

J. E. TREAT.  
Pneumatic Action for Organs.

No. 220,737.

Patented Oct. 21, 1879.

Fig. 1.

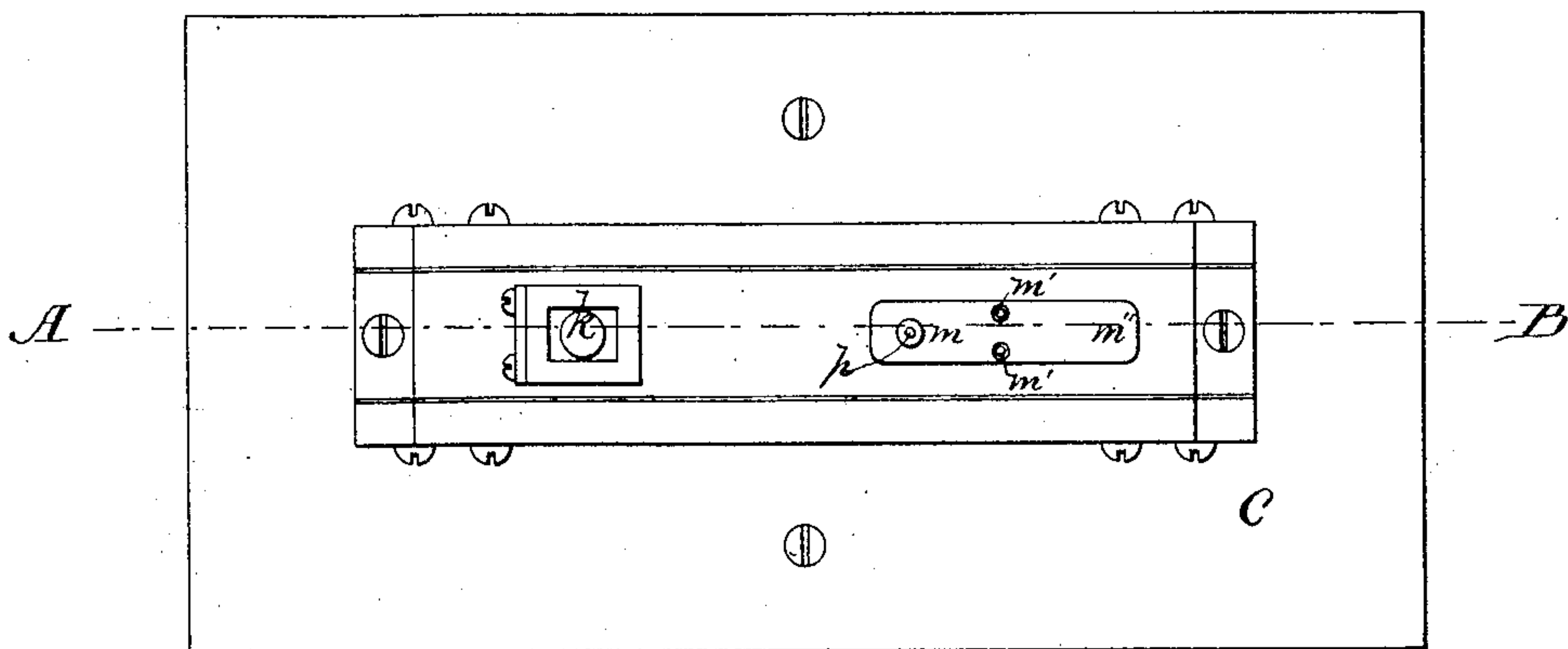
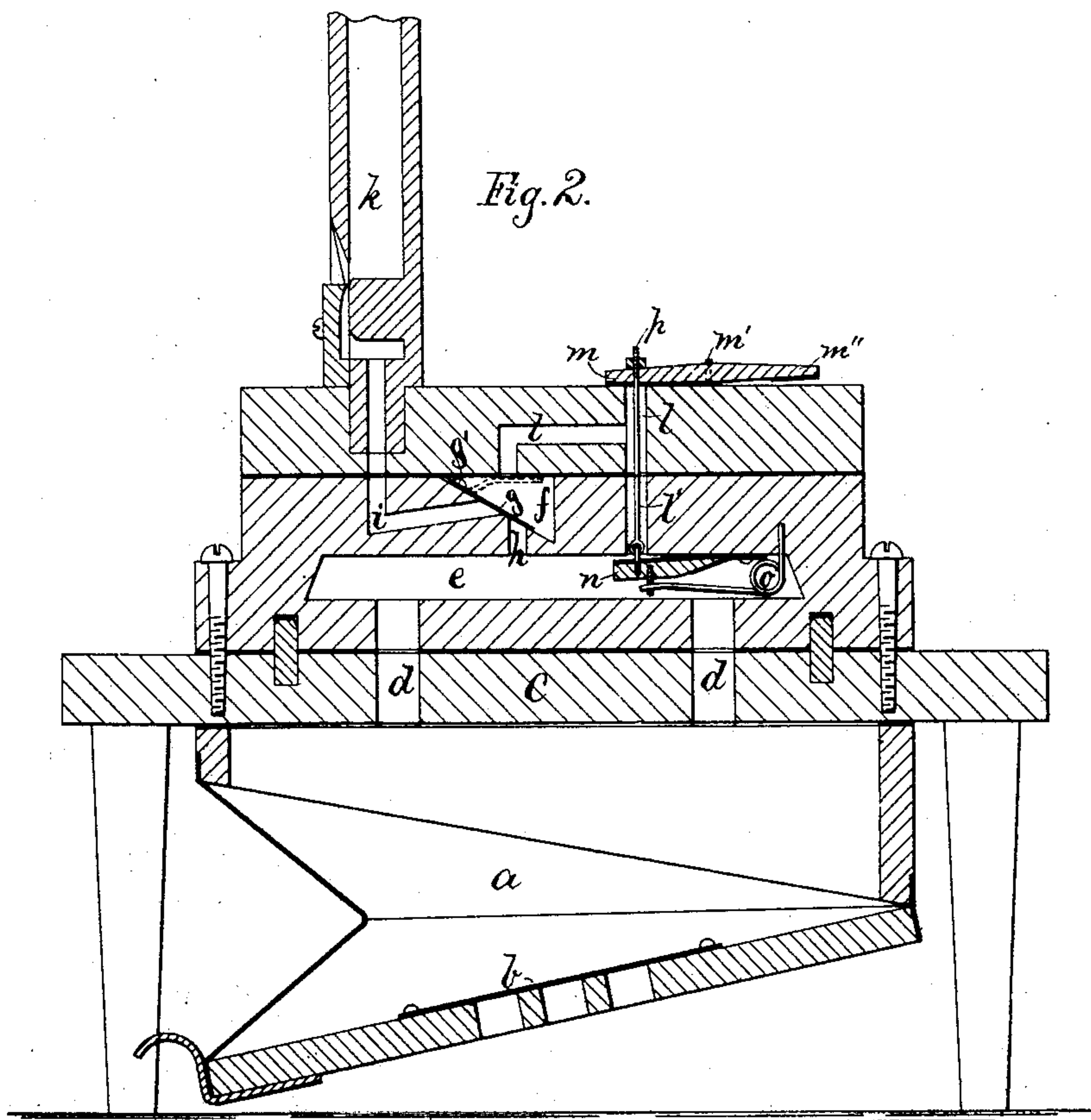


Fig. 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PNEUMATIC ACTIONS FOR ORGANS.

Specification forming part of Letters Patent No. **220,737**, dated October 21, 1879; application filed February 8, 1879.

*To all whom it may concern:*

Be it known that I, JAMES E. TREAT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic Actions for Pipe or Reed Organs; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in pneumatic actions for pipe or reed organs, and consists of a flexible valve located within a valve-chamber provided with an inlet-hole, through which the wind enters the valve-chamber from the wind-chest or other wind-pressure chamber, and with an outlet or pipe-hole, through which the wind-pressure is forced from the valve-chamber to the pipe or reed.

The aforesaid flexible valve is so arranged as to close both the pressure-hole and pipe-hole when it is on its seat.

In addition to said openings covered by the flexible valve, I provide a third, leading, also, from the valve-chamber, which opening I term the "relief" pipe or vent, and which leads to the outer atmosphere, where it is closed by a valve that can be manipulated to open and close the said relief-vent.

In the accompanying drawings, Figure 1 represents a plan view of my invention; and Fig. 2 represents a vertical section on the line A B, shown in Fig. 1.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

*a* is the bellows, with its inlet-valve *b*, as usual. *c* is the frame, with its openings *d d* leading to the wind-chest *e* from the bellows *a*, as shown. *f* is the valve-chamber, located between the wind-reservoir and the organ-pipe *k*. *g* is the flexible valve, located within the valve-chamber *f*, as and for the purpose set forth. *h* is the inlet or chest hole, leading from the wind-reservoir to the valve-chamber *f*, where it is covered by the flexible valve *g*. *i* is the pipe-channel leading from the valve-

chamber *f* to the organ-pipe *k*, as shown. The flexible valve *g* is fastened to its seat at *g'*, and in Fig. 2 the dotted lines show the position of the valve *g* when it is raised from its seat and forced against the relief-opening *l*. The relief-channel *l* is closed by means of the valve *m*, that is movable on the fulcrum *m' m'*, and it is manipulated by any suitable mechanism at its front end, *m''*, as and for the purpose described.

The lower extension of the vertical part of the relief-channel *l* is the reciprocal pressure-channel *l'*, that enters the wind-chest *e*, where it is provided with a valve, *n*, actuated by a spring, *o*, and connected to the relief-valve *m* by means of a rod, *p*, as and for the purpose set forth.

The operation of this pneumatic action is as follows: As long as the relief-valve *m* remains closed the flexible valve *g* in the valve-chamber rests on its seat and covers both the inlet or pressure or chest hole *h* and the outlet or pipe hole *i*, when the wind-pressure is admitted through the inlet-hole from the wind-chest or other wind-reservoir, and no matter how strong the wind-pressure therein is, no wind is conducted to the pipe or reed. This is owing to the fact that a dead-air cushion exists within the valve-chamber *f* above the flexible valve *g*, and consequently the said valve will not rise from its seat until the dead-air cushion is removed, which is done by opening the relief-valve *m*, and the instant the said relief-valve is opened the flexible valve *g* is forced from its seat by the wind-pressure from the wind-chest, &c., and is forced up so as to cover the relief-opening *l*, leading from the valve-chamber *f*, by which an instantaneous and direct communication is established from the wind-reservoir to the desired pipe or reed. As soon as the relief-valve *m* is closed the flexible valve *g* comes to its seat and closes the pressure-hole *h*, leading from the wind-reservoir, as well as the opening *i*, leading to the pipe or reed.

For the purpose of aiding in forcing and retaining the flexible valve *g* to its seat within the valve-chamber as soon as the relief-valve *m* is closed, I employ a reciprocal pressure from the wind-reservoir *e*, which is conducted through



a pipe or channel, *l'*, leading from the wind-reservoir to the relief-opening *l* in the valve-chamber. The mouth of said reciprocal wind-pipe is automatically closed within the wind-reservoir by means of the valve *n*, connected by a rod, *p*, to the relief-valve *m*, in such a manner that when the latter is closed the former is open, and inversely. This reciprocal wind-pressure is, however, not necessary, as the device, as above described, is practically operative without it, and it only serves as an aid in closing the flexible valve and to keep it closed when the relief-valve is closed.

This pneumatic action is equally useful for stop as well as key action. When used for a stop action the usual keys would be employed for the purpose of operating valves to shut off or open the communication from the wind-reservoir to the dead-air chamber containing the hereinbefore-described flexible valves, and only one relief-pipe would be needed for each stop. When used as a key-action, each key would be directly connected to the relief-valve for its corresponding pipe.

The advantages over other pipe or reed organ actions are as follows: I obtain an invariable and light touch under any and all circumstances, no matter whether one or more stops are used at the same time. I dispense with the usual slides, that were liable to run too loose or too tight, according to the humidity of the atmosphere. My action is almost noise-

less. No running or loss of wind will occur, and each pipe has its own wind-supply.

As a stop-action, my invention can be made very light, durable, and cheaper than the common ones in use.

Composition and crescendo pedals can be made according to my invention much more cheaply and conveniently.

This invention is particularly adapted to electric action.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. In a pipe or reed organ, a valve-chamber, *f*, located between the wind-reservoir and the pipe or reed, and provided with a valve, *g*, covering both the pressure or chest hole *h* and pipe-channel *i*, and having a relief-vent, *l*, and a relief-valve, *m*, as and for the purpose set forth.

2. In a pipe or reed organ, the combination of an air-chamber, *f*, as described, with its valve *g*, channels *h*, *i*, and *l*, and relief-valve *m*, the reciprocal wind-channel *l'*, and reciprocal valve *n*, as and for the purpose set forth.

In testimony that I claim the foregoing as my own invention I have affixed my signature in presence of two witnesses.

JAMES E. TREAT.

Witnesses:

ALBAN ANDRÉN,  
HENRY CHADBURN.