E. Hamlin,

Tremolo.

No. 80,167. Patented July 21, 1868.

Fig: A.

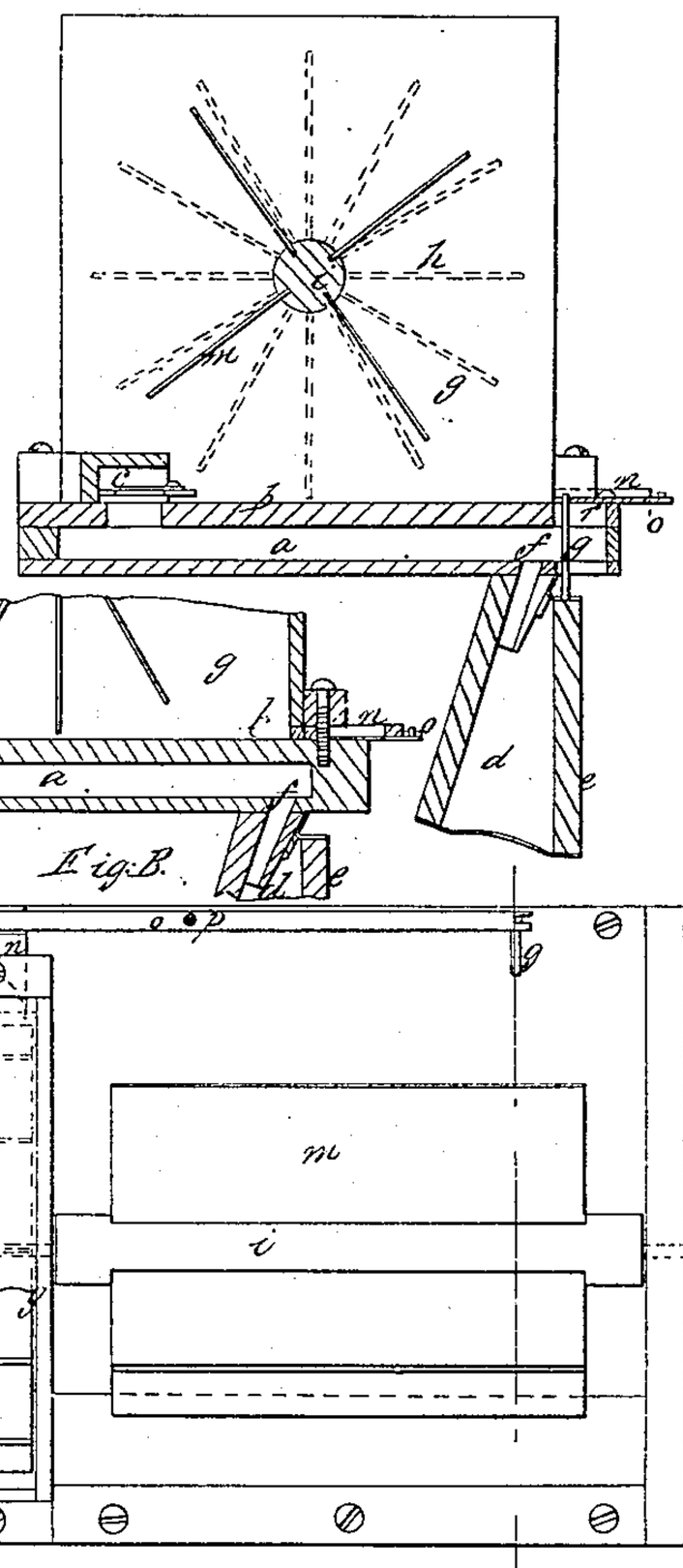

Fig: C.

Fig: B.

Witnesses:

C. Warren Brown
L. H. Latimer

Inventor.

Emmon Hamlin
By his Attys
Curtis Hollister & Sprague.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

United States Patent Office.

EMMONS HAMLIN, OF WINCHESTER, MASSACHUSETTS.

Assignor to the Mason & Hamlin Organ Co. of Boston, Ma

Letters Patent No. 80,167, *dated July* 21, 1868.

IMPROVEMENT IN MELODEONS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EMMONS HAMLIN, of Winchester, in the county of Middlesex, and State of Massachusetts, have invented an Improvement in Melodeons, &c.; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

In that class of melodeons or reed musical instruments in each of which the air is drawn through the reeds by an exhaust-bellows, there are now used, to a considerable extent, tremolo-attachments, or tremolo-valves or wheels for interrupting the current of air in its passage to or from the reeds, in such manner as to produce tremulous pulsations, such tremolo-attachment being operated by the bellows, and it is customary to connect the reciprocating bellows-board with a pedal, which closes the bellows, the inflation of the bellows being effected by a spring which is compressed in and by the act of closing the bellows, while the bellows-boards are spread by the stress of the spring.

An objection to this construction is a want of uniformity in the tremolo, because, when the bellows is wholly closed, the spring acts (as the movable board begins to open,) with its full power of reaction, while, as the board approaches its outermost position, the force of the spring decreases, and the speed of the tremolo-valve or wheel is correspondingly decreased.

To remedy this defect is the object of my improvement, and my invention consists in combining with a bellows and tremolo-attachment, a regulator-gate or valve, operated by the bellows, this regulator causing the orifice for entrance of air to enlarge as the stress or intensity of the bellows-spring decreases, and thus effecting a uniform action in the tremolo.

The drawing represents those parts of a melodeon immediately connected with and embodying my improvement.

A shows a vertical section through the bellows and lever-pin.

B is a plan showing the regulator-lever, and other mechanism.

C is a cross-section through the lower part of the wheel-box and the upper part of the bellows.

a denotes the wind-chest; *b*, the reed-board; *c*, one of the reeds; *d*, the exhaust-bellows; *e*, the movable board thereof, expansion of the bellows exhausting or tending to exhaust air from the wind-chest, through air-passages *f*, and thus causing air to rush through the reeds *c* to supply the vacuum. Over the wind-chest is a wheel-box, *g*, containing a wind-wheel, *h*, mounted upon an axle, *i*. At one end of the wheel-box, said box communicates with the wind-chest *a* through a passage, *k*, and at its opposite end it has a passage, *l*, leading to the atmosphere, and as air is exhausted from the wind-chest by the bellows, air rushes into the passage *l*, and the current of air thus created between the two passages *k l*, impinging upon the blades of the wheel *h*, imparts rotation thereto, as will be readily understood.

On the axle *i* is a tremolo-wheel, *m*, so situated relatively to the reeds, that by its rotation it interrupts the current of air, producing pulsations of the same, which impart the tremulous sound to the air drawn through the reeds, this wheel being actuated by the wind-wheel *h*.

The air-inlet *l* of the wheel-box *g* is controlled by a gate or slide-valve, *n*, and this valve is jointed to a lever, *o*, which turns on a fulcrum, *p*, and is actuated by a pin, *q*, projecting up from the reciprocating bellows-board *e*, through the wind-chest and through a slot, *r*, in the reed-board *b*. Movement to and fro of the bellows-board, and the consequent movement of the pin *q*, causes said pin to rock the lever *o*, and such movement of the lever causes the gate or valve *n* to slide into and from, or in and out, within the air-inlet *l* of the wind-wheel box, or in such manner as to cause the air-passage to alternately contract and enlarge accordingly as the bellows is contracted or inflated, the operation being as follows: When the bellows is contracted by the pedal, the valve or gate *n* is thrown in by the lever *o*, as shown at B, the passage *s* through the valve and into the box *g* being thus contracted to its minumum area. When the bellows is released from the pressure of the pedal, it is immediately subjected to the full expansive power or stress of the spring, and the impetus of the current of

air against the wheel, and through this contracted passage, drives the wheel. Now, as the bellows expands, the pin *q* throws in the end of the lever *o*, to which it is connected, which throws out the opposite end of the lever, and with it the valve or gate *n*, thus enlarging the valve-opening and wind-passage into the wheel-box, which thereby becomes of maximum capacity, as the bellows is fully expanded, and the stress of the spring is least intense, and by this means the wind-wheel and tremolo-wheel are driven at uniform speed, the intensity of the impinging current, when the bellows is under the full expansive power of its spring, being counterbalanced by the enlarged volume of impinging air, when the spring has nearly spent its power.

I claim, in combination with a tremolo-attachment and an exhaust-bellows, a regulator-valve or gate, operating substantially as and for the purpose set forth.

EMMONS HAMLIN.

Witnesses:
J. B. CROSBY,
FRANCIS GOULD