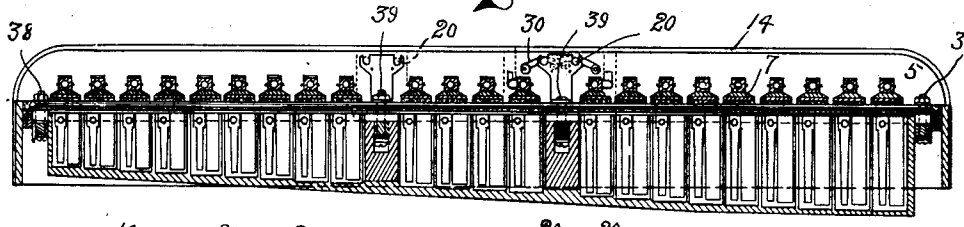
Sept. 29, 1942. L. R. STAHL 2,297,032

ACCORDION

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Fig. 1.



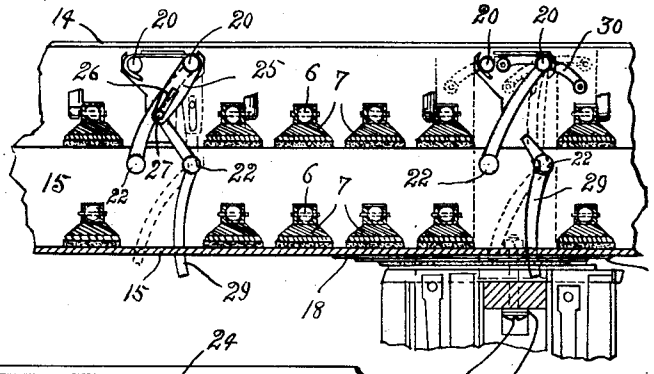
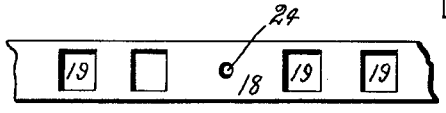


Fig. 2.



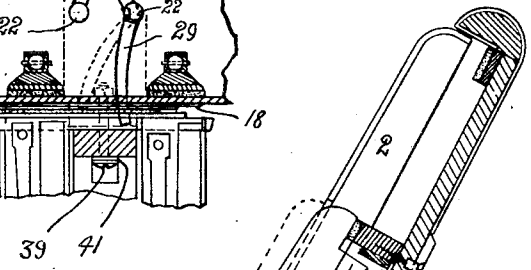


Fig. 3.

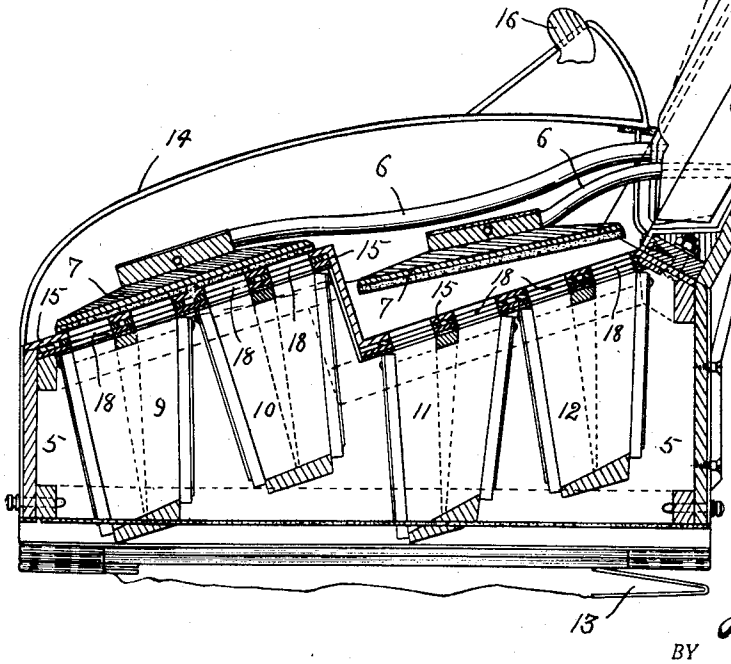


Fig. 4.

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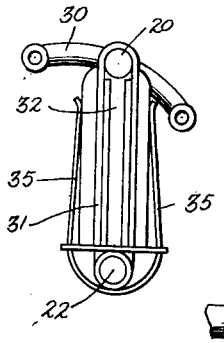


Fig. 5.

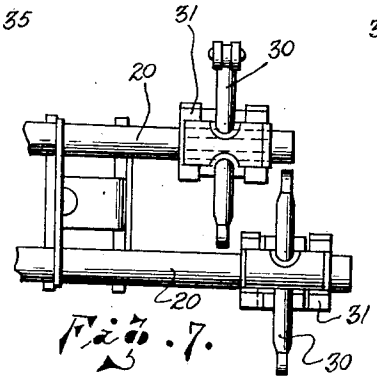


Fig. 7.

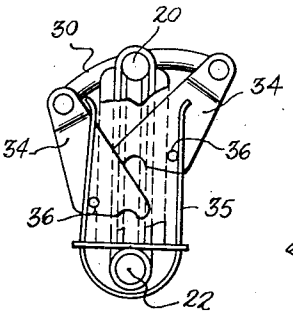


Fig. 6.

Fig. 8.

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UNITED STATES PATENT OFFICE

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ACCORDION

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Application September 15, 1941, Serial No. 410,825

5 Claims. (Cl. 84—376)

This invention relates to piano accordions and has particular reference to improvements in the mechanical actions thereof.

The principal object of the invention is to provide an improved treble action for an accordion and whereby the entire treble action may be positioned within the treble head of the accordion and not extend within the bellows thereof as is common.

Another object is to provide a novel construction of reed block support which makes possible the principal object of the invention.

A further object is to improve the construction of the reed plate of an accordion to provide a more firm support therefor and thereby preventing leaking from under the reed block caps, and which will give an easy, sturdy, and quickly responsive air valve action.

Still other objects and advantages of the invention will appear in the following description thereof.

Referring now to the accompanying drawings, forming part of this application, and wherein like reference characters indicate like parts:

Figure 1 is a plan view of a reed plate of an accordion embodying the invention.

Figure 2 is a front view of the reed block caps, partly broken away.

Figure 3 is a plan view of one of the shift slides, for changing the tone of the accordion.

Figure 4 is a transverse section of the treble side action.

Figures 5, 6, and 7, are respectively, front, top and side views of the automatic switch.

Figure 8 is a view similar to Figure 4, showing the switch mechanism in elevation, and for a better understanding two of the reed blocks are shown slightly lowered from their normal position.

In the drawings the numeral 1 indicates the keyboard, upon which the white keys 2 and black keys 3 are positioned, being mounted upon the transverse shaft 4; the key-board extending at an angle from the treble chamber 5 as is common for convenience of the player in manipulating the keys. Near the lower end of each key is fixed thereto one end of a shaft 6, the other ends of which shafts are secured to the upper side of a felt or chamois covered clapper 7. Between the key-board 1 and each key is mounted a spring 8 for biasing the keys outwardly and thereby the clappers downwardly upon their respective reed chambers, in the reed blocks 9, 10, 11, or 12, each chamber, of course, having the usual holes in the upper end thereof, which, together with the clappers, form the air valves of the instrument. At 13 is indicated the bellows of the instrument, and the air pumped thereby flows through the reed chambers when the clappers thereof are raised causing the desired sound, which, together with the air may flow out through the grill 14 bounding the upper side of the chamber 5. Thus when a key 3, for example, is depressed, its clapper 7 will be raised, permitting air from the bellows to pass through the reed chambers 11 and 12 actuating the reeds thereof and producing the sound which then passes out through the grill 14.

A novel feature of the present invention is in the provision of means whereby the reed blocks and all elements of the action are contained within the treble chamber 5, with no part of the action extending downwardly within the bellows of the accordion, as is common. This means comprises the stepping and inclining of the reed block support 15 as illustrated, it being secured in any desired manner along its end edges to the walls of the chamber 5, so that the reed blocks are held firmly in position, and entirely without the bellows 13. Furthermore the stepping and inclining of the reed block support, as clearly illustrated, directs the sound more outwardly and forwardly through the grill 14 and which, of course, is desirable.

Referring now to the sound control means more particularly illustrated in Fig. 8, it will be seen that a switch key 16 is mounted on a shaft 17, and which, through the mechanism associated therewith operates the sound control slides 18, there being a pair of these for each reed block. The slides 18 are provided with openings 19 (Fig. 3) spaced longitudinally thereof and which normally register with the openings in the top of each reed chamber. Consequently if these slides are moved so that the openings 19 do not fully register with the openings in the reed chamber, thereby restricting the air discharged therethrough, it will correspondingly soften the tone. To accomplish the movement of the slides I have provided a pair of shafts 20 rotatably held in position above the stepped reed blocks 9 and 10 by the brackets 21 fixed in any desired manner to the reed block support 15, and a similar pair of shafts 22 is shown as similarly supported upon the other stepped portion of the reed block support.

Fixed to these shafts 20 at points approximately above the slides 18 are depending rods 23, there being one for each slide although I have only illustrated one in full lines and suggested

another in dotted lines. The lower ends of these rods each extends through a hole 24 (Fig. 3) in each slide and thus as the shafts 20 are oscillated, the rods 23 will be swung one way or the other and thereby move the slides longitudinally. To move the slides in the other banks of reed blocks 11 and 12, I have shown as fixed to the shaft 20 a depending link 25, in the lower end of which is an elongated slot 26 (Fig. 2) in which the upper right-angularly turned end 27 of the rod 28 extends, this rod 28 passing through a hole in the rod 22. The lower end of the rod 28 extends through a hole 24 in its respective slide 18, and thus when the shaft 20 is oscillated the link 25 will move the upper end of the rod 28 one way and since it extends through the rod 22, the other end of the rod 28 will be moved the other way and thus impart a longitudinal movement to its slide 18 and simultaneously oscillate shaft 22 and thus similarly move other rods, one of which is suggested at 29, the others not being shown, but it is understood that there is one for each slide 18, and thus all slides are moved when the shaft 20 is oscillated.

To provide the rocking motion to the shafts 20 when desired, I have fixed thereto the rocker arms 33, upon either side of each of which is provided the frame structure 31, through either end of which the shafts 20 and 22 extend. A central longitudinal slot 32 extends from end to end of this frame structure, and it is into this slot that the free tapered end 33 of the lever 16 extends and is reciprocable. At either end of each rocker arm is pivoted a flat triangularly shaped member 34, the bottom of one or the other of each pair of which is always in engagement with the tapered end 33 of the lever 16. A pair of U-shaped springs 35 extend about the shaft 22, with their free ends extending upwardly toward the rocker arms. A pin 36 passes through and projects from each side of each member 34 and is positioned behind the adjacent upstanding free ends of the springs 35 to hold the bottom of one or the other of the members 34 in the path of the end 33 of the lever. Thus when the lever 16 is depressed, the free end 33 thereof will raise the lower member 34 (see Fig 6) and in so doing tip the rocker arm 30 to its other position, causing the free corner of the other member 34 to ride down the hypotenuse of the lower member 34 until their free corners pass, when the springs 35 bearing against the pins 36 will cause the members 34 to reverse their positions in alternately contacting the lever. When pressure on the lever 16 has been released, the spring 37 thereunder will return it to its normal position at which time openings 19 in the slides fully register with the openings in the reed chambers.

In Figure 8 is illustrated in dotted lines at 40 the relative position of the other mechanism identical with that just described, for oscillating the other shaft 20.

From Figure 1 it will be apparent that each reed plate or block extends from one end to the other of the accordion and is secured at its ends by the bolts 38 which extend through the reed block support and the frame about the sides of the chamber 5. This is the normal manner of supporting the reed block within an accordion but it is found that during the playing of the instrument the span of the reed block from one end to the other of the accordion is so great that the reed chambers towards the center of the block vibrate and as a consequence of this there is a leak of air from under the clappers 7. To prevent such leak of air, I have provided supports also at the center of the reed blocks as by the bolts 39 and which prevent all vibration with the consequent leak of air, with the result that all clappers function perfectly.

At 41, Figure 8 of the drawings, is more clearly illustrated the manner in which the central holding bolts 39 are applied in that the lower end of each of which carries a leaf spring indicated at 41 for engagement with two adjacent reed blocks.

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

1. In a piano accordion having a treble action and a chamber therefor, a support for the reed blocks of said accordion, tone control slides for said reed blocks, a shift key, and means comprising a mechanical linkage between said shift key and said slides and including a shaft transversely mounted within said chamber over said reed blocks, depending rods fixed at one end to said shaft and attached at their other ends to said slides, to optionally move said slides, for controlling the volume of air and sound transmissable through said reed blocks.

2. In a piano accordion having a treble action and a chamber therefor, a stepped support for the reed blocks of said accordion, tone control slides for said reed blocks, a shift key, and a mechanical linkage controlled by said shift key and including a shaft transversely mounted within said chamber over said reed blocks, depending rods fixed at one end to said shaft and attached at their other ends to said slides, to optionally move said slides, for controlling the volume of air and sound transmissable through the reed blocks.

3. In a piano accordion having a treble action and a chamber therefor, a support for the reed blocks of said accordion, said support being attached at both ends and centrally to the walls of said chamber and extending transversely thereof to prevent vibration of said reed block and the consequent leak of air through the reed chambers thereof.

4. In a piano accordion having a treble action including a plurality of reed blocks, and a chamber therefor, sliding valves for said reed blocks, said chamber being too small for the normal support of said reed blocks therein, a stepped and inclined support within said chamber for the reed blocks of said accordion, and whereby said reed blocks may be grouped and supported wholly within said chamber, rockable shafts transversely mounted over said reed blocks, rods fixed at one end to said shafts and at their other ends to said valves, and means to rock said shafts and thereby move said valves.

5. In a piano accordion having a treble action and a chamber therefor, a support for the reed blocks of said accordion, said support being attached at both ends and centrally to the walls of said chamber and transversely thereof to prevent vibration of said reed blocks and the consequent leak of air through the reed chambers thereof, said central attachment including spring means extending between adjacent parallel reed blocks and intermediate adjacent opposite pairs of reed chambers of said blocks.

LEROY RAGNWALD STAHL.