

No. 873,320.

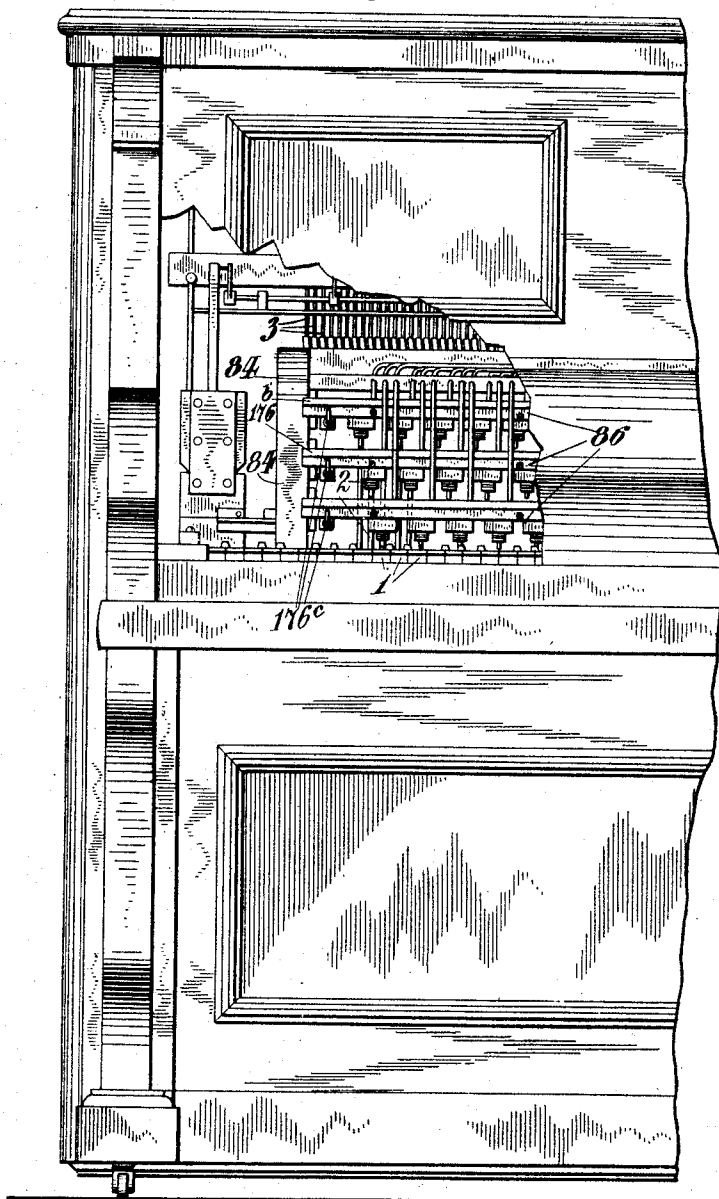
PATENTED DEC. 10, 1907.

F. G. LYNDE.
MECHANICAL MUSICAL INSTRUMENT.

APPLICATION FILED FEB. 15, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
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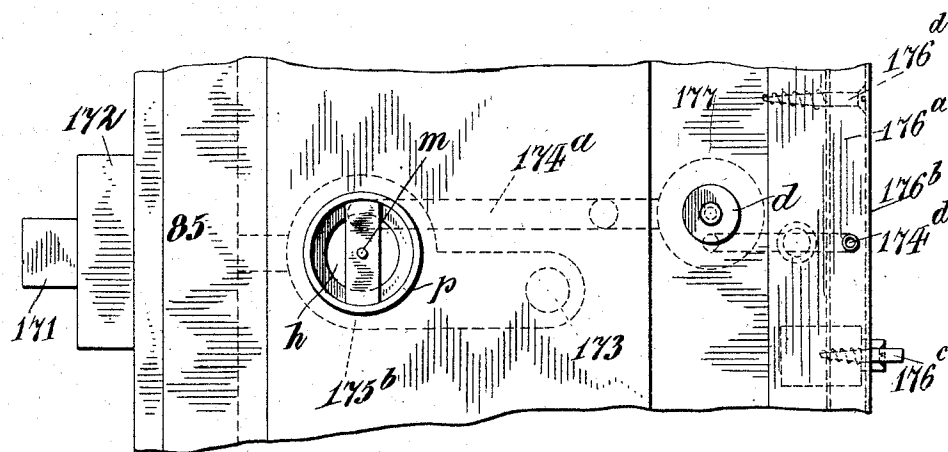
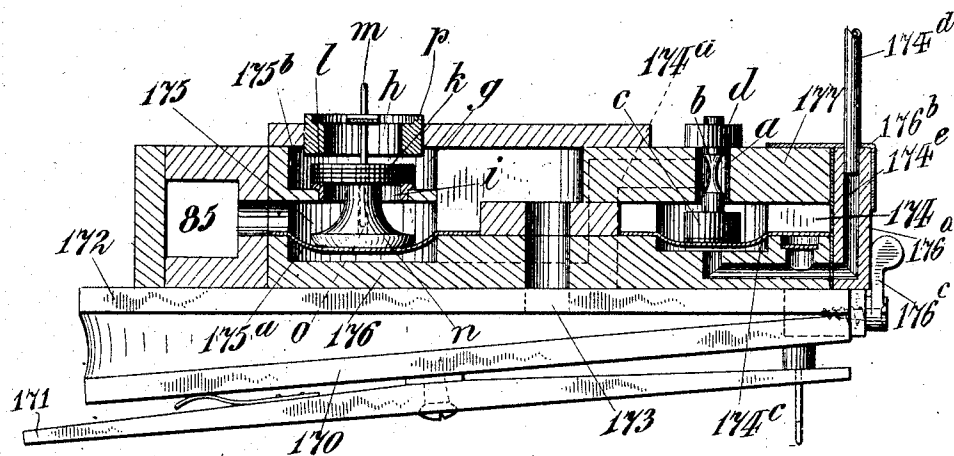
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2 SHEETS--SHEET 2.



Witnesses:
 Geo. H. Marx.
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UNITED STATES PATENT OFFICE.

FRANK G. LYNDE, OF NEW YORK, N. Y., ASSIGNOR TO JOHN A. WESER, OF NEW YORK, N. Y.

MECHANICAL MUSICAL INSTRUMENT.

No. 873,320.

Specification of Letters Patent.

Patented Dec. 10, 1907.

Application filed February 15, 1907. Serial No. 357,448.

To all whom it may concern:

Be it known that I, FRANK G. LYNDE, a citizen of the United States, residing in the borough of Manhattan, of the city of New York, State of New York, have invented certain new and useful Improvements in Mechanical Musical Instruments, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to automatic piano players or self-playing musical instruments of like nature in which the hammer or other playing devices are operated severally by independent pneumatics or small bellows which are controlled by the music sheet and are actuated from a common feeder bellows.

The invention is particularly concerned with the construction of the hammer pneumatic action and has for its object to improve the construction thereof as hereinafter described.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated and in which—

Figure 1 is a view in front elevation of a portion of a self-playing piano to which the invention is applied, the front casing being partly broken out. Fig. 2 is a view of a single pneumatic, partly in elevation and partly in longitudinal vertical section. Fig. 3 is a top view of the parts shown in Fig. 2.

The invention is illustrated in the accompanying drawings as applied to a piano in which the mechanical playing devices are inclosed within the piano case. As the present improvements, however, relate only to the construction of the hammer pneumatic action it is unnecessary to illustrate and describe in detail the construction of the piano. It will be sufficient to enable the application of the invention to be understood, to point out that each finger key 1 acts as usual through an abstract 2 upon the playing devices represented at 3. The hammer pneumatic actions 86 are preferably located above the key board of the instrument and comprise, as usual, a movable bellows member 170, arranged to engage, as by means of a projecting finger 171, the corresponding abstract 2. The stationary members 172 of the several pneumatics are likewise independent of each other, each being provided with a port 173. In general, the action is constructed substantially as usual, with a

primary air chamber 174 and a secondary air chamber 175. Both of these chambers in the present instance are shown as formed in a board 176 which is common to all of the pneumatics of a tier or series or set.

The chambers 174 and 175 are completed by a top board 177 which carries the valves. Each secondary chamber 175 communicates directly with a wind trunk 85 which is common to all of the pneumatics of the series or set, connecting them with the heading or headers 84 at one or both ends, through which communication is established with the feeder bellows as shown. Each primary chamber 174 communicates, as is usual, through a duct 174^a, indicated by dotted lines in Figs. 2 and 3, with the lower part of the secondary chamber 175, that is with the chamber below the diaphragm 175^a. The upper part of the chamber 175 also communicates, through a duct 175^b, with the port 173 of the corresponding bellows. The duct 174^a communicates directly with a passage *a* which opens at one end into the chamber 174 and at the other end to atmospheric air. This passage is controlled by a double valve which comprises a wooden stem *b* provided at its lower end with a button or valve plug *c* and at its upper end with a button or valve plug *d*. The stem *b* is reduced at its middle portion to afford a free air way from the duct 174^a. The valve plug *c* rests upon the diaphragm 174^c, so that when communication between the lower part of the chamber 174, below the diaphragm 174^c, and atmospheric air is established through the tracker board, as usual, the diaphragm 174^c rises, carrying the plug *c* against the lower end of the passage end and the plug *d* away from the upper end thereof, permitting the pressure of the atmospheric air to be admitted to the lower part of the secondary chamber 175 through the passage 174^a. Normally the plug *d* closes the upper end of the passage *a*, so that communication is established between the upper part of the chamber 174 and the lower part of the chamber 175. The air duct between the secondary chamber 175 and the bellows is also controlled by a valve, as usual, for the purpose of placing the bellows in communication with atmospheric air or with the feeder bellows through the chamber 175 and the wind way 85. For this purpose a valve chamber *g* is formed in the passage 175^b, communicating with atmospheric air through

a port *h* and with the chamber 175 through a port *i*. A valve plug *k* controls both ports *h* and *i* resting normally upon and closing the port *i*. This port is provided with a
 5 bushing *l* which coöperates with the valve *k*, thus forming a better seat than if the valve rested upon the flat floor of the chamber *g*. Ordinarily the valve *k* is carried by a stem which rests upon the diaphragm
 10 175^a, but in the present case the stem *m* is provided simply as a guide for the valve *k* and does not rest upon the diaphragm 175^a. To effect the movement of the valve from the diaphragm 175^a, a spool or sleeve washer
 15 *n*, suitably enlarged at its bottom to coöperate with the diaphragm, and perforated as at *o*, to receive the guide rod *m*, is adapted to transmit the movement of the diaphragm to the valve. This sleeve or spool *n* acts
 20 positively to lift the valve, whereas the leather nuts usually employed in the ordinary construction above and below the valve, upon the stem which usually rests upon the diaphragm, are apt to slip more or
 25 less, particularly the lower nut by which the valve is lifted. With the sleeve or spool *n* the action of this valve therefore becomes more positive and the liability of the valve to become disarranged through slipping of the
 30 nut is wholly obviated. The port *h* is likewise provided with a bushing *p* which fits tightly in the port and may be raised or lowered therein to regulate the lift of the valve *k*, for which it also forms a seat.
 35 The front board 176^a which is common to all of the valve chambers 174 is neither secured permanently in place nor is it detachable, as heretofore, but is hinged at its upper edge, as by a leather or fabric hinge 176^b, to

the top board 177 and is locked by latches 176^c. 40
 The flexible devices 174^d which connect the lower portions of the several primary chambers 174 with the tracker board are connected with conduits 174^e formed in the
 front board, the latter communicating as 45 usual with the lower portions of the chambers 174. This construction permits access to be had readily, when necessary, to the interior of the chambers 174 without the inconvenience of having a separate part to 50 handle. If desired screws may also be employed to secure the front board to the board 176, as indicated by dotted lines at 176^d in Fig. 3.

The operation of the improved pneumatic 55 will be readily understood without further explanation.

I claim as my invention:

A pneumatic action for mechanical musical instruments, comprising a board having 60 the primary and secondary chambers formed therein, the primary chamber opening through the front of the board, a top board a diaphragm between said chambers secured to the first named board, a front board 65 hinged to the top board and having conduits to communicate with the lower portions of the primary chambers below the diaphragm, and latches to hold the front board firmly against the first named board and closing 70 the front openings of the primary chambers.

This specification signed and witnessed this eleventh day of Febry. A. D., 1907.

FRANK G. LYNDE.

Signed in the presence of—
 SAMUEL GOOTENBERG,
 CONRAD HAIRIS.