

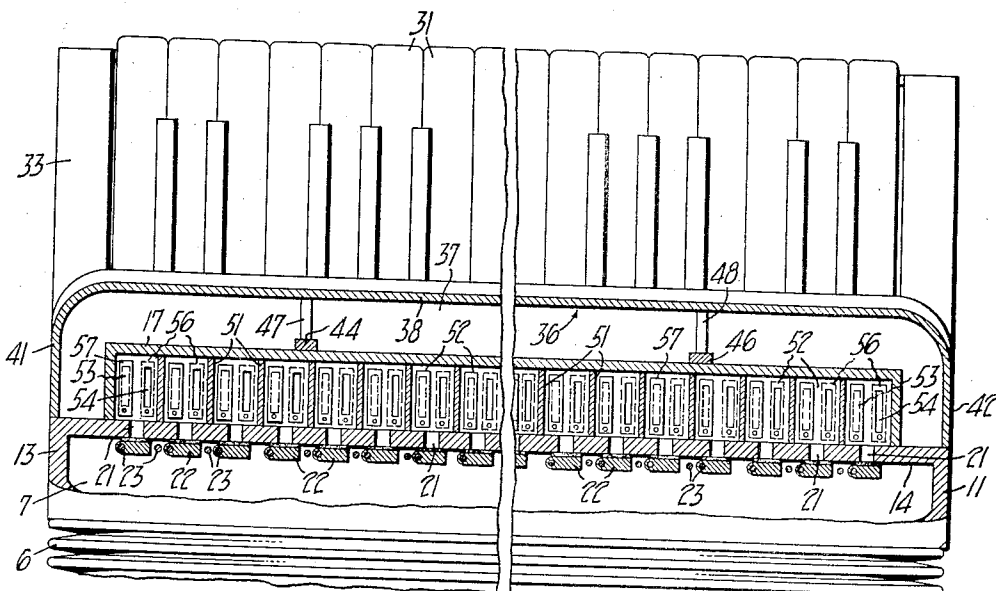
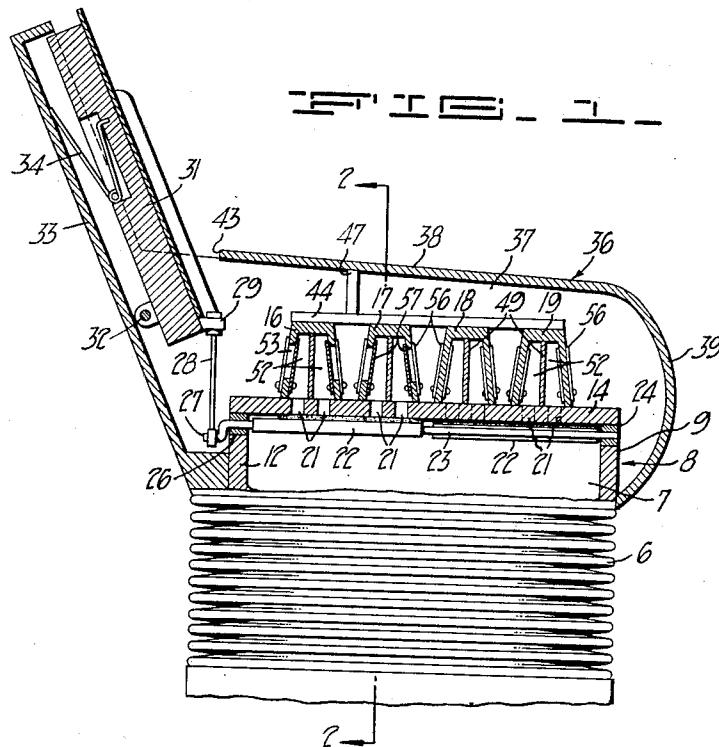
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ACCORDION

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ACCORDION

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8 Claims. (Cl. 84—376)

The invention relates to accordions and more particularly to the sound propagation system of the accordion.

5 An object of the invention is to provide an accordion which will produce tones of greater volume and of more vibrant quality than accordions heretofore.

10 Another object of the invention is to provide an accordion of the character described, wherein the customary valve mechanism is contained within the air chest or chamber of the accordion with the result that quieter operation of the keys and valves is obtained.

15 A further object of the invention is to provide an accordion of the character above which will have incorporated therein a resonating sound board most effectively arranged for propagation of sound from the accordion and a resonating air column which, in cooperation with the sound board, affords an improved and more resonant tone quality as well as a greatly enhanced volume of tone.

20 The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

25 Figure 1 is an end view of an accordion constructed in accordance with the present invention, with a portion of the accordion cut away and shown in section.

40 Figure 2 is a cross-sectional view of the accordion illustrated in Figure 1 and is taken substantially on the plane of line 2—2 of Figure 1.

45 The accordion of the present invention consists briefly in the combination of a plurality of reeds and pneumatic means for vibrating the reeds, with a sound board which is formed of an area many times larger than the reeds and which is supported for resonating with the reeds for amplifying the volume of tone thereof and a resonating air column formed in part by the sound board and responsive to the vibrations thereof, and vibration transmission means connecting the reeds with the sound board. Preferably, the sound board is formed with an area substantially coextensive with the area of the reed blocks of the accordion and is so connected 55 to the reed blocks as to effectively resonate with

all of the individual and various combinations of reed tones.

For the purpose of illustration and disclosure, the present invention is illustrated in the accompanying drawing in conjunction with the treble clef side of the accordion, although as will be understood, the invention is also applicable to the bass clef side of the accordion. The accordion as depicted in the accompanying drawing consists of a bellows 6 providing a flexible interior air chamber 7, for pumping of air through the several reeds and reed blocks of the accordion in the customary manner. The interior chamber or air chest 7 is here provided with a rigid end frame 8 including rectangularly related side walls 9, 11, 12 and 13 and an end wall 14. Mounted on the outer side of the end wall are a plurality of elongated reed blocks 16, 17, 18 and 19 which are positioned in side-by-side substantially parallel relation extending across the end wall from adjacent the sides 11 and 13. The reed blocks, as here illustrated, are of more or less standard construction including a center longitudinal partition 49 and a plurality of transverse partitions 51 which divide the reed blocks into a plurality of individual compartments 52 which are communicated through the sides of the reed blocks through a pair of side openings 53 and 54. A steel reed 56 is mounted in the opening 54 and a check-valve 57 is mounted in the opening 53 so as to by-pass the air from the reed in one direction of movement of the bellows. The end wall is formed with a plurality of openings 21 which communicate the chambers 52 with the air chest 7 for passage of air through these chambers. A plurality of flat or butterfly type valves 22 are mounted at the inner side of the end wall 14 and each supported on a pivotal shaft 23 for movement to and from the under-side of the wall 14 to close and open a set of openings 21. The shafts 23 extend across the end wall 14 between walls 9 and 12 and as here shown, are rotatably carried by such walls. Preferably, in order to minimize air leakage around the bearings for the opposite ends of the shafts 23 in the walls 9 and 12, the latter are provided with bearing bushings 24 and 25. One end portion 27 of each of the shafts 23 at the exterior of wall 12 is formed as a crank and is connected by a connecting rod 28 to one end 29 of a pivoted key 31. A plurality of such keys 31 are thus connected to the operating shafts of the valves for putting the various reeds in operation upon depression of the keys. As here shown in Figure 1, each of the keys 31 is pivoted or hinged as at 32 to a key-bed 33 and is resiliently held in spaced

relation from the key-bed by means of a loop spring 34. In accordance with the arrangement here shown, a depression of the key 31 will be accompanied by a raising of the connecting rod 28 and crank 27 to open the valve 22 connected to the crank, and upon release of the key the latter will be restored to a raised inoperative position by the spring 34, which will in turn close the associated valves. While as here shown, the key 10 is so pivoted and connected to the connecting rod 28 as to effect a pull on the rod 28 upon depression of the key, it will be understood that the rod 28 may be otherwise connected to the key so as to render the same a push-rod in normal operation. 15 Such a construction may be readily effected by connecting the rod 28 to an opposite side of the pivot 32 than as here shown, and is preferable in some instances.

As an important feature of the present invention, I use in conjunction with the accordion above described a resonating sound board 36 which is resiliently supported by the accordion in a position to efficiently propagate sound therefrom exteriorly of the accordion and which is operatively connected to the reeds for efficient transmission of vibrations from the reeds to the sound board. Also in the construction here used, I provide a resonating air column 37 for further improving and amplifying the tone of the accordion. 30

The sound board as illustrated in the accompanying drawing, consists of an essentially flat, thin board portion 38 overlying the reed blocks and spaced outwardly from the end wall 14 so as to define the resonant air chamber 37 therebetween. The board portion 38 is here supported around three sides thereof by a curved front portion 39 which is supported on the frame wall 9 by end walls 41 and 42 supported on the end wall 40 14 adjacent the frame walls 11 and 13 and adjacent the opposite ends of the reed blocks. This construction leaves the rear edge 43 of the sound board free and unsupported to obtain a proper resilience and resonant quality in the sound board 45 and this edge portion is spaced from the adjacent keys 31 so as to provide an air exit for the chamber 37. The chamber 37 is thus enclosed on three sides by the walls 39, 41 and 42 and thereby affords an effective and efficient vibratory air column operative to enhance and amplify the tonal output of the accordion. In order to effect a most efficient vibration of the sound board, a vibration transmission means is used for connecting the latter to the reeds. As here shown, this means 50 consists of a pair of sound bridges 44 and 46 extending transversely across the reed blocks and supported on the outer walls thereof adjacent the opposite ends of the reed blocks. Sound posts 47 and 48 are mounted on the bridges 44 and 46 and extend outwardly therefrom to engage the underside of the sound board portion 38. Preferably, a single sound post is used on each of the bridges and is located to engage the sound board portion 38 intermediate the center and free edge 43 thereof, so as to leave the majority of the sound board area unsupported and free to resonate with the reeds. In this manner sound vibrations are transmitted from the reeds through the reed blocks to the bridges 44 and 46 and thence 70 through sound posts 47 and 48 to the sound board. As here shown, the sound board forms an exposed end wall of the accordion and is thus most effectively arranged for propagation of sound from the accordion. It will be understood, however, 75 that the sound board may be otherwise con-

structed and arranged within the body of the accordion in a manner providing for an escape of the sound emanated thereby to the exterior of the accordion.

I claim:

1. An accordion comprising an air chamber having an end wall, a plurality of reed blocks mounted on said end wall, a sound board having an unsupported edge and spaced from said blocks and forming an exposed wall of the accordion and adapted for resonant vibration, and vibration transmission means connecting said reed blocks with said sound board to induce in said sound board vibrations sympathetic with said reed blocks. 15

2. An accordion comprising, a plurality of reeds, pneumatic means for vibrating said reeds, a sound board many times larger than said reeds and having a free unsupported side, said board being resonantly supported adjacent another side thereof for amplifying the volume of tone of said reeds and mounted at an exteriorly exposed surface of said accordion, and vibration transmission means connecting said reeds with said sound board at points so spaced in relation to the width of the sound board to produce vibrations in said sound board in resonance with the vibrations in said reeds. 25

3. An accordion comprising, an air chamber having an end wall, a plurality of reed blocks mounted on said end wall, a sound board spaced from said blocks and end wall in a plane substantially parallel thereto and having an area substantially coextensive with the area occupied by said blocks and supported from said chamber with a free unsupported side and positioned for vibration resonant with that of said reed blocks and for transmission of vibrations of said sound board to the exterior of the accordion, and vibration transmission means connecting said reed blocks with said sound board at points spaced to produce said resonant vibration. 35

4. An accordion comprising, a plurality of separated reed blocks, a sound board spaced from said blocks in a plane substantially parallel thereto and having an area substantially coextensive with the area occupied by said blocks and supported and positioned for vibration resonant with that of said reed blocks and for transmission of vibrations of said sound board to the exterior of the accordion, a bridge connecting said reed blocks, and a sound post connecting said bridge with said sound board to produce said resonant vibration. 40

5. An accordion comprising, a flexible air chamber and an end wall therefor, reed blocks mounted on the outer side of said end wall, a sound board supported from said end wall adjacent one side and having an unsupported side, said sound-board being spaced outwardly from said reed blocks and said end wall and adapted for vibration sympathetic to that of said reed blocks and relative to the vibration of said end wall and defining with the latter a resonant air column, and vibration transmission means connecting said reed blocks with said sound board to produce said sympathetic vibration in said sound board and air column. 55

6. An accordion comprising, a flexible air chamber and an end wall therefor, reed blocks mounted on the outer side of said end wall, a resilient sound board mounted for vibration relative to said end wall and spaced outwardly from said reed blocks and said end wall and defining with the latter a resonant air column, a bridge 75

connecting said reed blocks, and a sound post connecting said bridge with said sound board to transmit vibrations from said reed blocks to said sound board and air column.

5 7. An accordion comprising, a plurality of elongated reed blocks mounted in side-by-side substantially parallel relation, a sound board having an unsupported side and mounted in spaced substantially parallel relation to said reed
10 blocks, a pair of bridges extending transversely across said reed blocks adjacent the opposite ends thereof and supported thereon, and a sound post carried by each of said bridges and connected to said sound board.

15 8. An accordion comprising, an air chamber, a plurality of elongated reed blocks mounted in

side-by-side substantially parallel relation on a wall of said chamber, a sound board supported along one edge thereof and overlying said reed blocks in substantially parallel relation and having a free unsupported edge portion opposite to
5 said first edge to permit vibration of said sound board relative to said chamber to afford resonance of said sound board, a bridge extending transversely across said reed blocks from adjacent said
10 first edge to adjacent said second edge portion of said sound board, and a sound post carried by said bridge and connected to said sound board at a position intermediate the center thereof and said free edge portion.

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