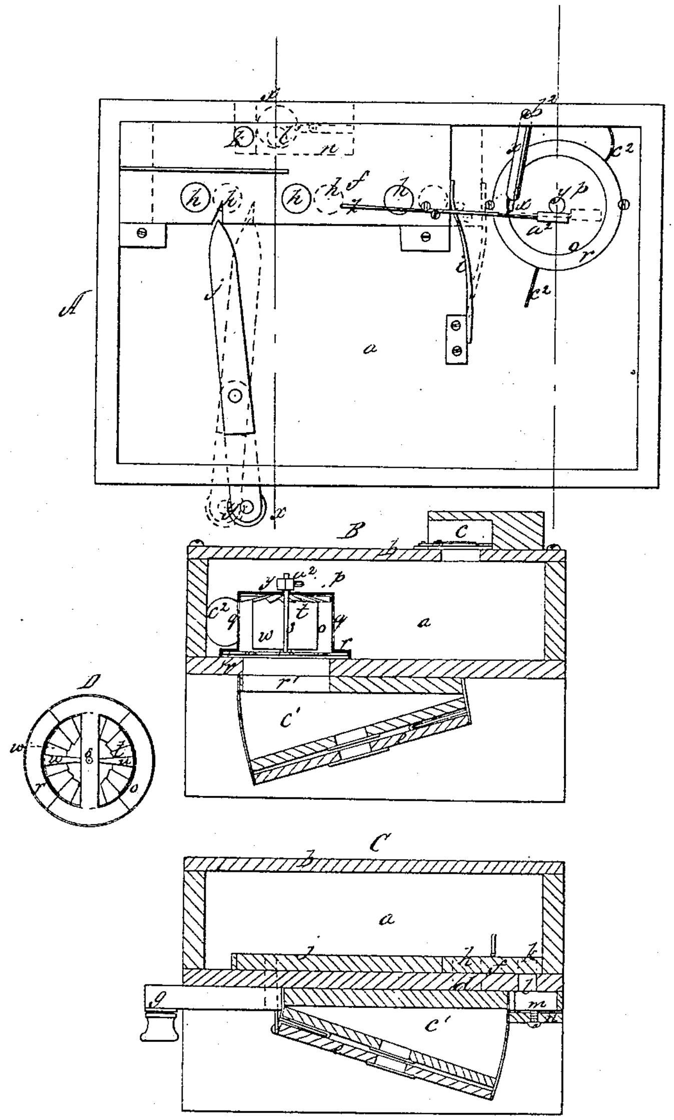
L. Louis,

Tremolo.

No. 80,979. Patented Aug. 11, 1868.



Witnesses:

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UNITED STATES PATENT OFFICE.

LA FAYETTE LOUIS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN TREMOLOS.

Specification forming part of Letters Patent No. **80,979**, dated August 11, 1868.

To all whom it may concern:

Be it known that I, LA FAYETTE LOUIS, of Boston, in the county of Suffolk and State of Massachusetts, have invented Improvements in Tremolos; 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 practice it.

My invention relates to details in the construction of melodeons or similar musical instruments, with reference to the employment of tremolo attachments and means for regulating such tremolos.

The invention consists, primarily, in the employment, in connection with the mechanism which controls the supply of air to the wind-chest, of a mechanism which starts the tremolo-actuating wind-wheel when the air is principally shut off from entrance to the wind-chest, excepting through the tremolo wind-pipe or passages, and which operates as a brake to arrest the motion of such tremolo-wheel when the air is supplied to the wind-chest through the main wind-passages.

The invention also consists in the peculiar construction and arrangement of the tremolo-valve and actuating-wheel, and the valve and wheel containing case, and in some other details of construction, which will be understood from their description below.

The drawings represent the embodiment of my improvements in a melodeon.

A shows a plan of the wind-chest, the reed-board being removed. B is a vertical cross-section through the tremolo-wheel and valve-case. C is a vertical cross-section on the line *x x*. D is a reversed plan of the valve case or cylinder.

a denotes the wind-chest, covered by the reed-board *b*, one of the reeds *c* being shown at B. The wind-chest communicates with the bellows-chamber *c'* through main air-passages *d*, movement of the bellows-board *e* downward by the pedal exhausting air from the wind-chest, and thereby drawing air through the reeds, as is well understood.

Arranged to slide over air-passages *d* is a slide-valve, *f*, which is connected to a lever, *j*, operated by a knee-stop, *g*. This valve has air-passages *h*, which correspond with the passages *d*, and are normally in connection therewith, the slide being held in position by a spring, *i*, while by pressing the knee-stop laterally the valve is carried over the passages *d*, and passage of air to the bellows through them is thus cut off.

The slide-valve *f* also has through it an air-passage, *k*, which, when the valve is slid over the passages *d*, is brought into connection with an air-inlet, *l*, leading from the wind-chest (through passage *k*) out from the instrument, as seen at C, the entrance to this passage (at the outside of the instrument) being preferably covered by gauze or a foraminous plate, *m*, and a slide-valve, *n*, being arranged to slide over the opening, so that the air-passage can be enlarged or contracted, as may be desirable. *o* denotes the tremolo cylinder or case, consisting of a cylinder having a close head, *p*, valve-openings *q* on its sides, and an open bottom, the cylinder, by means means of a flange, *r*, or otherwise, being secured directly over an opening, *r'*, made through the bottom board of the wind-chest into the bellows-chamber. In this case is a central shaft or spindle, *s*, carrying at its top a wind-wheel, *t*, and at the opposite ends of radial arms *u* valves *w*, made as segments of cylinders, so that as they rotate they alternately open and close the valve-openings *q*, such movement of the valves interrupting the current of air passing through the cylinder and valve-openings, and thereby producing the tremolo pulsations. Through the top of the cylinder *o* a pipe, *x*, leads, said pipe being inclined, and so arranged relatively to the blades or vanes of the wind-wheel *t* that an inrushing current of air through the pipe will impinge against the surfaces of said blades, and cause the wheel to rotate, such rotation actuating the valves or interrupting the passage of air into and through the valve-cylinder.

Fixed upon the top of the spindle or shaft *s* is a pulley, *y*, and fixed upon a rod, *z*, projecting from the slide *f*, is a friction-finger, a^2, the spring of the rod or wire *z* pressing this finger normally against the pulley, as shown at A, this pressure preventing rotation of the pulley *y*, and thereby holding the tremolo-valves stationary while the air passes from the reeds through the direct air-passages *d*. But when the knee-stop throws the valve-slide *f* over the passages *d*, the end movement of the finger imparts rotation to the pulley *y*, (the

finger pressing against and then passing beyond the pulley,) and thereby starts the wind-wheel *t*, the current of air through the pipe *x* then keeping up the rotation of the wind-wheel and valves. When the sliding valve is thrown back by release of the knee-stop, the finger again comes against the pulley, and instantly stops the rotative movement of the tremolo-valves.

Without the employment of the starting mechanism it is often difficult to start the wind-wheel by the current of air alone; but by means of mechanism for imparting the first motion to the wheel, irrespective of the wind-current, the motion of the wheel is readily kept up by the action of the wind drawn through the pipe *x* by the action of the bellows.

When the tremolo is in action all the air drawn through the reeds is drawn into the bellows through the tremolo-valves, and it is the interruption of this current by the movement of the valves, alternately cutting off air from the cylinder and admitting air to the cylinder, that makes the tremolo, the air to drive the wind-wheel which actuates the valves being drawn not through the reeds, but from the outside of the instrument through the pipe *x*. By means of a screw, b^2, the mouth of this pipe may be more or less contracted, to admit air with more or less freedom to the wind-wheel.

When some of the smaller reeds are open wind enough cannot pass through them to the bellows (through the tremolo valve-openings) to make the tremolo effective, and I therefore employ the air-passage which opens into the wind-chest when the slide-valve is closed, the supply of air not readily furnished through the reeds being drawn through this passage, the opening of which is controlled by the valve or gate, while any hissing of the inrushing air is prevented by covering the opening with a strainer.

At one side of each valve-opening is a wing or guard, c^2, which serves to keep the air from rushing into the valve-cylinder at an angle at which it would operate to accelerate the rotation of the valves, the current of air being more or less broken by bending the wings more or less toward the valve-openings, the rotation and speed of the valves being easily regulated by means of these wings.

I claim—

1. In combination with a wind-actuated wheel for driving a tremolo valve or wheel, a finger or equivalent mechanism for starting the wheel, substantially as described.

2. The employment of a finger or equivalent device for arresting the motion of the valve-driving wheel and for holding it stationary, substantially as described.

3. The valve and wheel containing cylinder, having a wind-pipe and valve-openings, arranged substantially as described.

4. Combining with the wind-pipe *x* a screw or other device for contracting the pipe, substantially as set forth.

5. In combination with the wind-wheel *t* and valve-containing case *o*, the wings or guards c^2, arranged to operate substantially as and for the purpose described.

6. In combination with the wind-chest and main and tremolo valve passages, the auxiliary air-passage *l*, substantially as described.

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Witnesses:
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