W. D. PARKER.

Tremolos for Organs.

No. 164,871. Patented June 22, 1875.

Fig.1.

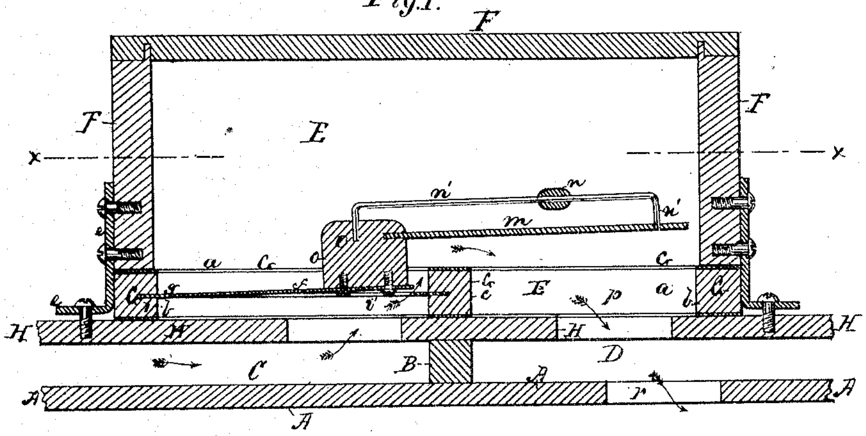


Fig.2.

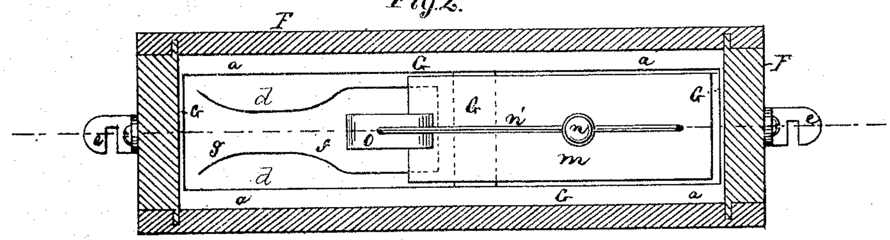
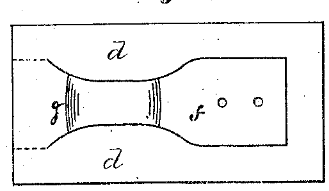


Fig.3.



Witnesses.

D. G. Stuart

L. Van Pisrowch

Inventor.

William D. Parker

per D. Hannay

Atty.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

WILLIAM D. PARKER, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GUSTAVUS W. INGALLS, OF SAME PLACE.

IMPROVEMENT IN TREMOLOS FOR ORGANS.

Specification forming part of Letters Patent No. **164,871**, dated June 22, 1875; application filed April 29, 1875.

To all whom it may concern:

Be it known that I, WILLIAM D. PARKER, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Tremolos for Reed or Pipe Organs; 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 which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of a "valve-tremolo" to which any improvement has been applied, as also of such parts of a reed-organ as will show the relation it sustains to the latter, the parts of the organ with which it is represented as being connected being broken off and detached. Fig 2 represents a horizontal section of the valve-box detached from the organ, as taken through the line *x x;* and Fig. 3, a plan of the plate that forms the improved valve and valve-opening.

The valve proper of the valve-tremolo, as ordinarily constructed, is usually made of wood, hinged at one end and covered on its face with soft leather, and so constructed as to lay on its seat, and thus lap over its opening or air-passage.

As thus constructed, the air from the reeds comes up under the valve on its way to the suction-bellows, momentarily raising it from its seat, whence it is immediately thrown back again by the load or weight upon its back. The frequent repetition of these movements causes a continued vibration while the organ is being played, and thereby creates that pulsation in the tone of the reeds which is termed tremolo. But this lapping of the valve on its seat, as it is thus rapidly vibrated, causes it on each descent to strike upon its seat, thereby not only making an objectionable noise or sound, but otherwise imparting a jerky character to the pulsation created by its vibratory movement. To remedy these evils is the object of my improvement.

My invention consists in so constructing the valve and its air passage or opening that the former can play freely up and down through the latter, so that, having no seat but the air itself, it makes no noise, and produces an even and agreeable pulsation to the tone of the reeds.

To enable others skilled in the art to make, construct, and use my improvement, I will now proceed to describe its parts in detail, omitting a description of such parts of an organ as are unnecessary to form a full understanding of the invention.

In the drawing, Fig. 1, A represents the top of the bellows, and B the partition that separates the reed-chamber C from the suction-chamber D, of the valve-chamber E, formed by its cover or box F. The valve-box F is arranged to sit on the top of the frame G proper of the valve-tremolo. Frame G is of an oblong rectangular form, and consists of two side-pieces, *a*, connected together at their ends by cross-pieces *b*, and divided into two spaces of unequal length by a third cross-piece, *c*. In the walls of the longer space is arranged the metal-plate *d*, grooves for its support being cut or formed in the side-pieces *a a*, end piece *b*, and cross-piece *c*, and into which it is first inserted before they are permanently secured together. The upper and lower faces of frame G are each covered with soft leather, so as to form an air-tight packing between it on its upper face and the under edge of the valve-box F; and on its under side, between it and the valve or sounding-board H, on which it is made to rest, and to which it is secured by means of two clamps or stay-pieces, *e e*, there being one arranged at each end of the frame. These clamp-pieces are respectively secured at their upper end to the lower outer edge of one of the ends of the valve-box F, and at their lower ends, through a slot or hole in their foot and an adjusting-screw, to the valve or sounding board H, and are made of such length as to embrace and tightly compress the valve-frame G between the sounding-board and the lower edge of valve-box F, to prevent the passage of air between the joints. This device is clearly shown in Figs. 1 and 2.

In Fig. 3 is represented the valve *f* proper, and its air-port or opening. Preferably I form the valve and its opening or air-passage,

i, out of one sheet of metal, but not necessarily so, and this by stamping or cutting it out with a die of the length required, without entirely cutting or detaching it at its intended fixed or stationary end *g*, from plate *d*, and which, when properly cut, forms the valve-port or opening *i;* but it may be entirely cut out or through to the end, and detached, if desired, as represented by dotted lines. This, however, is not deemed so good a plan, as it would involve another and distinct means of securing it to frame G beyond merely inserting it into the groove cut in the inner face of the end cross-piece *b*. The valve *f* and its opening *i* may be made of any suitable and corresponding material and shape. An excellent shape for the purpose is shown in Figs. 2 and 3. In order to increase the resiliency and vibratory power of the valve, where the thickness of the metal out of which it is cut is considerable, a portion of either the upper or lower surface of its metal at or near its fixed end *g* is cut away by grinding or other suitable means. Here it may also be observed that on stamping out the valve, the sharp or rough edges of the cut, as well of the valve as its opening, are to be smoothed off by a fine file or other suitable appliance, in order that the one may freely play up and down in the other. Care, however, should be exercised not to increase the size of the one or diminish that of the other, either of which would have a tendency to destroy that requisite nicety of fit, so desirable to prevent the passage of air through the valve-opening without imparting a corresponding movement to the valve. With valve *f* is combined the usual fan-blade *m*, regulating ball *n*, and rod *w'* of the ordinary valve-tremolo, they being firmly connected at one end to valve *f*, through the instrumentality of block *o*, and to each other at their other end, block *o* in turn being secured to the upper side and outer end of valve *f*.

The operation is as follows: A current of air having been induced in the organ, through the action of the suction-bellows, causes it first to pass through the reeds, and then through the valve-tremolo opening *i*. The air in its course raises valve *f*, and then passes down through the opening *q*, in the valve-frame G, and through opening *q*, in the sounding-board H, whence it is drawn through the suction-opening *r* of the bellows, as indicated by the arrows. The valve *f* having been raised by the air, it is then, by the action of the adjusted weight *n* and its own elasticity, immediately thrown down again, passing in its course below valve-opening *i*. These movements are repeated in rapid succession as long as the bellows are acted upon, the tongue in each of its upward and downward movements playing freely up and down between the walls of opening *i* during the entire operation, thus never being violently or suddenly arrested, but, on the contrary, having perfect freedom to perform its full vibratory motion below, as well as above the valve-opening plate, thereby giving an agreeable fullness and smoothness to the pulsatory tones of the reeds, and which cannot otherwise be obtained.

It is evident that the same improvement can be readily applied to pipe-organs with the same effect, and without change of principle, by any one skilled in the art, without the application of further invention.

I am aware that the musical reeds of organs have heretofore been made of one piece of metal with their frame. Such I do not claim; but

What I do claim is—

1. A valve to operate as a tremolo, when constructed to play freely up and down through its air passage or opening, and applied to the reed-chamber in the manner substantially as and for the purpose set forth.

2. A free valve, *f*, and its opening, *i*, in combination with the fan *m*, and adjustable weight *n*, the whole arranged to operate substantially as set forth.

3. A free tremolo-valve, made out of the same piece of metal as its frame, in the manner and for the purpose substantially as set forth.

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

WM. D. PARKER.

Witnesses:

DAVID MANNING, Jr.,

F. E. BARKER.