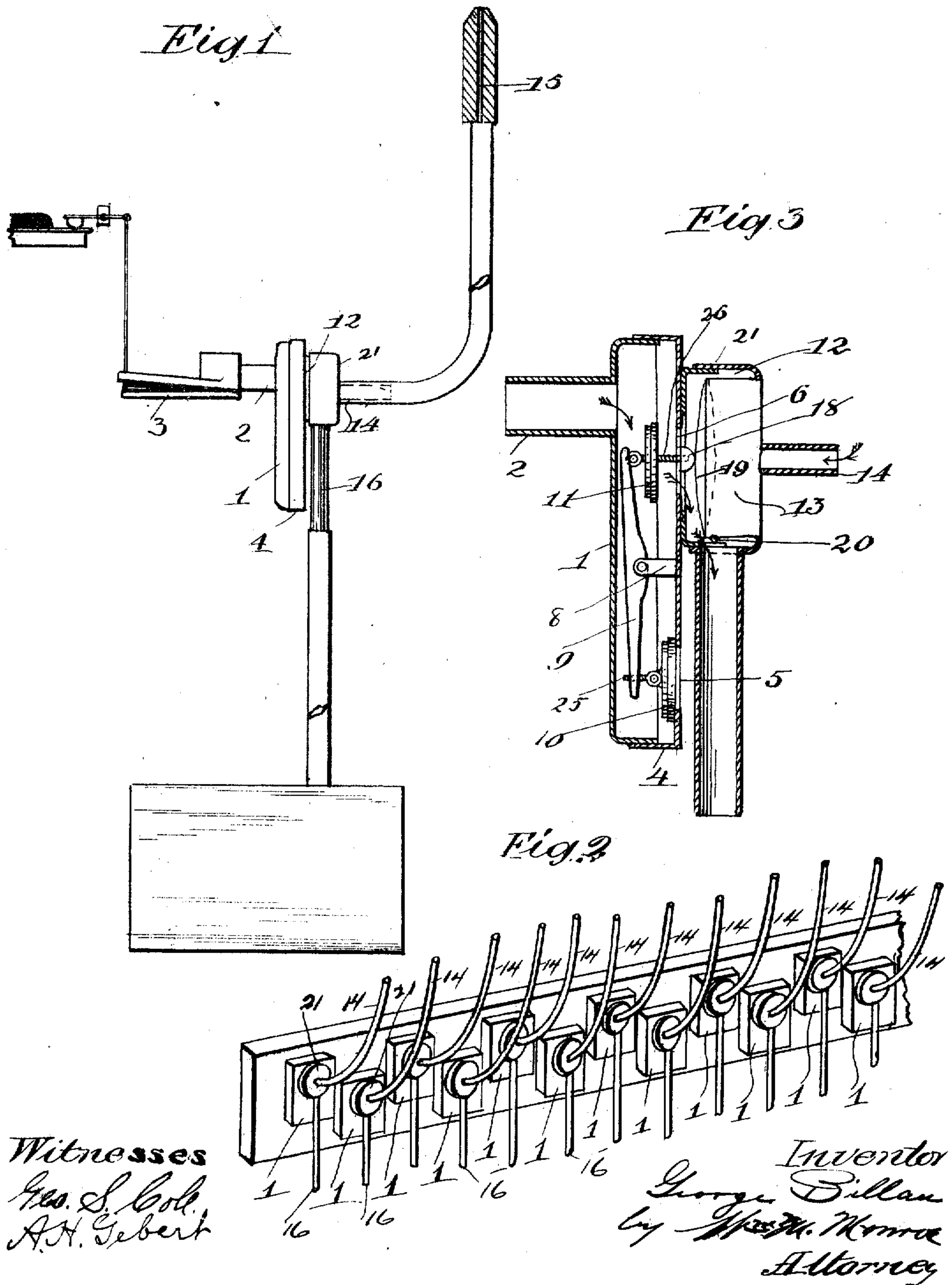


No. 829,382.

PATENTED AUG. 28, 1906.

G. BILLAU.
CONTROLLING DEVICE FOR STRIKING PNEUMATICS.
APPLICATION FILED NOV. 8, 1905.



UNITED STATES PATENT OFFICE.

GEORGE BILLAU, OF CLEVELAND, OHIO.

CONTROLLING DEVICE FOR STRIKING-PNEUMATICS.

No. 829,382.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed November 8, 1906. Serial No. 286,341.

To all whom it may concern:

Be it known that I, GEORGE BILLAU, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Controlling Devices for Striking-Pneumatics, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of the invention are to provide an action-valve and valve-chamber for the striking-pneumatic of an automatic piano-player which will be quicker in action, noiseless, will not obstruct by tortuous openings the free passage of air, and also a form of construction in which the valve cannot stick or become retarded in action.

A further object is to dispense with a large common exhaust-chamber inclosing the valve-chambers, to provide separate cells for the pouches, which are controlled by the tracker-board, and, further, to provide a device of great simplicity and uniformity of action in which all parts are readily accessible to the operator and the different component parts of the valve, and primary pneumatic-controlling chambers and pouch-cells are interchangeable and when worn or injured can readily be replaced or adjusted without dismantling the entire machine.

The invention consists in an individual controlling-chamber for each striking-pneumatic having valve-controlled openings for an inlet and exhaust and an individual pouch-cell for each chamber having an exhaust-opening and an inlet-opening from the tracker-duct leading into the pouch.

The invention further consists in separable parts for the chamber and cell, whereby the valves and pouch may readily be removed for adjustment or repair, and in the peculiar form of balanced valve-support, whereby the greatest possible sensitiveness is obtained and quickest possible response to the action of the pouch.

The invention further consists in the combination and arrangement of parts and construction of details, as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of the device, showing the tracker-board in transverse section and showing one complete controlling set of

striking-pneumatics, controlling-chamber, pouch-cell, and connections with the main exhaust-chamber, tracker-duct, and key. Fig. 2 is a perspective view of board containing a number of the chambers and attached cells. Fig. 3 is an enlarged vertical section of the controlling-chamber and pouch-cell, showing the separable forms of chamber and cell, the pouch and its connections, and the balanced valve in the controlling-chamber.

In the figures, 1 is the controlling-chamber, which is provided with a pipe 2, leading to the striking-pneumatic 3. This chamber is preferably shallow and flat or disk-shaped, and the back or cover 4 slips over the other portion, so that it can readily be taken apart. In the cover 4 are two openings 5 and 6, one, 5, for air-inlet from the outer air and the other, 6, for exhaust leading to the main exhaust-chamber and bellows. In the controlling-chamber centrally placed between the openings 5 and 6 is seen the projecting bearing 8, upon which the arm 9 is centrally balanced, so that the slightest pressure would turn it either way, and upon its extremities are the valves 10 and 11, which register, respectively, with the openings 5 and 6. Upon the cover of the controlling-chamber is shown a cell 12, in which is placed the pouch 13. Into this cell leads from the rear the tube 14, communicating with a tracker-duct 15, and from the lower edge of the chamber leads the tube 16, communicating with the main exhaust-chamber. This cell is in open communication with the controlling-chamber 1 through the opening 6 when the valve is raised, and there is also free communication between this chamber and the tube 16 when the valve is raised.

An adjustable extension 18 upon the valve 6 engages the flexible diaphragm 19 of the pouch, so that the slightest action of the diaphragm is instantly responded to by the valve. The bleed-hole 20 upon the pouch serves to perfect the vacuum in the tracker-duct. There should be an exact proportion observed between the size of the bleed-hole and the tracker-duct to insure immediate response of the pouch. The cell is separable also, and the pouch and duct to the tracker-board and tube leading to the main exhaust-chamber are attached to the cover 21, so that all can readily be removed for inspection.

The device is extremely simple, and the controlling-chamber and pouch-cell can be made of sheet metal or wood and easily put

together. The several chambers in the instrument can be set upon a common supporting-bar by inserting therein the tubes leading to pneumatics, as shown in Fig. 2.

5 The advantages of the invention are obvious in dispensing with one complete set of pneumatics and an additional inclosing exhaust-chamber and in avoiding the inconvenience of attaching the pouches to the inner
10 wall of an inclosing chamber, where the parts are inaccessible.

The valves are made adjustable in relation to their seats by means of screws 25 and 26, since the promptness of this action depends
15 upon their fine adjustment. The screw 26 extends beyond the valve, and a pad 18 at its end engages the diaphragm.

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

1. The combination with a striking-pneumatic, of an individual separable controlling-chamber therefor, having openings in one side to exhaust and outer air, and an opening
25 to said pneumatic in the other side, valves located within said chamber, a balanced arm pivoted within said chamber to the extremi-

ties of which the valves are attached a pouch-cell mounted upon the back of the controlling-chamber, over the said exhaust-opening, 30 a detachable cover for said cell, an exhaust-pipe inserted in said cell, a pouch on the inner side of said cover, and a tracker-board and duct leading to said pouch, substantially as described. 35

2. In combination with a striking-pneumatic, a separable or divisible controlling-chamber, having openings in its faces, one upon one side leading to said pneumatic and two upon the other side, balanced valves controlling the two openings on one side and located within the chamber, a divisible pouch-cell mounted over one of said two openings in one side of the chamber, an exhaust-tube leading therefrom, a pouch upon the cover of
40 said cell and a tracker-duct leading therefrom, substantially as described. 45

In testimony whereof I hereunto set my hand this 27th day of October, 1905.

GEORGE BILLAU.

Witnesses:

WM. M. MONROE,
GEO. S. COLE.