

1,002,072.

H. MEYER.
PNEUMATIC ACTION.
APPLICATION FILED AUG. 1, 1908.

Patented Aug. 29, 1911.
2 SHEETS-SHEET 1.

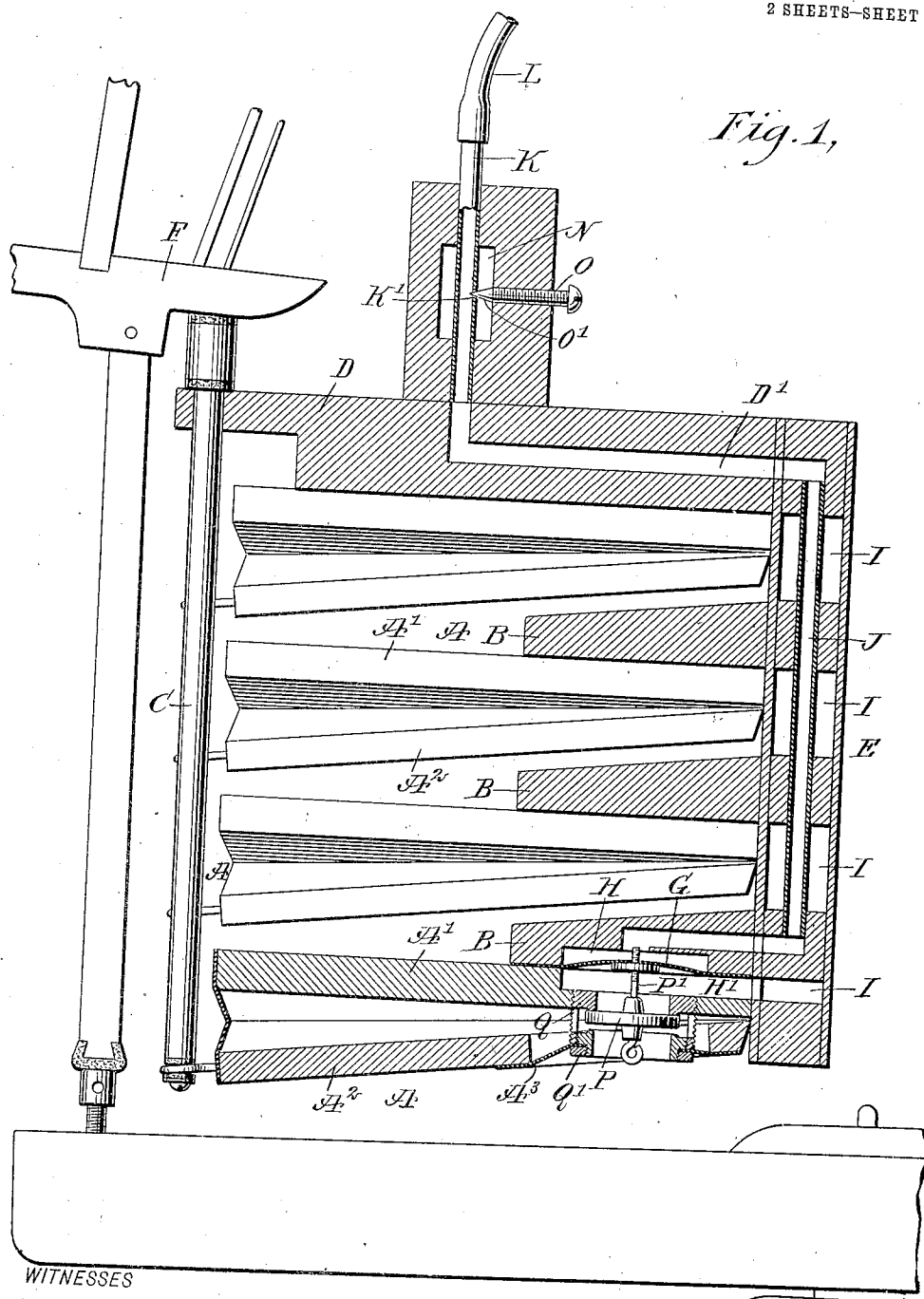


Fig. 1,

WITNESSES

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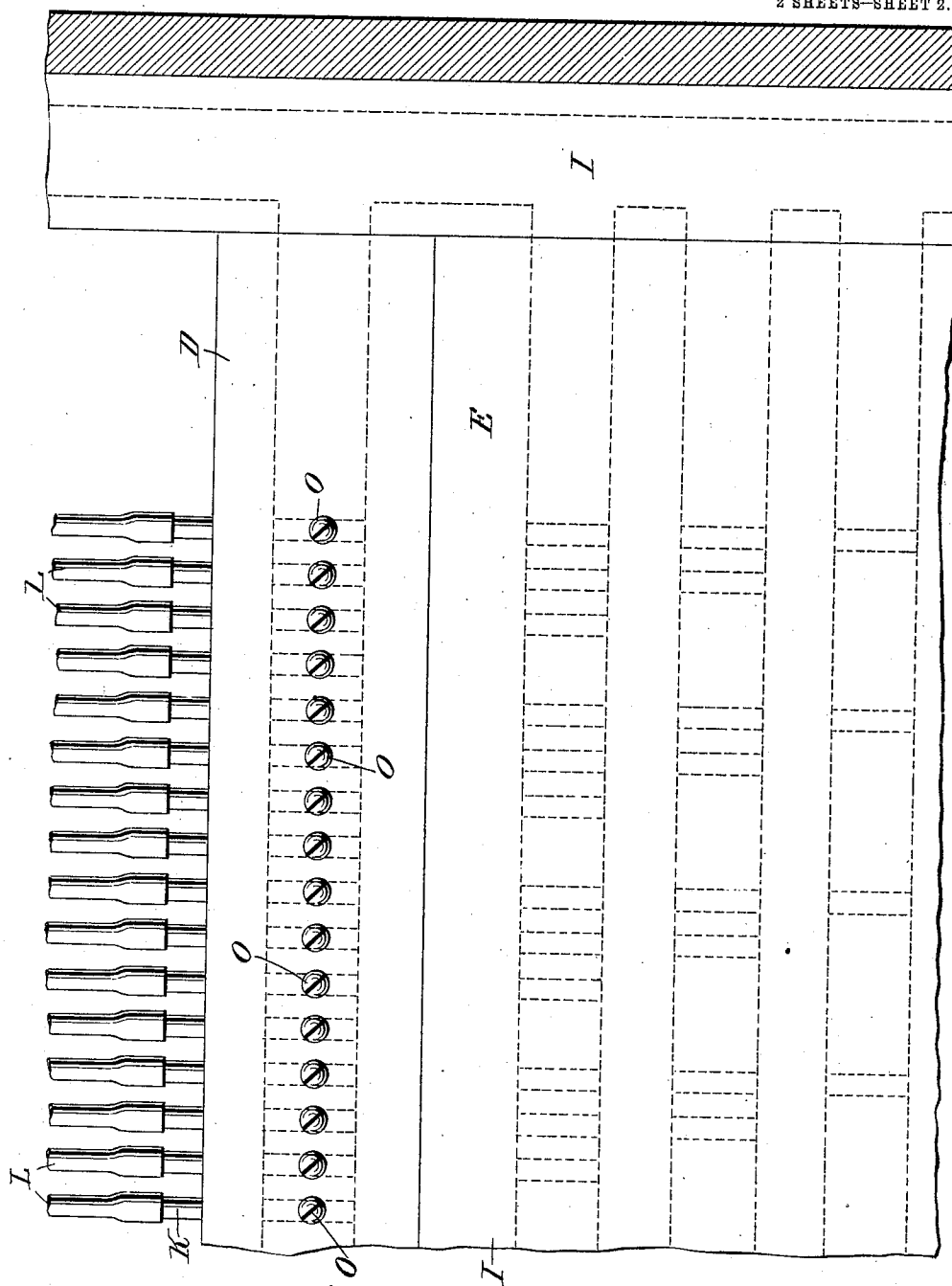
BY

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2 SHEETS—SHEET 2.



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Fig. 2.

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HERMANN MEYER, OF NEW YORK, N. Y.

PNEUMATIC ACTION.

Specification of Letters Patent. Patented Aug. 29, 1911.

1,002,072.

Application filed August 1, 1908. Serial No. 446,458.

To all whom it may concern:

Be it known that I, HERMANN MEYER, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Pneumatic Action, of which the following is a full, clear, and exact description.

The invention relates to self-players, self-playing pianos and like musical instruments, and its object is to provide a new and improved pneumatic action having a bleed hole adjustment, to permit accurate and quick regulation of the diaphragms and valves from the outside, with a view to insure proper opening and closing of the pneumatics.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claim.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a cross section of the improvement as arranged within a piano; and Fig. 2 is a front elevation of the same.

The pneumatics A are arranged in tiers and have their fixed members A¹ attached to the rails B, and their movable members A² connected with a lifter rod C, mounted to slide in suitable bearings arranged on the top board D, secured to the front board E, which also supports the rails B. The upper end of each lifter rod C engages the under side of the front end of a corresponding jack rocker F of the piano action, so that when a pneumatic A collapses, then a swinging motion is given to the corresponding jack rocker F to actuate the corresponding hammer, with a view to sound the desired string. The diaphragm G for each pneumatic A divides its chamber into an air chamber H and a suction chamber H', connected with the main suction chamber I, in the front board E and connected with a suction device of any approved construction. The air chamber H for each pneumatic is connected with a pipe J, extending through the suction chamber I and connecting at its upper end with a channel D', formed in the top board D, the end of the channel D' being connected with a short pipe or nipple K, connected by the usual flexible tube L, with an opening in

the tracker board. Each of the pipes K for the several pneumatics A extends through a suction chamber N, connected with the main suction chamber or the suction device in any suitable manner, and each pipe K is provided with a bleed or leak hole K', opening into the suction chamber N, as indicated in Fig. 1. Into the bleed hole K' of each pipe K extends the pointed end O' of a screw O, screwing in the front wall of the suction chamber N, so as to extend to the outside thereof, to permit the operator to turn the screw O from the outside with a view to move the pointed end O' farther in or out in the bleed hole K', with a view to vary the size thereof, according to the direction in which the screw rod O is turned. Thus when the screw rod O is screwed inward, the size of the bleed hole K' is diminished, and when the screw rod O is screwed outward the size of the bleed hole K' is increased. When the size of the bleed hole is diminished, it requires a longer time for air to exhaust from the pipe K into the suction chamber N than when the bleed hole K' is opened more fully on screwing the screw rod O outward. In the diaphragm G screws the threaded stem P' of a valve P, adapted to be seated on valve seats Q and Q', of which the valve seat Q is fixed in the valve casing and the other seat Q' is adjustably connected to the valve casing and is connected with a flexible portion A³ of the movable member A² of the pneumatic A, as more fully shown and described in the application for Letters Patent No. 408,292, filed by me on December 27, 1907, so that further detailed description of this valve is not deemed necessary, it being understood that other valves may be used in connection with the present improvement without deviating from my invention.

The operation is as follows: When a tracker board opening is uncovered and air passes through the tracker board opening, the tube L, the pipe K, the channel D' and the pipe J into the air chamber H, then the diaphragm G moves downward and consequently the valve P is moved from the seat Q onto the seat Q', to cut off atmospheric air from the interior of the pneumatic A. At the same time the interior of the pneumatic A is connected with the suction chamber H', so that the pneumatic is collapsed and consequently the lifter rod C of this pneumatic actuates the corresponding jack rocker F for actuating the hammer and

sounding the proper string. As soon as the tracker board opening is again covered by the note sheet, then the diaphragm G returns and with it the valve mechanism to normal position, as shown in Fig. 1, that is, the valve P moves back to the seat Q', thus disconnecting the interior of the pneumatic from the suction chamber H' and connecting the interior of the pneumatic A with the atmosphere, to allow atmospheric air to pass into the previously collapsed pneumatic to return the same to open position. When the note sheet disconnects from the tracker board opening, air is drawn out of the pipe K by way of the bleed hole K' opening into the suction chamber N, so that the pressure on the top of the diaphragm G is reduced and the diaphragm now returns to its original position shown in Fig. 1, so that atmospheric air passes into the pneumatic and inflates the same. Now by having the bleed hole adjustment as shown and described, the time for reducing the pressure on the diaphragm can be regulated to the minutest degree, it being understood that the flexibility of the diaphragms varies, and by varying the size of the bleed holes and causing quicker or slower reduction of the pressure in the air chamber H, the diaphragm is caused to act accurately and the action is rendered very sensitive.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:

A pneumatic action for self-playing musical instruments having pneumatics provided with suction chambers and air pressure chambers, rails carrying the fixed members of the said pneumatics, a front board supporting the said rails and having main suction chambers connected with the suction chambers of the said pneumatics, pipes extending through the said main suction chambers and connected with the air pressure chambers of the said pneumatics, a top board having channels connected with the said pipes, an auxiliary suction chamber on top of the said top board, pipes extending through the said auxiliary suction chamber and connected with the said channels and with the tracker board, the said auxiliary suction chamber pipes having bleed holes opening into the said auxiliary suction chamber, and pointed screws screwing in a wall of the said auxiliary suction chamber and controlling the said bleed holes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN MEYER.

Witnesses:

THEO. G. HOSTER,
EVERARD B. MARSHALL.