March 7, 1939. A. GUIDOBALDI 2,149,434

VALVE STRUCTURE FOR MUSICAL INSTRUMENTS

Filed Dec. 20, 1937

Fig. 1

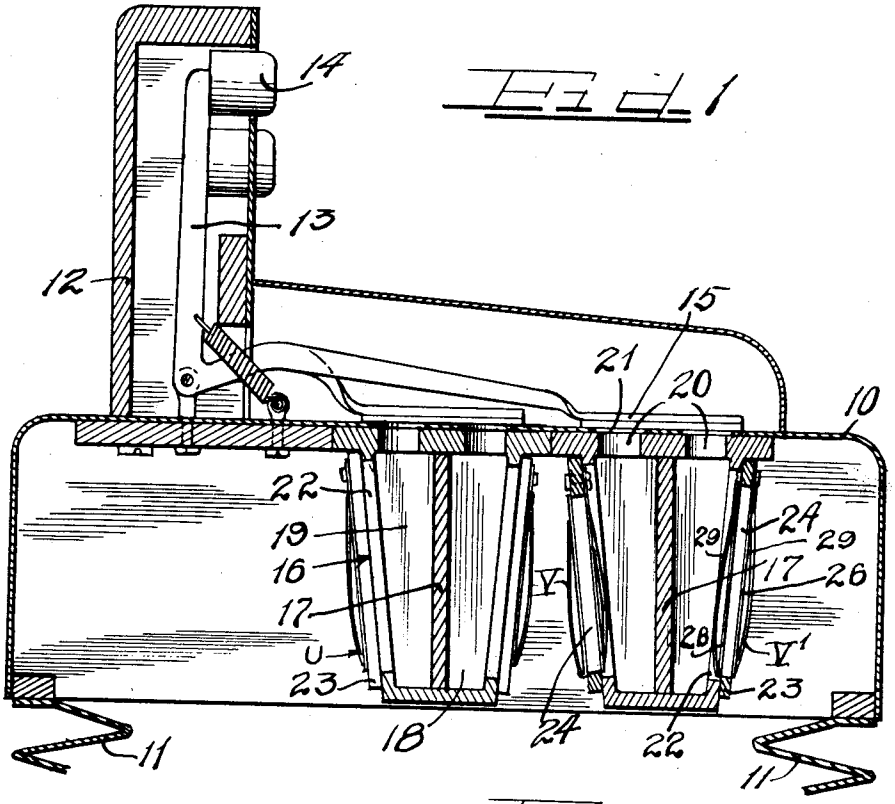


Fig. 2

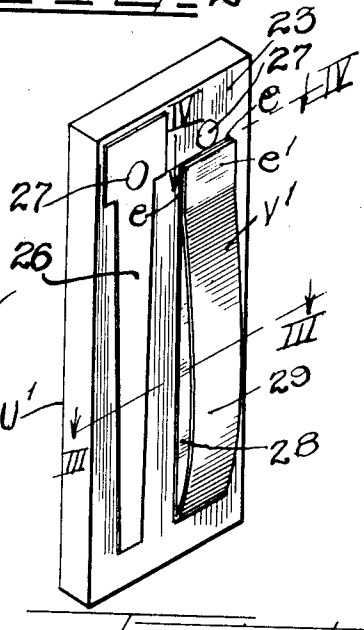


Fig. 3

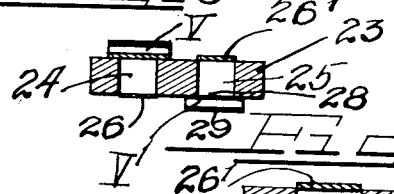
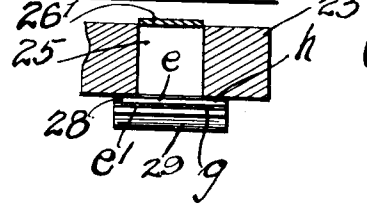


Fig. 4



Inventor

Alfredo Guidobaldi.

by Charles Hill Atty.

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VALVE STRUCTURE FOR MUSICAL INSTRUMENTS

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4 Claims. (Cl. 251—119)

This invention relates to musical instruments of the wind type, such as accordions, and particularly to improved check valve structure for controlling the air flow through the tone reed passages.

In musical instruments such as accordions, each tone reed is anchored at one end to extend across the corresponding end of a wind passage and a check valve extends across the other end of the wind passage so that the reed is sounded only by air flow against and around it through the air passage, the check valve preventing flow in the opposite direction through the passage. These check valves have usually been in the form of strips of flexible and pliable material such as leather, with the strip anchored at one end and overlying the wind passage. The disadvantage of this type of check valve is that the strip may curl away from the passageway or be swung away from the passageway due to its weight, the result being that the valve will not properly function.

The important object of my invention is to provide a sufficiently light and sufficiently responsive check valve which will at all times be maintained throughout its full length in close association with the air passage being controlled thereby. I preferably construct each valve of a length of comparatively stiff but sufficiently pliable material such as paper, and then bend the long paper strip near its middle cross line and fold one half over the other. The free ends of the halves are secured together and anchored to the valve support at one end of the air passageway to be controlled, with the inner leg straight to snugly seat against the support around the air passageway but with the other leg slightly longer than the inner leg so as to form a bow or truss extending from the outer or juncture end of the halves to the anchored free ends of the halves, this bow or truss formation exerting tension on the inner passageway controlling leg to hold it taut lengthwise across the passageway and also exerting pressure against the end of the inner passageway controlling leg to prevent it from curling or falling away from the passageway.

My improved valve structure and operation is clearly illustrated on the drawing, in which drawing:

Figure 1 is a cross-section of the keyboard end of an accordion;

Figure 2 is a perspective view of one of the valving plates or units;

Figure 3 is a section on plane III—III of Figure 2; and

Figure 4 is an enlarged section on plane IV—IV of Figure 2.

Referring to Figure 1, 10 represents the cover or housing for the keyboard end of an accordion, the cover at its base being connected with one end of a bellows 11. The keyboard 12 is secured to and extends laterally from the outside of the housing 10 and supports the key levers 13 each having an operating button 14 at one end and a valve plate 15 at the other end.

Within the housing 10 are the reed and valve supporting blocks 16 secured with their bases against the inner side of the housing outer wall. Each block has a longitudinally extending partition 17 and cross partitions 18 to be thereby subdivided into air chambers 19, each chamber having an air port 20 extending through the base of the block. The ports 20 are in registration with ports 21 through the housing outer wall and the air flow through the aligned ports is controlled by the valve plates 15 on the key levers 13. The side openings 22 of the compartments 19 are covered by reed and check valve units U.

Each of the valve units comprises a plate 23 which is preferably of light metal such as aluminum. Each plate has two longitudinal extending air passageways 24 and 25 therethrough. At the outer side of each plate a tone reed 26 overlies the outer side of the passageway 24 and is anchored, as by a rivet 27, at one end adjacent to the upper end of the passageway. A check valve V overlies the rear side of the passageway 24.

The rear side of the passageway 25 is overlain by a reed 26' and the front side of the passageway is overlain by a check valve V'. These check valves function to permit flow from the passageway outwardly but prevent flow into these passageways, the reeds being sounded by the air flow traveling past the reed into and through the passageways and past the check valves.

Describing now the construction of my improved check valve, each valve is formed from a strip of comparatively thin and pliable and flexible material, the strip being bent along a transverse line near its middle point and folded over to provide the inner leg 28 and the outer leg 29. The end portions *e* and *e'* of the legs 28 and 29 are held together in such manner that the leg 29 will be slightly longer than the leg 28 in order to form a bow and function as a truss for holding the leg portion 28 tensed and straight and to prevent curling, buckling or distortion thereof. The end portions *e* and *e'* of the legs may be secured

together as by cement *g* and these portions are then secured to the plate 23 at the upper end of the air passageway to be controlled so that the inner leg 28 of the valve structure will overlie the passageway for control of the air flow therethrough. The securing of the valve structure to the plate may be by gluing or cementing, as indicated at *h* of Figure 4. With the valve properly supported on the plate, the truss and strengthening action of the bowed outer leg 29 will hold the flow controlling leg 28 flat and taut so that it may at all times cooperate efficiently with the air passageway for control of the air flow.

I have found that paper, such as ordinary correspondence paper, may be efficiently used for the valve structure, although it is evident that other material having the proper characteristics, may be used. By forming the valve structure from a single strip of material, such as paper or its equivalent, a very economical and easily applied valve structure results, which is very efficient and reliable in its operation and eliminates all the disadvantages of prior valves such as valves in the form of single strips of material such as leather.

I have shown a practical embodiment of the features of my invention, but I do not desire to be limited to the exact construction and arrangement shown and described, as changes and modifications may be made herein, which would still come within the scope of the invention.

I claim as follows:

1. A valve structure for controlling the air flow through a musical instrument comprising a plate having an elongated air passageway therethrough, and a single strip of comparatively thin flexible material bent and overlapped to provide an inner portion and an outer portion with their free ends secured together and secured adjacent to one end of the passageway with the inner portion overlying the passageway, the outer portion being longer than the inner portion to form a bow functioning as a truss to hold the inner portion taut at all times.

2. A check valve structure for controlling the air flow through a musical instrument and comprising a plate having an elongated passageway therethrough, and a single strip of comparatively thin paper bent and overlapped to provide an inner portion and an outer portion with their free ends secured together and secured adjacent to one end of the passageway with the inner portion overlying the passageway and the structure swingable as a whole in response to air flow through the passageway, said outer portion being longer than the inner portion to form a bow functioning as a truss and as the sole means for holding said inner portion taut at all times.

3. A valve structure for musical instruments of the class described comprising a plate element having an elongated air passageway therethrough, and a valve element comprising inner and outer strips of flexible material, said outer strip being secured at its ends to the ends of the inner strip and the intermediate portion of the outer strip being bowed away from the inner strip to form a truss for holding said inner strip longitudinally extended and taut, said valve element being secured at one end adjacent to one end of said passageway for closure of said passageway by said inner strip and for swing of said valve element away from said passageway in response to air flow therethrough.

4. A valve structure for musical instruments of the class described comprising a plate element having an elongated air passageway therethrough, and a valve element comprising a strip of flexible material secured at one end adjacent to one end of said passageway to normally overlie said passageway but to swing away therefrom in response to air flow through the passageway, and a reinforcing strip secured at its ends to the ends of said valve strip and having its intermediate portion bowed away from said valve strip to form a truss for holding said valve strip at all times longitudinally extended and taut for efficient cooperation with said passageway.

ALFREDO GUIDOBALDI.