S. L. DICKINSON.

PLAYER PIANO.

APPLICATION FILED FEB. 27, 1909.

972,346. Patented Oct. 11, 1910.

Fig. 1,

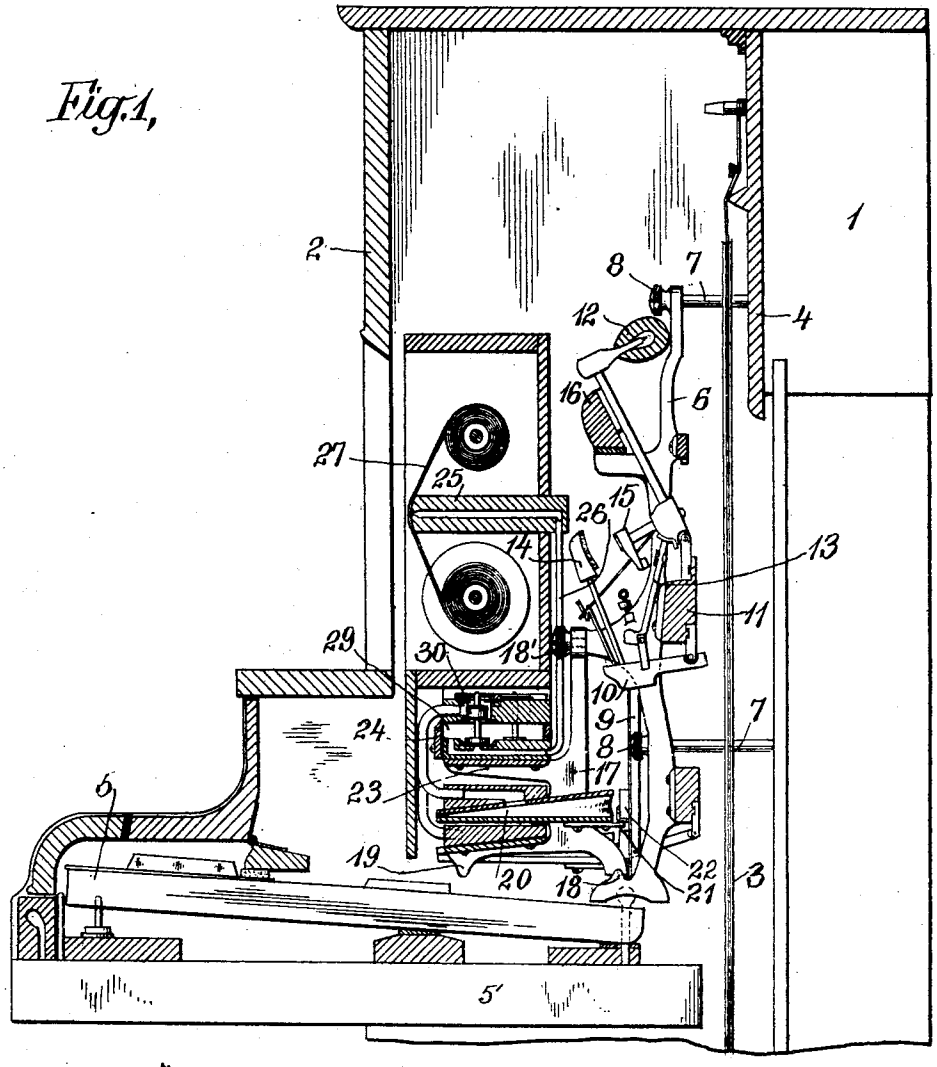
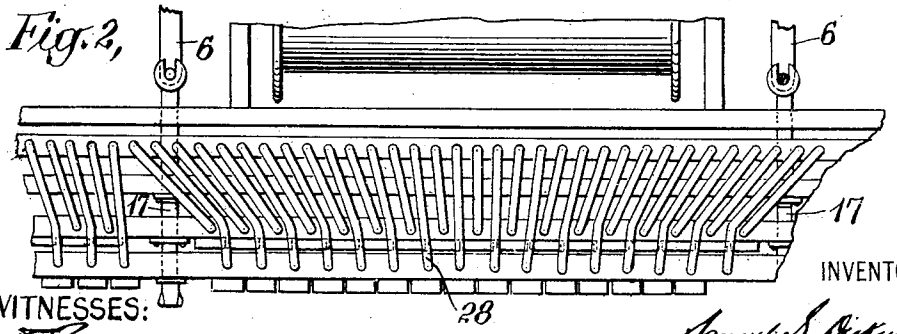


Fig. 2,



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PLAYER-PIANO.

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To all whom it may concern:

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

This invention relates to player-pianos and its object is to effect certain improvements in the construction of such instruments whereby the several devices thereof are more compactly arranged, greater strength of construction is obtained and a saving in the cost of manufacture effected.

The invention relates to player-pianos of the type having the automatic operating mechanism, tracker-board and music-roll mounted above the key-board, all in front of the wires.

One feature of the invention resides in the method of mounting the automatic actuating mechanism including the pneumatics and the valve-mechanisms therefor. In pianos as now commonly constructed, the piano-action is mounted on a plurality of brackets, spaced apart at intervals along the length of the key-board and these brackets are mounted upon the frame-work of the piano. In accordance with the invention, the pneumatics and the valve-mechanisms for playing the piano automatically are mounted upon the same brackets which carry the piano-action, either by providing extensions on the brackets for the piano-action adapted to carry the automatic mechanism or by the provision of auxiliary brackets secured to the brackets for the piano-action and carrying the automatic mechanism.

Another feature of the invention resides in the construction and arrangement of the pneumatics and the valve-mechanisms therefor. Because of the provision of the brackets for supporting the piano-action at points intermediate of the ends of the piano-action, it is necessary to provide spaces between the striking mechanisms operated by two adjacent keys at the points where the brackets are inserted and in accordance with the invention the pneumatics are so arranged that spaces are provided between pairs of adjacent pneumatics where these "breaks" for the brackets occur. The valve-mechanisms for controlling the action of the pneumatics, however, are not correspondingly arranged but on the contrary are spaced apart at regular intervals throughout the entire key-board, and these valve-mechanisms are connected to their respective pneumatics by tubes which are inclined, as may be necessary, in order to effect the connection between each valve-mechanism and its proper pneumatic. One advantage of this construction is, that the maximum space is allowed for each valve-mechanism. A more important advantage, however, is that this construction enables me to make up the valve-mechanisms in the form of bars of a length at least as long as the width of the piano of greatest width in which they may be used and to use such a bar or such portion thereof as may be necessary in any piano, irrespective of the positions of the "breaks" in that piano. It is common to make a plurality of these valve-mechanisms in a single structure and it will be seen that in accordance with the invention I may make up a complete set of valve-mechanisms corresponding to all of the keys of a piano and that this set of valve-mechanisms may be employed in any piano irrespective of the location of the space for the brackets therein.

I have illustrated the preferred embodiment of my invention in the accompanying drawings in which—

Figure 1 is a transverse section of a piano and Fig. 2 is a front view of a portion of the mechanism thereof.

In the accompanying drawings, 1 indicates the framework of a piano, 2 the casing thereof, 3 the strings mounted upon the plate 4, 5 the keyboard and 5′ the keybed.

6 indicates one of a plurality, preferably four, brackets which are secured to the framework of the piano by means of ball-bolts projecting upwardly from the keybed 5′ and entering cavities in the brackets and posts 7 the forward ends of which pass through openings in the brackets and are threaded to receive screws 8. The piano-action is mounted upon these brackets and may be of the usual or any suitable construction. In the drawings I have shown it as consisting of an abstract 9 operated by a key, a wippen 10 pivotally mounted upon the action-rail 11 and operated by the abstract 9 and a hammer 12 also pivotally mounted upon the action-rail 11 and operated by the wippen 10 by means of a jack 13. A back-check 14 is mounted upon the wippen 10 in the usual manner and coacts with a catch 15 carried by the hammer 12. When the hammer is in the retracted position, as shown in

Fig. 1, it rests against a hammer-rail 16 mounted upon the brackets 6.

The automatic actuating mechanism for the hammers 12 is mounted upon the brackets 6 and for this purpose the brackets may be extended so as to provide surfaces thereon upon which the automatic mechanism may be secured, or auxiliary brackets may be provided secured to the brackets 6. I have here shown the latter of these two constructions. Auxiliary brackets are shown at 17, one secured to each of the brackets 6. For this purpose bracket 6 may be provided with a projection 18 at its lower end adapted to enter a depression in the lower end of the auxiliary bracket 17, and the upper end of the bracket 17 has an opening therein to receive a screw 18', adapted to enter the bracket 6 to hold the auxiliary bracket 17 thereto. Each of the brackets 17 is provided with a forwardly extending arm 19 and upon these arms are secured the several pneumatics 20, one for each hammer of the piano. The movable arm of each pneumatic is provided with a finger 21 extending under a projection 22 upon the corresponding abstract 9. Each of the brackets 17 is also provided with a forwardly extending arm 23 and upon these arms are mounted the valve-mechanisms 24, each arranged to control the supply of air to its corresponding pneumatic 20. It will be seen that by this construction the automatic actuating mechanism of the piano including the pneumatics and the valve-mechanisms, is mounted within the piano upon the brackets which support the piano-action and I have found in practice that this method of mounting the automatic mechanism of a player-piano is much superior to those heretofore employed.

The controlling devices for the valve-mechanisms 24 are shown as consisting of the usual tracker-board 25 connected by tubes 26 to the several valve-mechanisms and a music-sheet 27 carried by suitable rolls mounted within a frame above the keyboard and immediately in rear of the front-board of the casing of the piano. Any suitable mechanism may be employed for rotating these rolls so as to cause the music-sheet to travel over the tracker-board 25.

The abstracts 9 and the parts connected thereto in a piano are not arranged at regular intervals throughout the length of the piano for the reason that spaces must be provided at certain points for the brackets 6, and because of the connection between the pneumatics 20 and the abstracts 9, the pneumatics must be arranged in a manner corresponding to the arrangement of the abstracts 9, so that spaces are provided between adjacent pneumatics opposite the brackets 6. The pneumatics 20 are therefore so mounted upon the arms 19 of the brackets 17 that each is opposite its corresponding abstract, as shown in Fig. 2. The valve-mechanisms 24 for the pneumatics need not, however, be so mounted, as the connections between the valve-mechanisms and the pneumatics may be arranged to compensate for the difference in the positions of each valve-mechanism and its corresponding pneumatic. The valve-mechanisms may therefore be spaced apart at regular intervals throughout the length of the piano as shown in Fig. 2. Each valve-mechanism 24 is connected with its respective pneumatic 20 by means of a tube 28, and by reference to Fig. 2 it will be seen that these tubes are inclined to the extent made necessary by the difference in the position of each valve-mechanism with reference to the position of its corresponding pneumatic so as to effect the proper connection. The valve-mechanisms here shown are of the usual construction consisting of a vacuum-box 29 and a movable valve-member 30 adapted to reciprocate under the control of the tracker-board and music-sheet in order to effect the necessary connections for exhausting air from or admitting air to the corresponding pneumatic 20.

The construction of the automatic mechanism for a piano above described permits of making up in a single structure the entire set of valve-mechanisms for a piano and this set of valve-mechanisms may be employed in any piano irrespective of the positions therein where the spaces for the brackets 6 occur. Additionally, this spacing of the several valve-mechanisms allows the maximum space for each valve-mechanism.

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 piano, a framework, wires mounted thereon, a keybed, a keyboard, a piano-action including hammers for striking the wires, automatic mechanism for actuating the hammers including pneumatics and valve-mechanisms for controlling the same, and brackets supported upon said keybed and said framework at intervals along the length of the piano-action, said brackets extending upwardly from the keybed and supporting both the piano-action and the automatic mechanism above said keyboard, substantially as set forth.

2. In a piano, a framework, wires mounted thereon, a keyboard, a piano-action including hammers for striking the wires, automatic mechanism for actuating the hammers including pneumatics and valve-mechanisms for controlling the same, brackets secured to said framework at intervals along the length of the piano-action and supporting the piano-action above the keyboard, and auxiliary brackets each secured to one of said brackets and having said automatic mechanism mounted thereon above the keyboard, substantially as set forth.

3. In a piano, a framework, a plate secured thereto, wires mounted on said plate, a keybed, a keyboard mounted thereon, a piano-action including hammers actuated by the keys to strike the wires, automatic mechanism for actuating the hammers including pneumatics and valve-mechanisms for controlling the same, a plurality of brackets each secured to said keybed and to said plate, said brackets extending upwardly from the keybed and having said piano-action mounted thereon above the keyboard and a plurality of auxiliary brackets each secured to one of said brackets above the keyboard and having said automatic mechanism mounted thereon, substantially as set forth.

4. An operating mechanism for operating a piano both manually and automatically formed in a single structure and adapted to be mounted in a piano above the keyboard thereof, the same comprising a piano-action including hammers adapted to be individually operated, automatic mechanism including pneumatics and valves therefor, a plurality of brackets on which the piano-action is mounted, said brackets being spaced apart along the length of the piano-action with certain of the brackets intermediate the ends of the piano-action, and a plurality of auxiliary brackets each secured to one of said brackets, said auxiliary brackets having said automatic mechanism secured thereto, substantially as set forth.

5. In a piano, a framework and casing, a plate secured to the framework, wires mounted on said plate and extending vertically, a keybed, a keyboard mounted thereon, and a manual piano-action and an automatic playing mechanism, the latter including pneumatics and valves therefor, combined in a single structure and mounted within the casing of the piano above the keybed, the means for mounting said structure consisting of a plurality of brackets upon which the piano-action is secured, means for securing the brackets upon said plate and said keyboard, said brackets being spaced apart at intervals along the length of the piano-action with certain of the brackets intermediate the ends thereof, and auxiliary brackets one secured to each of said brackets and upon which said automatic mechanism is mounted, substantially as set forth.

6. An operating mechanism for operating a piano both manually and automatically, formed in a single structure and adapted to be mounted in a piano above the keyboard thereof, the same comprising a piano-action including hammers adapted to be individually operated, a plurality of brackets on which the piano-action is mounted, said brackets being spaced apart lengthwise of the piano-action and certain of the brackets being intermediate the ends of the piano-action, and an automatic playing mechanism also mounted on said brackets and including pneumatics spaced apart lengthwise of the piano-action, valve-mechanisms differently spaced apart lengthwise of the piano-action, and connections between said pneumatics and valve-mechanisms, substantially as set forth.

7. An operating mechanism for operating a piano both manually and automatically, formed in a single structure and adapted to be mounted in a piano above the keyboard thereof, the same comprising a piano-action including hammers adapted to be individually operated, a plurality of brackets on which the piano-action is mounted, said brackets being spaced apart lengthwise of the piano-action and certain of the brackets being intermediate the ends of the piano-action, and an automatic playing mechanism also mounted on said brackets and including pneumatics arranged in groups lengthwise of the piano-action, valve-mechanisms arranged at regular intervals lengthwise of the piano-action, and connections between said pneumatics and valve-mechanisms, substantially as set forth.

8. An operating mechanism for operating a piano both manually and automatically, formed in a single structure and adapted to be mounted in a piano above the keyboard thereof, the same comprising a piano-action including hammers adapted to be individually operated, a plurality of brackets on which the piano-action is mounted, said brackets being spaced apart lengthwise of the piano-action and certain of the brackets being intermediate the ends of the piano-action, and an automatic playing mechanism also mounted on said brackets and including pneumatics arranged in groups lengthwise of the piano-action with spaces between the groups opposite said brackets, valve-mechanisms for said pneumatics spaced apart lengthwise of the piano at regular intervals, and connections between said pneumatics and valve-mechanisms, substantially as set forth.

This specification signed and witnessed this 26th day of February, 1909.

SAMUEL L. DICKINSON.

Witnesses:
D. S. EDMONDS,
HENRY MEYER.