

E. V. CARLSON.
ACTION FOR PNEUMATIC PIANO PLAYERS.
APPLICATION FILED MAY 9, 1908.

1,029,421.

Patented June 11, 1912.

Fig. 1.

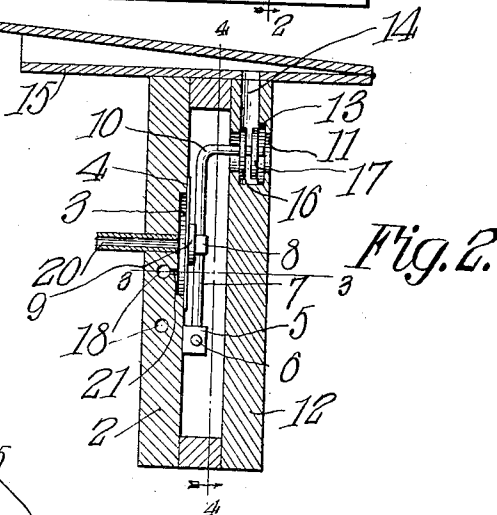
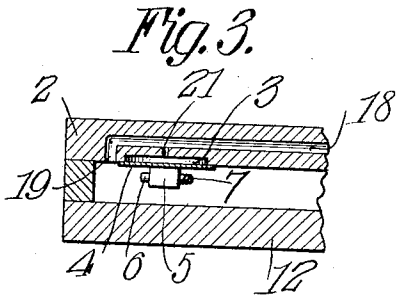
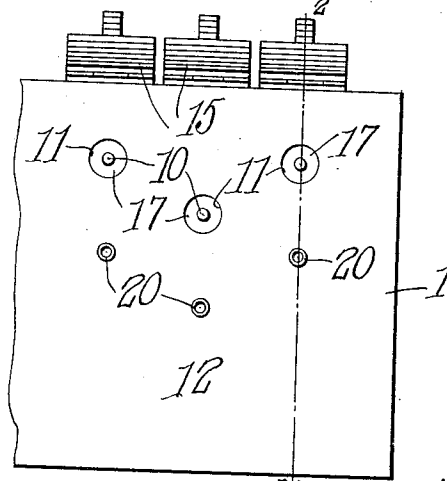
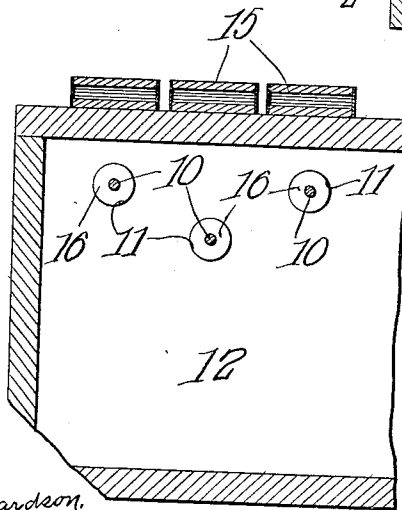


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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ACTION FOR PNEUMATIC PIANO-PLAYERS.

1,029,421.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed May 9, 1908. Serial No. 431,862.

To all whom it may concern:

Be it known that I, ERICK V. CARLSON, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Actions for Pneumatic Piano-Players; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to actions for pneumatic piano players, and it has for its primary object to improve the construction shown and described in my allowed application filed February 18, 1907, Serial Number 357,908, the improvements in question residing chiefly in the particular construction of that wall of the vacuum-chest in which the valve passage is formed, and in the particular arrangement of the valves in said passage.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which corresponding parts or features are designated by the same reference numerals throughout the several views.

Of the said drawings, Figure 1 is a fragmental front elevation of the improved action. Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1. Fig. 3 is a fragmental horizontal section taken on the line 3—3 of Fig. 2. Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2.

Referring more particularly to the drawings, 1 designates generally, the vacuum-chest whose rear wall 2 has its inner face dished or recessed as at 3 wherever one of the primary pneumatics is to be located, a diaphragm 4 being stretched over each recess.

Inasmuch as all of the pneumatic actions are identical in construction, one only will be described.

Located below the recess 3, and secured to the inner face of the wall 2 is a block 5 provided with a groove in which the laterally-bent lower end 6 of a vertically-disposed lever 7 is fitted, said lever extending across the diaphragm 4 and through a guide 8 secured to a disk 9 which is arranged against the diaphragm. The upper end 10 of the lever 7 is bent laterally forward, so as to extend through a horizontal passage 11

formed transversely through the front wall 12 of the chest, said passage thus communicating at opposite ends with the interior of the chest and with the atmosphere. The central portion of this passage is enlarged, as indicated by the numeral 13, to provide a valve seat, which latter extends above and below said passage, as shown in Fig. 2. The upper portion of the wall 12 of the chest is further provided with a vertical passage 14 which opens at its lower end into the valve seat 13, and at its upper end through the top of the chest, at which latter point it communicates with the operating pneumatic 15.

The bent upper portion 10 of the lever 7 which extends through the passage 11 carries a pair of disk valves 16 and 17 which are attached thereto in any preferred manner and are arranged in spaced relation to each other, the first-mentioned valve being adapted to close the inner end of said passage, and thus cut off communication between the interior of the chest and the passage 14 which leads to the operating pneumatic, while the last mentioned valve in like manner, is arranged to close the outer end of the valve passage, and thus cut off communication between the atmosphere and the operating pneumatic, one end of the valve passage being opened when the other end is closed, as will be understood.

The rear wall 2 of the chest has formed therein a transversely-extending passage-way 18 which has communication with the interior of the chest, as indicated by the numeral 19, above which passage is an air-duct 20 which leads from one of the orifices in the tracker board (not shown), it being understood that each orifice in the tracker communicates with a separate duct which in turn, communicates with one of the primaries for the purpose of admitting air to the latter when the openings in the note sheet pass over the orifices in the tracker. In order to prevent the accumulation of air in the primaries, and to vent the same, a short duct 21 leads from each primary into the passage-way 18, and, owing to the fact that its bore has a diameter less than that of the bore in the duct 20, the slow exhaust or bleeding of air from the primary is permitted.

The operation of the action is, in the main,

identical with that set forth in my prior application, owing to which fact an extended description of such operation is unnecessary, it being sufficient to state that the air admitted through one of the ducts 20 will operate the corresponding primary pneumatic, whereupon the lever 7 will be rocked upon its bent lower end, such movement causing the valve 17 carried by the upper or stem portion of the lever to close the outer end of the valve passage to the atmosphere, while at the same time, the valve 16 will move away from the inner end of said passage, opening communication between the passage 14 and the interior of the chest. The operating pneumatic 15 with which the passage 14 communicates will then collapse, owing to the existence of the vacuum in the chest, the jack carried by the operating pneumatic striking the corresponding piano key as said pneumatic collapses.

Owing to the fact that the seat 13 in which the valves 16 and 17 are movable is formed centrally of the valve passage 11, there is practically no possibility of lateral displacement of said valves, and of consequent failure of either the primaries or the operating pneumatics to work. When the valve 17 has been forced to its seat, its inner face will lie flush with the inner face of the adjacent wall of the passage 14 and the valve will neatly fit in the recess of its seat so that air flowing under pressure from the operating pneumatic 15, through the opening seat of the valve 16, and into the vacuum chest, will not tend to unseat said valve 17 and thus thereby hold said valve in a protective position against air leakage by reason of the air pressure exerted thereagainst.

What is claimed is:

In an action for pneumatic piano-players, a vacuum chest having front and rear walls and a transverse passage formed through the front wall and provided with a vertical passage communicating with the upper end of the wall, an operating pneumatic arranged upon the chest and having communication with said vertical passage, a primary arranged within the chest and communicating with a bleed duct opening into the chest, an air duct communicating with the primary, a lever mounted for rocking movement upon the inner face of the rear wall of the chest and extending upwardly across the primary and connected with the diaphragm thereof, a valve stem integrally connected with said lever and extending through the passage in the front wall and outwardly of the chest, valves mounted upon the stem in spaced relation and operating in the passage establishing communication between the operating pneumatic and the interior of the chest, said passage-way being centrally enlarged for receiving the valves whereby the air from the pneumatic will directly strike the edges of both valves, one wall of said passage being recessed to receive the outer one of said valves with the inner face thereof flush with the inner face of the passage whereby air flowing from the operating pneumatic will be prevented from unseating said outer valve and leaking through its seat.

In testimony whereof, I affix my signature, in presence of two witnesses.

ERICK V. CARLSON.

Witnesses:

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