

J. D. CHENEY & G. W. INGALLS.

Reed-Boards for Organs.

No. 147,608.

Patented Feb. 17, 1874.

Fig. 1.

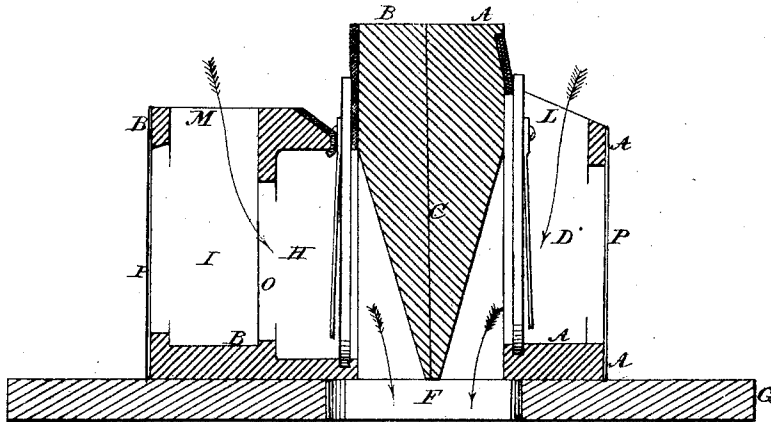
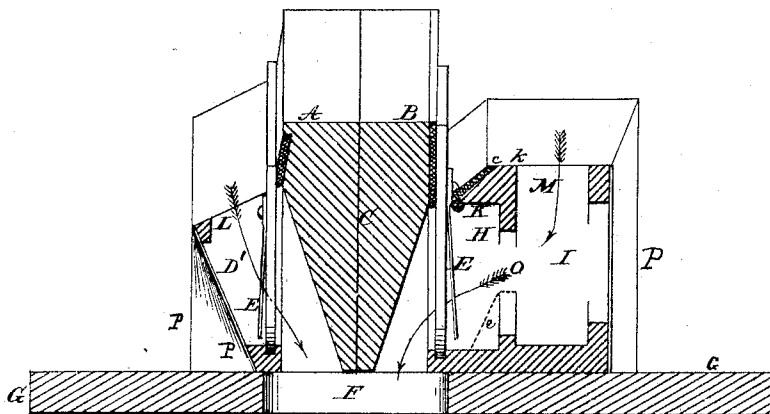


Fig. 2.



Witnesses.

T. C. Brecht
D. L. Stuart

Inventor.

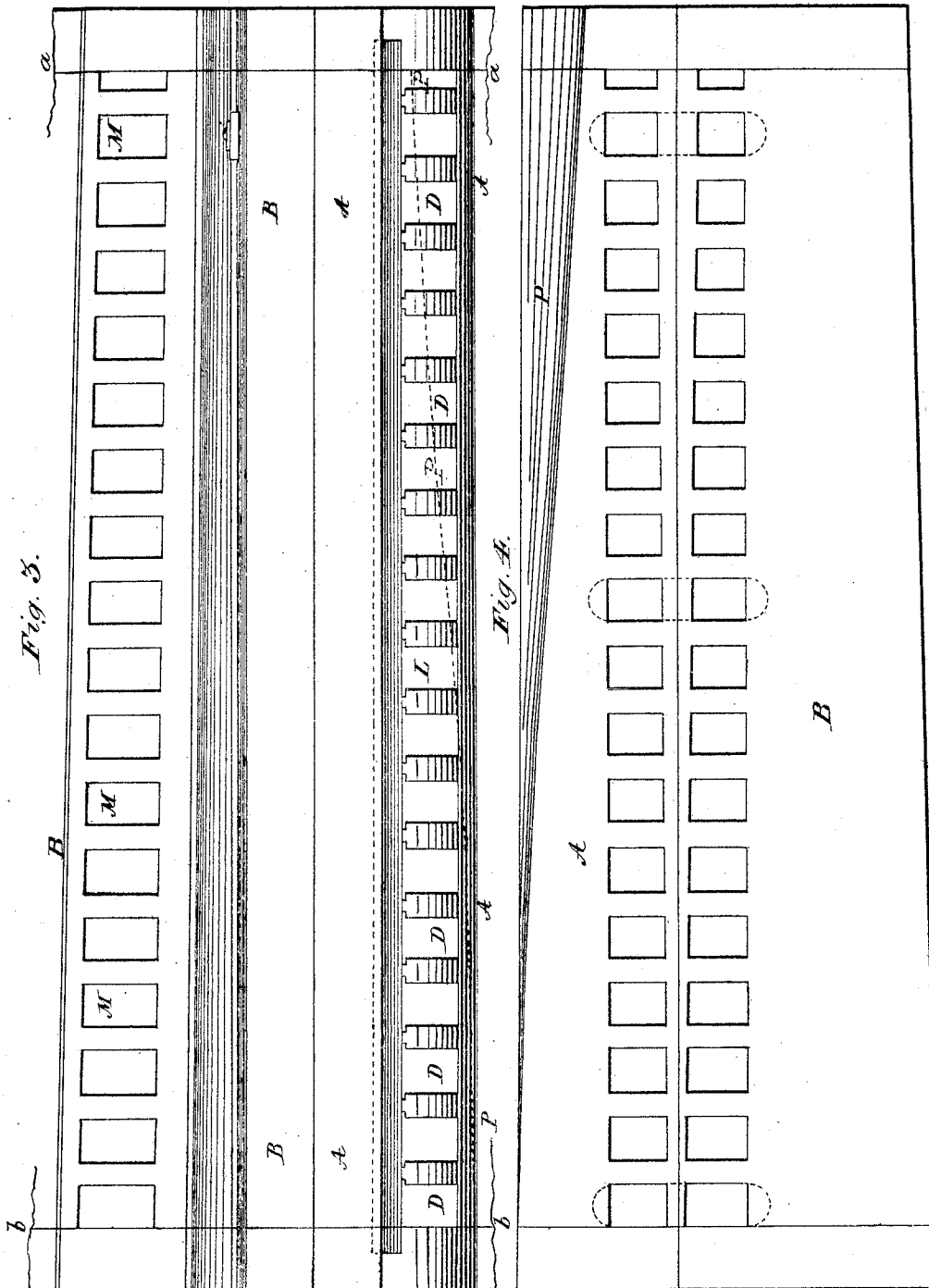
James D. Cheney
Gustavus W. Ingalls
per P. H. Harnay
att'y.

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 per *P. Hamay*
att'y

UNITED STATES PATENT OFFICE.

JAMES D. CHENEY AND GUSTAVUS W. INGALLS, OF WORCESTER, MASS.

IMPROVEMENT IN REED-BOARDS FOR ORGANS.

Specification forming part of Letters Patent No. **147,608**, dated February 17, 1874; application filed January 31, 1874.

To all whom it may concern:

Be it known that we, JAMES D. CHENEY and GUSTAVUS W. INGALLS, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Reed-Boards of Organs and other similar instruments; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 represents a vertical transverse section of a reed-board provided with two sets of reeds or stops having our improvements applied thereto, as taken through the cells of the lower reeds, or bass-cells, at the line *b b* of Fig. 3; and Fig. 2, a similar view taken through the cells of the upper reeds at the line *a a* of the same figure. Fig. 3 represents a plan of a portion of a reed-board having our improvements applied thereto, a few of the higher and many of the lower reeds and cells being omitted, as shown by black lines *a a* and *b b*, portions of the sounding-board being also broken off, and representing in dotted lines the winding shape of the lower part of the rear wall of the cells in "stop" A. Fig. 4 represents a bottom view of the two sets of stops A and B, as detached from the sounding-board.

The first branch of our invention relates to a new and improved mode of constructing the reed-cells. Heretofore they have been made of a uniform shape, having the walls or sides opposite the reeds arranged parallel thereto. After much thought and many experiments we find that the interior of a bass-cell should be larger than its mouth, while the mouth in the upper notes should be larger than the cells; and further, that a regularly-descending gradation or lessening of the size of the cells should take place between the lower notes of the one and the higher notes of the other. The first part of our invention, therefore, consists in constructing the cells of a reed-board upon this principle, and we find, by so doing, that we obtain a fuller and better tone in the bass, and at the same time cause the upper notes to "speak" much quicker and stronger, points of great practical importance, and which all or-

gans have heretofore failed to effect. This particular form and construction of the cells is more particularly adapted to the higher reeds. The second branch of our invention also relates to a new and improved construction of the cells of a reed-board, and is more especially adapted to a stop the reeds of which are pitched, say, an octave lower than those of the former stop. Our invention, for this purpose, consists in forming each cell out of two or more cells united together in a manner to be hereafter explained, and in arranging the mouth of the combined cell in the outer or auxiliary cell, and in closing the mouth of the inner or reed cell proper. By this peculiar construction we are enabled to produce a new and distinct quality of tone, and to add a new and beautiful stop to the organ, and which, from a resemblance, we term the "basset-horn" stop. Thirdly, our improvement consists in combining the principle of construction of the first stop A with the latter B by applying it to the inner cell of the combined cells of the second stop B, so as to unite the advantages of the two constructions. Fourthly, our improvement consists in covering the outer sides of the cells with—or, in other words, in making the outer wall of the cells of—paper or parchment, thin veneers, or similar material, coated with shellac or varnish. By this means the vibrations of the air, as set in motion by the reeds, are more readily communicated and facilitated, and produce more volume and a much finer quality of tone.

To enable others skilled in the art to make, construct, and use our invention, we will now proceed to describe our improvements in detail.

The drawing represents the reed-board as consisting of two sets of reeds or stops, A and B, united together as one board and mounted upon the sounding-board C, but either set may be made and used separately, or made separately and afterward united and used together, as shown in dotted lines at C, according as may be desired; but, being represented as united together, the valve-openings F are also represented as being common to both stops. In stop A the shape of the enlarged cells is shown at D, Fig. 1, and that of the small or contracted cells at D', Fig. 2. The reeds are

shown at E, and the mouth of each cell at L, the direction of the respective currents of air being represented by arrows. Now, by reference to Figs. 1 and 2, it will be observed that cell D is relatively much larger than cell D', compared with their respective mouths L, not simply because of the lessened depth of the latter, but because of its contraction at the bottom, produced by the inclination or winding in of the outer wall P of the cell from the top toward the bottom at that end of the reed-board. This inward and downward inclination or twisting and winding in of the outer wall P commences at the first, or, say, largest cell D, and gradually and regularly inclines or winds in more and more until it reaches the last or highest notes, say, D', with the view of uniformly reducing each succeeding cell a grade or degree less than the one which preceded it, as illustrated by the two extremes P, in Figs. 1 and 2, and in the curved dotted line, Fig. 3, and full lines in Fig. 4. By this peculiar construction and form of the cells of stop A, we are enabled to produce, as before stated, a fuller and better tone in the bass, and to cause the upper notes to speak more quickly and strongly. And this is true, whether the outer wall P is made of the usual material, properly shaped to suit our improved form of the cells, or is formed by covering that side P of the cells with paper or parchment, or with thin veneer, coated with shellac or varnish, and which we much prefer, as either of such produces more volume and a much finer quality of tone than where the wall is made of the usual material in the old way. Moreover, making the outer wall of paper, parchment, or veneer, materially facilitates the building of the cells and the perfecting of their form, and greatly cheapens their cost of production. Stop B is formed by uniting two or more cells in the manner shown at H and I. The mouth or upper end of cell H is closed at K by a strip of wood covered with soft leather, c, closing air-tight against the upper end of reed E, and in such manner as to allow the latter to be withdrawn and replaced without removing strip K. The two cells H and I communicate with each other through openings O, and supply air to the reed through the mouth M in the outer cell I, as shown by the arrows.

The outer wall P of cell I may be made in the usual manner, but we, for the same reason, prefer to make it of paper, parchment, or thin veneer, as in wall P of cells D D' of stop A. In like manner a third cell could be added on the outside of cell I by stopping up its mouth M and removing its wall P, and transferring them to the third cell, and so on, for as many as may be desired; but, as a rule, we would prefer to use but two. Moreover, we do not intend to confine ourselves to any particular form or relative size of the interior of these calls, so long as the air supplied to the reeds is made to pass to the inner through the mouth of the outer cell; nor to the material or thickness of material of which the outer wall

P is made, whether applied to the cells of the stop A or stop B.

Thus constructed, stop B, the reeds of which are an octave lower than those of stop A, produces that new and distinct quality of tone which has enabled us to add that new and beautiful stop to the organ which we name the "basset horn."

Should it be desired to increase the fullness of that tone, and to make that stop speak more quickly and strongly, the same principle applied to stop A can then be applied to stop B, by gradually diminishing the size of the inner cells H, as they proceed from the lower to the higher reeds, by using an inclined partition, c, at the bottom between the two cells, as shown in dotted lines at e, Fig. 2, said partition being in thickness and height at its lowest point at e, in Fig. 1, but gradually and regularly thickening toward the reeds E, and increasing in height cell by cell until it has assumed the form and height in Fig. 2—that is to say, vertical toward cell I, and inclined toward reed E in cell H, thereby materially decreasing the size of that cell, and so as regularly to decrease the size of each successive cell as they run from the lower to the higher reeds.

Our improved reed-board, whether it consists of the one or other of the stops A or B, or of both combined, is intended to be placed upon the sounding-board of an organ back of the keys, and may be operated in any of the ways well known to organ manufacturers.

Moreover, whenever it is desirable to place the reeds in a horizontal or other position, the cells and improvements must be arranged to conform thereto.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A reed-board or stop, A, consisting of a series of reed-cells constructed in the manner substantially as described, and for the purposes set forth—that is to say, of cells ranging in size and shape between cell D and cell D', and that in a regular and uniform manner, substantially as shown and described.

2. A reed-board or stop, B, (and which we name the "basset-horn" stop,) consisting of a series of reed-cells, each of which is formed by the combination of two or more cells, H and I, communicating with each other, as shown at O, the mouth of the inner cell or cells H being closed, as shown at K, and receiving air for transmission to the reed E through a mouth, M, in the outer cell I, the said parts being arranged substantially as shown and described.

3. The combination of the two stops A and B, whether formed or united in one reed-board or made separately and used together, each being constructed substantially as shown and described.

4. A reed-board in which a portion or all of the cells are formed and graduated relatively as to size, substantially as described, and illustrated in the range of cells D to D' of stop A, for the purpose set forth.

5. The cell of a reed-board formed by the combination of two or more cells, H and I, communicating with each other, as shown at O, and the mouth of the inner cell or cells being closed, as at K, and receiving air for transmission to the reed through the mouth M of the outer cell, when all said parts are constructed and arranged substantially as set forth.

6. A reed-board in which cells D, whose respective interior sectional areas at their inner ends is greater than the area of their mouths, are combined in a single series with cells D', whose corresponding area is less than their mouths, substantially as described and shown, and for the purpose set forth.

7. A reed-board or stop, A, in which the outer wall P of the cells is curved and inclined, substantially as described, and shown in Figs. 2, 3, and 4.

8. A reed-board in which the outer wall or walls P of the cells are formed or made of paper, parchment, or thin veneer coated with shellac or varnish, for the purpose set forth.

9. A reed-board consisting of a series of cells formed by the combination of two or more cells, H and I, and of which the mouth of the inner one, H, or reed-cell proper, is closed at K,

and the other left open for the passage of air to the reeds, as shown at M, and the lower part of the inner cells H provided with a system of graduated partitions, e, Fig. 2, substantially as shown and described, for the purposes set forth.

10. A reed-cell consisting of two or more cells, H and I, combined in one, in which the mouth of the inner one, H, is closed, as shown at K, and the mouth of the outer open, as shown at M, and the inner cell provided with a partition, e, in the manner and for the purpose substantially as shown and described.

11. A reed-board or stop, A, provided with a series of cells, D D', constructed substantially as shown and described, in combination with a reed-board or stop, B, provided with a series of cells constructed substantially as shown and described—that is to say, with cells formed by the union of two or more cells, H and I, and with a graduated partition, e, between, as set forth.

JAMES D. CHENEY.

GUSTAVUS W. INGALLS.

Witnesses:

C. P. WHITNEY,

J. W. STANTON.