H. M. Goodman,

Reed Organ.

No. 103,448. Patented May 24, 1870.

Fig: 1

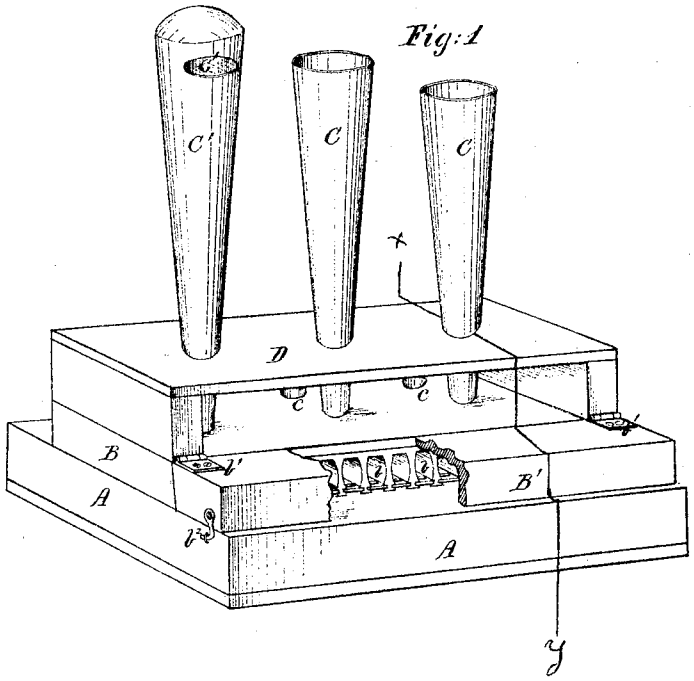
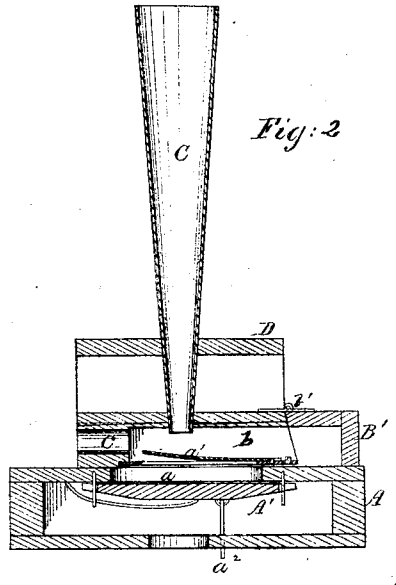


Fig: 2



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HORATIO N. GOODMAN, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN ORGANS.

Specification forming part of Letters Patent No. 103,448, *dated May* 24, 1870.

To all whom it may concern:

Be it known that I, HORATIO N. GOODMAN, of Syracuse, county of Onondaga, State of New York, have invented certain new and useful Improvements in Organs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 is a perspective view of my improvement, with a portion of the shell forming the reverberatory chamber broken away, showing the reed-tubes; and Fig. 2 is a vertical sectional view through line *x y*, Fig. 1.

Similar letters of reference denote corresponding parts in both the figures.

My invention has for its object the modification of the tone produced by the reed in that class of pipes known as reed-pipes, in order to enable me to form a greater variety of combinations of stops in organs, and more particularly to provide a solo-stop for the cabinet or reed organs in general use, and in which the marked predominance of the harsh reedy quality of the tone has heretofore been very objectionable.

My construction is more particularly applicable to that class of instruments in which are used free reeds—that is, reeds which are narrower and shorter than the slot or throat over which they are placed, so that they can pass freely through the throat during their vibration, said vibration being caused by a current of air sucked or drawn through the throat by means of an exhaust, instead of being forced through by a direct blast from the bellows.

The invention consists, first, in combining with the reed-tubes a reverberatory chamber, for the purpose of collecting the sound produced by the vibration of the said reed, and returning or deflecting it back through said tubes, and thence out through a pipe of suitable size and form; second, in providing the reed-tubes with one or more perforations, for the purpose of allowing free ingress of air, for vibrating the reed without disturbing the column of sound which is ascending in the pipes.

In the drawing, A represents the exhaust-chamber, which corresponds to the wind-chest in organs where the direct blast is used. Above chamber A is placed the reed-board B, constructed substantially in the ordinary manner—that is, with a series of grooves or chambers, *b*, forming reed-tubes upon its upper surface, each groove or chamber being separated from its neighbor by a partition, as plainly shown in Fig. 1. Each of these reed-tubes is made to communicate with the exhaust-chamber A by means of a slot, *a*, Fig. 2, and the reed a^1 is secured in the reed-tubes substantially in the manner which is customary in this class of instruments. Valve A′ may be operated by tripping-rod a^2, or its equivalent.

B′ is a reverberatory chamber, extending transversely across in front of the ends of the reed-tubes, substantially as shown in the drawing. The size of this chamber is not governed by any arbitrary rule, so far as I know, but in practice I have found the best size to be about the same height as the tubes, and of a width equivalent to about one-third their length.

C C′ are pipes, inserted in perforations in the reed-tubes, (one to each reed,) for the purpose of modifying the tone produced by said reed. These pipes may be made of either wood or metal, though, on account of economy and convenience in working, I usually prefer to make them of metal. I place them preferably over the reed, about midway of its length, but this position may not be essential.

D is a guide or rest board, placed parallel to the reed-board, and a short distance above it, for the purpose of steadying the pipes which pass through it, as plainly shown in the drawing.

Each of the reed-tubes is provided with one or more perforations or inlets, *c*, through which the air is admitted to the reed, one of these perforations being shown in the end of the tubes in Fig. 2, and others in the top of the tubes in Fig. 1. I regard the end of the tube opposite the reverberatory chamber as being the best place for these inlets, and, under some circumstances, I find it advisable to place a board or wing in an upright position a short distance in front of the inlets in the end of the reed-tubes.

When the size of the pipes is such as to make it necessary, I adapt the following plan or system of arranging them: I place one as near as possible to the front of the reed-board. I then place the next one a little in its rear, then the next one a little in the rear of that,

until there is room for another in front. Then I proceed as before, thus placing them in diagonal rows. This arrangement enables me to utilize the entire surface of the reed-board, and make a compact construction.

Pipes C are shown as having open tops, while pipe C′ is closed at its upper end, and has an opening, c', in one side, for the escape of the sound. I also make some of my pipes with a flat cap at the upper end, provided with a small outlet-tube similar to the flute-stop of an ordinary organ, and, by means of these various forms, I am enabled to produce a greater number of combinations than can be obtained in reed-organs in any other manner.

I connect the shell forming the reverberatory chamber with the reed-board by hinges b^1, so that I can raise said shell, for the purpose of having more ready access to the reeds and reed-tubes, and confine said chamber in proper position, when closed, by means of hooks b^2, or their equivalent.

By varying the size of the pipes to correspond with the size of the reed, and also varying the form of the open pipes, making them more flaring as I approach the upper register of the instrument, I am enabled to give each stop greater uniformity of quality, character, and strength of tone throughout its entire compass, imitating the diapasons, both open and stopped, the principal, the dulciana, and even the flute-stops, with a degree of fidelity never before attained.

The employment of the inlets c of various sizes, and in different positions, affords ready ingress for air enough to produce the required vibration of the reed without using the pipes for that purpose. This allows the column or wave of sound to be thrown back from the reverberatory chamber, and out through the pipes, without being disturbed by a counter-current of air, and the size and position of these inlets seem to effect the purity of the tone in a manner analogous to the changes produced in ordinary wooden or metal blast-pipes, by the various methods of voicing employed by organ-builders.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the reed tubes and pipes of a reed-organ having an exhaust-bellows, the reverberatory chamber B′, substantially as set forth.

2. The reed-tubes b, provided with inlets or air-passages c, substantially as set forth.

3. The combination of the reverberatory chamber B′, reed-tubes b, pipes C or C′, and inlets c, substantially as set forth.

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