooden parts due to the shrinkage of the wood involves troubles including subsequent damages.

The space between the caps and the covers is protected against the entrance of dust, etc. by means of bands, and the band near the slide cap serves also as external guide for the cap. Furthermore, the bands, which may have any desired shape, form also a soft transition from the covers to the rounded caps, and the harmonica according to the invention is therefore free from parts that can interfere with easy handling of the instrument.

The invention is illustrated by way of example in the accompanying drawing, in which

Figure 1 is a diagrammatic view of the harmonica according to the invention;

Fig. 2, a top view thereof;

Fig. 3, an enlarged top view thereof, partly in section, showing the use of a wire spring for acting upon the slide;

Fig. 4, a cross section on the line A—A, of Fig. 3;

Fig. 5, a vertical section on the line B—B, of Fig. 3;

Fig. 6, a top view of the part of the harmonica shown in Fig. 5 with the covering band omitted;

Fig. 7, a partial top view of the harmonica, partly in section, showing the use of a leaf spring instead of a wire spring;

Figs. 8 and 9 are two cross sections on the lines D—D and C—C, respectively, of Fig. 7 and show the application of the leaf spring to the slide and the bearing thereof;

Fig. 10 is a cross section on an enlarged scale on the line D—D, of Fig. 7; and

Fig. 11, a diagrammatic view of one of the closing bands.

The harmonica according to the invention is chromatic, i. e., it possesses two sets of reeds *a* tuned to the different successions of tones. Its holes *b* are alternately covered in known manner by a slide *c*.

According to the invention, the operation of the slide *c* is made particularly convenient by the provision of a handle comprising a cap *d* movably attached to that end of the harmonica at which the slide *c* emerges to the outside and coupled therewith. The cap *d* is rounded or curved and shaped so that its external form corresponds to the inner form of the hand, or the position of the fingers, during playing. On the other end of the harmonica a stationary cap *e* is provided.

The cap *d* is rotatably disposed at the end averted from the end of the slide *c*. To insure easy mounting the axis of rotation is formed by two pins *g* which rearwardly extend from the reed plates *f* at the outer end thereof, Fig. 6, and are produced by milling. The pins *g* loosely engage corresponding holes in the wall of the cap loosely disposed with its edge in gaps *h* of the reed plates *f*, Fig. 6. The cap *d* embraces with its side walls the reed plates *f* through which it is guided during its swinging motions.

The slide *c* and the cap *d* are subject to the

action of a common spring *i* which returns them into normal position. In the construction shown in Figs. 3 and 4 a U-shaped wire spring *i* having coils *k* is provided for this purpose and in the construction shown in Figs. 7 and 8 a U-shaped leaf spring which insures softer operation of the slide *c*. The spring *i* lies in a bore *l* of the member *m*, Figs. 3 and 4, or in a continuous recess *l*, Figs. 3, 4 and 5, which is open on the side and can be readily produced by milling. One end of the spring *i* projects to the outside and passes loosely through holes of the slide *c* and of the wall of the cap *d*.

The covers *n* of the harmonica are secured to the reed plates *f* by means of bent lateral ends *o* and are uniformly curved toward the mouthpiece *p* in such manner that the outer surfaces of the members *n* and *p* correspond to the form of the mouth during playing. This is indicated in Fig. 10 which shows also that the mouthpiece *p* closely connects with the covers *n* and that the outer surfaces of both members pass into each other, which is facilitated by the inward bend of the front edges *q* of the covers *n*.

The slide c and its two perforated guides *r* are disposed between the edges *q* of the covers *n* on the front side of the wooden member *m* which is correspondingly offset. This arrangement and guiding of the slide *c* affords the advantage of being reliable and preventing bending.

In order to cover the space between the caps *d*, *e* and the covers *n*, to prevent the entrance of dust, etc. and also accidental lifting of the cap *d*, bands *s* are placed about the ends of the instrument on both sides, which cover the space between the caps *d*, *e* and the covers *n*. The bands *s* embrace the caps *d*, *e*, thereby guiding the cap *d* also externally, so that metal contacts with metal. To insure easy production and mounting of the metal bands *s* and to provide for having metal contact with metal the wooden member *m* for the air holes is cut out at the points where the bands *s* are located, as indicated in Figs. 3 and 7, so that the metal reed plates *f* are freely exposed for contact with the bands *s*. The bands *s* cover also the fastening means *t* for the covers *n* or their bendings *o* to prevent accidental loosening of the same and also of the cross pin *u* on which the wire spring *i* with its coils *k* is disposed.

The bands *s* are countersunk in front, and the reed plates *f* are reduced in front on both sides to such an extent that the bands *s* can be rounded off in front like the mouthpiece *p* and they are flush with the latter. The wooden member *m* is recessed in the rear, and the bands *s* are therefore flush also with the rear thereof.

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