

S. L. DICKINSON.
 PLAYER PIANO.
 APPLICATION FILED FEB. 15, 1912.

1,059,123.

Patented Apr. 15, 1913.

2 SHEETS-SHEET 1.

Fig. 1,

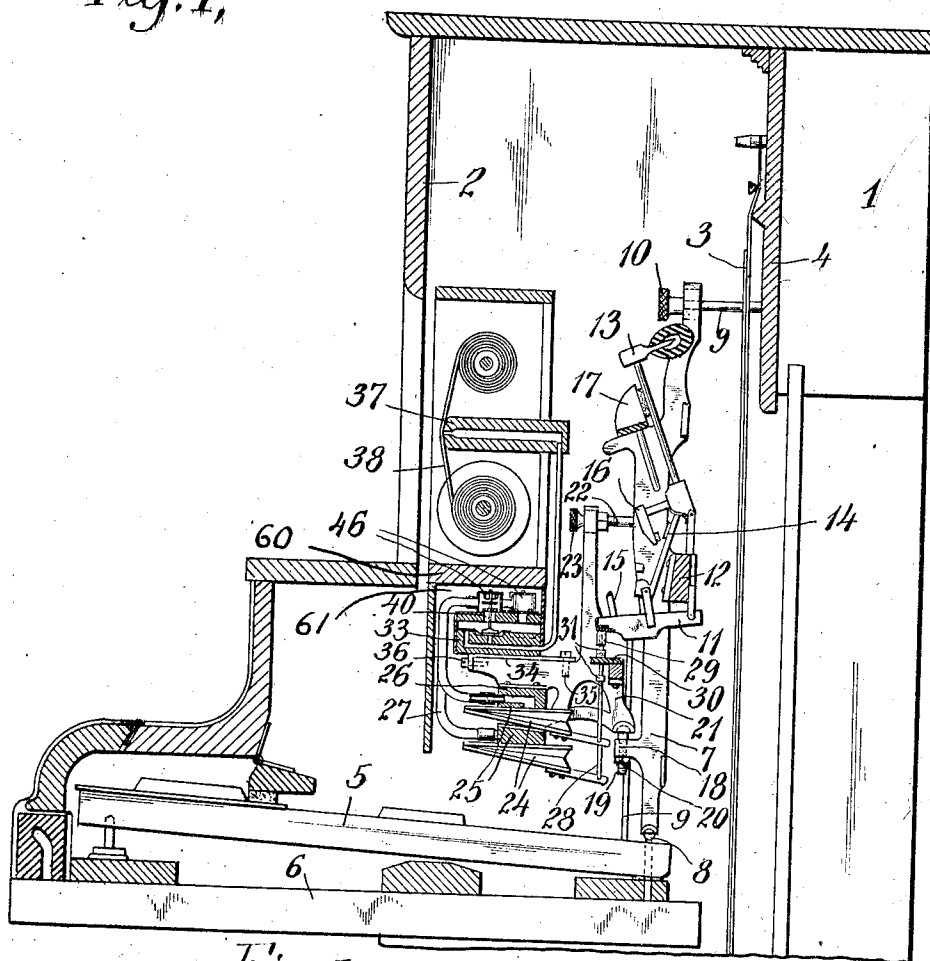
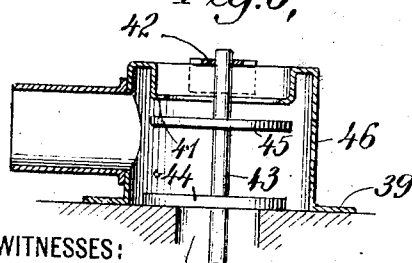


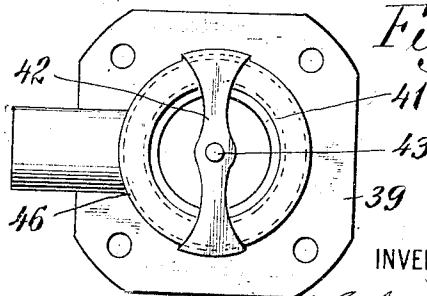
Fig. 5,



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Fig. 6,



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2 SHEETS—SHEET 2.

Fig. 2,

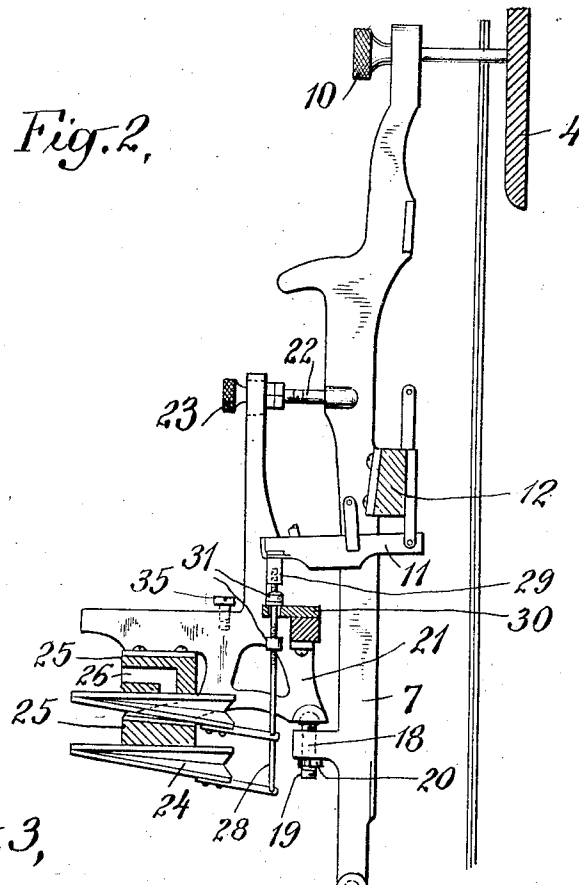


Fig. 3,

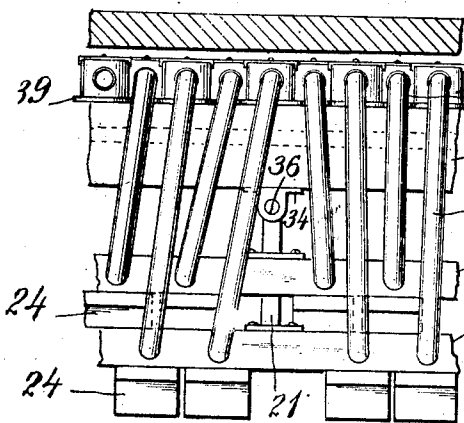
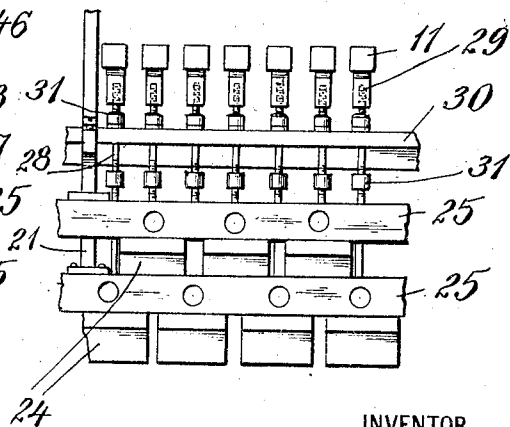


Fig. 4,



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SAMUEL L. DICKINSON, OF CRANFORD, NEW JERSEY.

PLAYER-PIANO.

1,059,123.

Specification of Letters Patent.

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Application filed February 15, 1912. Serial No. 677,770.

To all whom it may concern:

Be it known that I, SAMUEL L. DICKINSON, a citizen of the United States, residing at Cranford, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Player-Pianos, of which the following is a specification.

This invention relates to player-pianos such as that illustrated and described in U. S. Letters Patent, No. 972,346, granted to me October 11, 1910. The invention is directed to the provision of an improved construction and arrangement of the parts of pianos of this type whereby the parts thereof may be more readily manufactured and assembled, whereby the work of regulating the pianos for proper operation is greatly facilitated, and whereby the cost of manufacture is decreased.

The invention relates particularly to the construction and arrangement of the parts whereby the proper regulation of pneumatic playing mechanism may be secured. It is well known that in pneumatically operated pianos, as now commonly constructed, the work of regulating the piano consumes a substantial amount of time and as this is an operation which can be done only by a skilled workman, the cost of effecting the regulation is a substantial item in the cost of manufacture of the completed pianos. In accordance with the invention, the parts of the piano are so arranged and certain of them are made removable so that ready access to the adjustable parts, whereby the proper regulation is secured, may be obtained. This feature of the invention involves removably mounting certain parts of the pneumatic-action upon suitable supports in front of the piano-action of an upright piano and in front of the devices connecting the striking pneumatics to the piano-action; by the removal of these parts, ready access is had to these connecting devices so that they may be readily adjusted in order to establish the proper limits for the movement of the striking pneumatics and thus regulate the blows delivered thereby to the hammers of the piano-action.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which—

Figure 1 is a vertical section through the upper portion of an upright player-piano; Fig. 2 is a similar view of a portion of the

mechanism shown in Fig. 1 with the wind-chest removed; Fig. 3 is a front view of a portion of the pneumatic-action; Fig. 4 is a view similar to Fig. 3, the wind-chest being removed; Fig. 5 is a section of one of the valve chambers; and Fig. 6 is a top view of the same.

Referring to these drawings, 1 indicates the framework of an upright piano; 2 the casing thereof; and 3 the strings mounted upon the plate 4. The keyboard is shown at 5, the keys thereof being mounted upon the key-bed 6.

The action of the piano is mounted upon the key-bed 6 above the keyboard and in front of the strings 3, so that the hammers of the action may strike upon their appropriate strings. This piano-action is carried by a plurality of brackets 7, these brackets being arranged at distributed points along the length of the action. Each bracket 7 is mounted upon the key-bed in such a manner as to permit of vertical adjustment thereof. For this purpose, ball-bolts 8 are provided upon the key-bed 6 and each bracket 7 has a socket at its lower end bearing upon one of the ball-bolts. At their upper ends, the brackets 7 are provided with slots which receive studs 9 provided with thumb-nuts 10, whereby the brackets are held in vertical position. The action as above stated is mounted upon the brackets 7. This action may be of the usual or any suitable construction. In the drawings a wippen is shown at 11 pivotally mounted upon an action-rail 12 and actuated by an abstract 49. The hammer 13 is also pivotally mounted upon the action-rail 12 and is operated by the wippen 11 by means of a jack 14. A back-check is mounted upon the wippen 11 in the usual manner as indicated at 15, this back-check coacting with a catch 16 carried by the hammer 13. When the hammer is in a retracted position, as shown in Fig. 1, it rests upon a hammer-rail 17 mounted upon the brackets 7.

The automatic actuating mechanism for the hammers 13 is mounted upon the brackets 7. Means are provided whereby the automatic mechanism may be adjusted vertically with respect to the brackets 7 and to the piano-action carried by those brackets. The brackets 7 are provided with ears 18 having threaded openings therein which receive ball-bolts 19. These ball-bolts may be adjusted vertically to any desired position in the openings in ears 18 and may then be

locked by locking nuts 20. The ball-bolts 19 on the several brackets 7 support auxiliary brackets 21. The upper ends of these auxiliary brackets are positioned by studs 22 projecting forwardly from the brackets 7 and extending through slots in the upper ends of the auxiliary brackets 21, each stud 22 being provided with a thumb-nut 23. The striking pneumatics 24 are mounted upon the auxiliary brackets 21. For this purpose, two bars 25 are provided extending lengthwise of the piano and secured to the several auxiliary brackets 21. Each of these bars 25 has a plurality of striking pneumatics 24 secured to the underside thereof. In each of the bars 25 are a plurality of passageways 26, one connecting with each of the striking pneumatics 24 and a tube 27 is connected to each of these passageways. The movable side of each pneumatic 24 is connected by a rod 28 to the wippen 11 of the hammer 13 corresponding to that pneumatic. Each of these rods 28 has a screw-cap 29 on its upper end which may be turned upon the rod so as to regulate the length of the rod. Each of these rods 28 also passes through an opening in a strip 30 extending lengthwise of the piano and secured upon the auxiliary brackets 21. Each of the rods 28 is threaded along the portion thereof adjacent to the strip 30 and on this threaded portion of rod 28 are two nuts 31, one above and one below the strip 30. These nuts 31 are adapted to engage opposite sides of the strip 30 so as to limit the upward and downward movement of the rod 28 and, therefore, the movement of the movable side of the corresponding striking pneumatic.

The wind-chest and the valve-mechanisms thereon are removably mounted upon the auxiliary brackets 21 in such manner that by loosening the securing devices which hold it in position, it may be removed from its position by drawing it forwardly. This wind-chest 33 is secured to a plurality of metallic strips 34. Each of these strips is slotted at its rear end and a screw-stud 35 projects through this slot and into a threaded opening in the underlying auxiliary bracket 21. Each of the strips 34 is turned downwardly at its forward end and a screw 36 passes through an opening in this downwardly turned portion and enters a threaded opening in the forward end of the corresponding auxiliary bracket 21. By withdrawing the several screws 36, loosening the several studs 35, and removing tubes 27, the wind-chest 33 may be drawn forwardly to remove it from its position.

By reason of the arrangement of the parts as above described, the work of regulating the pneumatic mechanism so that it will operate the action of the piano properly, may be readily performed, the time required therefor being very much less than that re-

quired with the constructions heretofore commonly employed. It will be seen that the brackets 7 carrying the piano-action may be adjusted vertically as desired so as to cause the hammers 13 to strike upon the wires 3 at the proper points on those wires. The auxiliary brackets may also be adjusted vertically with respect to the brackets 7 and the action of the piano so that the pneumatics and the connections from them to the wippens or other parts of the action may be properly positioned. Furthermore, by removing the wind-chest 33 and the valve mechanisms mounted thereon, access may be had to the caps 29 of the rods 28 and the nuts 31 on the rods 28, so that the effective length of each rod 28 may be regulated as desired and so that the limits of the throw of each rod 28 by its pneumatic 24 may be regulated as desired. Fig. 2 shows the principal parts illustrated in Fig. 1, except that the wind-chest and the valve mechanisms carried thereby have been removed. This figure shows with what freedom access may be had to the caps 29 and nuts 31. Figs. 3 and 4 are front views of certain of the parts shown in Figs. 1 and 2. In Fig. 3, the wind-chest 33 is shown mounted in its position upon the auxiliary brackets, the valve mechanisms on the wind-chest being connected by the tubes 27 with the pneumatics 24. Fig. 4 corresponds to Fig. 3 except that the wind-chest 33 has been removed. Its removal clears the space in front of the regulating devices upon the rods 28 so that free access may be had to those devices.

The tracker is shown at 37 and the music-sheet which coacts therewith is shown at 38. These parts may be of the usual or any suitable construction. The tracker and the rolls for the music-sheet are mounted in a suitable tracker-box which is so supported within the piano that it is removable with the wind-chest. In the present instance the bottom-board 60 of the tracker-box is mounted upon the wind-chest 33 so as to lie parallel thereto and elevated therefrom a sufficient distance to make room for the valve-mechanisms. The board 60 of the tracker-box is extended beyond the ends of the box and out to the ends of the wind-chest and two or more blocks 61 are secured to the wind-chest 33 and have the board 60 secured thereto.

Referring now to Figs. 1, 5 and 6, the valve mechanisms of the pneumatic-action will be described. The valve mechanisms forming part of the pneumatic-action are made separate from the wind-chest and are afterward secured upon the wind-chest. Each valve mechanism consists of a hollow member 46 made of thin metal; preferably a piece of sheet metal is pressed to the proper configuration forming a hollow member or cup such as that shown in Figs. 5 and 6. This member has a flange 39 at the

lower end or bottom thereof, whereby the member 46 may be secured upon the wind-chest 33 over an opening 40 leading to the interior of the wind-chest. This lower end of the member 46 is open so that when the valve is mounted in position the interior thereof is or may be connected with the interior of the wind-chest. At the opposite or upper end of the valve mechanism, the metal thereof is drawn down to form a lip 41 around an opening in this end of the cup. A bridge 42 is mounted upon this end of the member 46 and extends across the opening therein, this bridge being provided with a central opening, as shown in Fig. 6. Within the member 46 is a reciprocating valve which is adapted to close the opening 40 leading to the interior of the wind-chest or the opening at the opposite end of member 46 within the lip 41. This valve has a stem 43 which is guided by the central opening in the bridge 42 and at its opposite end extends through the opening 40 in the wind-chest to devices of the character heretofore commonly employed for actuating such a valve. On the spindle 43 are two disks 44 and 45, the former being adapted to close the opening 40 when the valve is in one position and the latter being adapted to close the opening within the lip 41 when the valve is raised to the upper position.

The common practice heretofore in the construction of pneumatic-actions has been to provide the valve mechanisms of such an action within the wall of the wind-chest by boring that wall so as to provide the necessary passages therein. This practice has frequently resulted in cracking a board of the wind-chest so much as to render it useless. By forming the valve chambers separate from the wind-chest and thereafter securing them upon the wind-chest in the proper positions, the expense incident to such breakage is reduced or completely avoided. Furthermore, valve mechanisms constructed as above described by suitably shaping sheet metal may be manufactured at low cost, may be readily mounted in position upon the wind-chest and are efficient and reliable in their operation.

Having described my invention, what I claim as new therein and desire to secure by Letters Patent of the United States is:

1. In a player-piano, the combination of a casing, a keyboard therein, a piano-action mounted within the casing above the keyboard, a plurality of striking pneumatics, a connection from each pneumatic to a hammer of the action, adjusting means in each of said connections, and a wind-chest removably mounted in front of the piano-action and said adjusting means, its removal giving access to the adjusting means, substantially as set forth.

2. In a player-piano, the combination of

a casing, a keyboard therein, a piano-action mounted within the casing above the keyboard and in front of the strings, a plurality of striking pneumatics mounted in front of the action, a connection from each pneumatic to the action for actuating a hammer of the action, adjusting means in each of said connections, and a wind-chest mounted in front of the piano-action and removable to give access to said adjusting means, substantially as set forth.

3. In a player-piano, the combination of a frame, strings thereon, a keyboard, a key-bed, a plurality of brackets mounted on the key-bed, a piano-action mounted on the brackets, a plurality of striking pneumatics mounted on the brackets in front of the action, a connection from each pneumatic to the action for actuating a hammer of the action, adjusting means in each of said connections, and a wind-chest removably mounted on said brackets in front of the piano-action and by its removal giving access to said adjusting means, substantially as set forth.

4. In a player-piano, the combination of a frame, strings thereon, a keyboard, a key-bed, a plurality of brackets mounted on the key-bed, a piano-action mounted on the brackets, auxiliary brackets each mounted on one of said brackets, a plurality of striking pneumatics mounted on the auxiliary brackets in front of the action, a connection from each pneumatic to the action for actuating a hammer of the action, adjusting means in each of said connections, and a wind-chest removably mounted on said auxiliary brackets in front of the piano-action and said adjusting means, its removal giving access to said adjusting means, substantially as set forth.

5. In a player-piano, the combination of a casing, a keyboard therein, a piano-action mounted within the casing above the keyboard and in front of the strings, a plurality of striking pneumatics mounted in front of the action, a connection from each pneumatic to the action for actuating a hammer of the action, adjusting means in each connection for adjusting the limits of the movement thereof actuated by the pneumatic, and a wind-chest mounted in front of the piano-action and removable to give access to said adjusting means, substantially as set forth.

6. In a player-piano, the combination of a frame, strings thereon, a keyboard, a key-bed, a plurality of brackets mounted on the key-bed, a piano-action mounted on the brackets, a plurality of striking pneumatics mounted on the brackets in front of the action, a rod actuated by each pneumatic and connecting the pneumatic with the action, nuts on said rods for adjusting the limits of the movement of the rods and pneumatics, and a wind-chest removably mounted on said brackets in front of the piano-action and said nuts and by its

removal giving access to said adjusting nuts, substantially as set forth.

7. In a player-piano, the combination of a frame, strings thereon, a keyboard, a key-bed, a plurality of brackets mounted on the key-bed and adjustable vertically with respect to the key-bed and strings, a piano-action mounted on the brackets, a plurality of auxiliary brackets each mounted on one of said brackets and adjustable vertically with respect to said brackets and the piano-action carried thereby, striking pneumatics mounted on the auxiliary brackets and connected to the piano-action, and a wind-chest mounted on the auxiliary brackets and connected to the pneumatics, substantially as set forth.

8. In a player-piano, the combination of a casing, a keyboard therein, a piano-action mounted within the casing above the keyboard, a plurality of striking pneumatics, a connection from each pneumatic to a hammer of the action, adjusting means in each of said connections, and a pneumatic-mechanism removably mounted in front of the piano-action and said adjusting means, said pneumatic-mechanism including a wind-chest, valve-mechanisms coöperating therewith to control the pneumatics, a tracker-box and a tracker all of which parts are re-

movable from the piano together and by their removal give access to said adjusting means, substantially as set forth.

9. In a player-piano, the combination of a frame, strings thereon, a keyboard, a key-bed, a plurality of brackets mounted on the key-bed and adjustable vertically with respect to the key-bed and strings, a piano-action mounted on the brackets, a plurality of auxiliary brackets each mounted on one of said brackets and adjustable vertically with respect to said brackets and the piano-action carried thereby, striking pneumatics mounted on the auxiliary brackets and connected to the piano-action, a wind-chest connected to the striking pneumatics, a tracker-box and a tracker, said wind-chest, tracker-box and tracker being mounted upon the auxiliary brackets so as to be removable therefrom together and by their removal giving access to the connections from the striking pneumatics to the piano-action, substantially as set forth.

This specification signed and witnessed this 10th day of February, 1912.

SAMUEL L. DICKINSON.

Witnesses:

I. McINTOSH,

JOSEPH F. COLLINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."