No. 814,725. PATENTED MAR. 13, 1906.

F. A. PILCHER.

AUTOMATIC MUSICAL INSTRUMENT PLAYER.

APPLICATION FILED DEC. 5, 1904.

Fig. 1.

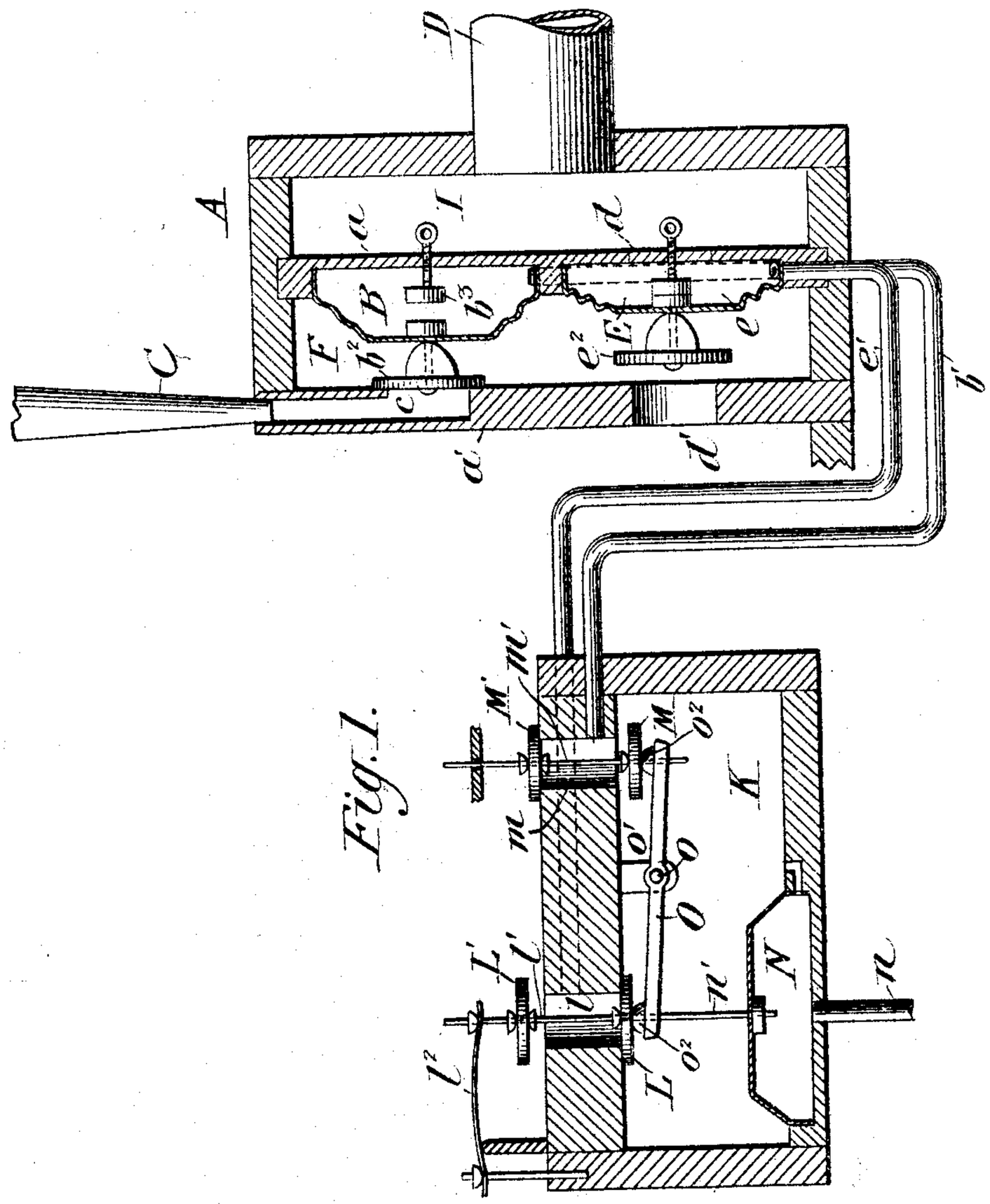
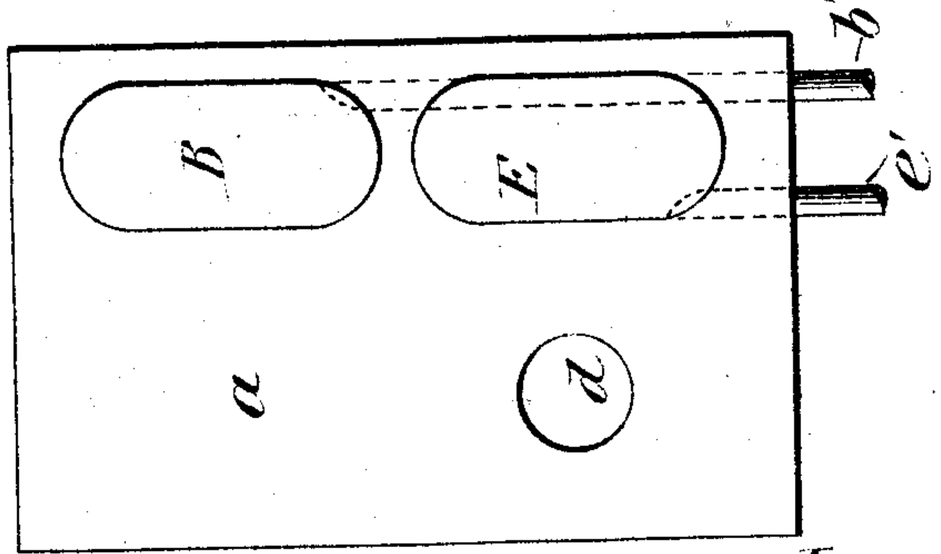


Fig. 2.



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UNITED STATES PATENT OFFICE.

FRANK A. PILCHER, OF MARIETTA, OHIO, ASSIGNOR OF ONE-THIRD TO FREDERICK S. BRASOR AND ONE-THIRD TO SAMUEL S. PORTER, OF MARIETTA, OHIO.

AUTOMATIC MUSICAL-INSTRUMENT PLAYER.

No. 814,725. Specification of Letters Patent. Patented March 13, 1906.

Application filed December 5, 1904. Serial No. 235,635.

To all whom it may concern:

Be it known that I, FRANK A. PILCHER, a citizen of Great Britain, residing at Marietta, in the county of Washington and State of Ohio, have invented a certain new and useful Improvement in Automatic Musical-Instrument Players, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to automatic musical-instrument players, and more particularly to improvements relating to solo attachments of the same general type as that described and claimed in my application for Letters Patent filed April 7, 1904, Serial No. 261,955. I described in said application a solo attachment comprising a wind-chest divided into a series of compartments, each having a passage communicating with a sounding device and each containing a pneumatic connected through a primary to the keyboard or tracker-board, said pneumatics being operatively connected to levers carrying valves at one end controlling the sounding-device passages and valves at the other end which close the passages to the adjacent compartments when the sounding-device valves are open. The wind being applied at one end of the chest, preferably the treble end, only the highest note of any given chord can be sounded on account of the arrangement of valves just described.

My present invention comprises certain improvements in the construction of the pneumatics controlling the valves in the said compartments, as well as improvements in the construction of the primaries, as will be hereinafter more fully described. In place of the single pneumatic in each compartment connected to a pivoted lever carrying the valves at its opposite ends, which was the construction of the invention described in my said prior application, I make use of two independent pneumatics in each compartment, each carrying one of the valves and each connected to a primary by a separate pipe. The primary comprises a chest having a diaphragm communicating with the keyboard or the tracker-board, over which paper passes for automatic playing, as the case may be, and is supplied with air in the usual way, said diaphragm being connected to one end of a pivoted lever adapted to alternately operate two valves controlling exhaust-passages through the wall of said chest and into which passages said pipes from the pneumatics open. By this construction one valve in the primary is closed when the other is open, and in consequence when one of the pneumatics in the wind-chest of the solo attachment is expanded the other is collapsed, whereby the same result is obtained as with the construction of the invention described in my said prior application.

Figure 1 is a longitudinal section through the primary and the end portion of the solo-attachment wind-chest, showing one compartment of the latter with its pneumatics, &c.; and Fig. 2 is an end view of the partition which carries said pneumatics in said wind-chest.

In said views, A represents the wind-chest of my improved solo attachment, I the end air-compartment, and *a* the end partition of the first compartment containing the pneumatics B and E. *a'* represents the next partition, which is provided with a wind-passage *c*, leading to a sounding device C, represented as a speaking-pipe. The partition *a* is provided at one side of said pneumatics with an aperture *d*, (indicated in dotted lines,) leading to the first pneumatic-compartment F, and the partition *a'* is provided with a similar aperture *d'*, as are all the succeeding partitions, the apertures of adjacent partitions being offset, so that the passage of the wind through the chest is along a zigzag path. This arrangement is not essential, however, but is adapted merely for convenience in construction.

The passage *c* to the pipe C is controlled by a valve b^2, secured to the diaphragm of the pneumatic B, which is attached to the partition *a*, hollowed out for that purpose. Said pneumatic when collapsed admits the air through the passage *c* to the sounding device C by opening the valve b^2, the extent of movement of said valve being controlled by an adjustable buffer or stop b^3, threaded in the partition *a*. Similarly the passage *d'* is controlled by a valve e^2, carried by the diaphragm of the pneumatic E, mounted on the

partition *a* in the same way as the pneumatic B, a similar stop e^3 being provided to limit the movement of said valve.

From the pneumatic E a pipe *e'* leads to the primary for the compartment F, and from the pneumatic B a similar pipe *b'* leads thereto, said pipes opening, respectively, into the two exhaust-passages, hereinafter referred to, which are formed in the wall of the primary chest K. Said chest contains the usual pneumatic N, connected to the keyboard or tracker-board by a pipe *n*, and the diaphragm of said pneumatic is connected by a rod *n'* to a lever O, pivoted at *o* on a bracket *o'*, attached to the wall of the chest K, the opposite ends of said lever carrying washers o^2 o^2, which engage the valve-disks L and M, controlling the inner ends of the exhaust-passages *l* and *m*, formed in the wall of the chest. The valve-disk L is connected by an extension *l'* of rod *n'* to a similar disk L', which seats against the outer end of the passage *l* when the disk L is moved away from the inner end of said passage. A spring l^2 normally holds the disk L against its seat. A similar construction is provided in connection with the passage *m*, there being two valve-disks M and M' connected by a rod *m'*, which alternately open and close the opposite ends of the passage *m*. The stem *m'* of the valve-disk M' passes through a guide, as shown, and gravity is relied upon to cause the downward movement of said disk and the connected disk M when the lever O raises the disks L and L', although, of course, a spring similar to the spring l^2 may be used, if desired.

The operation is as follows: Air is supplied in the usual way to the primary wind-chest K by a pipe, (not shown,) and air is supplied to the end compartment I of the solo-attachment wind-chest A by a pipe D, as in my said former application. When the air is exhausted through the pipe *n* from the pneumatic N through the action of the keyboard or tracker-board, said pneumatic collapses, pulling with it the link *n'* and the left-hand end of the lever O. The rod *n'* forces the valve-disk L' against its seat and simultaneously removes the valve-disk L away from its seat. At the same time the other end of the lever O forces the valve-disk M against its seat and raises the valve-disk M' from its seat at the other end of the passage *m*. Thereupon air is exhausted through the pipe *b'* from the pneumatic B, which allows said pneumatic to collapse and open the valve b^2, admitting air to the sounding device C. The other pneumatic E of the solo attachment is expanded by the air-pressure from the primary passing through the pipe *e'*, and consequently the valve e^2 closes the passage *d'* and shuts off the air from all the succeeding compartments of the solo-attachment wind-chest. The result is the same as in my former invention—that is to say, only the highest note of any chord is played, assuming the wind-trunk D to be applied to the treble end of the attachment. Wind for harmony can be supplied to the wind-chest A through a separate wind-trunk and flap-valves in the same way as described in my said application.

Having thus described my invention and its manner of use, what I claim is—

1. In a solo attachment for musical instruments, the combination with sounding devices, a wind-chest divided into compartments by apertured partitions, a pair of pneumatics in each compartment, a valve connected to one of said pneumatics arranged to control the admission of air to said sounding devices, a valve connected to the other pneumatic arranged to close the aperture in the partition leading to the next compartment, when said first-mentioned valve is open, and means constructed and arranged to actuate said pneumatics alternately.

2. In a solo attachment for musical instruments, the combination with sounding devices, a wind-chest divided into compartments by apertured partitions, a pair of pneumatics in each compartment, a valve connected to one of said pneumatics arranged to control the admission of air to said sounding devices, a valve connected to the other pneumatic arranged to control the aperture in the partition leading to the next compartment, and a primary having separate controlling means for the said pneumatics.

3. In a solo attachment for musical instruments, the combination with sounding devices, a wind-chest divided into compartments by apertured partitions, a pair of pneumatics in each compartment, a valve connected to one of said pneumatics arranged to control the admission of air to said sounding devices, a valve connected to the other pneumatic arranged to close the aperture in the partition leading to the next compartment, and a primary having separate valves controlling wind connections to the said pneumatics, together with a primary pneumatic connected to said valves so as to close and open them alternately and reciprocally.

4. In a solo attachment for musical instruments, the combination with sounding devices, a wind-chest divided into compartments by apertured partitions, a pair of pneumatics in each compartment, a valve connected to one of said pneumatics arranged to control the admission of air to said sounding devices, a valve connected to the other pneumatic arranged to close the aperture in the partition leading to the next compartment,

and a primary having separate valves controlling wind connections to the said pneumatics, together with a primary pneumatic connected to a tilting lever having its opposite ends connected to the two valves so as to open and close them reciprocally and alternately.

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

FRANK A. PILCHER.

Witnesses:
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