

E. LESCHBRANDT.
 PLAYER PIANO OR SIMILAR INSTRUMENT.
 APPLICATION FILED DEC. 21, 1910.

1,017,158.

Patented Feb. 13, 1912.

Fig. 1.

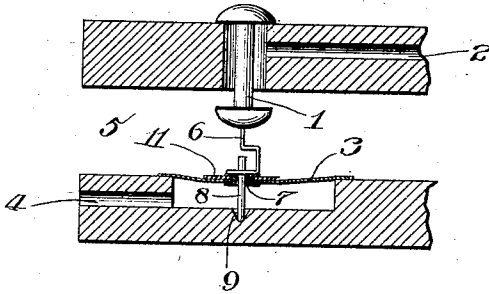


Fig. 2.

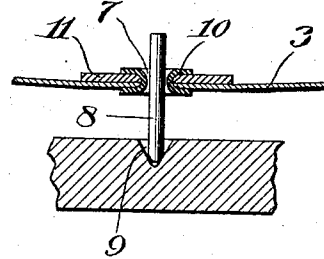
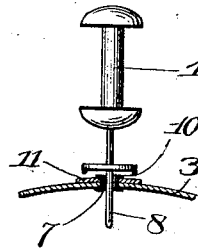


Fig. 3.



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EINAR LESCHBRANDT, OF PHILADELPHIA, PENNSYLVANIA.

PLAYER-PIANO OR SIMILAR INSTRUMENT.

1,017,158.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed December 21, 1910. Serial No. 598,586.

To all whom it may concern:

Be it known that I, EINAR LESCHBRANDT, a subject of the King of Norway, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Player-Pianos or Similar Instruments, of which the following is a specification.

My invention relates to improvements in air actuated instruments, player-pianos, organs, &c., in which the music is reproduced by pneumatically operated mechanism. In such apparatus there is employed a system of valves, which in conjunction with an operating bellows or "striker," actuate the keys of the instrument. This operation is usually dependent upon the varying air pressure or tension upon either side of a soft diaphragm and in order that this may respond promptly to the tension or pressure, it is necessary that there be a duct connecting the spaces upon the two sides of the diaphragm. This duct is generally very small in diameter and is termed a "bleed-hole." Should this small duct become obstructed by dust from the air, by lint or fibers of paper scraped from the music roll as it passes over the tracker board and carried down with the air sucked through the tracker duct, or through any other cause, the action of the valves becomes sluggish and the music is improperly reproduced and presently, if the bleed-hole is not cleaned, the valves operating in conjunction with it may cease to operate.

As at present constructed the cleaning of the bleed-hole is a troublesome affair and a source of annoyance to the user of the instrument, requiring the removal of parts to reach the seat of the trouble and sometimes necessitating the employment of a skilled workman.

The object of my invention is to furnish a simple and effective self-cleaning means for preventing the obstruction of the bleed-hole and this means is illustrated in the accompanying drawings forming part of this specification and in which,

Figure 1, is a central-sectional elevation through one of the valves of a player-piano, and through a diaphragm the movements of which actuate said valve showing my invention as applied to a bleed-hole situated centrally in said diaphragm: Fig. 2, an enlarged central-sectional elevation of the diaphragm and my bleed-hole cleaning device

showing fully the details of construction of the former: Fig. 3, a sectional view, through a diaphragm showing, in side elevation, a cleaning pin carried by a valve located above the diaphragm.

1, is one of the primary valves of a player-piano or similar instrument. 2, the duct leading to the secondary valve, not shown, 3 a diaphragm one side of which is connected by a duct, 4 with the tracker board and the other side of which closes off the space 5 upon the under side of valve 1.

6 is a connection between the diaphragm 3 and valve 1 by means of which the movements of the former are transmitted to the latter.

7 is the bleed-hole, in this case located centrally in the diaphragm.

Normally the pressure above and below the diaphragm 3 are, through the bleed-hole 7, in equilibrium, a vacuum more or less complete being, through mechanism which it will be unnecessary to show or describe here, maintained therein. When a perforation in the music roll opens the duct in tracker-board communicating with duct 4 the diaphragm 3 will be raised. When air ceases to flow through duct 4 an equilibrium is soon established in the spaces upon opposite sides of diaphragm 3 and this diaphragm falls. I purpose using the movements of the perforated diaphragm in connection with a pin 8 which passes through the perforation for keeping this perforation open. The pin 8 is somewhat smaller in diameter than the perforation 7, the two being so proportioned that the area of the space between them will be the proper area for the bleed-hole.

The pin 8 is of metal and its lower end rests in a conical shaped depression 9 in the frame that carries diaphragm 3, the purpose of this arrangement being to center the pin 8 in the hole 7 and to allow for possible slight variations in the location of this hole in the diaphragm.

As the diaphragm is moved up and down and as the pin 8 is stationary the movements of the former past the latter will dislodge any dust or lint that might settle in the bleed-hole.

For simplicity of construction I prefer to place the bleed-hole in the diaphragm, particularly the primary diaphragm if a double valve construction be used in the instrument.

If the bleed-hole be in the diaphragm I

would preferably place centrally of said diaphragm an eyelet 10, Fig. 2, which would not only form a metal edged bleed-hole but which would hold in place a disk 11 which would engage the connection 6 carried by the valve 1.

In the modification shown in Fig. 3 the pin 8 instead of resting in the conical depression 9 in the frame that carries the diaphragm is carried by valve 1, and if the normal movement of the valve is not sufficient for the purpose of cleaning there will be sufficient lost motion to accomplish this.

By the term "pin," used throughout this specification, it will be understood that I mean any object that would in passing through the bleed-hole accomplish my purpose, for instance, a string, a wire, a brush or other equivalent.

Having thus described my invention I claim as new and desire to secure by Letters Patent:—

1. The combination in a player piano or similar instrument of a movable diaphragm with a bleed-hole therein and a pin of lesser diameter than said hole passing there-through, said pin being so carried that it can

move freely from side to side of said bleed-hole.

2. The combination in a player piano or similar instrument, of a movable diaphragm with a bleed-hole therein and a pin of lesser diameter than said hole passing there-through.

3. The combination in a player piano or similar instrument, of a movable diaphragm with a bleed-hole placed centrally therein, and a pin of lesser diameter than said hole passing therethrough.

4. In a player piano or similar instrument, in combination, a diaphragm, an eyelet placed centrally in said diaphragm, a disk secured by said eyelet to said diaphragm, and a pin of less diameter than the hole in said eyelet passing therethrough.

5. In a player piano or similar instrument, in combination, a perforated diaphragm, a pin of less diameter than said perforation passing therethrough, and a seat in which said pin is stepped.

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Witnesses:

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