No. 675,706. Patented June 4, 1901.

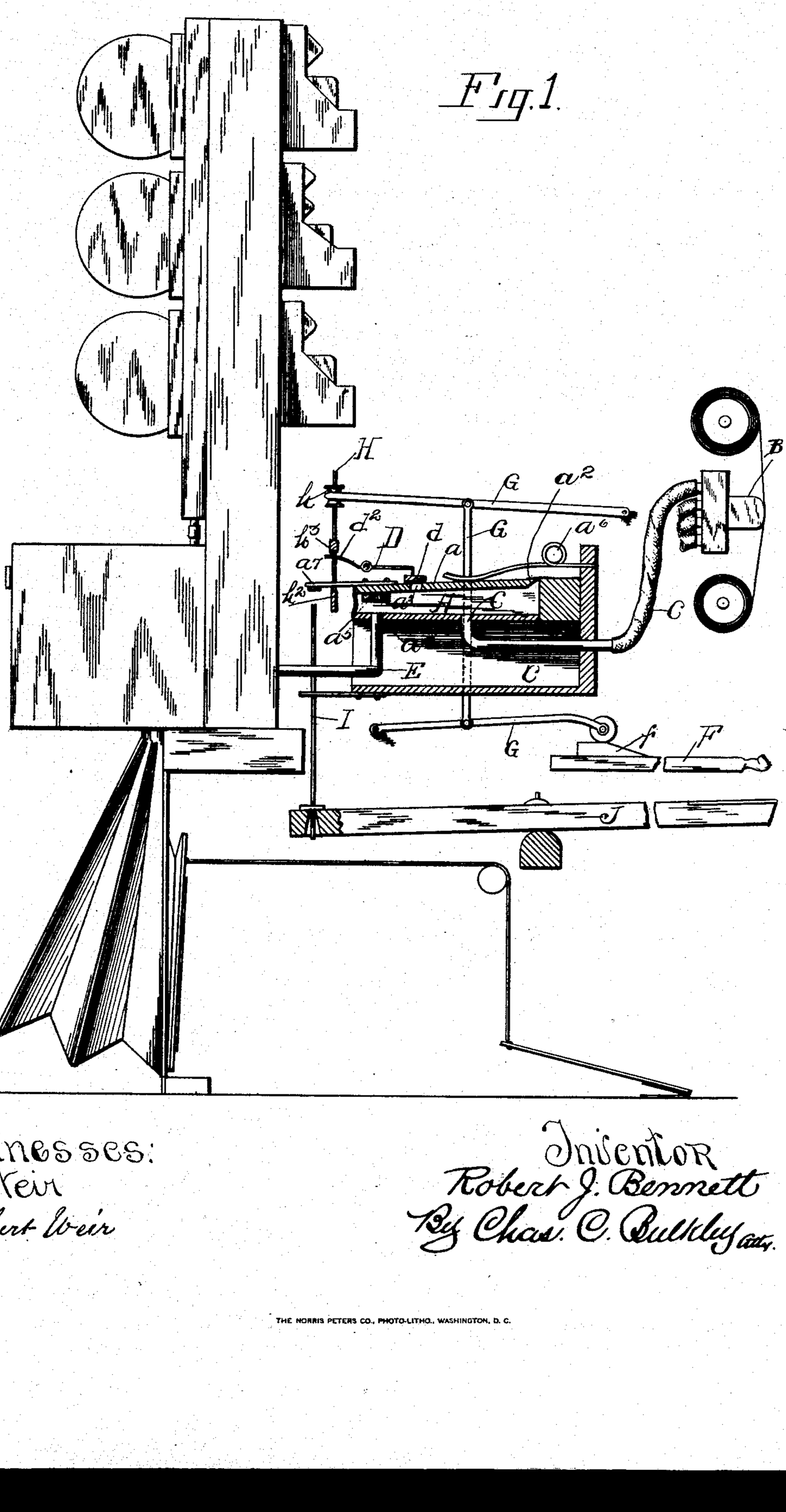
R. J. BENNETT.

COMBINED MANUALLY AND MECHANICALLY ACTUATED MUSICAL INSTRUMENT.

(No Model.) (Application filed Feb. 8, 1898.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses:
J. B. Weir
Robert Weir

Inventor
Robert J. Bennett
By Chas. C. Bulkley Atty.

No. 675,706. Patented June 4, 1901.

R. J. BENNETT.

COMBINED MANUALLY AND MECHANICALLY ACTUATED MUSICAL INSTRUMENT.

(No Model.) (Application filed Feb. 8, 1898.)

2 Sheets—Sheet 2.

Fig. 2.

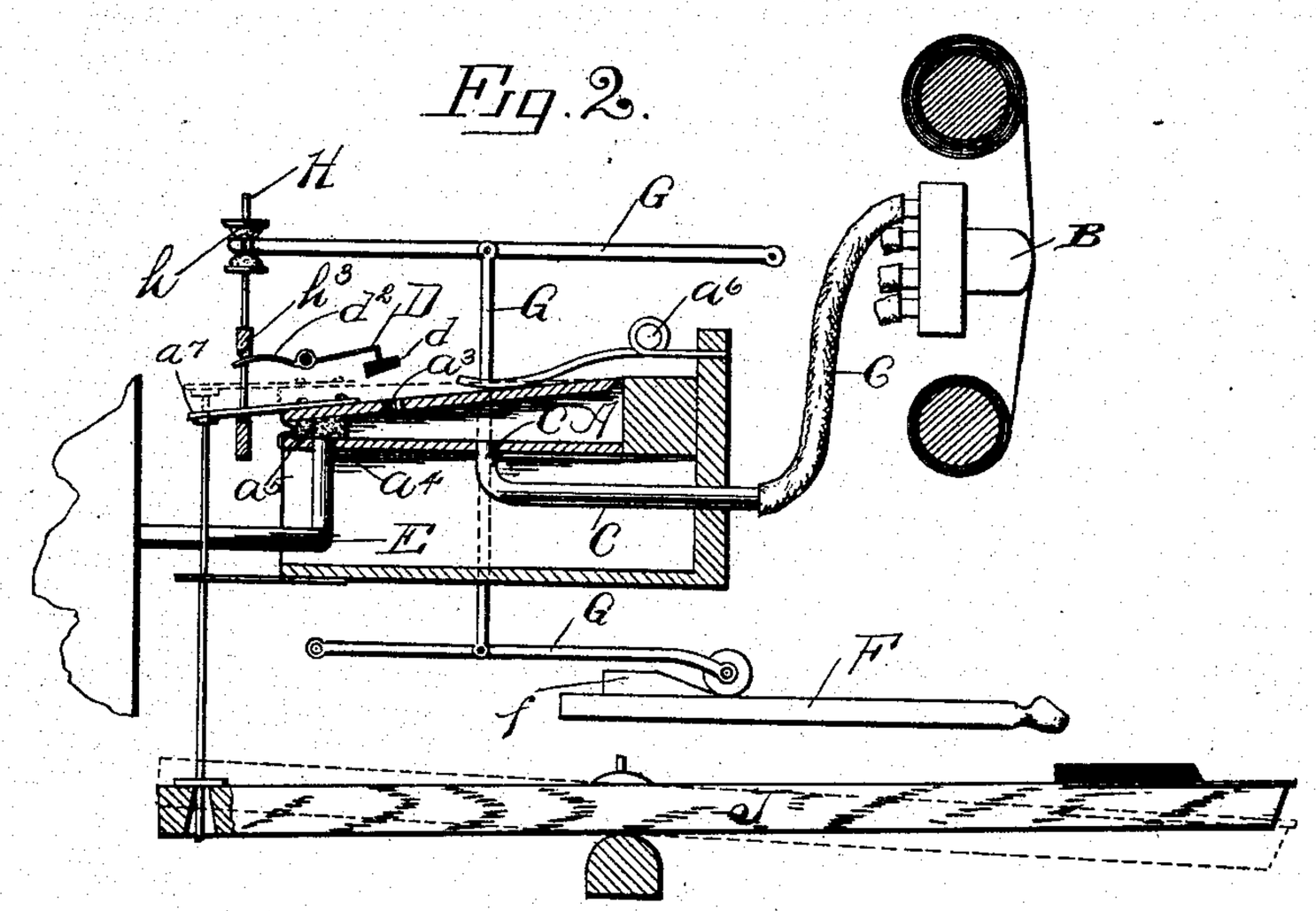
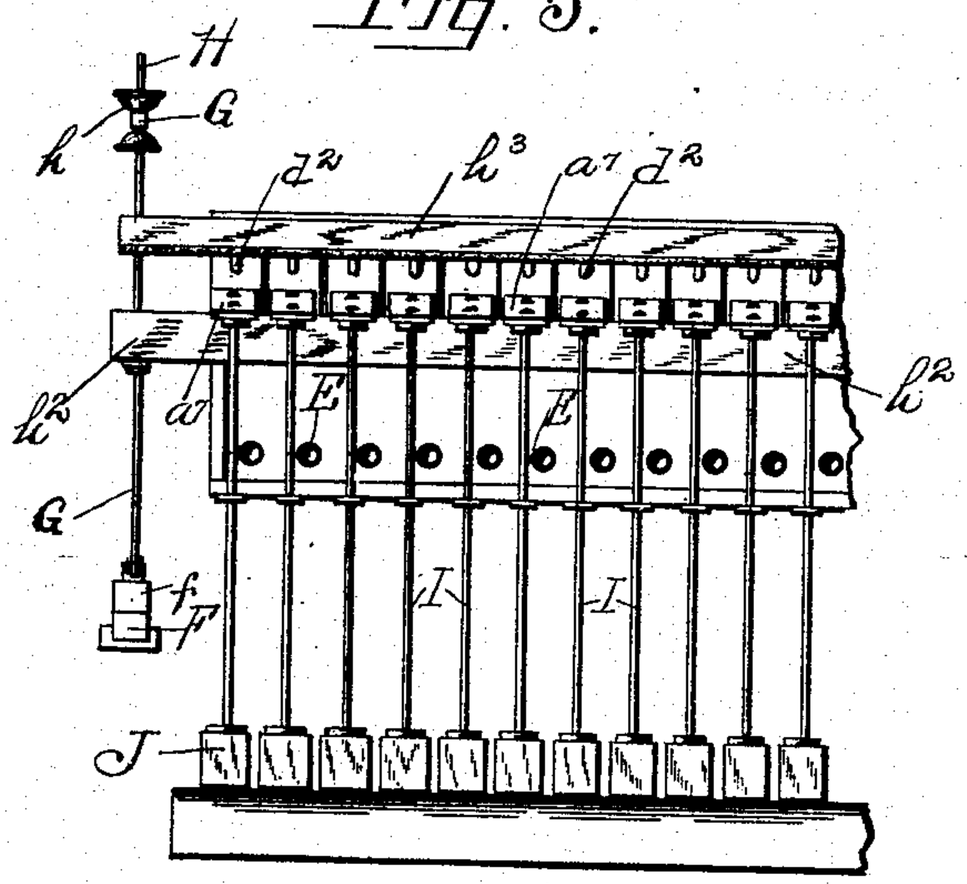


Fig. 3.



Witnesses:
J. B. Weir
Robert Weir

Inventor.
Robert J. Bennett,
By Chas. C. Buckley Atty.

UNITED STATES PATENT OFFICE.

ROBERT J. BENNETT, OF CHICAGO, ILLINOIS, ASSIGNOR TO LYON & HEALY, OF SAME PLACE.

COMBINED MANUALLY AND MECHANICALLY ACTUATED MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 675,706, dated June 4, 1901.

Application filed February 8, 1898. Serial No. 669,607. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. BENNETT, 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 a Combined Manually and Mechanically Actuated Musical Instrument, of which the following is a specification.

Referring to the accompanying drawings, wherein like reference-letters indicate the same or corresponding parts, Figure 1 is a side elevation of a portion of an organ with that part to which my invention chiefly relates enlarged and shown in vertical transverse section, illustrating the position assumed by the various parts thereof when the same are to be used in conjunction with a traveling music sheet or card. Fig. 2 is a vertical transverse section of the more particular features of my invention on the same plane as shown in Fig. 1, but with the parts thereof appearing in the position they assume when their operation is to be manually controlled by the performer. Fig. 3 is a portion of a rear elevation of the parts shown in Fig. 2.

My invention relates to that class of musical instruments whose sound-producing mechanism is capable of being operated either mechanically or manually; and it more particularly relates to means whereby the performer may at pleasure bring into operation either the manual or mechanical controlling and actuating devices. Heretofore to accomplish this it has been deemed necessary to construct such instruments with one set of ports and their respectively-connected wind-passages for the admission of air when it was desired to operate the instrument mechanically and another set of ports and their respectively-connected wind-passages for the admission of air when the instrument should be operated manually. Such a plurality of passages is expensive and unnecessary.

The object of my invention is to dispense with these unnecessary passages; and to that end it consists in combining with the sound-producing mechanism of such an instrument a series of collapsible chambers or passages, air-ducts opening thereinto from the tracker-board, a series of passages, tubes, or pipes through which air received in the chambers is transferred to the pneumatics which operate the sound-producing mechanism, and valves operated by the collapsing of said chambers to close said latter passages; in combining with the features above referred to ports opening into the collapsible chambers directly from the external air, valves for closing said ports, and means controlling said valves whereby they are closed when the said chambers are distended and opened when said chambers are partly or wholly collapsed; in combining the above-described features with means whereby at the will of the performer they may be made to assume their respective positions necessary to enable the instrument to be operated either mechanically or manually, and, lastly, in the more specific features of construction and operation indicated in the several claims hereto appended.

In the accompanying drawings, A is an air-tight collapsible chamber or passage having a top a, hinged at the point a^2, which chamber, when the sound-producing mechanism is to be operated by means of a traveling music-sheet, receives air through apertures in the tracker-board B and the connecting pipe or tube C, and when the sound-producing mechanism is to be operated manually receives air through the port a^3, controlled by the valve d, in either case discharging said air through the port a^4 (controlled by a valve a^5, connected to the hinged top a) into the pipe, tube, or passage E, which transmits the air to the pneumatics actuating the sound-producing mechanism. To throw the ports of said collapsible chamber into such position that air may be introduced through the tracker-board, the cam-stop F is drawn outward, which causes the cam f to lift the lower arm of the compound lever G, thereby raising the upper arm. This upper arm being engaged to the rod H at the point h in turn raises said rod and the bars or buttons h^2 h^3 attached thereto. The bars or buttons h^2 h^3 respectively raise the hinged portion of the collapsible chamber A, thereby opening the port a^4 and allowing the lever D to resume its normal position, closing the port a^3 by means of the valve d, the ports described assuming the position shown in Fig. 1. Reversing the movement of the stop F, the bar or button h^2

is depressed and the hinged portion of the chamber, assisted by the spring a^6, is permitted to resume its normal position, closing the port a^4 by means of the valve a^5, while the bar or button h^3 bears upon the outer arm d^2 of the lever D, thereby raising the valve d and admitting the outer air through the port a^3. In this position (shown in Fig. 2) the projection a^7 of the upper or hinged portion of the chamber A rests upon or near the upper end of the key-rod I. By depressing the key J the key-rod I is raised, so as to strike the projections a^7 and raise the hinged portion of the chamber, (but not sufficiently to bring it in contact with the valve d,) thereby permitting the outer air to enter through the port a^3 and be transmitted to the pneumatics actuating the sound-producing mechanism through the port a^4, the ports in this case assuming the position indicated by the dotted lines in Fig. 2. When the pressure upon the key is removed, the hinged top or portion of the collapsible chamber falls, closing the port a^4 by means of the valve a^5, the parts then assuming the position indicated by the unbroken lines in Fig. 2.

It will be understood that the number of collapsible chambers A correspond to the number of keys, that the number of stops F may be as greatly raised as desired, and that I do not mean to limit myself to the use of a compound lever G or to any particular form of lever, and it is obvious that a weight may be substituted for the spring a^6, and it is further obvious that the form of the device may be greatly varied without departing from the principle of the invention.

Having thus described the principle of my invention and one way in which it may be carried into practice, what I claim as new, and desire to secure by Letters Patent, is—

1. In a musical instrument the sound-producing mechanism of which is capable of either manual or mechanical actuation, the combination of a series of collapsible chambers or passages, unobstructed air-ducts opening thereinto from the tracker-board, a series of passages, tubes or pipes through which air received in the chambers is transferred to the pneumatics which operate the sound-producing mechanism, and a series of valves operated by the collapsing of said chambers to close said latter passages.

2. In a musical instrument the sound-producing mechanism of which is capable of either manual or mechanical actuation, the combination of a music-sheet tracker-board, a series of collapsible chambers or passages, means of communication for the passage of the air between the tracker-board and said chambers, means of communication for the air between each one of the said collapsible chambers and the sound-producing mechanism, a valve in each one of said chambers, controlling said communication and operated by the movements of the collapsible chamber, an opening or port from said collapsible chamber to the external air, a valve, for controlling said opening or port, means for operating said valve and connections between the collapsible chamber and the respective manually-operated keys of the instrument.

3. In a musical instrument of the kind described a series of collapsible chambers or passages each having the port a^3 controlled by a valve d secured to the lever D, the open port c, the port a^4 controlled by the valve a^5 attached to the hinged upper portion of the collapsible chamber or passage, and means whereby the collapsible chambers or passages may be simultaneously distended and the ports a^3 a^4 respectively closed and opened, or the collapsible chambers or passages may be simultaneously collapsed and the ports a^3 a^4 respectively opened and closed, substantially as and for the purpose described.

4. In a musical instrument of the kind described, the combination with the traveling music-sheet tracker-board, of a series of collapsible chambers or passages each having two intake-ports, one of which is in open communication with the tracker-board, a valve for controlling the other port, a discharge-passage from said collapsible chamber to the sound-producing mechanism, a valve for controlling the same, operated in the movements of the collapsible chamber, and means for controlling such valve-actuating movements from the keys.

5. In a musical instrument of the kind described, the combination with the traveling music-sheet tracker-board, of a series of collapsible chambers or passages each having two intake-ports, one of which is in open communication with the tracker-board, a valve for controlling the other port, a discharge-passage from said collapsible chamber to the sound-producing mechanism, a valve for controlling the same operated in the movements of the collapsible chamber, and means for controlling the said intake-valve from the stops to open and retain it open when the chamber is wholly or partially collapsed.

6. In a musical instrument of the kind described, a series of collapsible chambers or passages, a traveling music-sheet and tracker-board, means of communication between the tracker-board and the collapsible chambers, a discharge-pipe leading from each one of said chambers to the sound-producing mechanism, a valve in each one of said chambers for controlling communication between the same and the discharge-pipe which valve is operated in the movements of the collapsible chamber, a draw-stop for collapsing or distending said chamber, a valve for each chamber controlling an intake-port from the external air and connections between the keys and each one of said chambers for distending the same to open the discharge-pipe leading to the sound-producing mechanism.

7. In an instrument of the kind described the

combination of the following elements, viz: a series of collapsible chambers or passages A each having flexible air-tight walls and a top a hinged at the point a^2, the port c, a^3, a^4, the valve a^5, the projection a^7, the lever D, the valve d, the arm d^2, the rod H, the button or buttons h, the buttons or bars h^2 h^3, the tubes, pipes or passages e, C, the tracker-board B, the lever G, the cam-stop F, the key J, the rod I, the spring, a^6, substantially as described.

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

ROBERT J. BENNETT.

Witnesses:
CHAS. C. BULKLEY,
ROBERT WEIR.