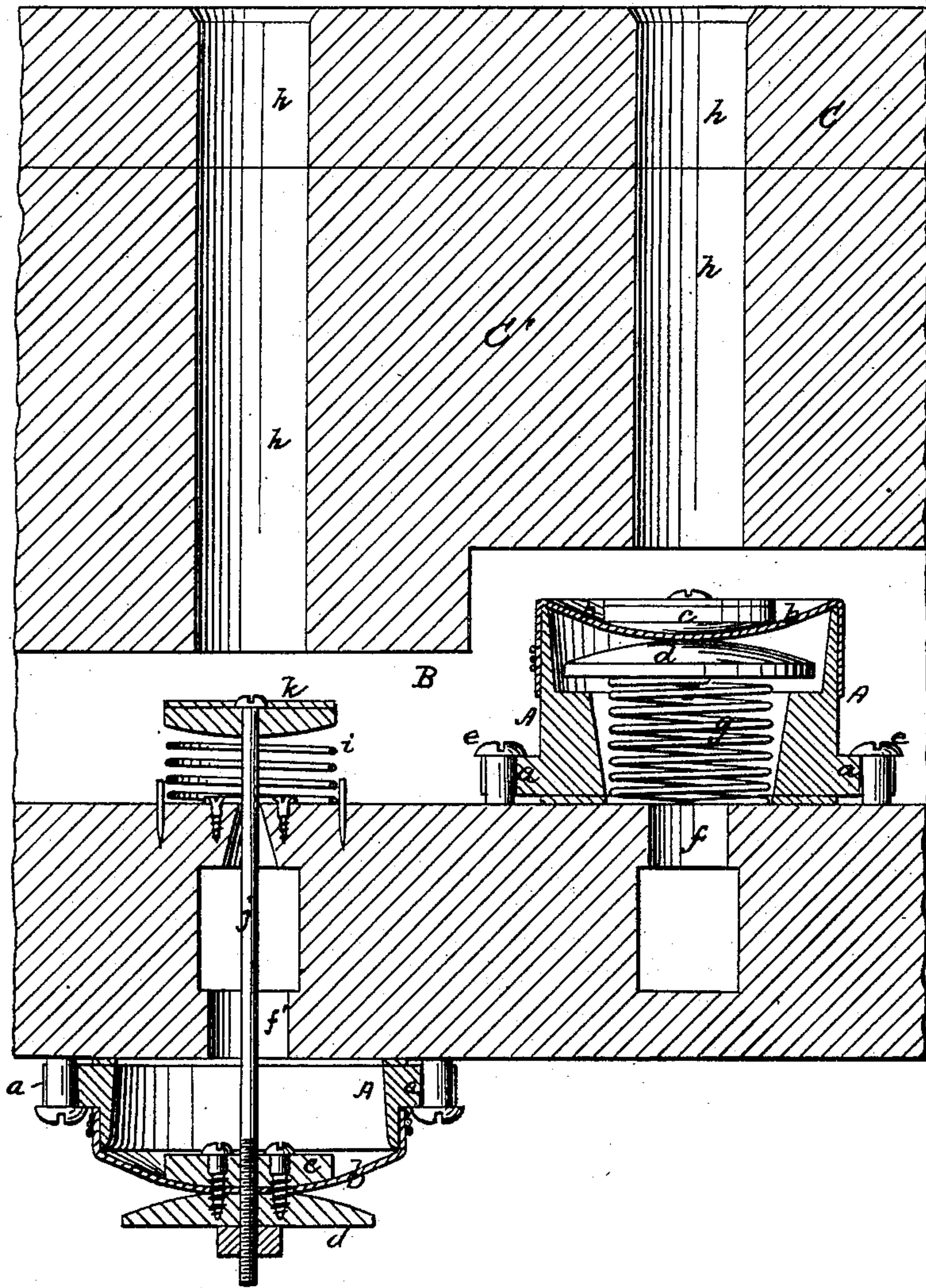


T. WINANS.

PNEUMATIC ACTION FOR ORGANS.

No. 176,724.

Patented April 25, 1876.



Witnesses:

Ewen A. Rich
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UNITED STATES PATENT OFFICE.

THOMAS WINANS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN PNEUMATIC ACTIONS FOR ORGANS.

Specification forming part of Letters Patent No. **176,724**, dated April 25, 1876; application filed April 5, 1876

To all whom it may concern:

Be it known that I, THOMAS WINANS, of Baltimore, Maryland, have invented certain new and useful Improvements in Pneumatic Actions for Organs, of which the following is a specification:

My present invention relates particularly to the pneumatic lifters for the pallets or valves which control the admission of air to the organ-pipes; and it is an improvement on the pneumatic valve-lifters described in my Letters Patent No. 153,143, dated July 14, 1874, and No. 162,450, dated April 20, 1875.

I now make use of an annular metal frame, provided at its base with laterally-projecting ears, to take screws or pins, by which it is fastened to the sound-board, and closed at one end by a flexible diaphragm, which carries internal and external piston-disks of different areas, as described in my Letters Patent No. 153,143.

The valve-lifter thus formed is applied directly to the inner or outer face, as the case may be, of the bottom of the wind-chest, the device being available for use whether located inside or outside the wind-chest.

To obviate the necessity for a valve or pallet, which must be held in place by special guides for the purpose, as described in my Letters Patent No. 153,143, I fit to the sound-board, and within the wind-chest, an auxiliary cleat or strip, perforated to correspond with the admission-holes in the sound-board, and designed to decrease the distance between the valve or pallet and the aperture to be closed by it.

The accompanying drawing represents my improved valve-lifter under two different arrangements—the one applicable to valve-lifters arranged inside the wind-chest, and the other to those outside the wind-chest.

The drawing represents each device in vertical central section. Only so much of the organ is represented as is needed to explain my present improvement.

In each example the valve-lifter consists of an annular metallic frame, A, with laterally-projecting ears *a*, to take the screws *e*, which bind it to the wind-chest, and it is closed at one end by a flexible diaphragm, *b*, carrying outer and inner piston-disks *c* *d*, of different

areas, substantially as and for the purposes set forth in my Letters Patent No. 153,143.

The valve-lifter on the right of the drawing is arranged inside the wind-chest B, and is fastened directly to the bottom of the same, over the passage *f*, through which compressed air is supplied to or exhausted from the interior of the lifter. The case A contains a light spiral spring, *g*, which serves to press and hold the diaphragm upward when the air-pressures from above and below upon the diaphragm are equalized. To guide and center this spring the case A, for a portion of its length, has a diminished internal diameter, as shown, and in this contracted part the spring is received.

The outer disk *c* serves as the pallet or valve to control admission of air to the pipe through the aperture *h*. This aperture is formed in the sound-board C, and also in the auxiliary cleat or strip C', which is added as a fixture to the under side of the sound-board, to decrease the distance between the valve and the pipe-opening *h*, for the purposes hereinbefore mentioned. The valve is represented as open, and for this purpose air-pressure has been removed from below the diaphragm, thus permitting the pressure in the wind-chest to overcome the spring and depress the valve.

The device described is most compact, cheap, and simple, and can be applied conveniently and rapidly to the wind-chest.

All parts of the device are contained within the compass of the case.

The valve-lifter on the left of the drawing is arranged outside the wind-chest, and is fastened directly to the bottom of the same. This arrangement is the reverse of the one previously described, and necessitates reversing the position of the piston-disks, the larger disk *d* being outside. The valve, also, is lowered by the outward expansion of the flexible diaphragm, due to compressed air admitted through passage *f'* to the interior of the case, which, bearing against the large piston-disk *d*, overcomes the resistance offered by the spring *i*, plus the pressure of the wind in the wind-chest against the under side of the valve or pallet *k*. The valve *k*, in this instance, is added to the lifter, and is supported by a stem,

j, which passes up through the bottom of the wind-chest, and is encircled by the spiral spring *i*, confined in place between the valve *k* and the bottom of the wind-chest. The auxiliary cleat or strip *C'* is, with this valve, brought down even nearer to the bottom of the wind-chest than it is under the other arrangement.

What I here claim, and desire to secure by Letters Patent, is—

1. The pneumatic valve or pallet lifter, formed of an annular metal case with laterally-projecting ears or lugs, closed at one end by a flexible diaphragm carrying inner and outer piston-disks, as described, adapted for application to the bottom of the wind-chest, either outside or inside the same, as set forth.

2. The pneumatic lifter and valve, con-

structed and applied to the wind-chest, substantially as described, in combination with the sound-board and auxiliary perforated cleat or strip, attached to the sound-board, and located within the wind-chest, as and for the purposes set forth.

3. The annular metallic case and its flexible diaphragm and piston-disks, in combination with the spring, inclosed by, and held in the contracted portion of, said case, substantially as set forth.

In testimony whereof I have hereunto signed my name this 4th day of April, A. D. 1876.

THOMAS WINANS.

Witnesses:

THOS. D. WHISTLER,
GEO. WORTHINGTON.