

(No Model.)

W. B. FAIRFIELD.
HARMONICA.

No. 588,107.

Patented Aug. 10, 1897.

Fig. 1

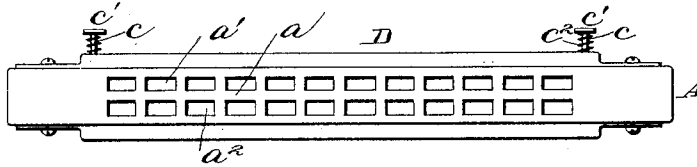


Fig. 2

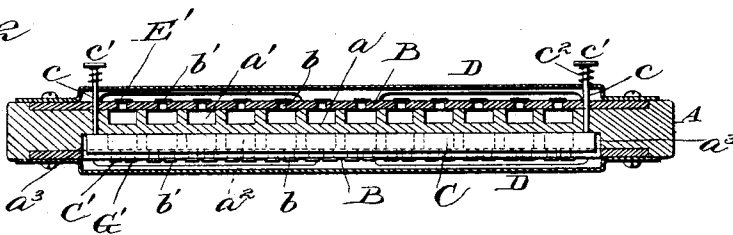


Fig. 3

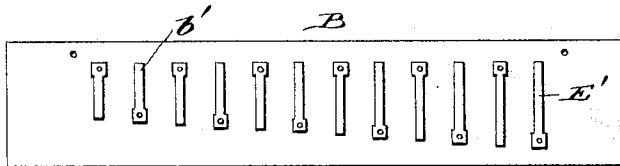


Fig. 4

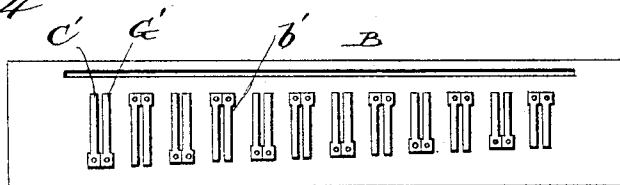


Fig. 6

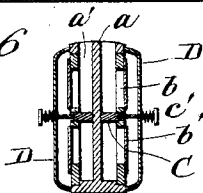
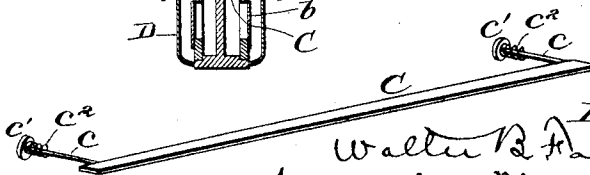


Fig. 5



Witnesses.

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HARMONICA.

SPECIFICATION forming part of Letters Patent No. 588,107, dated August 10, 1897.

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To all whom it may concern:

Be it known that I, WALTER B. FAIRFIELD, a citizen of the United States, residing at East Douglass, in the county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Harmonicas; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in musical instruments, and particularly to that class of instruments known as "mouth-harmonicas."

The invention will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a front view of a harmonica embodying my invention. Fig. 2 is a longitudinal section of the same. Figs. 3 and 4 are detail views of the single-reed plate and double-reed plate, respectively. Fig. 5 is a perspective view of the slide or cut-off device removed from the harmonica. Fig. 6 is a cross-section of a modified form.

Referring to the drawings, A is the body of a harmonica, usually of wood, provided with a double set of air-holes separated by a longitudinal partition a into two series a' and a'' , the former of which, for the sake of perspicuity in the specification, I will designate as the "first series" and the latter as the "second series" of blow-holes. To each side of the body A is attached a reed-plate B in the usual manner, each reed-plate having reed-openings b , over each of which is secured a tongue or reed b' in a well-known manner. These reeds are arranged so as to come opposite the air-holes a' a'' in the body.

In the ordinary harmonica, so far as I am aware, the reeds opposite each air-hole may be arranged in two ways.

First, where there is only one series of air-holes the two reeds for each air-hole may be arranged so that one is operated by suction—that is, by drawing in the breath—while the other one is actuated by blowing. These two reeds may be of the same tone or there may be a musical interval between the tones produced by them.

Second, where there are two series of air-

holes, as in my construction, the reeds may be in double sets for each air-hole, one set to be operated by blowing and the other set by suction, the reeds of one series of air-holes being tuned to the same tones as the reeds of the other series, but the tones of the two reeds of each set varying by a musical interval.

In such constructions to produce a chord required considerable practice and even then was imperfectly attained, since it depended upon the player blowing into or sucking through more than one air-hole at a time.

In my construction I supply a simple and efficient means for producing the chords with each note in the melody in the nature of an accompaniment to such melody. To do this, I employ a double series of air-holes, as previously described, and arrange the reeds in such a manner that the air passing through the air-holes of one series—for example, the first series a' —will produce each a single tone, the successive tones being arranged at such musical intervals from each other as to produce the desired musical scale, either diatonic or chromatic, while the reeds of the other series—for example, the second series a'' —are so arranged as to produce two tones at each blow-hole, these two tones each varying from the tone produced by the corresponding air-holes of the first series by a musical interval, whereby when the air passes through a pair of air-holes, one in the first series and its complement in the second series, a chord will be produced by these three tones sounding together. The reeds producing these three tones may be arranged to sound by suction or by blowing, but must be adapted to sound simultaneously, and, if desired, the notes of all the air-holes may be sounded by blowing or all by suction, or the notes of some of the air-holes may be produced by suction and the others by blowing.

The simplest means for producing the results above set out comprises three reeds to each pair of air-holes, as shown in Fig. 2, one reed being in the air-hole of the first series and two reeds in the corresponding air-hole of the second series, each of said three reeds varying from the other two by such a musical interval as to cause the three reeds when

sounded together to produce a chord of three notes. I have marked these three reeds in Fig. 2 as C' E' G', to indicate, as an example, the tone which may be produced by each reed to give a chord; but instead of having a single set of three reeds to each pair of air-holes to be all operated by suction or by blast I may use a double set of three such reeds for each pair of air-holes, one set of reeds to operate by suction and the other set by blast. As it is necessary, however, to provide means whereby the melody-note may be sounded without at the same time sounding the corresponding two notes which go to produce the chord I also provide means for preventing the sounding of said two notes, and this forms an important feature of my invention. This means may be, first, an arrangement of reeds in such a manner that the melody-note will be produced by both suction and blast, but reeds of the same tone being used for this purpose, while the corresponding two tones which go to form the chord are produced only by suction or only by blast, but not by both. In this way by one manner of producing the melody-notes the chord-notes will be sounded with them, while in the other manner of producing the melody-notes the chord-notes will not sound.

A second means for permitting the sounding of the melody-notes independently of the chord-notes consists of a stop device which shuts off the air from said chord-notes. This stop device may be constructed in a simple manner, as follows: The body A of the harmonica is provided with a longitudinal slot a^3 , in which is mounted a slide or cut-off plate C, preferably of thin sheet metal. This slide C is arranged to move in and out in the slot a^3 , and when fully in has its inner edge in close contact with the partition a of the body A, whereby the air-holes of that series which serve to produce the chord-notes are closed, and consequently the said chord-notes cannot be sounded. When the slide C is drawn out, the said air-holes are opened and the air admitted to the reeds of such air-holes. In order to permit the ready operation of this slide C, each end is connected to a rod c , the said rods passing through the ends of the body A and being provided with push-buttons or heads c' at the side opposite the slide. Between the heads c' and the body A are placed springs c^2 , preferably surrounding the said rods and tending to hold the heads away from the body A, whereby the slide C is kept closed. The melody-reeds and harmony-reeds may be arranged on the same plate, one above the other, and in such an arrangement the slide is located between them, as shown in Fig. 6.

When playing a harmonica thus constructed, the player may produce the melody on the first series of air-holes, and, when desired, may produce the chords for the melody by pressing down on the push-buttons or heads c' , so as to move the slide C outward and open

the air-holes of the second series. By removing the pressure from the push-buttons the springs c^2 will draw the slide C inward and shut off the second series of air-holes, thus stopping the chord-notes.

I am aware that shutters or slides in connection with musical instruments, and particularly mouth-harmonicas, are old, but these are to be distinguished from my invention by the fact that they are used in such a construction that in no way do they affect the tone of the instrument, though they may stop the sound altogether or may alter the volume of the sound.

On the outside of the reed-plates B are placed the usual shells D, one of which projects sufficiently from the reed-plates B to permit the slide C to be moved inward and outward beneath one of the said shells, while the opposite one projects a similar amount to be symmetrical with its corresponding opposite shell.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a harmonica, the combination, with a body having two series of air-holes, of a series of single reeds arranged opposite one series of air-holes, said single reeds being tuned to produce the notes of a scale, and a series of double reeds opposite the other series of air-holes, each pair of said double reeds being tuned to produce notes forming a chord with the single note produced by the corresponding opposite single reed, substantially as described.

2. In a harmonica, the combination, with a body having two series of air-holes, of a series of single reeds arranged opposite one series of air-holes, said single reeds being tuned to produce the notes of a scale, a series of double reeds opposite the other series of air-holes, each pair of said double reeds being tuned to produce notes forming a chord with the single note produced by the corresponding opposite single reed, and means for stopping the playing of the double reeds when desired, substantially as described.

3. In a harmonica, the combination, with a series of melody-reeds, of a series of chord-reeds, and a slide arranged to cut off the air from the chord-reeds, when desired, substantially as described.

4. In a harmonica, the combination, with a body having two series of air-holes, and a longitudinal slot, of a series of melody-reeds opposite one series of air-holes, a series of chord-reeds opposite the other series of air-holes, and a slide movable in the longitudinal slot and arranged to close that series of air-holes next to the chord-reeds, substantially as described.

5. In a harmonica, the combination, with a body having two series of air-holes, and a longitudinal slot, of a series of melody-reeds opposite one series of air-holes, a series of chord-

reeds opposite the other series of air-holes, a slide movable in the longitudinal slot and arranged to close that series of air-holes next to the chord-reeds, means for forcing the
5 slide out to open the said air-holes, and a spring for closing the slide, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER B. FAIRFIELD.

Witnesses:

REBECCA D. FAIRFIELD,
Mrs. F. J. LIBBY.