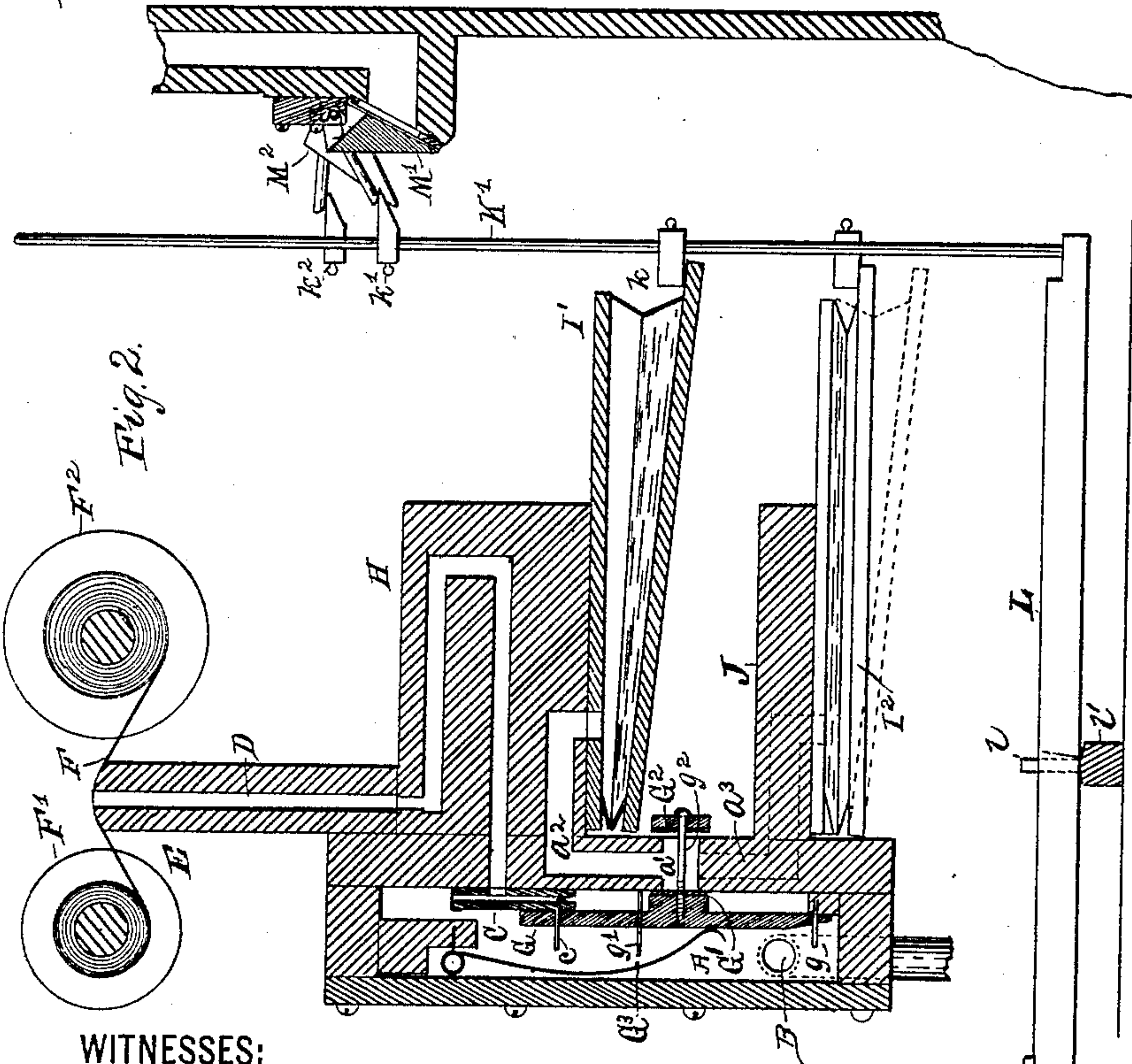
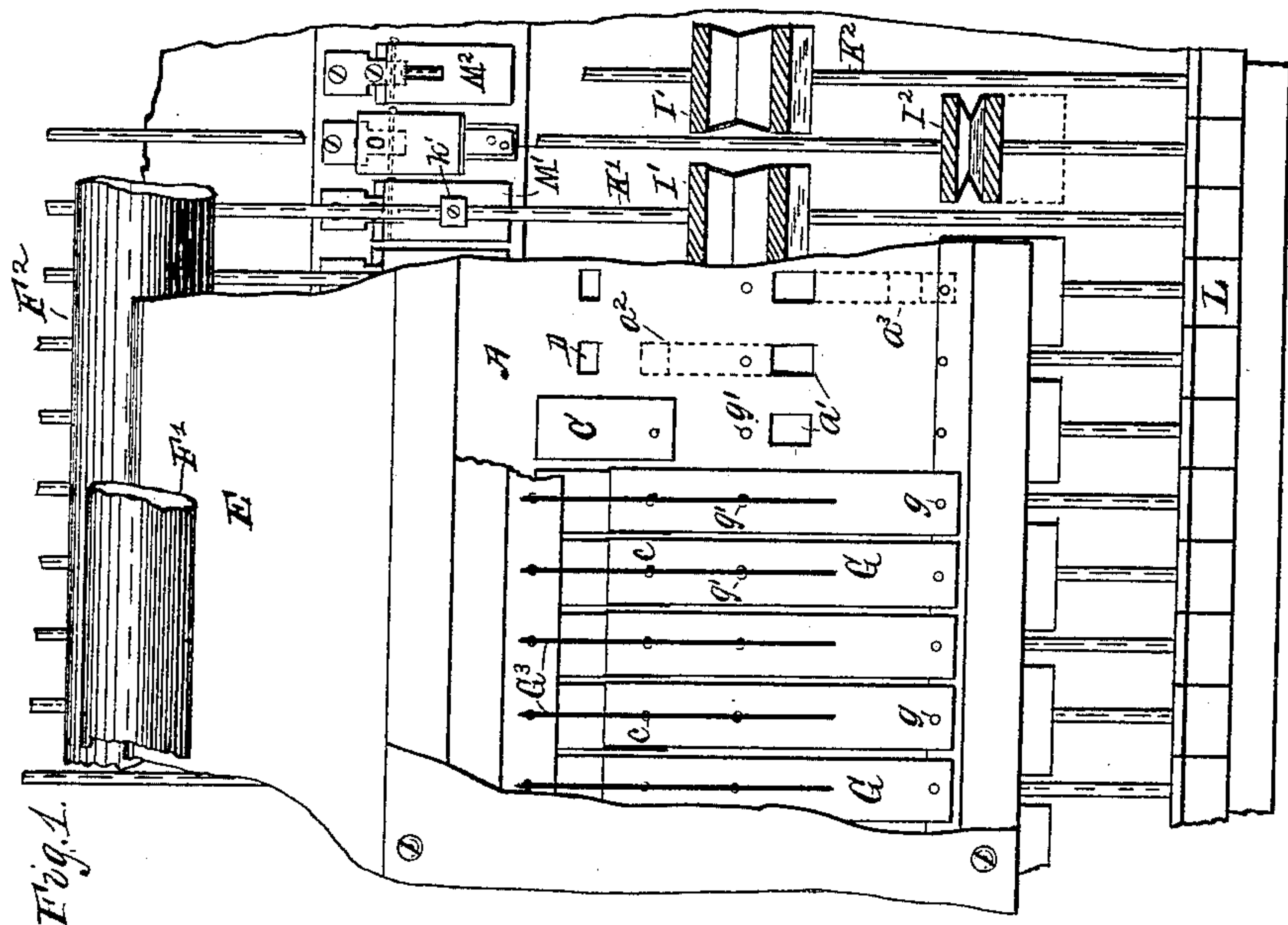


(No Model.)

J. H. CHASE & J. B. TRACY.
MUSICAL INSTRUMENT.

No. 520,297.

Patented May 22, 1894.



WITNESSES:

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YORK, N. Y.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 520,297, dated May 22, 1894.

Application filed May 10, 1892. Renewed April 12, 1894. Serial No. 507,318. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH H. CHASE and JAMES B. TRACY, both of Meriden, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Musical Instruments, of which the following is a specification.

We will describe a musical instrument embodying our improvement and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a front view of a portion of a musical instrument embodying our improvement, the view being partly in elevation and partly in section. Fig. 2 is a transverse vertical section of a portion of the instrument.

Similar letters of reference designate corresponding parts in both figures.

A designates a chamber of the kind ordinarily known as a wind chest. It is intended to communicate with bellows, and, in the organization of parts illustrated in the drawings, suction bellows are to be employed.

B designates an opening through which communication will be established to an equalizer and set of bellows.

Within the wind chest A are arranged pneumatic motors C corresponding in number with the number of sound producing devices or sets of sound producing devices in the instrument. These motors do not communicate internally with the wind chest, but communicate internally with a corresponding number of ducts, D, whose upper extremities terminate in a rest or tracker board E. Atmospheric air may pass into the ducts D under control of any suitable valve mechanism. As here shown, we employ a valve consisting of a perforated music sheet F having its ends attached to rollers F' F², by either of which it may be drawn from the other and so caused to travel over the rest or tracker board.

With each of the motors C a valve G' is combined. The valves G' are arranged in the wind chest, and, as here shown, are attached to levers G of wood or other like material fulcrumed at the lower ends to pins g and bearing at the upper ends against the movable parts of the pneumatic motors C. As here shown, pins c extend from the motors C through the valve levers G and guide pins

g' extend through the valve levers from one of the walls of the wind chest. The valves G' are arranged intermediate of the ends of the levers G and opposite them valves G² are attached to the levers, the illustrated means of attachment being pins or screws g² extending from the valves G² to the valves G'. The valves G' G² may be made of wood faced with felt or other suitably soft material. The valves G' G² operate in connection with openings a' extending through the rear wall of the wind chest A, the valves G' serving to co-act with the inner extremities of these openings and the valves G² co-operating with the outer extremities thereof. The openings a' manifestly must correspond in number with the ducts D, pneumatic motors C, valve levers G and valves G' G². From each of the openings a' a duct a² extends up through the back of the wind chest and thence into a block H in which the ducts D extend and on which the rest or tracker board E is mounted. On the under side of the block pneumatic motors I' are arranged.

From the lower portion of the rear wall of the wind chest A a block or rail J extends. Ducts a³ extend downwardly from the opening a' within the rear part of the wind chest A and into the block or rail J. On the under side of the block or rail J pneumatic motors I² are arranged. The ducts a² and the ducts a³ are precisely the same in function and this is equally true of the pneumatic motors I' I². These ducts and motors might be all in the same planes and are only arranged as represented because space may be economized by arranging them in two rows and arranging those in each row opposite the spaces between those in the other row.

Normally the pneumatic motors C will be collapsed and the air will be cut off from the ducts D by an imperforate portion of the music sheet. While this condition of things continues the valves G' will close the adjacent ends of the openings a' and the valves G² will be opened. Springs G³ arranged within the wind chest and impinging against the valve levers serve to produce this relation of the valves to the openings a' and also to collapse the pneumatic motors C.

While the parts are in the condition just

described the pneumatic motors $I' I^2$ will communicate internally with the atmosphere and will be expanded. Whenever a perforation of the music sheet F allows air to pass into one of the ducts D , the pneumatic motor C corresponding to said duct will be expanded, whereupon the corresponding valve G' will be removed from the opposite opening a' and the corresponding valve G^2 will be caused to close against such opening. This will cut off communication of the corresponding pneumatic motor I' or I^2 with the atmosphere and cause it to communicate with the interior of the wind chest A . The motor $I' I^2$ will immediately collapse. As here shown, the motors $I' I^2$ are combined with rods $K' K^2$. These rods are represented as being combined with the motors by having affixed to them collars k which lap over movable parts of the pneumatic motors $I' I^2$. The lower extremities of the rods $K' K^2$ are shown as resting upon the rear extremities of the manual keys, L , fulcrumed to pins l and a rail l' in a well known manner. The rods $K' K^2$ may operate any suitable sound producing devices. As here shown, they have toes $k' k^2$ which operate with valves M', M^2 . These valves may control reed ducts or ducts leading to organ pipes.

The wind chest A with its contained pneumatic motor C , its valves $G' G^2$, valve levers G and springs G^3 may be removed at will, as it is made independently of the rest or tracker board E and blocks $H J$. These blocks $H J$ are intended to be supported at their ends by cheek pieces or other appropriate devices.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a musical instrument having pneumatic motors for causing the operation of sound producing devices, a removable wind chest provided with valves for controlling said pneumatic motors and other pneumatic motors for operating said valves, substantially as specified.

2. In a musical instrument, the combination with manual keys, and sound producing devices,—of push pins or rods operated by

said keys and extending from direct connection therewith to operative connection with said sound-producing devices,—pneumatic motors—moving parts of which form independent operative connection with said push pins or rods,—a wind chest in communication with said motors, and mechanism whereby the pneumatic motors are caused to act when the instrument is played mechanically,—substantially as set forth.

3. In a musical instrument, the combination of a wind chest,—pneumatic motors arranged within the wind chest,—ducts communicating with the wind chest and with air outside of same,—valves controlling said ducts at the points of communication named and operated directly from said internal pneumatic motors,—other pneumatic motors communicating also with said ducts but at their opposite outer extremities, and arranged outside of the wind chest,—and connections whereby the last named pneumatic motors may cause the sound producing devices to speak,—substantially as set forth.

4. In a musical instrument, the combination of a wind chest, pneumatic motors arranged within the wind chest, ducts communicating with the wind chest and with air outside of the wind chest, pneumatic motors communicating with these ducts and arranged outside of the wind chest for causing the playing of the sound producing devices of the musical instrument, valves within the wind chest co-acting with said ducts, and valves outside the wind chest also co-acting with said ducts and connected by devices accessible from the outside of the wind chest with supports located within the wind chest, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOSEPH H. CHASE.
JAMES B. TRACY.

Witnesses:

WILBUR H. SQUIRE,
M. A. CHATFIELD.