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2,684,005

SOUND CHAMBER FOR ACCORDIONS

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2 Sheets-Sheet 1

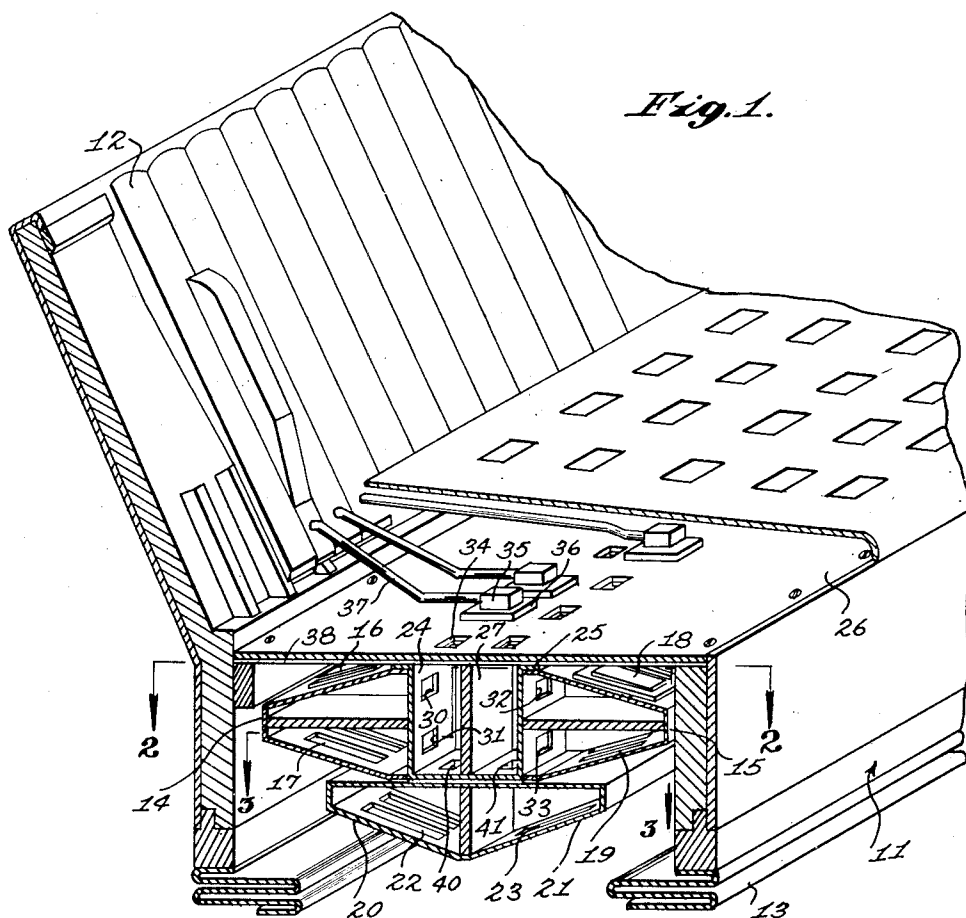
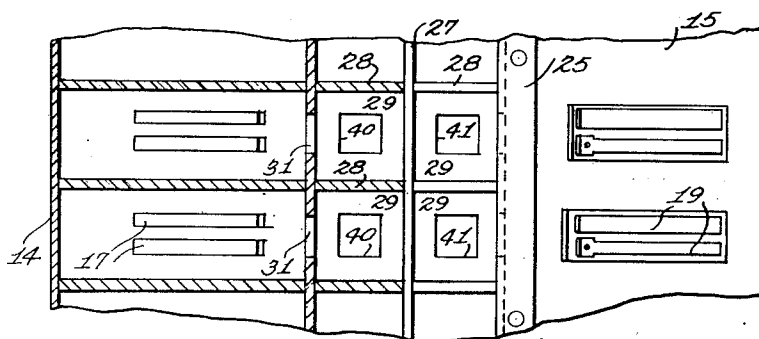


Fig. 3.



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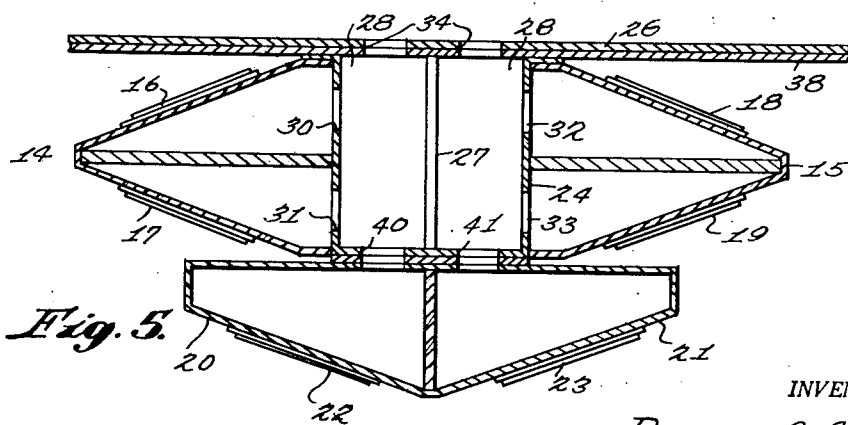
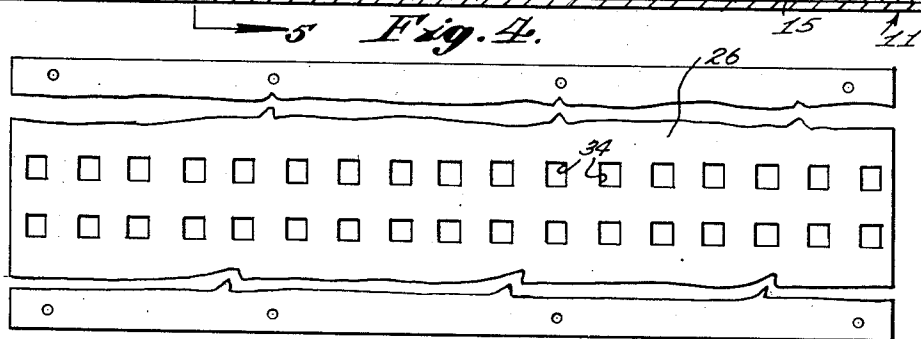
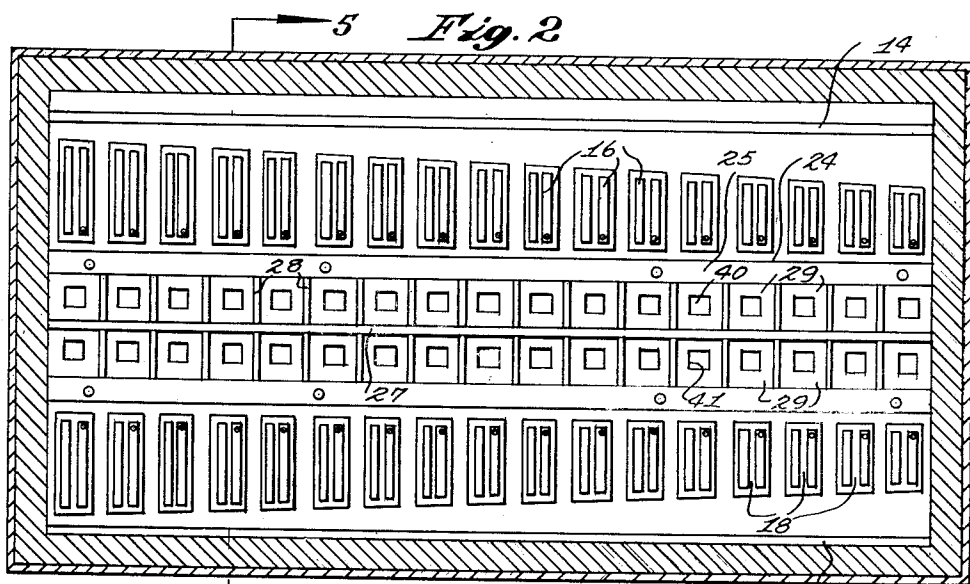
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2 Sheets-Sheet 2



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SOUND CHAMBER FOR ACCORDIONS

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This invention relates to accordions, and more particularly to an improved sound chamber arrangement in a piano accordion.

A main object of the invention is to provide a novel and improved piano accordion which includes a sound chamber in which various tones of the accordion are blended together, wherein the tone of the accordion is substantially enriched, and wherein blended tones are produced, providing a deeper and more even tone than that which is provided by the accordions of the prior art.

A further object of the invention is to provide an improved tone-mixing arrangement for a piano accordion, said arrangement involving relatively simple parts, providing more efficient valving than is obtainable with accordions of conventional construction, and providing greatly improved clarity and richness of tone, as compared with the conventional accordion.

Further objects and advantages of the invention will become apparent from the following description and claims and from the accompanying drawings, wherein:

Figure 1 is a fragmentary perspective view, partly in cross-section, showing a portion of a piano accordion provided with an improved sound chamber arrangement in accordance with the present invention;

Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1;

Figure 3 is a fragmentary cross-sectional detail view taken on line 3—3 of Figure 1;

Figure 4 is a fragmentary top plan view of the top plate of the sound chamber portion of the accordion of Figure 1, showing the arrangement of the sound-outlet openings thereon;

Figure 5 is a cross-sectional detail view taken on line 5—5 of Figure 2.

Referring to the drawings, 11 generally designates a three-reed piano accordion having the playing keys 12 and the bellows 13. Designated at 14 and 15 are respective double-reed blocks mounted inside the bellows enclosure, said reed blocks being provided with respective opposed sets of reeds 16, 17 and 18, 19. Designated at 20 and 21 are respective additional reed blocks provided with respective reeds 22 and 23. Designated at 24 is a channel-shaped housing member which may be constructed of sheet aluminum or any other suitable rigid material, such as plastic or the like, said channel member 24 being provided with marginal flanges 25 which are secured to the top valve plate 26 of the accordion. The plate 26 is secured to the side walls

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of the bellows enclosure, as shown in Figure 1. The double-reed blocks 14 and 15 are secured to the opposite sides of the channel member 24 and the respective reed blocks 20 and 21 are secured to the bottom wall of said channel member.

Secured centrally in the channel member 24 is a longitudinal partition wall 27, and secured transversely in the channel member are spaced partition walls 28 disposed on opposite sides of the longitudinal partition wall 27 and defining respective compartments 29 on opposite sides of the longitudinal partition wall. Each compartment 29 is in lateral registry with a pair of reeds 16 and 17 on one side of the channel member and each compartment 29 on the opposite side of the channel member is in lateral registry with a pair of reeds 18 and 19. The respective compartments 29 on opposite sides of the partition wall 27 are respectively in registry at their bottom portions with reeds 22 and 21. As shown in Figure 1, the side walls of the channel member 24 are formed with apertures 30 and 31 transversely aligned with the respective reeds 16 and 17, and on the opposite side of the channel member the wall is apertured at 32 and 33 substantially in transverse registry with the reeds 18 and 19. The bottom wall of the channel member and each compartment 29 is apertured at 40 and 41 above the respective reeds 22 and 21. The apertures 30, 31 and 40 in the compartment 29 on one side of the longitudinal partition wall 27 establish communication of the compartment 29 with respective reeds 16, 17 and 22 at said one side. The apertures 32, 33 and 41 at the other side of the longitudinal partition wall establish communication for the compartment 29 on said opposite side with the respective reeds 18, 19 and 23 adjacent thereto.

The valve plate 26 is apertured above each compartment 29, as shown at 34. Designated at 35 are respective valves having face portions 36, each valve being arranged over an aperture 34 and being connected to one of the keys by a connecting bar 37. The valves 35 are operated in a conventional manner by the movement of the keys 12, the valve face 36 of each valve being lifted vertically away from its valve aperture 34 responsive to the depression of its associated key.

In operation, as a valve 35 is lifted to open its sound-outlet aperture 34, air is allowed to pass through all the reeds associated with the sound compartment 29 controlled by said valve. For example, if a valve 35 on the left side of the partition wall 27 is lifted, as viewed in Figure 1, air is allowed to actuate the reeds 22, 17 and

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16 and to produce tones which travel in the form of sound vibrations through the apertures 40, 39 and 31 into the sound chamber 29. These vibrations are blended in said sound chamber and emerge from the top opening 34 in the form of a blended and enriched tone consisting of the combined vibrations of the reeds 16, 17 and 22. Similarly, combinations of the tones of the reeds 18, 19 and 23 are produced in the mixing chambers 29 on the right side of the partition wall 27, as viewed in Figure 1, and are sounded responsive to the lifting of a valve 35 on the right side of said partition wall.

The reeds 16, 17 and 22 on the left side of the partition wall 27 may be employed for producing sharps and flats, and may be actuated by one of the black keys on the keyboard of the accordion. The reeds 18, 19 and 23, on the right side of the partition wall 27, as viewed in Figure 1, may be employed for producing natural tones, and may be actuated by the white keys of the keyboard.

The partition walls 27 and 28 may be of any suitable material, such as wood or the like, or may be made integrally with the channel member 24, when said channel member is made of molded material, such as plastic or the like. The size of the chambers 29 may vary in accordance with the size of the accordion and the number of the openings 39, 31, 40 and 32, 33 and 41 may vary, and similarly, the number of compartments 29 may also vary depending on the number of keys.

A suitable gasket 38 of soft leather or other suitable soft sheet material is employed between the flanges 25 of the elongated channel member 24 and the valve plate 26.

It will be seen that for a three-reed accordion, each compartment 29 is formed with three apertures, such as 30, 31 and 40, or 32, 33 and 41, associated with three different reeds. In the case of a four-reed accordion, the walls of each sound chamber 29 will be formed with four apertures, associated respectively with four different reeds. The compartment 29 blends the vibrations produced by its associated reeds and allows said vibrations to emerge from its top valve opening 34, providing a single combined note of much greater volume, of deeper and more even tone, and of substantially increased richness than that produced by a conventional accordion. Furthermore, by employing a single valve opening 34 to control the generation of a plurality of mixed tones, instead of employing separate valve openings for each tone component, the possibility of air leaks at the key pads of the valve openings is considerably reduced.

While a specific embodiment of an improved accordion construction has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In an accordion having a multiplicity of vibratory reeds, a plate member having a plurality of sound outlet openings, a channel shaped housing member defining a plurality of compartments beneath said plate member, each of said sound outlet openings communicating solely with an opening formed in the portion of the top wall of said channel member contiguous to each of said compartments, the side walls of said channel

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member being formed with a plurality of sound inlet openings, the openings in the side walls contiguous to each compartment being in communication therewith, a plurality of reed blocks arranged exteriorly of and along each of the side walls of said channel member, each of said reed blocks having a multiplicity of reed chambers therein, at least one reed mounted on each of said reed chambers, each of said reed chambers being in communication with one of the sound inlet openings in the side wall of said channel member, whereby sounds generated by a plurality of the reeds in response to action of the accordion bellows will pass into each of the compartments, and whereby different sounds from respective reeds entering a compartment will be mixed therein, and a plurality of movable valves disposed on said plate member, each valve having a face portion confronting one of the sound outlet openings in the plate member.

2. In an accordion having a multiplicity of vibratory reeds, a plate member having a plurality of sound outlet openings, an elongated channel member secured beneath said plate member, means in said channel member defining a plurality of compartments, each of said sound outlet openings communicating solely with an opening formed in the portion of the top wall of said channel member contiguous to each of said compartments, the side and bottom walls of said channel members being formed with a plurality of sound inlet openings, the openings in the side and bottom walls contiguous to each compartment being in communication therewith, a plurality of reed blocks arranged exteriorly of and along each of the side walls of said channel member, each of said reed blocks having a multiplicity of reed chambers therein, at least one reed mounted on each of said reed chambers, each of said reed chambers being in communication with one of the sound inlet openings in the side wall of said channel member, another plurality of reed blocks arranged exteriorly of and along the bottom walls of said channel member, each of said bottom reed blocks having a multiplicity of reed chambers, at least one reed mounted on each of the last mentioned reed chambers, each of said last named reed chambers being in communication with the adjacent sound inlet opening in the bottom of said channel member, whereby sounds generated by a plurality of the reeds in response to action of the accordion bellows will pass into each of the compartments, and whereby different sounds from respective reeds entering a compartment will be mixed therein, and a plurality of movable valves disposed on said plate member, each valve having a face portion confronting one of the sound outlet openings in the plate member.

3. In an accordion having a plurality of vibratory reeds, a plate member having a plurality of sound outlet openings, an elongated channel-shaped housing member secured beneath said plate member, a longitudinal partition wall secured centrally in said housing member, a plurality of spaced transverse partition walls secured in said housing member on opposite sides of said longitudinal partition wall, defining a plurality of successive compartments on opposite sides of said longitudinal partition wall, each of said sound outlet openings communicating solely with one of said compartments, the respective walls of said channel-shaped housing member being formed with a plurality of sound inlet openings, a plurality of said last-named

openings communicating with each of said compartments, a plurality of reed blocks, each of said reed blocks having a multiplicity of reed chambers therein, at least one reed mounted on each of said reed chambers, one of said reed chambers communicating with each of said sound inlet openings, whereby sound generated by a plurality of the reeds in response to action of the accordion bellows will pass into each of the compartments, and whereby different sounds from respective reeds entering the compartments will be mixed therein, and a plurality of movable valves disposed on said plate member, each valve

having a face portion confronting one of the sound outlet openings in the plate member.

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