

[54] **MUSICAL INSTRUMENT, SIMILAR TO THE ACCORDION AND THE LIKE, FOR EASILY PRODUCING RAPID HARMONIC SEQUENCES**

[76] Inventor: **Arthur Eslon Cohen**, c/o S. Cooke, 1504 Upshire Rd. Apt. 2C, Baltimore, Md. 21218

[22] Filed: **May 12, 1971**

[21] Appl. No.: **142,636**

[52] U.S. Cl. **84/376**

[51] Int. Cl. **G10d 11/00**

[58] Field of Search..... **84/375, 376**

[56] **References Cited**

UNITED STATES PATENTS

370,218 9/1887 Stratton 84/376
2,754,715 7/1956 Ruben..... 84/376 X

FOREIGN PATENTS OR APPLICATIONS

1,087,766 9/1954 France..... 84/376

OTHER PUBLICATIONS

"Hohner Accordions," M. Hohner, Inc., Hicksville, L. I., N. Y., received in scientific library 12,9,1964, model: Morino-Artiste VI D.

Primary Examiner—Richard B. Wilkinson

Assistant Examiner—John F. Gonzales

[57] **ABSTRACT**

A musical instrument, similar to the accordion and the like, containing two standard accordion bass section devices, on each of which preset chords can be produced by depressing single buttons, and on each of which individual bass tones can be produced by depressing other single buttons, such that a wide variety of rapid harmonic sequences can be easily produced.

2 Claims, 10 Drawing Figures

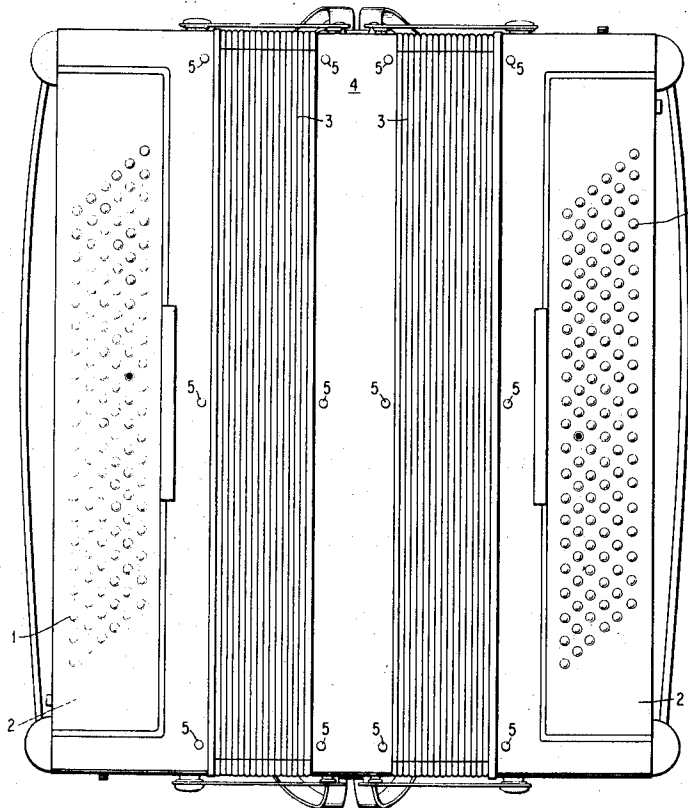


FIG. 1

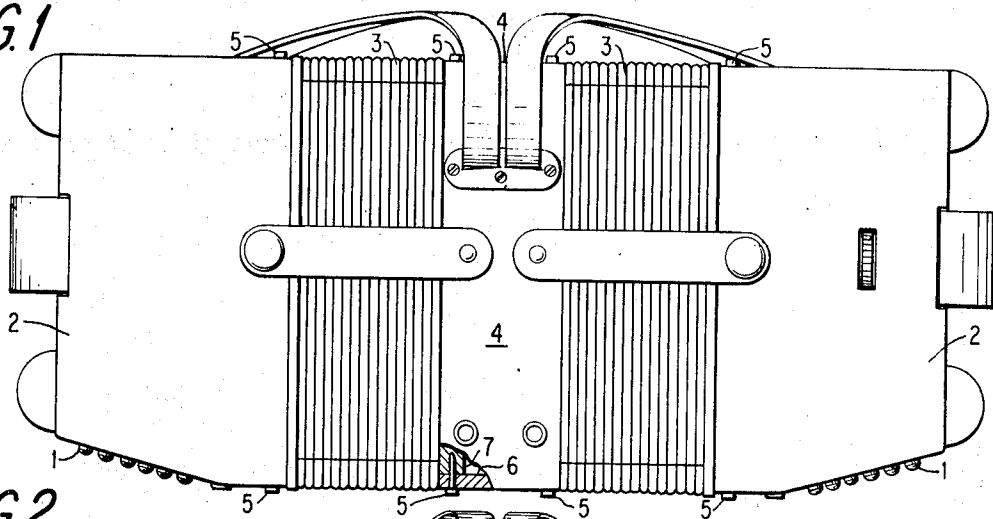
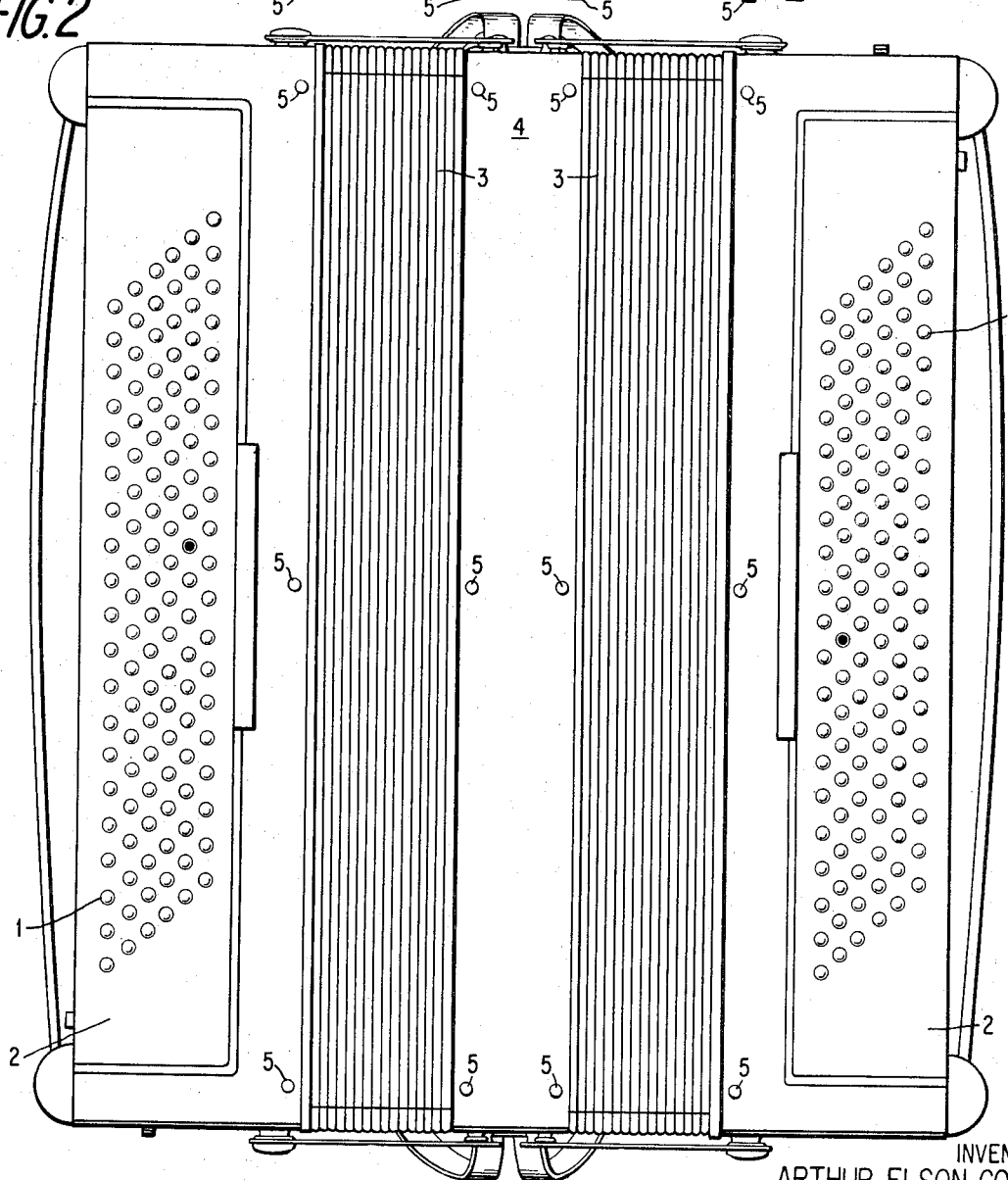
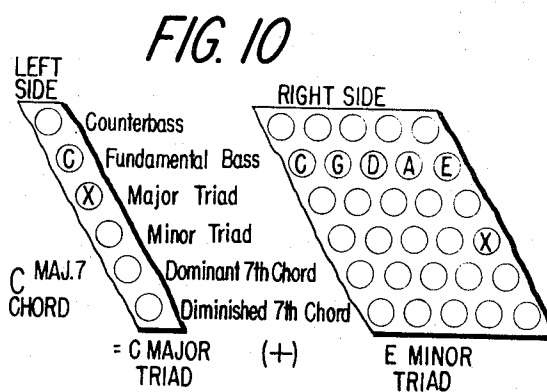
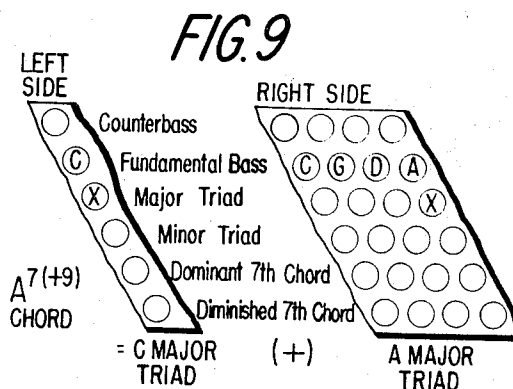
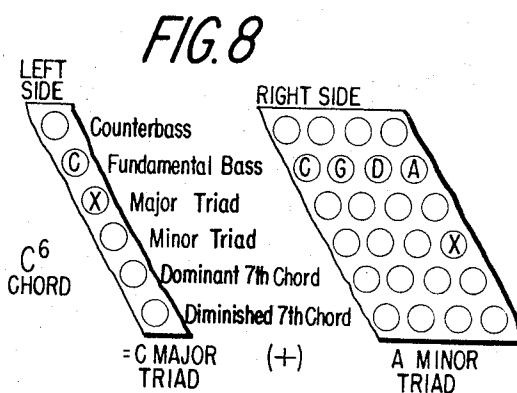
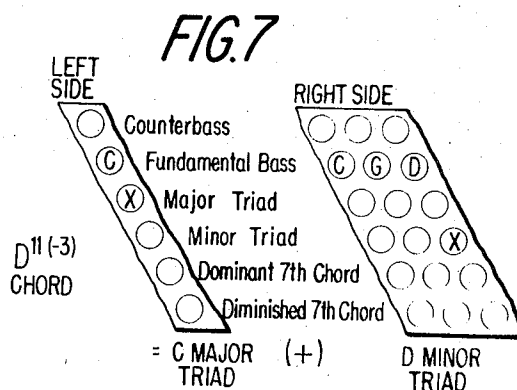
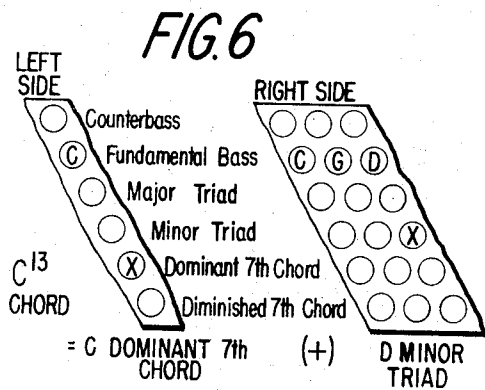
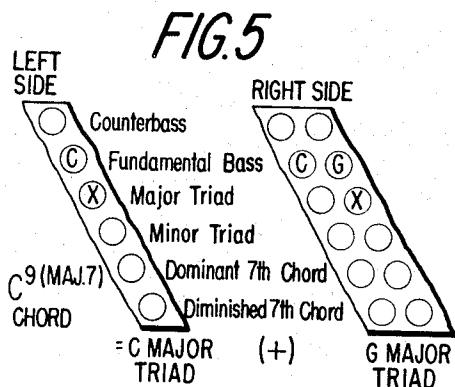
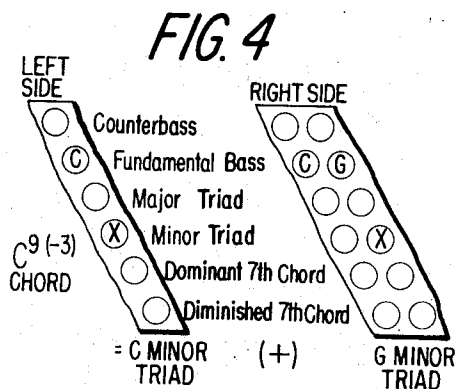
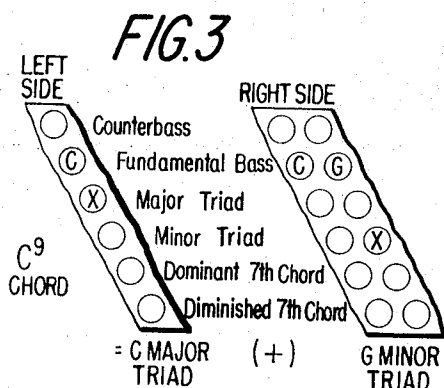


FIG. 2



INVENTOR
ARTHUR ELSON COHEN



INVENTOR
ARTHUR ELSON COHEN

MUSICAL INSTRUMENT, SIMILAR TO THE ACCORDION AND THE LIKE, FOR EASILY PRODUCING RAPID HARMONIC SEQUENCES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the creation of a new musical instrument, similar to the accordion and the like, by which can be easily produced a wide variety of rapid harmonic sequences.

2. Description of the Prior Art

Most of today's musical instruments are constructed to produce one individual tone at a time, except for string instruments in the violin and guitar families or instruments using a piano-type of keyboard, on all of which chords can be obtained at the choice of the player. However, none of these chords can be said to be preset in the sense that the depression of one key, button or string will cause more than one individual tone to sound. Limited use is made of special devices for producing preset chords on instruments of the guitar or zither families by the depressing of single buttons, but these devices represent attachments for pre-existing musical instruments rather than constituting instruments or parts of instruments themselves. Two modern musical instruments stand out as being the principal ones in widespread use which use preset chords; the accordion and the chord organ. On both of these instruments, it is possible to sound a chord by the depressing of one button which is able through a preset mechanism to cause several individual tones to sound simultaneously. The source of vibration or sound in the accordion is air pumped by bellows which is compelled to circulate over pre-tuned reeds. In the chord organ, the vibration or sound source is usually electronic, using electric oscillators or signal generators to produce the vibrations.

In the present invention, the bellows and reed sound source of the accordion will be used. Accordions and the like differ from one another in various particulars: size, weight, bulk, exterior design and decoration, number of voices or octaves and register switches, whether buttons or piano-type keys are used on the treble side, number of buttons and piano-type keys, among other things. However, most accordions and the like are similar in one respect. On one side, usually the right side, there are keys or buttons for individual treble tones. On the other side, usually the left side, there are buttons for individual bass tones and preset chords, which chords are preset so that the depressing of one button is sufficient to obtain a chord which comprises several tones. Accordions with left sides containing, for each key, one or more buttons for individual bass tones and preset chords are termed standard or conventional accordions, while those containing buttons only for individual bass tones are termed free bass accordions and have recently grown in popularity. Some accordions combine both a standard bass system and a free bass system in the same bass button-board.

The principal limitations on the ease with which a player can produce on accordions and the like a wide variety of rapid harmonic sequences are several:

a. On the treble or right side of either a standard or free bass accordion, dexterity limits the number and combination of individual tones one can play simultaneously or alternately in rapid sequence. This limit on

dexterity is similar to that experienced by the right hand of a piano or organ player.

b. On the bass or left side of a standard accordion, the number of individual bass tone and preset chord buttons sets the limit, in order that the size and weight of the accordion remain such that it is easily manipulable and portable;

c. On the bass or left side of a free bass accordion, number of buttons is less of a problem than with the standard bass system, because many different chords can be produced by combining in different ways a limited number of buttons for individual bass tones. However, dexterity sets the limit much as it does on the treble or right side.

BRIEF SUMMARY OF THE INVENTION

Accordingly, the present invention has been designed to enable a player to easily produce on an instrument similar to the accordion and the like a side variety of rapid, harmonic sequences. To achieve this, whereas the standard accordion has preset chords on only one side of the instrument, the present invention uses preset chords on both of the two sides of the instrument, as well as individual bass tones on both sides. On both sides of the instrument, one button is sufficient to obtain a chord, which chord has been preset so that its several tones are sounded simultaneously when that button has been depressed. An individual bass tone can also be obtained by depressing one button.

Similarly to the accordion and the like, the preset invention can be played by pulling out the bellows from the player's body when the bellows are in a closed position or pushing them back toward the player's body when they are in an open position, while at the same time depressing a preset chord button on one side of the present invention in simultaneous combination with another preset chord button on the other side, in order to compel air to circulate over the reeds to produce the desired musical tones. This requires using only one finger of each hand at a time. This renders the present invention extremely simple to play, requiring as it does relatively little dexterity on the part of the player. From the point of view of dexterity, this is not as easily done by using two fingers at the same time to depress two preset chord buttons on the same bass side of a standard accordion. Nor can it be as easily done by using one finger on the bass side of a standard accordion while at the same time using one finger on the treble side of the same accordion. Nor can it be done at all by using only two fingers at the same time anywhere on a free bass accordion. Thus, by using only two fingers, one on each hand, it is possible to obtain variations of sixth, seventh, ninth, eleventh and thirteenth chords which are composed of four, four, five, six and seven different tones, respectively. These types of chords have found their way into frequent usage in music of all types, most recently the popular, blues, jazz, rock, folk and Latin American types. No accordion presently contains many or all of these types of chords preset so that they might be sounded by depressing only one button. However, the present invention permits the player to obtain them by depressing at the same time only two buttons, each of which is preset for a simpler chord. This renders the present invention unusually suitable and adaptable for complex harmonic or accompaniment work.

Because only two fingers are used to obtain these chords, they can be played alone and alternately with other chords and individual bass tones in such rapid succession as to enable the player to easily achieve a wide variety of rapid harmonic sequences.

Sometimes, not just one but two fingers will be used simultaneously on the left side of the present invention, much as they are when playing the left side of a standard accordion. This may be done when the player wishes to construct a very complex chord. However, it is more usually done when the left hand, in addition to playing a preset chord with either the third left finger or second left finger, wishes to play an individual bass tone such as a fundamental bass or a counterbass simultaneously or alternately with that chord, which is often done by using the fourth left finger. This adds body, tonal depth and definition to the particular chord. The left side of the present invention can often be played similarly to the way it is played on the bass or left side of a standard accordion, thus not requiring very much new learning for the player of the present invention who already plays a standard accordion. This also permits that player to build on techniques for working the buttons already developed for the standard accordion. The fingers used for both the left and right hands by the player of the present invention are the second, third and fourth fingers, and occasionally the fifth. The thumb, as with the bass or left side of a standard accordion, usually remains unused except for its base which helps secure the palm of the hand against the end of the instrument in order to enable the player to achieve maximum control and support for bellows work and other rhythmic and percussive effects.

The number and type of preset chords and individual bass tones used in the present invention need not be the same on both sides of the instrument, the number and type of preset chords and individual bass notes can vary according to the desired size (and weight and bulk) of the instrument. The larger the instrument, the greater the number of different preset chords and chord combinations can be obtained for each of the keys. The larger the instrument, pertaining to individual bass tones, the greater the number of transverse rows of keys and thus, also, the more other tones of various scales available for each key in which the present invention can be played, up to the total of twelve semitones or keys used in the Western chromatic scale. The larger the instrument, the larger the number of voices or octaves can be sounded simultaneously or individually for each preset chord. On the other hand, a smaller version of the instrument is more manipulable and portable and available to the general public. It is more manipulable because it is lighter and less bulky. Thus certain rhythmic and percussive effects may be more easily obtained with smaller versions of the present invention than with larger ones. Its increased portability makes it easier to transport and store. Finally, smaller versions of the present invention can be manufactured and sold more cheaply and played more easily than larger versions, thus making them more available to the general public. In any case, however small the instrument may be, it should contain on each side, for each key to which it is tuned, a button activating as a chord the preset major triad, a button activating as a chord the preset minor triad, and a button activating as an individual bass note the fundamental bass for that particular key. All except some of the very smallest accordi-

ons contain such preset chords and individual bass notes.

Whatever its size, any version of the present invention may have one or more register switches on each side for obtaining different voices or octaves or combinations thereof for the preset chords and individual bass tones. Furthermore, the present invention may of course also be wired with one or more microphones for amplification of the reed sounds.

The general object of the present invention is to provide a new and better musical instrument, similar to the accordion and the like, which is capable of easily producing a wide variety of rapid harmonic sequences. The present invention is principally used as an instrument for complex harmonic work and accompaniment, easily producing rapid harmonic sequences particularly useful for such types of music as popular, blues, jazz, rock, folk and Latin American. However, it can also be played as a solo instrument.

Further objects of the present invention reside in the details of construction and in the cooperative relationships between the component parts thereof.

Other objects and advantages of this invention will appear herein and will become apparent to those skilled in the art upon reference to the accompanying specification, claims and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

A fuller understanding of the invention and the manner in which its objects and advantages may be realized will become apparent from the following detailed description thereof in connection with the accompanying drawings wherein:

FIG. 1 is a top plan view of one version of the present invention, with a portion broken away to show method of construction.

FIG. 2 is a front elevational view of one version of the present invention.

FIGS. 3 through 10 are front elevational views of enlarged detailed portions of the buttons as they are shown on the left and right sides of FIG. 2. clarity, these views have been rotated 90° (the left side having been rotated in a direction opposite to that of the right side).

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2, both of which show a version of the present invention in a closed, locked position: On each side, the buttons 1 for preset chords and individual bass tones are housed in a sound box 2; The two sound boxes 2 are attached to two sets of bellows 3 which bellows are expanded and contracted in order to compel air to circulate over reeds to produce musical tones. The sound box 2 houses a mechanical method of linkages connected to the buttons 1 for selectively opening and closing pallets or covers positioned over air holes next to appropriately tuned reeds mounted in reed chambers which are held against these holes by blocks in which the reed chambers are mounted. Taken together, on each side these buttons 1, sound box 2, linkages, pallets or covers, air holes, reeds, reed chambers and blocks represent a device identical to the bass or left side (bass section of a standard accordion, for producing preset chord reed sounds and individual bass note reed sounds. Thus, the present invention can be constructed by joining one

bass or left side (bass section) of a standard accordion with another bass or left side (bass section) of a standard accordion, and one or more sets of bellows. The two bass sections are joined so that there is one bass section on one side of the instrument and the other bass section facing it directly across from it on the other side of the instrument, with the bellows in between them. One set of bellows is all that is necessary as a source of air to activate the reeds. When one set is used, shoulder straps (if used) can be attached to either the right or left sound box 2 to anchor the instrument against the player's body, the same as is done with most versions of the accordion. However, two sets of bellows can also be used, as illustrated in FIGS. 1 and 2. When two sets of bellows are used, both sets of bellows 3 and the two sound boxes 2 are movable. Therefore, a separator panel 4 is used to provide a stationary part of the instrument to which any shoulder straps can be attached to anchor the instrument against the player's body. In FIGS. 1 and 2, this panel 4 is shown as connecting one set of bellows 3, a sound box 2 and buttons 1 to another set of bellows 3, another sound box 2 and buttons 1.

The separator panel 4 is located in the middle of the instrument and is hollow in its inside like the bellows. It consists of four sides put together in rectangular or other shape to receive in an airtight manner the outside frame 7 (indicated in the broken away portion of FIG. 1) at one of the ends of each set of bellows 3. The hollow separator panel 4 can be constructed of wood or other suitable material. At the bottom of the middle of FIG. 1 is depicted the method by which each set of bellows 3 is connected to the separator panel 4, by showing a section of the panel as it would appear with a portion of its covering broken away, revealing one side 6 of the panel, the outside frame 7 at one end of a set of bellows 3 and one of the pins 5 used to secure the set of bellows to the separator panel. This method of securing the bellows by pins 5 is used on both sides of the separator panel and is also used to secure the two sets of bellows 3 to the two sound boxes 2.

To indicate how the present invention would look when equipped with the usual fittings, FIGS. 1 and 2 also illustrate vent buttons (housed in the end of each sound box 2); shoulder straps with strap holder plates; locking straps with studs, flat heads and fastener clasps; side straps with strap adjusting devices; and register switches.

In the version of the present invention shown in the drawings, there are 20 transverse rows of six buttons 1 each on each side of the instrument, identical in external and internal structure to those found on the bass or left side (bass section) of most 120-bass standard accordions. This includes one transverse row for each of the 12 semitones or keys in the even-tempered chromatic scale so often used in Western music, with a repetition on the button-board of transverse rows for eight of those keys, for the convenience of the player. Each transverse row is an interval of a fifth apart from the transverse row on either side of it. Each transverse row includes buttons for the one key for which it is arranged, described as follows, starting from the top down: first, an individual bass tone button for the major third counterbass; second, an individual bass tone button for the fundamental bass; then, the third through sixth buttons to activate preset chords which are, respectively, the major triad, the minor triad, the dominant seventh chord diminished the diminished seventh

chord. On FIGS. 1 and 2, the top button of each transverse row is located closest to the middle of the instrument. This arrangement is more clearly understood from FIGS. 3 through 10. As is the case on the bass or left side (bass section) of most standard accordions, the fundamental bass for the key of C is indicated by a distinguishing mark on that particular button 1 on both sides of FIG. 2, which in this case is a dot.

An essential feature of the present invention is that it enables the player to obtain easily and rapidly a wide variety of chords not as easily or rapidly obtainable on accordions and the like. This is demonstrated in FIGS. 3 through 10, all of which show enlarged portions of the button-board on the left and right sides of the present invention, which are shown in complete detail and smaller scale as buttons 1 in FIG. 2. FIGS. 3 through 10 demonstrate various chord combinations or sum chords using the key of C as the tonic key. In order to most clearly demonstrate this, the dot used to distinguish the key of C in FIG. 2 is omitted from FIGS. 3 through 10. Instead, a small letter is written inside each button to indicate that button represents an individual fundamental bass tone tuned in a particular key. Thus, FIGS. 3 through 10 show one of the transverse rows of buttons (that of the key of C) from the left side of the present invention (right side of FIG. 2), and from two to five transverse rows of buttons which are each an interval of a fifth apart (respectively, those of the keys of C, G, D, A and E) from the right side of the present invention (left side of FIG. 2). This means that each of the five other, unlettered buttons remaining in that particular transverse row is arranged so as to produce sounds which are tuned for the same key. For instance, in the row for C, starting at the top, the individual bass tone button is E (the major third counterbass of C), then the individual bass tone button is C (the fundamental bass of C), followed by one button for each of the four preset chords: the C major triad, the C minor triad, the C dominant seventh chord and finally at the bottom, the C diminished seventh chord. In the G row, the progression of buttons from top to bottom is equivalent: the individual bass tone at the top is B (the major third counterbass of G), then the individual bass tone is G (the fundamental bass of G), followed by the four preset chords: the G major triad, the G minor triad, the G dominant seventh chord and the G diminished seventh chord. It is similar for all the other keys shown in the remaining FIGS. 6 through 10. The arrangement of buttons used in the drawings for individual bass tones and preset chords proceeding from top to bottom of each transverse row is that used on the bass or left side (bass section) of most standard accordions and represents a convenient and traditional arrangement for the fingers of the player.

Furthermore, each transverse row is arranged longitudinally in intervals of successive fifths between buttons for the individual bass tones and between buttons for the preset chords. As seen on the right side of FIGS. 3 through 10, each transverse row is one fifth apart. This also applies to the left side of the present invention, even though that is not apparent from FIGS. 3 through 10 because only one transverse row is shown there for the left side. This arrangement in intervals of fifths represents the standard accordion's bass section embodiment of the "circle of fifths" concept of harmony. Over the years, it has proven to be a most convenient and handy arrangement for using preset chords in

harmonic progressions. This arrangement remains equally suitable for obtaining harmonic progressions which use sum chords such as those described below.

Between the two sets of transverse rows in FIGS. 3 through 10 is indicated the type of individual bass tone or preset chord, as the case may be, which can be produced by depressing a single button located in one of the six longitudinal or horizontal levels to the left and right of the words indicating the type of individual bass tone or preset chord. Below each of the transverse rows of FIGS. 3 through 10 is indicated the preset chord obtained after one of the buttons has been depressed. For purposes of clear illustration, only preset chords are sounded in FIGS. 3 through 10. No individual bass tones are sounded. The particular button which has been depressed to obtain that chord is marked by an "X." Each of FIGS. 3 through 10 is marked by two "X's." This is to indicate that two buttons have been depressed simultaneously, one on the left side and one on the right side of the instrument. Simultaneous depression of buttons results in simultaneous emission of musical sounds, in this case the sounds of the chords produced by depressing those particular buttons. This results in an addition of those chord sounds. The fact of that addition or summing is indicated in FIGS. 3 through 10 by the plus sign in parentheses between the two chords indicated under the transverse rows. On the left side of each figure is indicated the resulting sum chord produced by adding the sound of the preset chord produced on the left side of the instrument with the sound of the preset chord produced on the right side. If a version of the present invention has one or more register switches in order to obtain different voices or octaves or combinations thereof for and individual bass tones, such preset chords, sum chording can result either from both sound boxes being switched to the same register or from a different register being used on each side of the instrument. However, the more similar the voices or octaves used on one side of the instrument are to those on the other side, the closer and tighter the chord harmony will be in the resulting sum chord.

The key of C is used as the tonic key in FIGS. 3 through 10 because it is more familiar to the general public than other keys, containing as it does no sharps or flats in its major scale. This same key is used as the tonic key throughout in order to have a consistent frame of reference against which to measure and understand the addition of different preset chords to obtain different sum chords. For the purpose of illustration, the left side of the instrument is used for the tonic key of C in FIGS. 3 through 10 because the left hand is often the lead hand on the present invention. Although using the left hand in such a manner enables the player to build on left hand techniques already possibly acquired for playing the bass or left side (bass section) of a standard accordion there is of course no technical reason why the present invention could not be used with the right hand as lead hand, particularly if the direction of the slant of the transverse rows on the right and left side button-boards were reversed.

It will also be noted that all the sum chords shown by FIGS. 3, 4, 5, 7, 8, 9 and 10 are obtained solely by the adding (i.e., simultaneous combination) of major and minor triads. Although the seven sum chords shown by those figures do not by any means represent the total number of combinations obtainable by the present in-

vention, they are among the principal and most commonly used chords in modern music. By thus using only major and minor triads, a wide variety of sum chords can be obtained by using only one finger on each hand not only on larger versions of the present invention but also on those smaller versions which usually contain only the major and minor triads in their selection of preset chords and no other preset chords such as the dominant seventh or diminished seventh. It is for this reason that the present invention comprises on each side transverse rows containing buttons to produce the preset major triad, the preset minor triad and the fundamental bass. By using only one finger on each hand to combine either one major or minor triad on one side of the present invention with a particular major or minor triad on the other side of the present invention, it is possible to obtain at least seven new combination or sum chords (as illustrated by all of FIGS. 3 through 10, except for FIG. 6), in each key for which the following is true: For each particular key with its transverse row of preset chords (major and minor triads) on one side of the present invention, there exist on the other side four longitudinally arranged transverse rows of buttons for preset chords (major and minor triads) which are tuned for keys which are longitudinally arranged in intervals of four successive fifths relative to the key on the first side and one fifth relative to each other; that is, keys which represent respectively the fifth, second, sixth and third intervals in the major scale of the key on the first side. The transverse rows in FIG. 10 can be used to illustrate this for the key of C; the transverse row tuned to C on the right side of FIG. 10 is not germane to the above point but is included to illustrate the position of the four other keys relative to C. Of course, other versions of the present invention could include only one preset chord for each key, or different chords altogether from the ones included here, or a different number of keys arranged in transverse rows. The most complete versions, however, would make possible all of these seven sum chords for each of the 12 keys or semitones in the Western scale. This would require for each side of the present invention, at least twelve transverse rows, each tuned to a different key, arranged intervals of a fifth from the transverse row on either side of it, which would include a button for the preset major triad, the preset minor triad and, for tonal definition and depth, the fundamental bass. FIG. 6, on the other hand, shows how a wider preset chord selection such as that contained in the larger version of the present invention shown in the drawings which includes the dominant seventh chord enables the player to obtain as a sum chord the thirteenth chord, one of the more complex polychords used in music, by still using only one finger on each hand.

The types of sixth, seventh, ninth, eleventh and thirteenth chords obtained on the present invention as sum chords, some of which are shown in FIGS. 3 through 10, are not as easily or rapidly obtainable on accordions and the like, nor can they be played in as rapid sequence with other chords and individual tones on such other instruments, principally because more fingers are usually required to obtain the same chords on such instruments, thus requiring much more dexterity on the part of the player. In some cases, the dexterity requirements may be so great on accordions and the like as to eliminate altogether the practical possibility of using

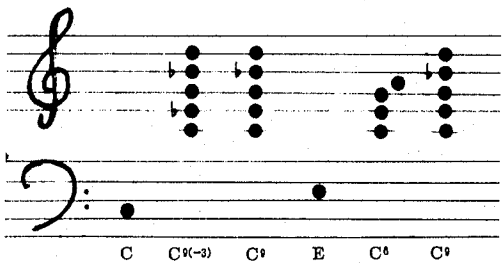
such chords to obtain the same kind of rapid harmonic sequences, obtainable on the present invention.

To understand more fully how depressing two preset chord buttons simultaneously can produce a sum chord

depressing the buttons for the C dominant seventh chord (C-E-G-B^b) and the D minor triad (D-F-A). Since all seven tones are used, no redundancies are produced.

Harmonic sequence produced	Left hand fingering	Button depressed	Right hand fingering	Button depressed	Sum chord produced	Refer to Figure No.
C bass tone.....	4th.....	C fundamental bass.....				
C ⁹ (-3) chord.....	2nd.....	C minor triad.....	2nd.....	G minor triad.....	C ⁹ (-3) chord.....	4
C ⁹ chord.....	3rd.....	C major triad.....	2nd.....	G minor triad.....	C ⁹ chord.....	3
E bass tone.....	4th.....	E counterbass.....				
C ⁶ chord.....	3rd.....	C major triad.....	4th.....	A minor triad.....	C ⁶ chord.....	8
C ⁶ chord.....	3rd.....	C major triad.....	2nd.....	G minor triad.....	C ⁶ chord.....	3

See the following:



NOTE.—Although they are written here in their root position, the ninth sum chords may actually be sounding in their second inversions and the sixth sum chord may actually be sounding in its third inversion, depending on the octave distribution of the reeds in the accordion bass sections. Regardless of whether the root position or one of the inversions is used, the sound of the resultant sum chord will not be materially affected, all other things being equal (i.e., tonic key, other bass tones being played simultaneously, harmonic context, etc.).

from the addition of chord sounds, five of the more common of the eight sum chords demonstrated in FIGS. 3 through 10 can be analyzed as follows, preceding from the simplest to the more complex: the C⁶(C sixth) chord, the C^{major7}(C major seventh) chord, the C⁹ (C ninth) chord, the D¹¹⁽⁻³⁾ (D eleventh with a minor third) chord, and the C¹³ (C thirteenth) chord.

Referring to FIG. 8, the C⁶ chord (C-E-G-A) is obtained by simultaneously depressing the buttons for the C major triad (C-E-G) on the left side and the A minor triad (A-C-E) on the right side. The redundancy of the C and E tones in either chord is not significant harmonically for the resulting sum chord since these same tones have already been made to sound in the other chord on the other side of the instrument.

Similarly, referring to FIG. 10, the C^{major7} chord (C-E-G-B) is obtained by simultaneously depressing the buttons for the C major triad (C-E-G) and the E minor triad (E-G-B). (Again, the redundancy of the E and G tones is not significant harmonically.)

Referring to FIG. 3, the C⁹ chord (C-E-G-B^b-D) is obtained by simultaneously depressing the buttons for the C major triad (C-E-G) and the G minor triad (G-B^b-D) (with a redundancy of G which again is not significant harmonically).

Referring to FIG. 7, the D¹¹⁽⁻³⁾ chord (D-F-A-C-E-G) is obtained by simultaneously depressing the buttons for the C major triad (C-E-G) and the D minor triad (D-F-A). (Since all six tones are used, no redundancies are produced.)

As the sum chords become more complex, as with the D¹¹⁽⁻³⁾ chord in FIG. 7, the possibility increases that they will be heard in different ways. For instance, the D¹¹⁽⁻³⁾ chord could also be heard as the fourth inversion of an incomplete C¹³ (C thirteenth) chord, that is, minus its B^b(C-E-G- -D-F-A). How a chord will be heard depends on what (if any) inversion it is being played in, the tonic key being used at the time, what if any individual bass tone is being played with it simultaneously, and the harmonic context in general.

Finally, referring to FIG. 6, a complete C¹³ chord (C-E-D-B^b-D-F-A) can be obtained by simultaneously

The following chart and musical notation show one type of harmonic sequence which can be produced by the present invention, by way of illustrating one way of playing and writing music for the present invention.

Nothing is indicated in either the above chart or the musical notation about rhythmic and percussive effects, both of which can take several forms for any harmonic sequence.

Thus, the objects of the present invention have been achieved by providing a new musical instrument similar to the accordion and the like, in which preset chords and individual bass tones can be added to and alternated with one another and air supplied to the reeds by one or more sets of bellows in such a manner as to easily produce a wide variety of rapid harmonic sequences.

While for purposes of illustration, the present invention has been described with references to the particular embodiments herein, it will be apparent to those skilled in the art that the present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims rather than to the foregoing specification as indicating the scope of the invention.

I claim as my invention:

1. A musical instrument, similar to the accordian and the like, containing two standard accordion bass section devices, one on each side of the bellows, facing one another, on each of which preset chords can be produced by depressing single buttons, and on each of which individual bass tones can be produced by depressing other single buttons, each device comprising a plurality of longitudinally arranged transverse rows of buttons for preset chords and individual bass tones tuned respectively for particular keys, each of which transverse rows is arranged to contain a button activating an individual bass tone tuned as the fundamental bass for that particular key, a button activating a preset chord tuned as the major triad for the same key and a button activating a preset chord tuned as the minor triad for the same key, such that a wide variety of rapid

11

harmonic sequences of resultant sum chords played simultaneously or alternately with individual bass tones or alternately with preset chords can be easily produced.

2. A musical instrument, similar to the accordion and the like, containing two standard accordion bass section devices, one on each side of the bellows, facing one another, on each of which preset chords can be produced by depressing single buttons, and on each of which individual bass tones can be produced by depressing other single buttons, each device comprising

12

a plurality of longitudinally arranged transverse rows of buttons for preset chords and individual bass tones tuned respectively for particular keys, which transverse rows are arranged longitudinally in intervals of successive fifths between buttons for individual bass tones and between buttons for preset chords, such that a wide variety of rapid harmonic sequences of resultant sum chords played simultaneously or alternately with individual bass tones or alternately with preset chords can be easily produced.

* * * * *

15

20

25

30

35

40

45

50

55

60

65

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,776,089

Dated December 4, 1973

Inventor~~(s)~~ Arthur Elson Cohen

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Title Page, Inventor's Name: "Eslon" SHOULD READ "Elson"

Column 2, line 19: "side" SHOULD READ "wide"
" " line 20: AFTER "rapid" DELETE ","
" " line 30: "Similarly to the accordion and the like, the
preset" SHOULD READ "The present"
" " line 31: "can be" SHOULD READ "is"
" " line 34: AFTER "position" ADD "(like the accordion),"

Column 3, line 33: AFTER "effects" ADD "with the hands and
body."
" " line 36: ", the" SHOULD READ ". The"
" " line 66: "note" SHOULD READ "tone"

Column 4, line 2: "notes" SHOULD READ "tones"
" " line 41: AFTER "2." ADD "For"
" " line 51: ";" SHOULD READ "."
" " line 64: AFTER "section" ADD ")"

Column 5, line 34: DELETE "of its covering"
" " line 35: DELETE "outside"
" " line 44: "bos" SHOULD READ "box"
" " line 59: "on either side of it." SHOULD READ "to its
immediate left."
" " line 67: "chord diminished" SHOULD READ "chord and"

Column 6, line 12: AFTER "demonstrated" ADD "in detail"

UNITED STATES PATENT OFFICE page 2
CERTIFICATE OF CORRECTION

Patent No. 3,776,089

Dated December 4, 1973

Inventor(s) Arthur Elson Cohen

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 14: AFTER "of" ADD "one version of"
" " line 15: "are shown in complete detail, and" SHOULD
READ "button-boards are shown fully and in"
" " line 53: "arrange-ment" SHOULD READ "arrangement"

Column 7, line 24: AFTER "sounds" ADD ", to produce what is
known as superimposition or a complex chord
or polychord."
" " line 34: AFTER "for" ADD "preset chords"
" " line 35: DELETE "preset chords,"

Column 8, line 27: AFTER "one" ADD "successive"
" " line 39: "most" SHOULD READ "more"
" " line 40: AFTER "possible" ADD "at least"
" " line 45: "on either side of it," SHOULD READ "to
its immediate left,"
" " line 51: AFTER "chord" ADD ",,"

Column 9, line 2: DELETE ",,"

Column 10, line 53: "accordian" SHOULD READ "accordion"

Signed and sealed this 14th day of May 1974.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents