

G. Woods,
Reed Organ,

No 58,032,

Patented Sept. 11, 1866.

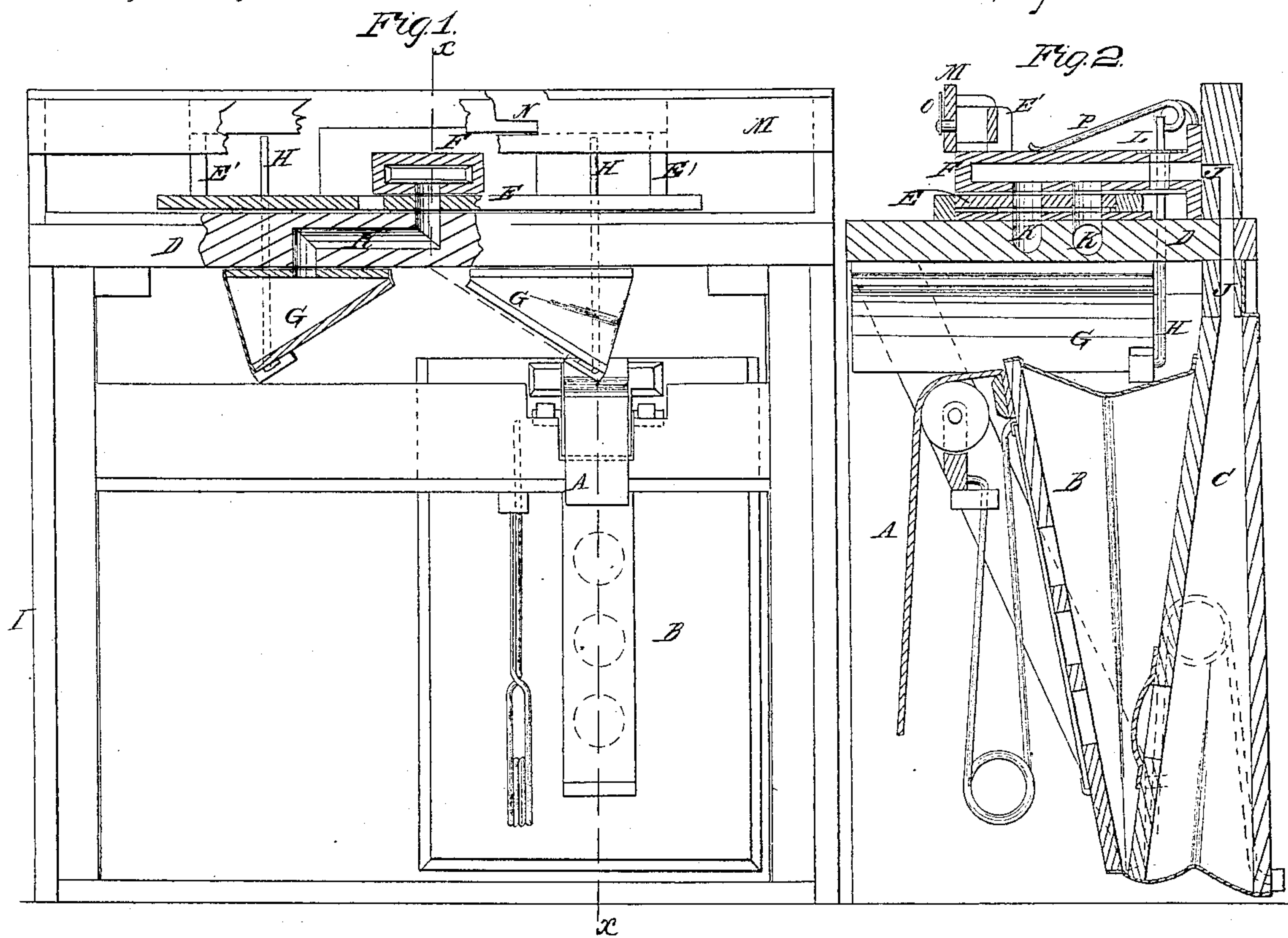
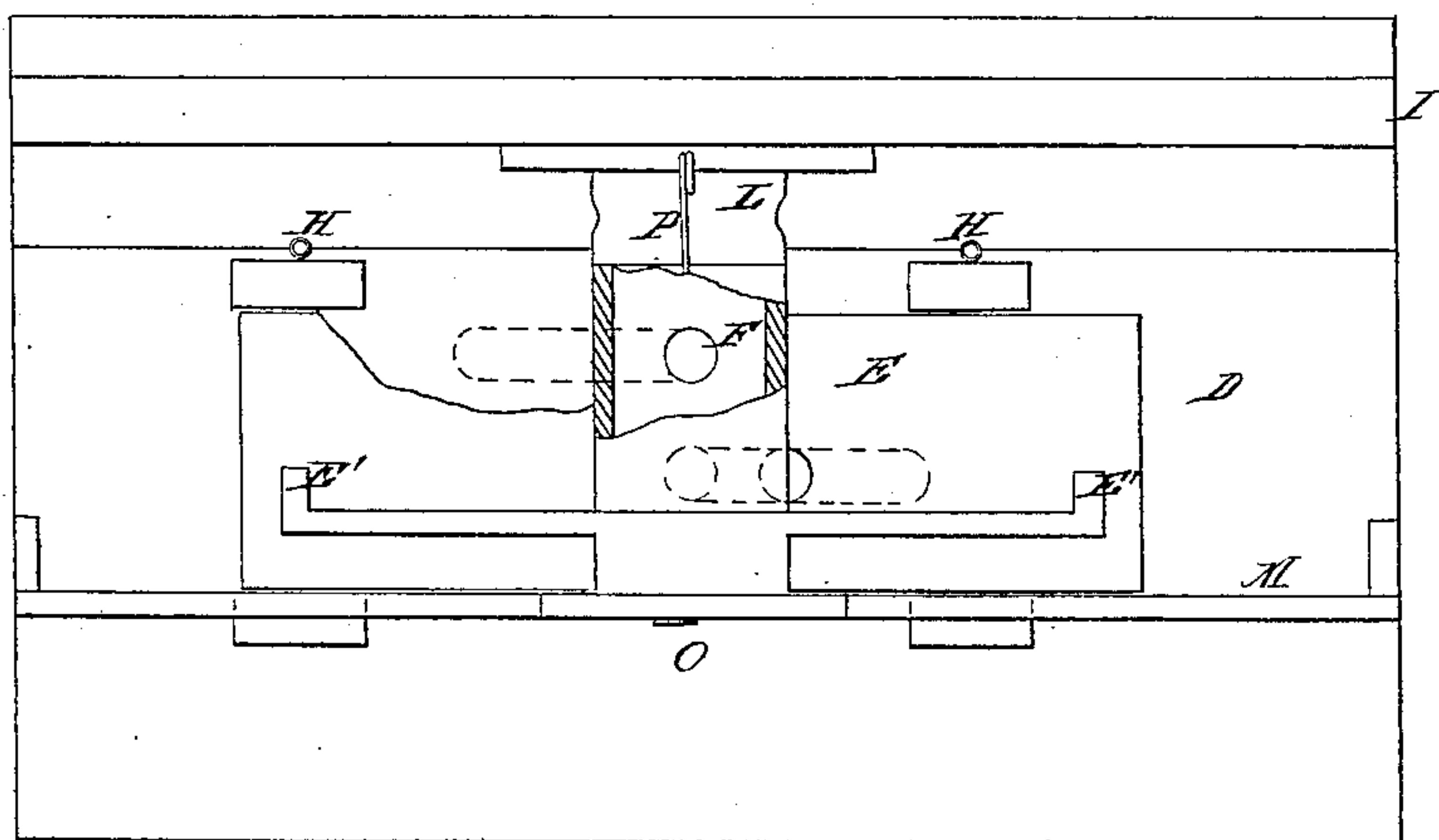


Fig. 3.



Witnesses:
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GEORGE WOODS, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO HENRY MASON, EMMONS HAMLIN, LOWELL MASON, JR., AND D. J. MASON.

IMPROVEMENT IN MUSICAL INSTRUMENTS.

Specification forming part of Letters Patent No. 58,032, dated September 11, 1866.

To all whom it may concern:

Be it known that I, GEORGE WOODS, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Musical Instruments; and I do hereby declare that the following is a full, clear, and exact description thereof which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation of a part of a cabinet-organ with my improvement applied thereto. Fig. 2 is a cross-section along the line *x* of Fig. 1. Fig. 3 is a plan view.

Similar letters of reference indicate like parts.

The object of this invention is to improve the manner of operating the stops of musical instruments, being adapted and applied in the present example to the class called "cabinet-organs." A pneumatic bellows or lever is provided for each stop, and they are operated through the main bellows by channels, which are all governed by a perforated slide-valve, common to all, such valve being connected to an index that moves therewith over the face of a register-plate, the valve itself being moved to and fro by any convenient means. The passages through the valve and in the valve-seats or surfaces between which it moves are so arranged that combinations of stops can be made therewith.

The several parts of a cabinet-organ which are here shown are supported by a frame, I, which may be taken to represent part of the case of the instrument.

The letter A designates a treadle-strap, which is taken over an anti-friction roller to the upper front edge of the movable side of a bellows, B, by operating which the flexible chamber C is exhausted. The said chamber C and bellows B are made and operated in the ordinary mode or in any other suitable way, being in this example brought back to their normal condition by springs properly applied.

J is an air-passage leading from the air-chamber C upward through the back part of the case, or through whatever part of the framing lies above said chamber, and thence

into a pipe, F, which is fixed in a horizontal position above the top D of the frame. The outer end of pipe F is closed, but its inner end is open, and is connected with the air-passage J by a flexible pipe, L. (Seen in Figs. 2 and 3.) The bottom of the pipe F has openings, which are respectively opposite the mouths of passages K, which are made in the board D, and severally lead through it into pneumatic bellows G G that are fixed to the lower side of said board.

E is a slide-valve, placed on the top of the board D, and fitted to be easily moved thereon toward the right or the left by any suitable device, as by a lever, which may, if desired, be operated by the knee of the performer without lifting his feet from the treadle of the instrument.

I have not shown any such lever in this example, because any person skilled in the art can easily make and apply it.

The valve has several openings through it, which, in certain positions of the valve, come into coincidence with one or more of the mouths of the passages K that lead to the several bellows G, and also with one or both of the openings in the bottom of the horizontal pipe F, and consequently put the bellows G, one or more of them, according to the position of the valve, in communication with the exhaust-chamber C, so that when the air is withdrawn from the latter it will also be withdrawn from the former, causing them to collapse, their movable sides being raised by the pressure of the atmosphere, carrying up with them stop-rods H, whose lower ends are connected to the lower movable sides of said bellows G, so as to rise and fall with them. The rods H, there being one for each bellows G, are severally made, by suitable connections, to operate one of the stops of the instrument; but their connections do not form part of my present invention, and therefore are not here shown. The rods in this example extend upward through holes made for them in the board D, and their movements are guided in vertical lines, the connection of the rods with the bellows G being made by bending their lower ends to a right angle and entering them into wide sockets made on the bottom boards of the bellows G, so that the bent ends of the

rods can play therein as the bottom boards rise and fall.

M is a frame erected on the top of the board D near its front edge, having a horizontal slot, N, at about the middle of its length, which receives the spindle of an index, O, that indicates, in conjunction with a register or scale, which may be placed on the frame M above the slot N, what stop or what combination of stops is open. The index is connected with the valve E by means of a frame that is supported on the top of the valve by short standards E' E'. The bottom of the valve is properly packed to make it tight on its seat. The valve is so fitted that it can be moved easily on its seat beneath the pipe F, which is held down upon it by elastic pressure by means of a spring, P, suitable packing being applied to the bottom of pipe F to prevent air from leaking between it and the valve.

From this construction it follows that while air is being pumped out of the exhaust-chamber C one of the bellows G, which is in communication with it, will also be exhausted, and its movable bottom will be pushed upward by atmospheric pressure, carrying upward its stop-rod H. If two bellows, G, are put in communication with the exhaust-chamber C, as is shown in Fig. 2, both will be exhausted and their stop-rods raised simultaneously, thereby making a combination of stops. This result is attained by arranging a series of single and double openings in the valve, so as to establish communication between the pipe F and the bellows G by uncovering one or two openings, K, at a time, according as the valve is moved a greater or less distance on its seat, its movements being guided by observing the index O, which moves with it.

In applying the improvement to a musical instrument, each stop to be operated by this means must have its bellows or pneumatic lever G and a stop-rod, H, and the pipe F may be made of larger extent, so as to be brought over each bellows, or there may be numerous

pipes F, according to the number of stops or combinations of stops to be produced. The valve E extends above the whole series of bellows or pneumatic stop-levers G, and its openings and the positions of the mouths of the air-passages K are arranged so that the proper stops or combinations of stops will be drawn by the progressive movements of the valve back and forth.

The interior of the pipe F is always in communication with the exhaust-chamber C, so as to form a continuation thereof, and consequently the degree of its exhaustion is the same as that of chamber C; therefore, when by the movement of the slide-valve any of the openings K are uncovered, its bellows G is immediately exhausted by the pump. When its opening K is closed air is admitted into such bellows G through a valve, and as it is expanded its stop-rod sinks and allows the stop to become closed.

The mouths of the various openings K are brought opposite to one or another of the openings in the bottom of the pipe F, so that it is only necessary to remove the solid parts of the valve from between them in order to operate the proper bellows G.

I claim as new and desire to secure by Letters Patent—

1. The slide-valve E, with openings so arranged as to allow communication between the exhaust-chamber or pump or bellows of a musical instrument and one or more of the bellows or pneumatic stop-levers G when the valve is moved to a proper position, substantially as described.

2. The combination of the pipe F, perforated on its bottom, with the air-passage J, leading to the exhaust-chamber C, and the passages K of the pneumatic stop-levers G, substantially as shown.

GEORGE WOODS.

Witnesses:

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