

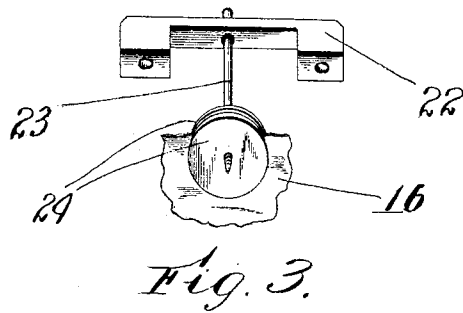
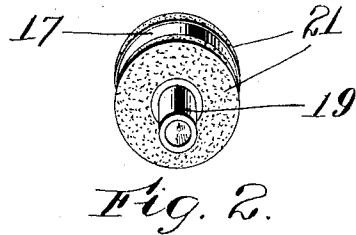
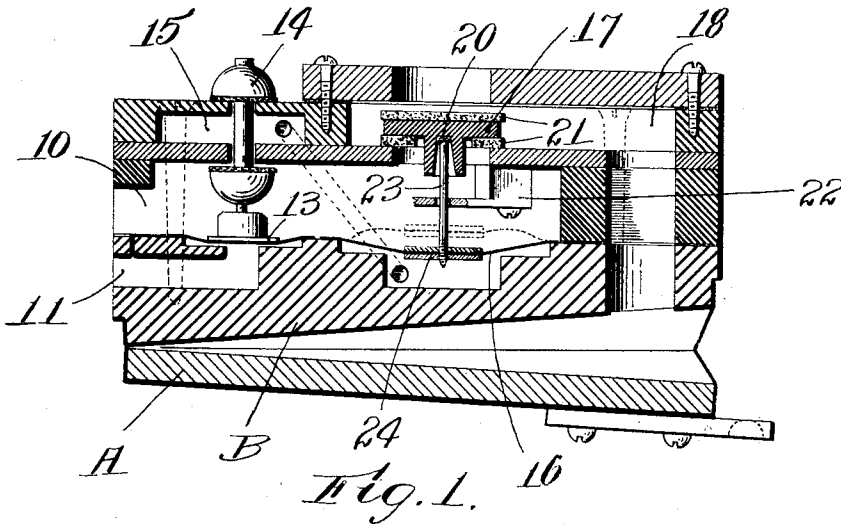
P. WELIN.

AUTOMATIC MUSICAL INSTRUMENT.

APPLICATION FILED JUNE 3, 1903. RENEWED MAY 22, 1909.

945,883.

Patented Jan. 11, 1910.



Witnesses:
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Inventor:
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By his Attorneys,
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UNITED STATES PATENT OFFICE.

PETER WELIN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO KRELL AUTO-GRAND PIANO CO. OF AMERICA, OF CONNERSVILLE, INDIANA, A
CORPORATION OF INDIANA.

AUTOMATIC MUSICAL INSTRUMENT.

945,883.

Specification of Letters Patent. Patented Jan. 11, 1910.

Application filed June 3, 1903, Serial No. 159,885. Renewed May 22, 1909. Serial No. 497,715.

To all whom it may concern:

Be it known that I, PETER WELIN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Automatic Musical Instrument, of which the following is a specification.

This invention relates to that class of musical instruments which are operated under air tension.

The special objects of this invention are to provide a novel form of self-centering, freely-supported valve for instruments of this class, and to combine said valve with its operating instrumentalities so that the same will occupy comparatively little room.

To these ends, this invention consists of the valve and of the combinations of parts therewith as hereinafter described and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawing, I have illustrated this invention as applied to a construction of the type shown in United States Letters Patent No. 727,725 granted to me May 12, 1903, except that the main pneumatic is arranged below its valve-box and strikes upwardly instead of being arranged above its valve-box as shown in said patent.

In the drawing, Figure 1 is a transverse sectional view illustrating the application of my valve to a construction of the class described. Fig. 2 is a perspective view of the valve, and Fig. 3 is a fragmentary detail view of the guide for the valve-stem, and of the means for connecting the valve-stem to the diaphragm.

In that class of musical instruments to which this invention relates, the main or striking pneumatics employed for sounding the notes are controlled by valves located in air ducts or passages leading to such pneumatics. In this class of instruments the promptness of response and the general efficiency of the construction depends in great measure upon the prevention of leakage through these valves, and the perfect seating of the valves upon their valve seats. In most constructions of this class, the valves are secured rigidly upon their valve-stems, and whenever frequent use of these valves causes any considerable number to be loosened on the stems so that the leakage will be allowed through the valves, or when any

considerable number of them fail to fit properly to their valve-seats, the instrument, as a whole, will have so much leakage that power will be wasted and efficient results cannot be produced. To overcome these objections, it has been proposed to provide valves which have loose connection with their valve-stems. In one type of construction, the valves have been connected in place by flexible strips of sheep-skin or similar material; while in a second class of constructions the valves have been made in the form of caps mounted on the upper ends of the stems.

My invention relates to a construction of the last named type, and the especial object of my construction is to construct a valve of this class so that the upper surface of the valve will be entirely plain or unobstructed, and to combine a valve of this type with its operating devices so that such valves may be used in connection with comparatively shallow ducts or chambers below the same.

Referring to the drawings, and in detail, A designates a main or striking pneumatic which is mounted on the under side of a valve-box B. Opening into the valve-box B is a suction chamber 10 and a tracker-board channel 11. The tracker-board channel 11 is connected to operate a diaphragm 13 controlling a puppet valve 14 which connects a chamber 15 either with the atmosphere or with the suction chamber 10. Leading from the chamber 15 is a passage opening below the valve-operating diaphragm 16 which operates my new form of valve 17, which is located in the air-passage or duct 18, so that the same will normally be connected with the atmosphere, or when the valve is raised the passage 18 will be connected to the suction chamber. In the operation of this construction when an air-impulse is admitted through the tracker-board channel 11 the puppet valve 14 will be raised, admitting pressure below the valve-operating diaphragm 16, lifting the valve 17 so that the striking pneumatic will collapse and a note will be sounded.

The body of my improved valve 17 is flat or disk-shaped, preferably circular in outline, and is provided with a downwardly extending sleeve 19 which is bored out to receive the valve-stem 23. The upper end of the valve stem preferably rests in a packing

of flannel or similar soft material 20 so as to prevent said valves from rattling if they should happen to be raised from the ends of the valve-stems. The opposite faces of the valve 17 are covered with packings of felt, sheep-skin or similar soft material 21. The valve-stem 23 extends down through a guide 22 which is arranged obliquely in the suction chamber 10.

10 In practice, it is desirable to keep the suction chamber or main air-channel 10 as small as possible. At the same time, room must be left below the bridge-piece 22 for the motion of the diaphragm 16.

15 In prior constructions of this class, the valve-stems have been connected to diaphragms by being threaded into wooden blocks or seat-pieces which are cemented on to the upper side of the diaphragm. In my

20 construction, however, I prefer to employ fiber disks 24 which are fastened on opposite sides of the diaphragm 16, the valve-stem being threaded through both of such fiber disks, and in practice, I have found that this

25 construction is desirable not only because it occupies comparatively little room, but also for the reason that the fiber-disks will be fastened so that the connection between the diaphragm and its valve-stem cannot be

30 broken.
I am aware that changes may be made in practicing my invention by those who are skilled in the art, and I do not wish, therefore, to be limited to the construction I have

35 herein shown and described, but
What I do claim and desire to secure by Letters Patent of the United States is:

1. In a construction of the class described, the combination of an air-chamber having

40 oppositely facing ports therein, and a double

faced valve comprising a flat or disk-shaped body portion with valve faces upon upper and lower surfaces thereof, and a bearing sleeve extending down from the lower face of the disk into the lower of said ports and chambered out to receive the upper end of a valve-stem. 45

2. In a construction of the class described, the combination of an air-chamber having top and bottom ports opening therein, a double faced valve mounted in said chamber and consisting of a flat or disk-shaped body having valve faces upon its upper and lower surfaces, a bearing sleeve extending down from the lower face thereof and chambered 55 out to fit loosely upon the end of a valve stem, a valve-stem, a guide in the air chamber for said valve-stem, a diaphragm for operating the valve-stem, and means for connecting the valve-stem to the diaphragm, 60 comprising fiber-disks threaded on to the valve-stem on opposite sides of the diaphragm.

3. As an article of manufacture, a double faced valve for automatic musical instruments, comprising a flat or disk-shaped body portion with valve faces on the upper and lower surfaces and a central bearing sleeve located entirely below the disk-shaped body extending down from the lower face of the disk and chambered out to receive the end of a valve-stem. 70

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

PETER WELIN.

Witnesses:

LOUIS W. SOUTHGATE,
PHILIP W. SOUTHGATE.