

UNITED STATES PATENT OFFICE.

ROBERT A. GALLY, OF CINCINNATI, OHIO, ASSIGNOR TO THE BALDWIN COMPANY, OF CINCINNATI, OHIO.

PIANO-PLAYING PNEUMATIC ACTION.

1,101,173.

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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 Piano-Playing Pneumatic Actions, as is set forth in the following specification.

The object of my invention is to join the parts of each chest and so brace them all together in the piano, as to secure permanent and airtight construction and certain alinement to the piano action.

In the drawings Figure 1 is an end view from the bass, partly cut away, showing the chests and their end cleats, and also the steadying braces; Fig. 2 is a reversed view of the same chest ends and end-cleats; Fig. 3 a rear view of chests, end-cleats and braces; and Fig. 4 a plan view of the end of a chest.

Previous structures have used various end-cleats, etc., but of more parts to complete the frame, more space, and less rigidity; and braces have been more complicated.

In the present structure a compact and strong joining of the ends of the two rails 1, 2 of a chest 3 is by two cross pieces or end-cleats 4, 5 laid across the two opposite edges of the two rails at their ends, and preferably set into shoulders or notches 6 in the ends of the outer edges of the rails. These end-cleats 4, 5 are preferably of a hard wood, as maple, and are glued and clamped to place to set the joint and make an open end frame of the chest 3 suitable to fasten to the air-service chest of the action. Binding-pins 7 may be set through each rail and the end-cleats 4, 5 above and below the rail, preferably being bored for and snugly driven in after the gluing up has been finished. These binding-pins make a strong structure of chest-end which will hold rigidly against any strain when the chest is fastened to place by screwing to end-cleats 4, 5. To hold the chests 3 rigidly for permanent level alinement with the piano action, one end cleat of each chest is extended well beyond the chest, and at its outer end is fastened to the support of the chests.

When it is desired to insert the outer end screw or fastening through the end-cleat, and there are striker-pneumatics attached to the edge of chest across which one end-cleat is laid, the extension is made by the

other block. As the striker-pneumatics 8 of the chests usually are in the way of having the screws for attaching the chests to wind-box or end-trunk 9, entry holes are provided in the outer wall 10 of the end-trunk and the screws 11 are passed through false-holes 12 and fastened through the inner wall of the chest with a screw hole in the end-cleats 4, 5. Entry holes are afterward plugged or sealed.

As it is difficult to insert an ordinary screw across the space in the trunk, a long screw 11 is used with a shoulder 13 intermediate its length which binds against the inner wall and holds the chest to its joint therewith, the head and barrel of the screw 11 extending toward the outer wall 10 to an easy reach for insertion or removal.

A cheap form is shown making such screw from common stock by slipping or driving a tube over a long screw and up to its head, and fastening a washer against the end of the tube to form an intermediate shoulder, although the shoulder may be made on the original screw if quantity warrants sufficiently low cost.

Various details used to illustrate the present invention are not claimed herein, but are shown and claimed in appropriate separate applications. Various modifications may be made from the showing herein and yet be subject to the claims hereof.

Intermediate the lengths of the chests 3 are spacer spools 14, preferably at the breaks of the scale, and which, with aid of screws 15 space and bind the two rails of the chest to a rigid position. Other means of spacing may be employed, but the spool is preferred, as it may be quite small in its middle part and so leave very clear passage for air. Subspacers 16 may be placed between the rails at their two edges, preferably alternated between the spacer-spools to allow full section of air-way along chest.

To minimize space, the two open sides of each chest are closed by sealing across with rubber-cloth or other suitable airtight material, and pneumatics attached over said cloth or seal 17. To secure a rigid holding together of the chests and the permanent alinement and level of the striker pneumatics, a bracer 18, preferably of hard wood is strongly attached by screws or otherwise to the rear face of each chest preferably at the space between the groups of pneumatics

corresponding to the "breaks" in the scale of the piano, and this brace rests on a bearing post or regulator 19 set in the keyed 20 to hold the player action to correct level alinement to the piano action.

What I claim as my invention, is:—

1. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, each end-cleat attached to the similar edges of the two rails.

2. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, each rail having notches in both its edges at its ends, and each end-cleat attached to the similar edges of said rails in said notches.

3. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, each end-cleat attached to the similar edges of the two rails and binding-pins set through each rail and its two end-cleats.

4. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, each rail having notches in both its edges at its ends, and each end-cleat attached to the similar edges of said rails in said notches, and binding-pins set through each rail and its two end cleats.

5. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, one of said end-cleats extending only a length approximately the same as the width of the two rails, and the other end-cleat extended beyond said two rails.

6. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, one of said end-cleats extending only a length approximately the same as the width of the two rails, and the other end-cleat extended beyond said two rails and having a fastening near its outer end.

7. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, one of said end-cleats extending only a length approximately the same as the width of the two rails, and the other end-cleat extended beyond said two rails, and striker-pneumatics attached across

the edges of the rails having the unextended end-cleat.

8. In a player-piano action: a pneumatic-chest comprising two rails facing each other with an air space between, and two end-cleats across the two outer edges of said rails at their ends only, one of said end-cleats extending only a length approximately the same as the width of the two rails, and the other end-cleat extended beyond said two rails and having a fastening near its outer end, and striker-pneumatics attached across the edges of the rails having the unextended end-cleat.

9. In a player-piano: a wind-box having two boards and an air space between, screw-holes in one of said boards and entry holes positioned oppositely thereto in the other board, a chest having its end butted against the outer face of the board with screw-holes and against said screw-holes, and a screw having a shoulder-bearing against the inner face of the board with screw-holes, and the threaded end of said screw passing through said screw-holes and into said chest and binding it to said wind-box, said screw having its head and barrel extended from said bearing shoulder substantially across said air-space to its corresponding entry-hole.

10. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, the middle part of the spool being of less diameter than its ends.

11. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, the middle part of the spool being of less diameter than its ends, and sheet-like seals over the two spaces between the edges of the two rails.

12. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and rigidly between the rails, and substantially midway the edges of the rails.

13. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, the middle part of the spool being of less diameter than its ends and substantially midway the edges of the two rails.

14. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, and substantially midway the edges of the rails, and sheet-like seals over the two spaces between the edges of the two rails.

15. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of

the chest and secured rigidly between the rails, the middle part of the spool being of less diameter than its ends and substantially midway the edges of the two rails, and sheet-like seals over the two spaces between the edges of the two rails.

16. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, and substantially midway the edges of the rails, and spacer-means intermediate the spacer-spools and at the edges of the rails.

17. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, the middle part of the spool being of less diameter than its ends and substantially midway the edges of the two rails, and spacer-means intermediate the spacer-spools and at the edges of the rails.

18. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, and substantially midway the edges of the rails, and spacer-means intermediate the spacer-spools and at the edges of the rails, and alternating from one edge of the rails to the other.

19. In a player-piano: a pneumatic-chest comprising two rails facing each other, and a spacer-spool intermediate the length of the chest and secured rigidly between the rails, the middle part of the spool being of less diameter than its ends and substantially midway the edges of the two rails, and

spacer-means intermediate the spacer-spools and at the edges of the rails, and alternating from one edge of the rails to the other.

20. In a player-piano: a pneumatic-chest consisting of two rails facing each other, an air-space between, sheet-like seals over the two spaces between the edges of the two rails, and striker-pneumatics attached to said chest over one of the said seals.

21. In a player-piano: a pneumatic chest consisting of two rails facing each other, an air-space between, sheet-like seals over the two spaces between the edges of the two rails, a spacer-spool intermediate the length of the chest and rigidly between the rails, and striker-pneumatics attached to said chest over one of the said seals.

22. A piano, and a player-piano action: a plurality of longitudinally disposed chests, one above another, and having striker-pneumatics attached thereto, and a brace fastened to the rear faces of all said chests at a position intermediate their lengths, and a support or bearing under and against the lower end of said brace and set in a part of the piano.

23. A piano, and a player-piano action, a plurality of longitudinally disposed chests, one above another, and having striker-pneumatics attached thereto, and a brace fastened to the rear faces of all the chests at a position intermediate their lengths, and a vertically adjustable support or bearing under and against the lower end of said brace and set in a part of the piano.

ROBT. A. GALLY.

Witnesses:

S. M. WAMACKS,

J. W. MACY.