

Elias P. Needham.

*Impt. in Tremolo Attachments of
Melodeons and other Reed Instruments.*

117666

PATENTED AUG 1 1871

Fig. 1.

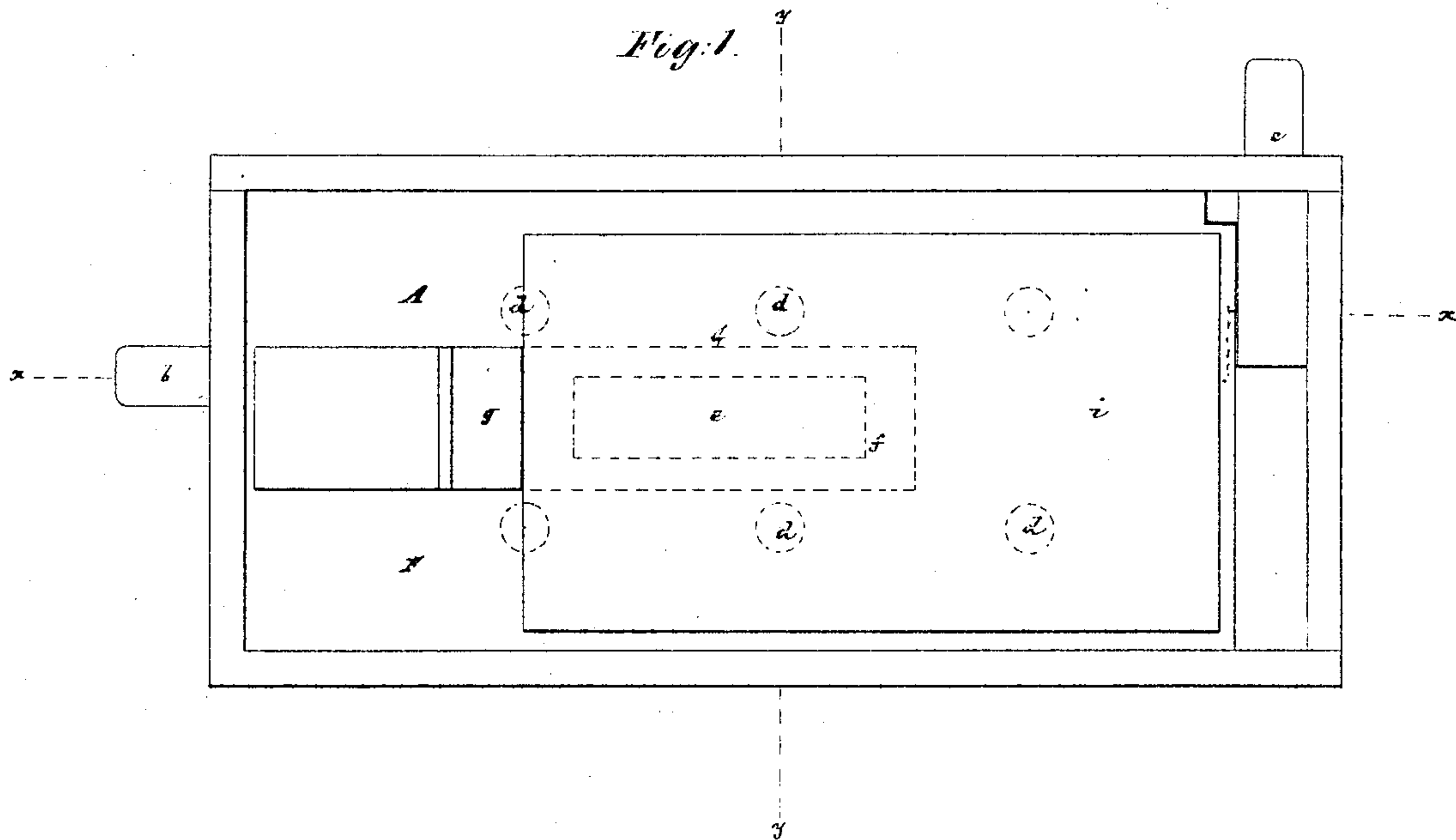


Fig. 2.

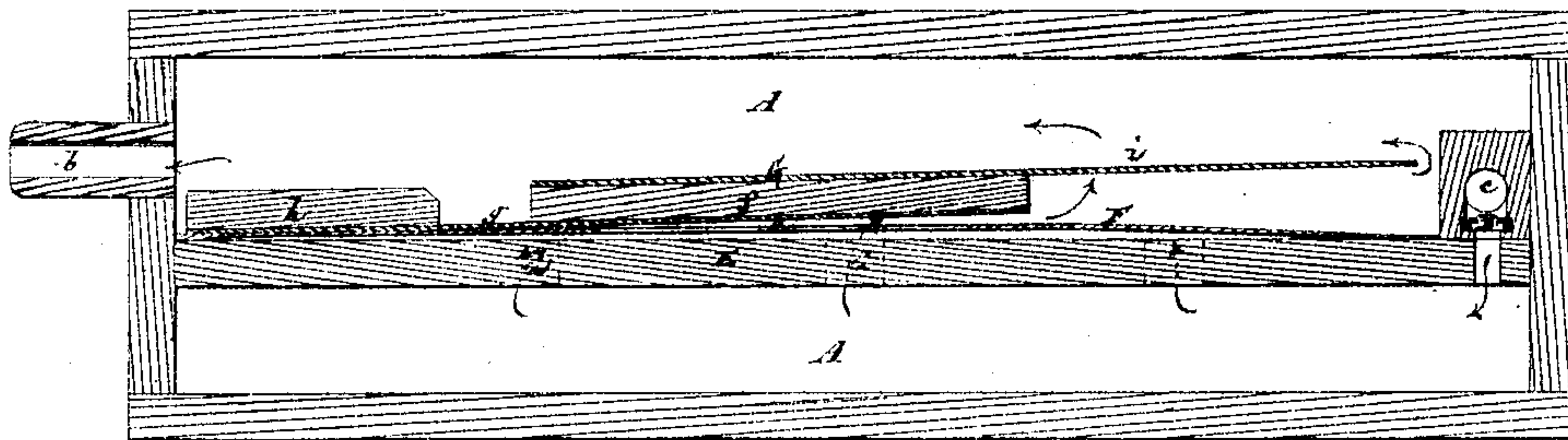
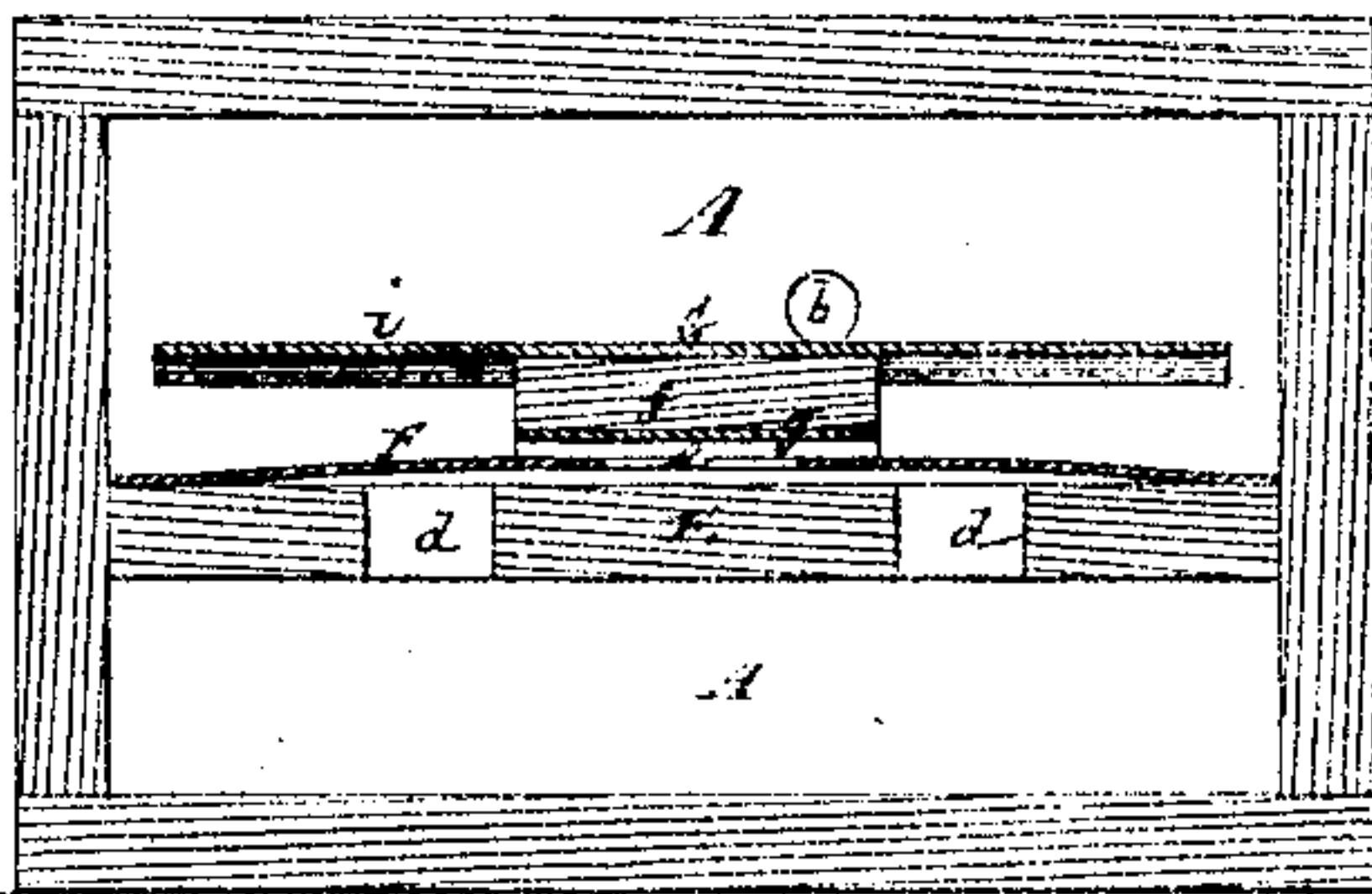


Fig. 3.



Witnesses:

*E. A. Needham.
Henry T. Brown*

E. P. Needham

UNITED STATES PATENT OFFICE.

ELIAS P. NEEDHAM, OF NEW YORK, N. Y.

IMPROVEMENT IN TREMOLO ATTACHMENTS FOR REED INSTRUMENTS.

Specification forming part of Letters Patent No. 117,666, dated August 1, 1871.

To all whom it may concern:

Be it known that I, ELIAS P. NEEDHAM, of the city, county, and State of New York, have invented a new and useful Improvement in Tremolo Attachments of Musical Instruments; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a plan of the interior of the wind-passage or chamber of a reed-organ with my improved tremolo applied thereto; Fig. 2, a longitudinal section through the line *x x* in Fig. 1; and Fig. 3, a transverse section thereof through the line *y y*, the working parts being represented full size.

Similar letters of reference indicate corresponding parts throughout the several figures.

My invention relates to that description of tremolo for reed and pipe musical instruments, such as organs and melodeons, in which a flap-valve is used to agitate the air. The invention consists in supporting the valve upon a flexible diaphragm, which forms the valve-seat and is free to vibrate both with and independently of the valve; also, in a combination of said diaphragm, having a perforation in it for passage of the air, with a flap-valve and a perforated partition in the wind-passage, together with openings or passages arranged to conduct the air through the pipes or reeds. By this improvement a most sensitive and perfect tremolo is produced.

In the accompanying drawing, *A* represents the wind-passage, and *b* the outlet through which the air is passed when the bellows is in operation. *B* is one of the reeds, and *c* the opening admitting the air to or through the latter. *E* is a horizontal partition or dividing-board within the air-passage, and *d d* holes therein through which the air passes from the reeds to the outlet *b*. This

partition *E* is covered, or for the most part, with a diaphragm, *F*, of India rubber or other suitable flexible material, which diaphragm is fastened down at its edges onto the board *E*, but is made with a slot or opening, *e*, through its body beneath the closing portion *f* of the valve *G*. This valve is constructed of a body portion carried by a flexible lower strip, *g*, which is secured to the diaphragm *F* by a rear block or board, *h*, and the upper portion of the body of the valve provided with a tremolo or agitating-leaf, *i*. By this method of applying the valve on the flexible diaphragm *F* a most perfect and sensitive tremolo action is obtained, inasmuch as the air, in passing from the reeds or pipes to the outlet *b*, through the perforated board *E*, causes the diaphragm to be lifted, together with the valve, which opens by the action of the bellows, and, being "floated," as it were, by the diaphragm, is much more sensitive and perfect, as regards its production of the tremolo, than when the valve is seated on a fixed or rigid surface, the flexible diaphragm vibrating as well as the valve. Whether the air is forced or drawn through the wind-passage a similar effect is produced.

What is claimed, and desired to be secured by Letters Patent, is—

1. The attachment of the tremolo-valve to a flexible diaphragm arranged to form the valve-seat, and which is free to vibrate in common with the valve, essentially as herein set forth.

2. The combination of the perforated diaphragm *F* with the valve *G*, the perforated portion *E* in the wind-passage *A*, and passages or openings arranged to conduct the air through the reeds or pipes, substantially as specified.

E. P. NEEDHAM.

Witnesses:

C. A. NEEDHAM,
HENRY T. BROWN.