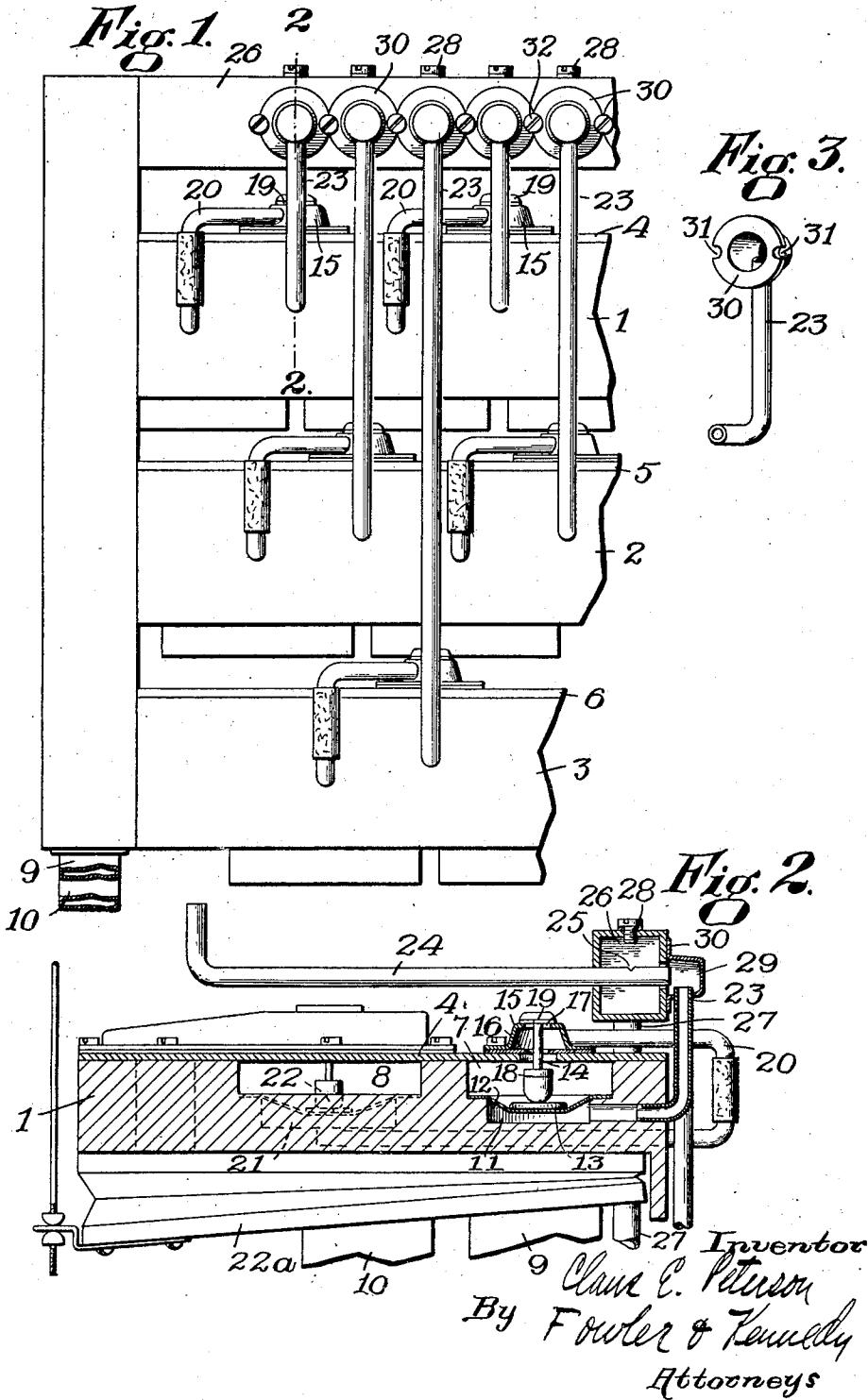


C. E. PETERSON.  
 PNEUMATIC PIANO PLAYER.  
 APPLICATION FILED JUNE 21, 1917.

1,274,766.

Patented Aug. 6, 1918.



Inventor  
 C. E. Peterson  
 By Fowler & Kennedy  
 Attorneys

# UNITED STATES PATENT OFFICE.

CLAUS E. PETERSON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO IVERSON PIANO PLAYER COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## PNEUMATIC PIANO-PLAYER.

1,274,766.

Specification of Letters Patent.

Patented Aug. 6, 1918.

Application filed June 21, 1917. Serial No. 176,216.

*To all whom it may concern:*

Be it known that I, CLAUS E. PETERSON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Pneumatic Piano-Players, of which the following is a specification, accompanied by drawings forming a part of the same.

10 My present invention relates to so called bleed devices of a piano player and to an improved connection between the bleed device and the primary valve, which may be readily applied, and in which the use of rubber tubing may be avoided. In the accompanying drawings I have shown so much of a pneumatic piano player as will be necessary to illustrate the character of my present invention.

20 The piano player embodying my present invention is similar to those now in common use and comprises a motor pneumatic, a secondary valve for controlling the action of the motor pneumatic, and a primary valve whose action is controlled by the passage of a perforated sheet over the tracker bar. In the accompanying drawings,

Figure 1 represents a rear view of a portion of the player action.

30 Fig. 2 is a sectional view on the plane of the broken line 2—2, Fig. 1, showing the arrangement of the motor pneumatic and the secondary and primary valves. Other portions of the player mechanism not concerned in my present invention, and therefore not shown, will be well understood by those conversant with this class of instruments.

40 Fig. 3 is a detached view of the connection between the hollow bleed bar and the primary valve.

Like reference characters refer to like parts in the different figures.

50 My improved player action comprises, in the present instance, three bars 1, 2 and 3, extending lengthwise the instrument, preferably made of wood, and having attached to their upper surfaces steel plates 4, 5 and 6. The upper bar 1 is shown in transverse sectional view in Fig. 2, to which reference is particularly made to illustrate the character of my present invention. The wooden bar 1 is provided with longitudinal channels 7 and 8, the former forming the wind

chest for the primary valve, and the latter the wind chest for the secondary valve, said wind chests being suitably connected at their ends by pipes 9 and 10 with an air exhausting mechanism, not shown, such as a bellows or the like. Recessed below the wind chest 7 and spaced apart according to the distance between the keys of the piano are air chambers 11, one of which is shown in Fig. 2. The chamber 11 is separated from the wind chest 7 by a yielding diaphragm 12 provided at its center with a washer 13 upon which the lower end of the primary valve stem 14 rests. Mounted upon the steel plate 4 is an inverted cup 15, having an opening 16 communicating with the wind chest 7, and an opening 17 leading to the outer air.

The valve stem 14 is provided with the packed valves 18 and 19. As the valve stem 14 is raised the valve 18 contacts with the steel plate 4 and closes the opening 16, and the same movement of the valve stem 14 raises the valve 19 to allow atmospheric air to flow through the opening 17 into the inverted cup 15 and through the tubular passage 20 to an air chamber 21, shown by broken lines in Fig. 2, and by its pressure to raise the diaphragm 22. The lifting of the diaphragm 22 raises a secondary valve, not shown, which cuts off the motor bellows 22<sup>a</sup> from the outside air and connects it with the wind chest 8, in the usual and well known manner. The air chamber 11 of the primary valve is connected by pipes 23 and 24 with the perforations of the tracker bar, and whenever these perforations are uncovered by the perforations of the music sheet, air at atmospheric pressure will flow through the pipes 23 and 24 to lift the diaphragm 12. As soon as the perforation in the tracker bar is closed by the music sheet, the pressure of air in the chamber 11 begins to be reduced by a small bleed opening 25 in the pipe 24, said bleed opening, opening into a closed tubular bar 26. The tubular bar 26 is connected with an air exhaust mechanism, not shown, by means of a pipe 27, Fig. 2, by which a partial vacuum is maintained in the tubular bar 26. Upon the upper side of the bar 26 are holes placed opposite the bleed openings 25 and closed by screws 28, which can be removed to allow ac-

cess to the bleed openings in case the passage through the latter becomes impeded by dust or other foreign substances.

The pipe 23 is bent at right angles at its lower end and inserted in the wooden block 1 in alinement with a passageway leading to the chamber 11, and its upper end is soldered into a cup shaped cap 29 having a flange 30, which is notched on opposite sides at 31, 31, to receive attaching screws 32 by which the flanged caps are secured to the bar 26. The cap 29 covers the end of the pipe 24, allowing the removal of dust from the pipes 24 and 23 by the removal of the cap 29, and the removal of a screw 28 over a bleed hole 25 allows the latter to be cleared of dust, or to be enlarged, if required, in order to increase the bleeding action.

The bars containing longitudinal chambers forming wind chests and the arrangement of pneumatically operated valves for controlling the action of the motor bellows form no part of my present invention, as this portion of the within described apparatus is substantially the same as the pneumatic apparatus now in use in piano players. Neither do I claim broadly the employment of a tubular bar inclosing a vent chamber having a bleed device located between the openings of a tracker bar and the primary valve mechanism, as such has been hitherto proposed. According to my present invention, I place the tubular bar 26 directly over the front side of the bars 1, and I lead pipes 24 horizontally from a tracker bar through the tubular bar 26; from the backside, leaving the top and front sides, which are readily accessible, for the removal of the screws 28 and the flanged caps 29. The horizontal pipe 24 extends through the tubular bar 26 and terminates in the detachable cap 29, its

only connection with the interior of the tubular bar being through the bleed opening 25.

The bleed device of a pneumatically actuated piano is a delicate mechanism, owing to the minuteness of the opening and the operation of the instrument depends for sensitiveness and responsiveness in maintaining the size of the bleed openings uniform. By my arrangement of the bleed mechanism, the openings 25 are readily accessible by means of the screws 28 which are located upon the top side of the tubular bar, and the ends of the pipes 25 are accessible by the removal of the caps 29. The pipes 23 are soldered to the caps 29 and are readily inserted in the block 1, and the caps 29 are detachably attached to the tubular bar 26 by screws 32.

I claim:

In an instrument of the character described, comprising a series of bars having valve controlled wind chests and motor bellows communicating therewith forming a pneumatic mechanism, the combination with said pneumatic mechanism of a tubular bar inclosing an exhaust chamber, and supported directly over the rear edge of said bars, pipes leading from tracker bar and passing through said tubular bar from the rear to the front side and provided with a bleed opening upon their upper sides, screws held in the upper side of said tubular bar opposite said openings, caps detachably attached to the front side of said tubular bar, and pipes permanently attached to said caps and leading from said caps to the primary valves of the instrument.

CLAUS E. PETERSON.

Witnesses:

NELLIE WHALEN,  
PENELOPE COMBERBACK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."