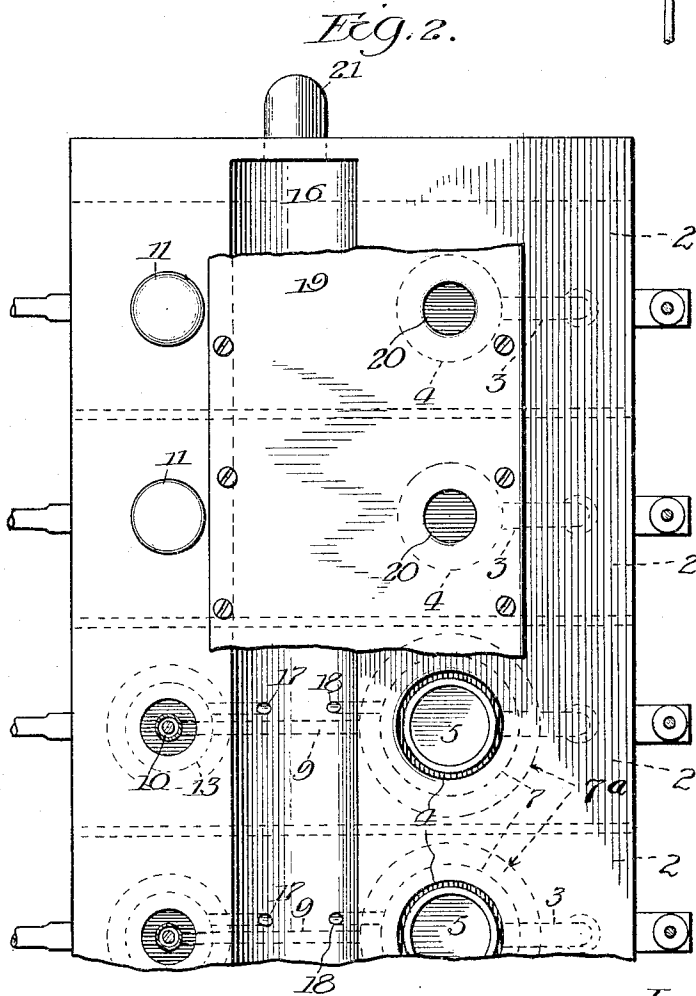
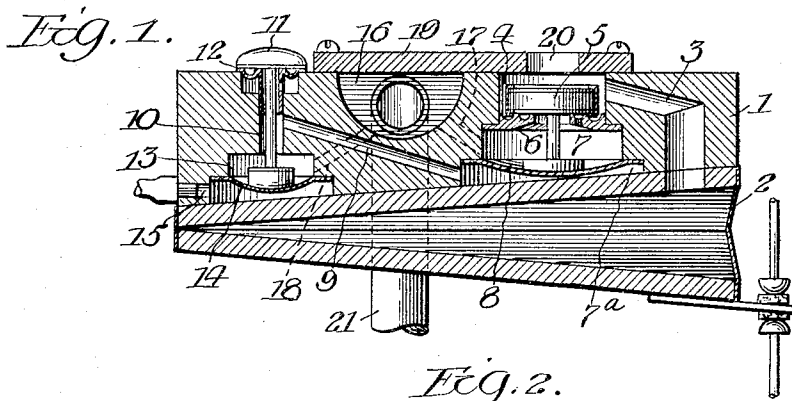


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 PNEUMATIC MUSICAL INSTRUMENT.  
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1,154,957.

Patented Sept. 28, 1915.



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# UNITED STATES PATENT OFFICE.

HARRY J. ANDERSON, OF CHICAGO, ILLINOIS.

PNEUMATIC MUSICAL INSTRUMENT.

1,154,957.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Original application filed October 28, 1911, Serial No. 657,296. Divided and this application filed February 14, 1912. Serial No. 677,474.

*To all whom it may concern:*

Be it known that I, HARRY J. ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Pneumatic Musical Instruments, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the art of pneumatic musical instruments.

One of the objects of my invention is to mount the primary and secondary valves, as well as the action pneumatics upon a single homogeneous support.

Another object of my invention is to arrange the air passages and valve chests in the supporting structure for the action pneumatics in such a way that no part of any passage will need to be plugged after boring.

A further object of my invention is to avoid the use of joints in the part of the pneumatic piano illustrated, and to cheapen the cost of manufacture and assembling of pneumatic musical instruments.

Referring to the accompanying drawing, Figure 1 is a sectional view illustrating my invention taken through the member to which the action pneumatics are attached; Fig. 2 is a plan view of Fig. 1, certain parts being broken away to better show the passages and openings in my device.

The matter described and claimed in this application is divided from my former application for a pneumatic musical instrument, Serial No. 657,296, filed October 28, 1911.

Throughout the several views the same part is designated by the same reference numeral.

Referring more particularly to the drawings, 1 is a solid block of trapezoidal cross section, to which the action pneumatic 2 is directly attached, as shown. Leading from the pneumatic 2 is a passage 3 which connects with the secondary valve chest 4. Within chest 4 is a secondary valve 5 having a seat 6. The particular construction of the secondary valve and the seats for the primary and secondary valves is more particularly described and claimed in my prior application above mentioned, and will not be further described herein. Below the

seat 6 is the usual secondary pouch chamber 7, having a pouch or membrane 8 attached across its lower end for the purpose of operating the valve 5. The part of the pouch chamber below the membrane 8 is indicated by the reference character 7<sup>a</sup>. It will be seen to be of greater diameter than the pouch chamber 7, the openings 4, 7 and 7<sup>a</sup> thus forming a series of cylindrical spaces of successively increasing diameters. The passage 9 leads from beneath the membrane 8 to a passage 10 which is governed by primary valve 11. The seat of the primary valve is designated by 12. The pouch chamber of the primary valve is designated as 13 and has a pouch or membrane 14 stretched across it, which is for the purpose of operating the primary valve. A passage 15 connects with the pouch chamber 13 below the membrane 14, providing means for connection with the usual tracker board. In the upper part of block 1 is a windway 16, of semi-circular cross section, which is connected to the pouch chamber 7 by means of a passageway 17, and to the pouch chamber 13 by a passage 18. Passages 17 and 18 appear in dotted lines only in Fig. 1. The points at which they communicate with the windway 16, however, are shown in Fig. 2. The passageway 9 appearing in full lines in Fig. 1 is shown dotted in Fig. 2. A board 19 is used to cover the windway 16, and also the valve chest 4, a port 20 being provided in the board 19 for admission of atmospheric air to the secondary valve chest. As shown in Figs. 1 and 2, the fixed boards of the pneumatics 2 serve to cover the open mouths of the lower ports of both the primary and secondary pouch chambers. A conduit 21 is shown connecting with the windway 16 for the purpose of connecting the windway with the usual tension producing apparatus. This conduit 21 was omitted from my prior application, of which this case is a division, but some such element is of course necessary and is assumed to be used, though not shown, in my prior application.

It will be seen from the foregoing that the construction above described is remarkably simple and at the same time cheap to manufacture. There is an entire absence of glued surfaces in making up the windways for the striking pneumatics. It will be noted also that there is no necessity for plugging any holes in the construction of the appa-

ratus, all the various passages and pouch openings being so placed that they may be bored from the exterior of the piece 1, without leaving any unused portions which require plugging.

It will be understood that various rearrangements and modifications of my device may be made without departing from the spirit of my invention, and that I contemplate all such modifications as are embraced within the scope of the appended claims.

Having thus described my invention, what I claim is:

1. In an automatic musical instrument in combination, a primary valve, a secondary valve, an integral block supporting said valves provided with pouch chambers, pouches mounted in said chambers, for operating said valves and a pneumatic directly attached to said block.

2. An automatic musical instrument comprising an integral block, having a windway, primary and secondary valve pouch chambers in said block pouches mounted in said chambers and passages connecting said windway with said pouch chambers.

3. In an automatic musical instrument in combination, a block having a longitudinal windway, a secondary valve chest in said block and a cover piece closing both said chest and said windway.

4. In an automatic musical instrument, a block having an open longitudinal windway in its top and a series of valve chests also opening at the top of said block, and a single cover plate for said windway and said chests, said plate being provided with ports for connection with said chests.

5. In an automatic piano player, a block having a groove in its upper face to act as a windway, said block also being provided with a series of primary and secondary pouch chambers, and also having straight passages connecting said pouch chambers with said windway.

6. In an automatic piano player, a block provided with a single windway, said block also having a series of primary and secondary pouch chambers therein, and also having straight passages connecting said pouch chambers with said windway, one of said passages communicating with each of said chambers.

7. In an automatic piano, a block having a groove in its upper surface to act as a windway, a plate covering said groove, a series of primary and secondary valve pouch chambers opening from the bottom of said block pouches in said chambers and pneumatics attached directly to the bottom of said block and covering said pouch chambers.

8. In an automatic piano player, an integral block having a valve chest and a pouch chamber therefor, a valve seat separating

said chest from said pouch chamber and a diaphragm dividing said pouch into two portions, said chest and the two portions of said pouch chamber being in the form of cylindrical bores having successively greater diameters the bore of greatest diameter opening from a face of said block.

9. In an automatic piano player, a block having a semicircular groove in its top face to act as a windway, and also having two parallel rows of apertures in its top face for the primary and secondary valves respectively, said block being provided also with two parallel rows of valve pouch chambers in its bottom face for the primary and secondary valves, respectively, each pouch being distinct from any other, straight passages connecting said pouch chambers with said windway, a cover plate for said windway, and said secondary valve apertures, provided with ports connected with the secondary valve apertures and pneumatics attached directly to said block covering said pouch chambers.

10. In an automatic piano player in combination, a block having primary and secondary valves mounted thereon, said block being provided with a bore controlled by said primary valve and also having a pouch chamber for said secondary valve opening on the bottom face of said block, said bore being parallel with said pouch chamber a straight passage connecting said bore with said pouch chamber and pouches for operating said valves.

11. In a pneumatic instrument, a block provided with a suction windway and having pouch chambers opening on one of its exterior faces, said chambers being formed of two portions of different diameters, the outer portion being of the greater diameter and pouches in said chambers separating said portions.

12. In an automatic piano player in combination, an integral block having a groove in one of its faces serving as a windway, said block being provided with primary and secondary pouch chambers arranged in pairs and having straight passages leading from said windway to each of said chambers, the two passages leading to each pair of chambers lying in the same plane perpendicular to the axis of the windway.

13. An automatic musical instrument comprising an integral block having a windway, primary and secondary pouch chambers in said block and separate straight passages connecting said windway with each of said pouch chambers.

14. An automatic musical instrument comprising an integral block provided with a windway, said block having individual pouch chambers therein distinct from said windway, and connected thereto by separate passages, said pouch chambers opening on

one of the exterior faces of said block and having and being formed of two portions of different diameters, the outer portion being of the greater diameter.

5 15. In an automatic piano player in combination, an integral block provided with coaxial primary valve bores and pouch chambers, and having coaxial secondary valve chests and pouch chambers with their  
10 axes parallel to the axes of said primary bores and chambers, and pouches in said chambers said block having also straight passages connecting said bores with said secondary pouch chambers.

15 16. A chest member having a vacuum chamber extending longitudinally thereof and a series of recesses at one side of said longitudinal chamber and communicating therewith, one wall of each of said recesses  
20 having a port, said recesses opening from a face of said chest member.

17. A chest member having a vacuum chamber extending longitudinally thereof, and a series of recesses at one side of said  
25 chamber and communicating therewith, said recesses opening from a face of said chest member and the wall of the member opposite said recesses being provided with ports.

30 18. A chest member having a vacuum chamber extending longitudinally thereof and a series of diaphragm recesses at one side of said longitudinal chamber and communicating therewith, one wall of each of said recesses having a port, said recesses  
35 opening from a face of said chest member, valves carried by said chest member and cooperating with said ports, and diaphragms for actuating said valves.

40 19. A chest member having a vacuum chamber extending longitudinally thereof, and a series of diaphragm recesses at one side of said longitudinal chamber and communicating therewith, said recesses opening  
45 from a face of said chest member and the wall of the member opposite said recesses being provided with ports, valves carried by said chest member and cooperating with said ports, and diaphragms for actuating said valves.

50 20. A chest member having a vacuum chamber extending longitudinally thereof and a series of diaphragm recesses at one side of said longitudinal chamber and communicating therewith, one wall of each of  
55 said recesses having a port, said recesses opening from a face of said chest member,

secondary valves carried by said chest member and cooperating with said ports, and diaphragms for actuating said valves.

21. A chest member having a vacuum chamber extending longitudinally thereof  
60 and a series of diaphragm recesses at one side of said longitudinal chamber and communicating therewith, one wall of each of said recesses having a port, said recesses  
65 opening from a face of said chest member, primary valves carried by said chest member and cooperating with said ports, and diaphragms for actuating said valves.

22. A chest member having a vacuum chamber extending longitudinally thereof  
70 and series of diaphragm recesses alongside of said longitudinal chamber and communicating therewith, one wall of each of said recesses having a port, said recesses opening  
75 from a face of said chest member primary and secondary valves carried by said chest member and cooperating with said ports, and diaphragms for actuating said valves.

23. A chest member having a vacuum chamber extending longitudinally thereof,  
80 and series of diaphragm recesses alongside of said chamber and communicating therewith, said recesses opening from a face of said chest member and the wall of the member  
85 opposite said recesses being provided with ports, primary and secondary valves carried by said chest member and cooperating with said ports, and diaphragms for actuating said valves.

24. A pneumatic musical instrument comprising an integral block having a longitudinal windway therein and provided with primary and secondary pouch chambers,  
90 said block having valve bores extending from the primary pouch chambers, passages connecting said primary valve bores with said secondary pouch chambers, and passages connecting said windway with said pouch chambers, the passages connecting  
100 said windway with said primary pouch chambers being distinct and separate from those connecting the windway with the secondary pouch chambers.

In witness whereof, I hereunto subscribe  
105 my name this 8th day of February, A. D., 1912.

HARRY J. ANDERSON.

Witnesses:

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O. M. WERMICH.