R. A. GALLY.

MUSICAL INSTRUMENT BELLOWS.

APPLICATION FILED JUNE 29, 1912.

1,056,093.

Patented Mar. 18, 1913.

Fig. 1.

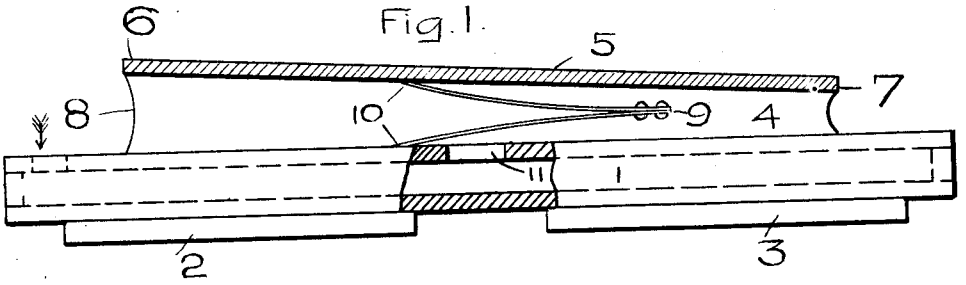


Fig. 2.

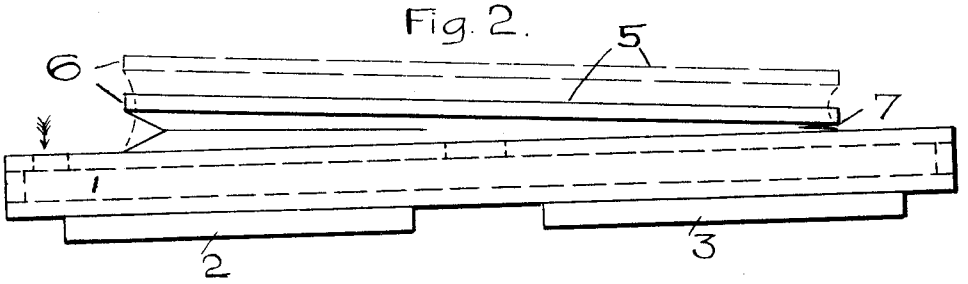
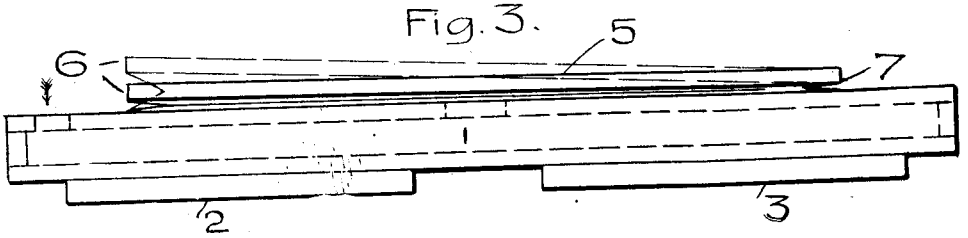


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MUSICAL-INSTRUMENT BELLOWS.

1,056,093. Specification of Letters Patent. Patented Mar. 18, 1913.

Application filed June 29, 1912. Serial No. 706,600.

To all whom it may concern:

Be it known that I, ROBERT A. GALLY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Musical-Instrument Bellows, of which the following is a specification.

In my prior application #653,638, filed October 9th, 1911, is set forth a bellows with its moving board having motion in parallel planes during the first part of its motion, but interrupted during the latter part of its motion at one of its ends by an interrupting block or similar means near that end, and having its latter motion continued at the other end.

In the present application no block is used, the two motions being secured by the slanted angular form of the reservoir covering.

In the present drawings Figure 1 is a front view of the bellows with the reservoir cut open to show the spring; Fig. 2 is the same reservoir at the end of the parallel action of its first motion; Fig. 3 shows the reservoir in the second stage of action, having one end without motion.

By a chest as 1, or in other suitable manner, pumpers 2 and 3 are combined with a reservoir 4 having its moving board 5 lying in a line from 6 to 7 at an angle to its opposite fixed part, as the present chest 1, its collapsible cover 8 thereby having a greater surface between its two angular lines at one end of the reservoir than at the other end.

The expansion spring 9 is positioned between the opposed fixed and movable parts of the reservoir with its active prongs or ends 10 engaging themselves with the moving board 5, at a point nearer the wider open end 6 than the closer end 7 of the reservoir 4, thus exerting its tension on the moving board 5 distributed in a proportion varying from one end to the other of the moving board 5 similar to the varied pull exerted by the different widths of cover 8 added to the total pull of area of moving board 5 as the partial vacuum of air acts on the reservoir when the pumpers as 2 and 3 draw air therefrom. With this construction, the first part of motion of the moving board 5 is in planes substantially parallel to its original slanted position until its closer end 7 has touched the chest 1 or other fixed part, the remaining motion of the moving board 5 continuing at its more open end 6, the board then moving as a hinged member fulcrumed at 7. Thus while there is no sudden jump of tension at the time of change of motion from parallel to hinged action, the speed of change is made twice as fast on the hinged motion of the higher tensions than with the parallel motion of the lower tensions, which best suits a perfect control of dynamic expression of the playing of auto-pneumatic piano-playing devices and other structures requiring a sensitive variation of air tension.

It will be understood that in the structure here shown the tension of air in the reservoir changes at every step of the motion of its moving board 5, owing to the increased tension of spring 9 as it is compressed, and the accompanying reduction of affective area and leverage of the cover 8 as it folds in with the collapse of the reservoir.

What I claim as my invention, is:

1. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board with a space between said fixed board and movable board on all four sides thereof, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides, an expansion spring between said fixed part and movable board having its bearings thereon nearer to the wider open end of said angle than to the narrower end of said angle, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

2. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides during the first part of the motion of the movable board, but collapsible on only three of said sides during

the second part of said motion, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

3. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides during the first part of the motion of the movable board, but not collapsible on one of said four sides during the second part of said motion, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

4. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides during the first part of the motion of the movable board, but collapsible on only three of said sides during the second part of said motion, the end of the movable board at the converging end of said angle being in contact with the fixed part during the second part of said motion, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

5. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides during the first part of the motion of the movable board, but not collapsible on one of said four sides during the second part of said motion, the end of the movable board at the converging end of said angle being in contact with the fixed part during the second part of said motion, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

6. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides, the first part of the motion of said movable board being in parallel planes, to its normal position at rest, and the second part of said motion being at varying angles to said normal position at rest and to the fixed part, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

7. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides during the first part of the motion of the movable board, but collapsible on only three of said sides during the second part of said motion, the first part of the motion of said movable board being in parallel planes, and the second part of said motion being at varying angles to the fixed part, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

8. A musical instrument bellows reservoir having a fixed part and an oppositely positioned bodily movable board, the fixed part and movable board standing at an angle one to the other at the normal position of rest of the movable board, and a collapsible cover attached across the space between the fixed part and the movable board around all four sides thereof and collapsible on all said four sides during the first part of the motion of the movable board, but collapsible on only three of said sides during the second part of said motion, an expansion spring between said fixed part and movable board having its bearings thereon nearer to the wider open end of said angle than to the narrower end of said angle, and pumper means combined with said reservoir and adapted to draw air therefrom and thereby collapse said reservoir.

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