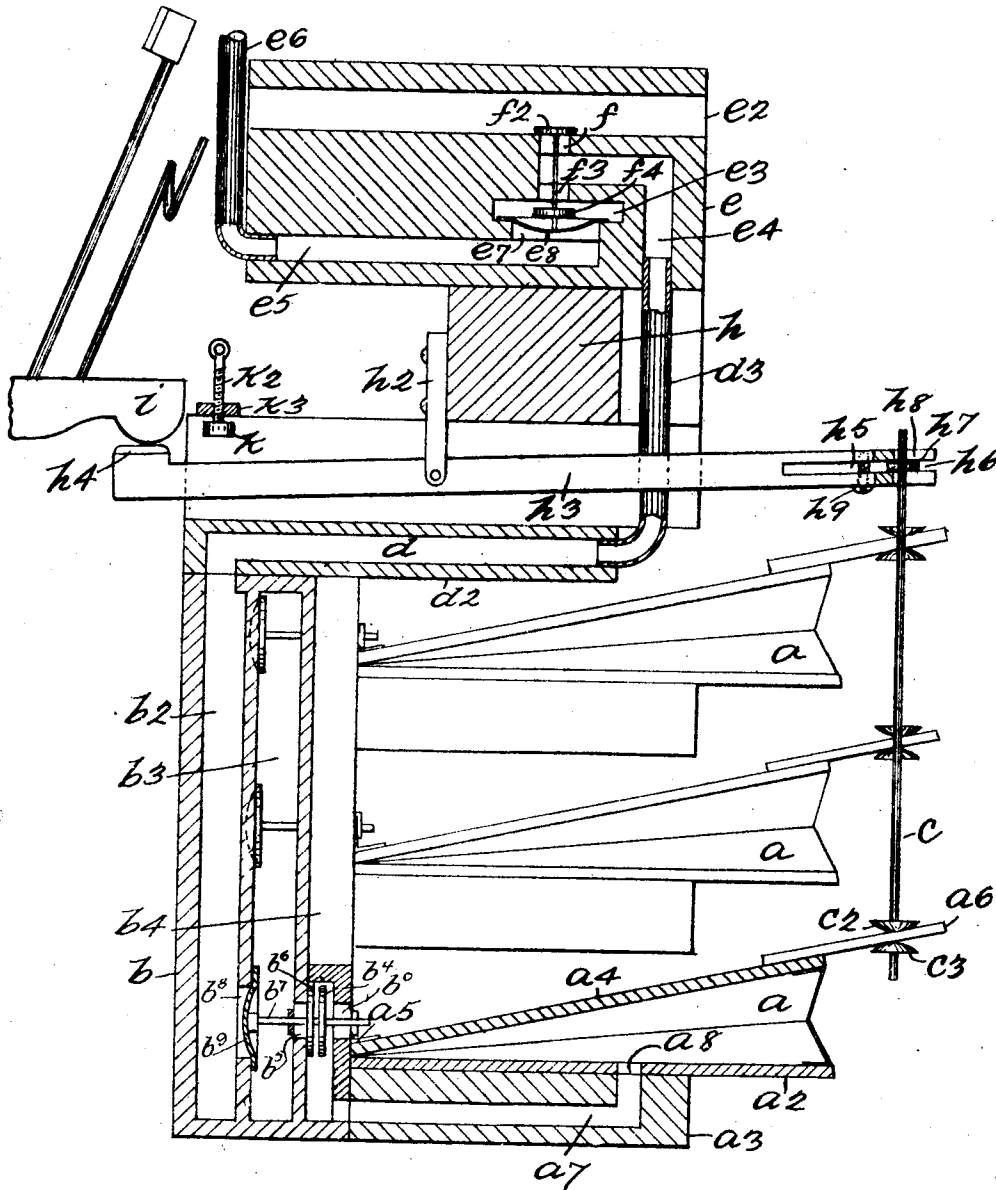


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PATENTED SEPT. 19, 1905.

J. HATTEMER.
PIANO.

APPLICATION FILED OCT. 1, 1904.



WITNESSES

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PIANO.

No. 799,903

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JUSTUS HATTEMER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Pianos, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to manually and mechanically operative pianos wherein a pneumatic-action is employed to operate the keys of said piano, the particular object of this invention being to provide an apparatus of the class whereby the piano-action of said piano is directly operated upon by the corresponding part of the pneumatic-action, and also to provide such an apparatus which is compact in form, simple in construction and operation, and readily removable in its entirety from the piano-casing, a further object being to provide a pneumatic-action wherein the adjustment thereof is more readily accomplished by reason of the fact that the adjusting devices are in the front rather than in the rear of the apparatus, and also to provide a simple and positive method of adjusting the movement of the various parts of the apparatus.

My invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which suitable reference characters are used to indicate the various parts thereof, said drawing being a sectional view of a pneumatic-action and a corresponding part of the piano-action, a portion only of said piano-action being shown, as the same forms no part of this invention.

In the drawing forming a part of this specification I have shown at *a* a pneumatic, the lower member *a*² of which is rigidly mounted upon a support *a*³ and the upper member *a*⁴ of which is pivotally connected at *a*⁵ with a casing *b*, and said movable member *a*⁴ also carries a projecting arm *a*⁶, through which passes a vertical rod *c*, held in its relative position with regard to the arm *a*⁶ by means of buttons *c*² and *c*³, preferably composed of leather or felt or similar soft material, and the support *a*³ is provided with a passage *a*⁷, communicating with the interior of the pneumatic *a*, as shown at *a*⁸. The casing *b* is divided into two compartments *b*² and *b*³, of which the compartment *b*³ is the vacuum-chamber for exhausting the air from the

pneumatics *a*, and communication between the passage *a*⁷ and the vacuum-chamber *b*³ is by means of a port *b*⁹, controlled by a valve *b*⁶, mounted upon a rod *b*⁷, and between the chambers *b*² and *b*³ is an opening *b*⁸, covered by a pouch *b*⁹, and, as shown in the drawing, the rod *b*⁷, upon which the valve *b*⁶ is mounted, is permanently connected with the pouch *b*⁹, and when said pouch is operated the valve *b*⁶ is operated thereby. The rod *b*⁷ also carries a valve *b*⁴, arranged to control a port *b*⁹, leading to the atmosphere from the passage *a*⁷, the two valves *b*⁴ *b*⁶ being so spaced that when one is seated the other is open, and vice versa.

Communicating with the chamber *b*² is a passage *d* in a supplemental casing *d*², and communicating with the other end of said passage *d* and with a valve-box *e* is a pipe or tube *d*³, and said valve-box *e* is provided with a compartment *e*², open to the outer air, a vacuum-chamber *e*³, a passage *e*⁴, with which the tube *d*³ communicates, and a passage *e*⁵, with which a tracker-tube *e*⁶ communicates, said tracker-tube being connected at its outer end with the tracker-board in the usual or any desired manner, and between the passage *e*⁵ and the vacuum-chamber *e*³ is an opening *e*⁷, which is closed by a pouch *e*⁸, and an opening *f* connects the compartments *e*² and *e*⁴, said opening *f* being controlled by a valve *f*², and an opening *f*³, controlled by a valve *f*⁴, connects the passage *e*⁴ with the vacuum-chamber *e*³.

Between the casing *d*² and the valve-box *e* is a member *h*, which supports a hanger *h*², with which is pivotally connected a striker-lever *h*³, carrying on its outer end a padded head *h*⁴, which operates the wippen *i* of the piano-action, and said lever *h*³ is provided at its other end with a longitudinal and horizontal slot *h*⁵, in which is mounted a washer *h*⁶, composed of leather or other suitable material and through which the vertical rod *c* passes, said rod and washer being threaded, as shown at *h*⁷, and the lever *h*³ is also provided with a vertical and longitudinal slot *h*⁸, whereby the connection and disconnection of the said lever and the rod *c* is facilitated, and a screw or similar device *h*⁹ is passed vertically through said lever and the parts thereof formed by the slot *h*⁵ for the purpose of clamping said parts together and holding the washer *h*⁶ in position, and it will be seen that rotation of the vertical rod *c* or of the washer *h*⁶ ad-

justs, raises, or lowers the lever h^3 , and thereby adjusts the same in its relation to the pneumatic a , and when said pneumatic is operated the lever h^3 is operated, as well as the wippen i of the piano-action.

When a perforation in a sheet of music passes over the tracker-tube e^8 in the operation of the piano, the air rushes therethrough to the passage e^7 , raises the pouch e^8 , and thereby the valves f^2 and f^4 , and as the air has been exhausted from the vacuum-chamber e^3 by means of the usual bellows apparatus (not shown in the drawing) the passage f^3 and compartment b^2 are also exhausted, and when the valve f^2 is raised the outer air is free to rush through the opening f , the passage e^4 , the tube d^3 , the passage d , and into the compartment b^2 of the casing b , and in so doing actuates the pouch b^9 , as well as the valve b^6 outwardly, and the air in the pneumatic a is drawn into the vacuum-chamber b^3 through the passage a^7 and opening a^8 , and said pneumatic is thereby collapsed and the lever h^3 is operated, as well as the corresponding wippen i of the piano-action, and a note is struck, as will be readily understood, and when the perforated portion of the music-sheet has passed the tracker-tube b^6 the valves f^2 and f^4 resume the position shown in the drawing, and the air in the passage e^4 and compartment b^2 is again exhausted, and the pneumatic a resumes its normal position and is ready for another operation. The vertical movement of the lever h^3 is adjustably regulated by means of a head h , mounted on a screw h^2 , passing through a suitable support h^3 above the lever h^3 , and rotation of said screw h^2 in either direction permits greater or less movement of the lever h^3 , as will be seen.

It will be understood that the passages e^5 e^4 d b^2 and the tube d^3 , as well as the valves and pouches communicating therewith, correspond in number to the tracker-tubes employed; but the exact arrangement of the valves, passages, pouches, vacuum-chambers, and communicating parts is not a feature of this invention, and any other suitable arrangement of these parts may be employed, the invention consisting of the arrangement of the lever h^3 , the position and adjustment of the vertical rod c , and suitable means for operating said rod and lever by means of the pneumatic a , and various changes in the arrangement of the lever h^3 , vertical rod c , and pneumatic a , made necessary by a different arrangement of these passages, valves, and pouches, may be

made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a piano of the class described, a pneumatic having a pivoted member, a wippen located above said pneumatic and nearer the pivoted end of its movable member than its free end, a rod connected with the free end of the said pivoted member, and the lever fulcrumed between said wippen and said rod, above the line of the pneumatic and having one end in engagement with the wippen and the other secured to the upper end of the said rod.

2. In a piano of the class described, a valve-box, a pneumatic located below the valve-box and connected therewith, a lever pivoted at a level between said valve-box and said pneumatic, a piano-action engaged by one end of said lever, and a connection from the other end of the lever to the pneumatic.

3. In a piano of the class described, a wippen, a lever pivoted to swing about a horizontal axis intermediate of its ends, so that one end of the lever swings downward when the other swings upward, one end of said lever engaging the wippen, a rod extending downward from the other end of said lever, and a pneumatic, the movable member of which is engaged by said rod.

4. In a piano of the class described, a wippen, a pneumatic located at a lower level, a lever one end of which engages said wippen, and a rod connecting the other end of said lever with the movable member of the pneumatic.

5. In a mechanically-operated piano, comprising the usual piano-action and wippens therefor; a lever one end of which bears against the under side of a corresponding wippen, a rod adjustably connected with the other end of said lever, a pneumatic connected with said rod, a valve-box, a pneumatic-casing beneath said valve-box, said lever operating between said valve-box and said casing, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 29th day of September, 1904.

JUSTUS HATTEMER.

Witnesses:

F. A. STEWART,
C. J. KLEIN.