

J. B. HAMILTON.
REED ORGAN.

No. 350,739.

Patented Oct. 12, 1886.

Fig. 1.

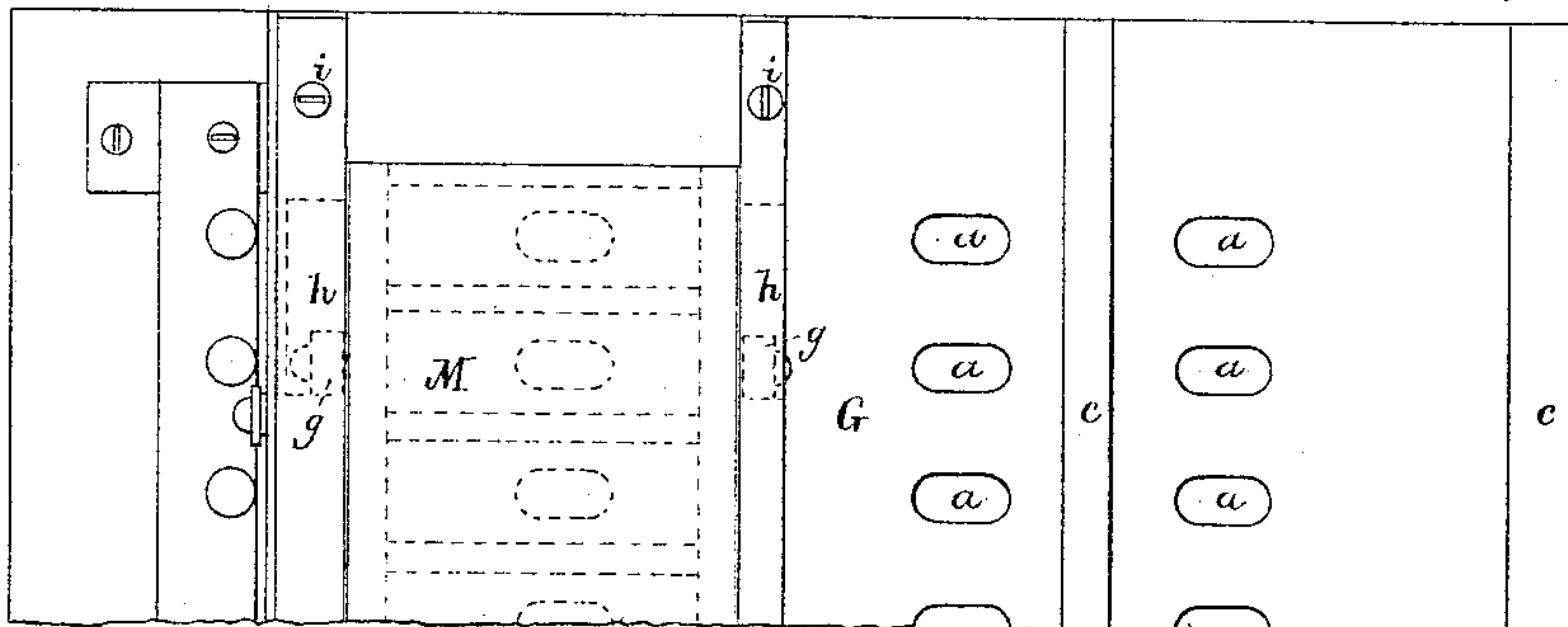


Fig. 2.

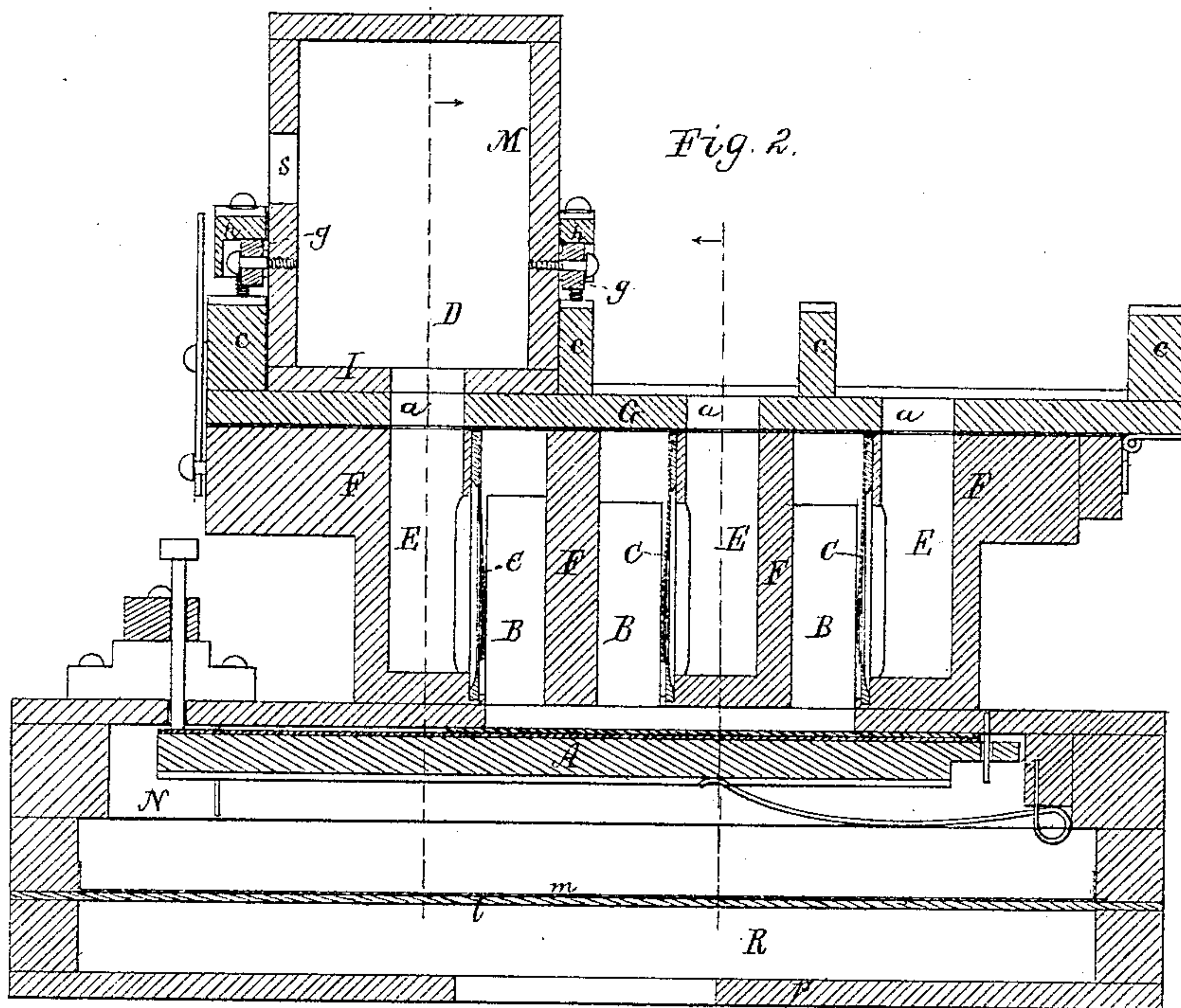


Fig. 3.

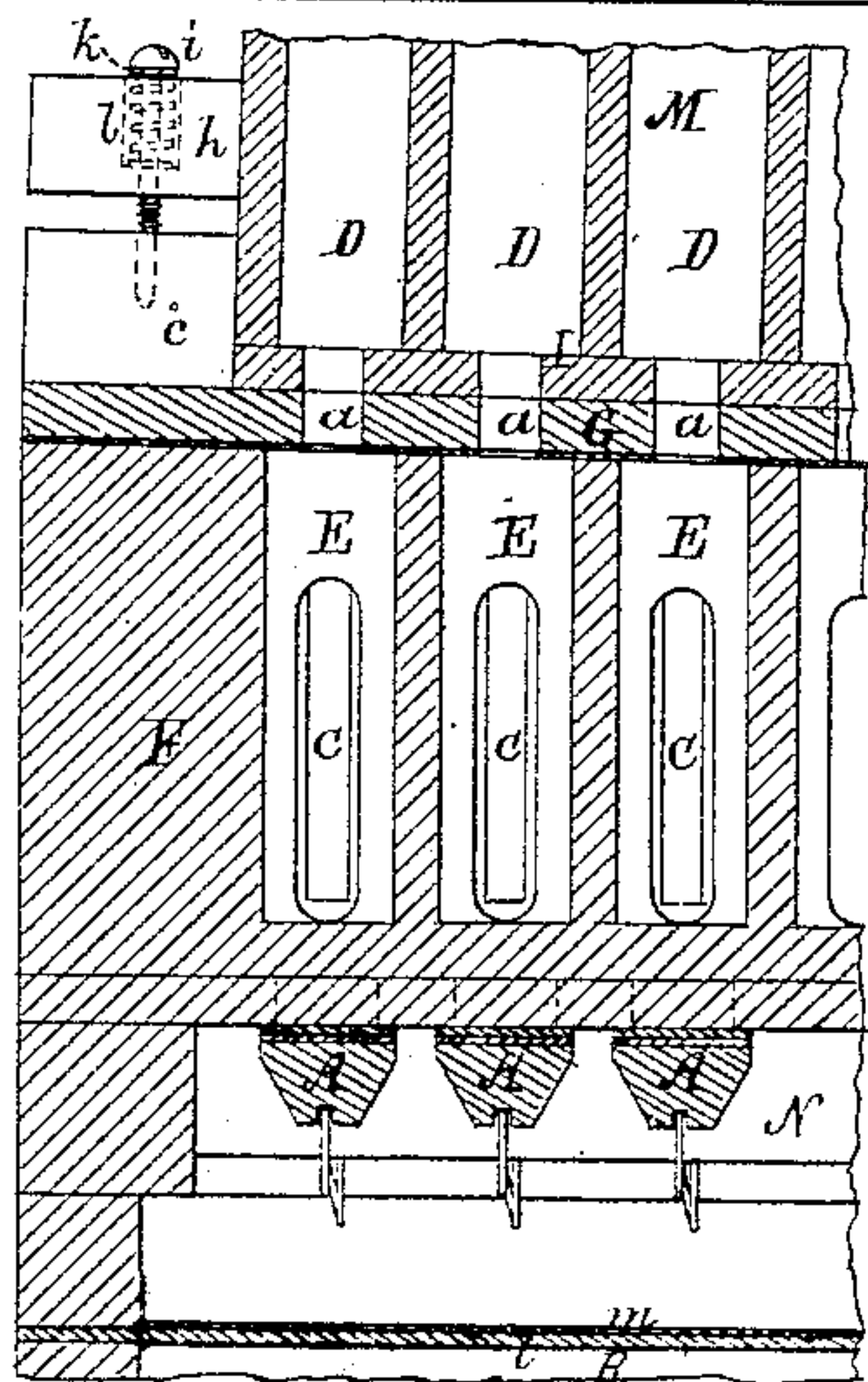
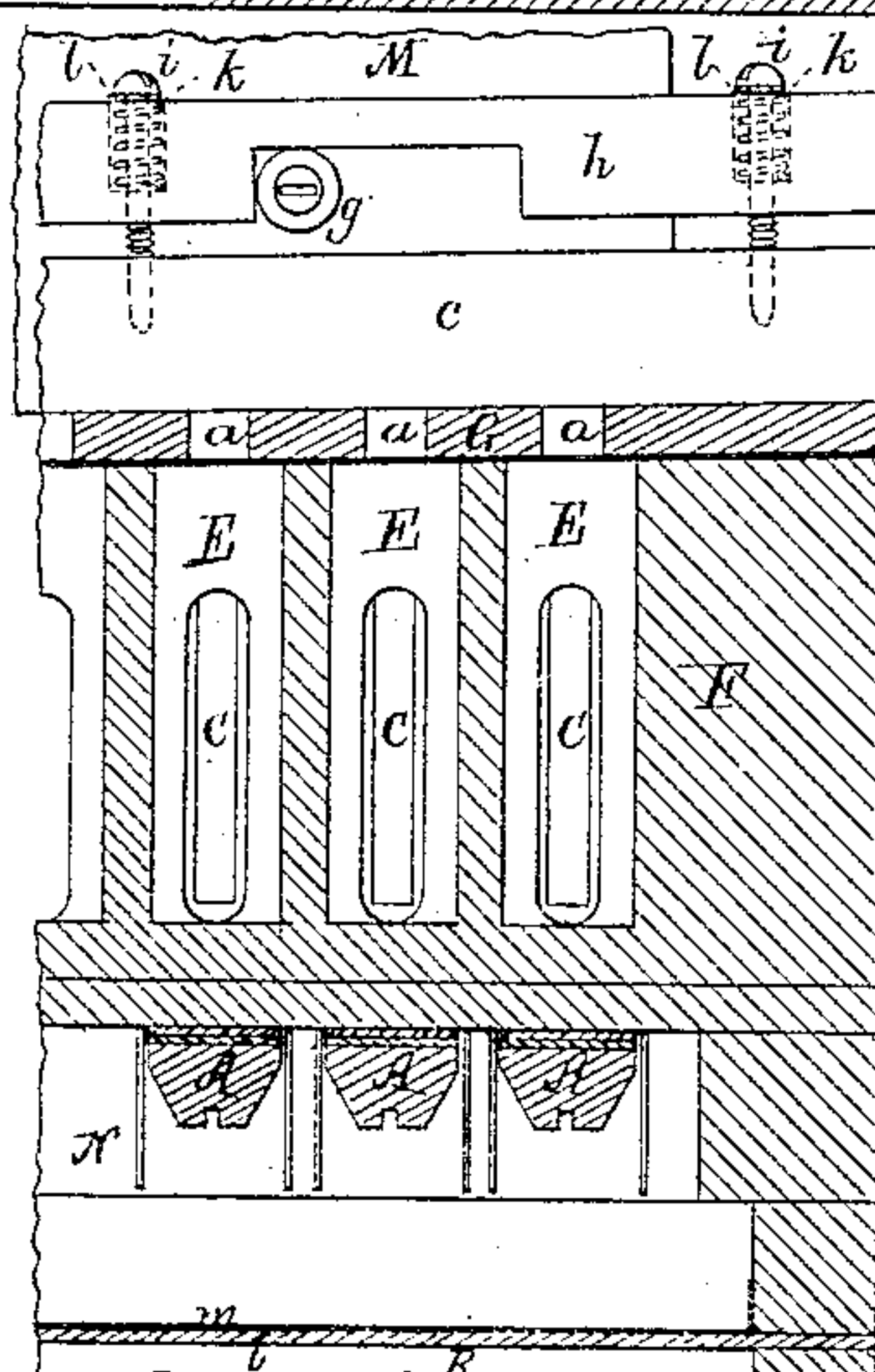


Fig. 4.



Witnesses

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Fig. 6.

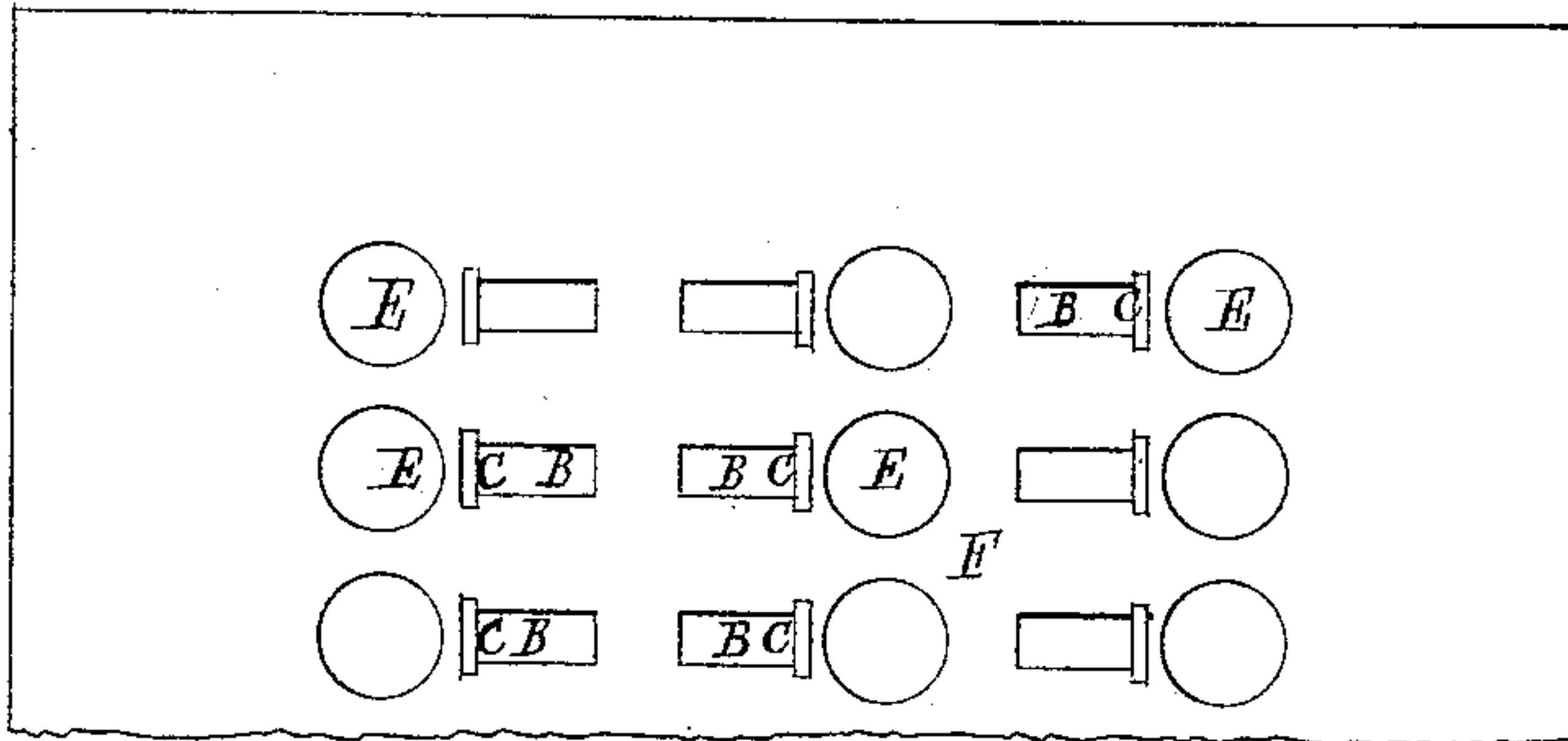


Fig. 8.

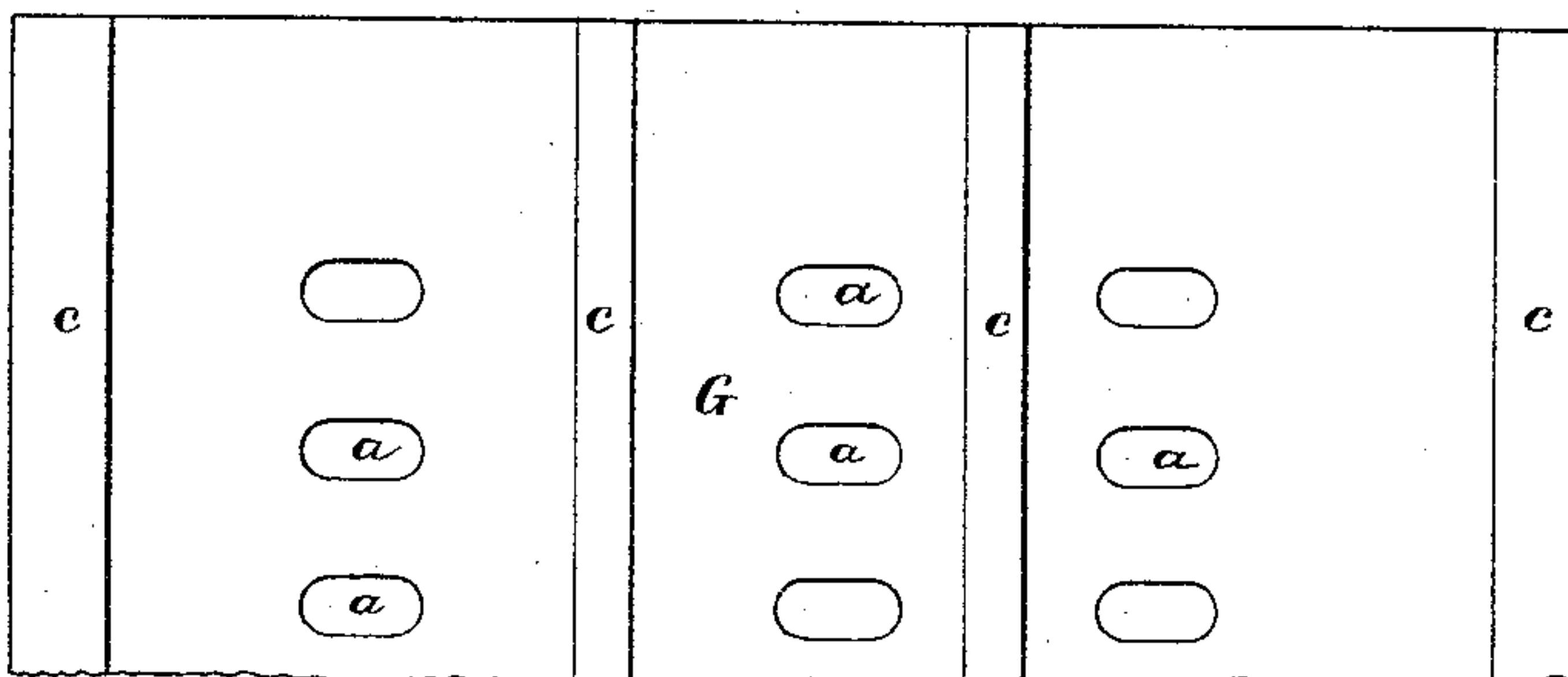


Fig. 7.

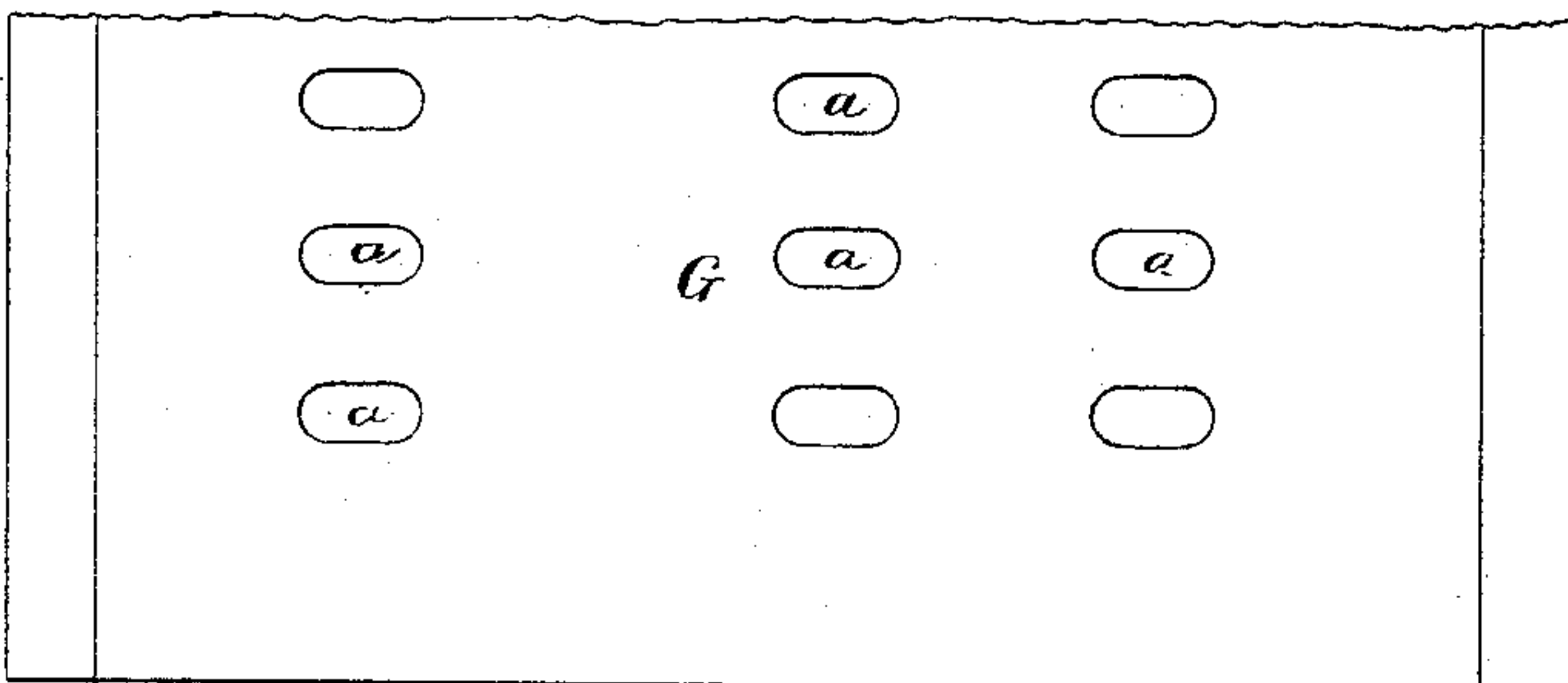
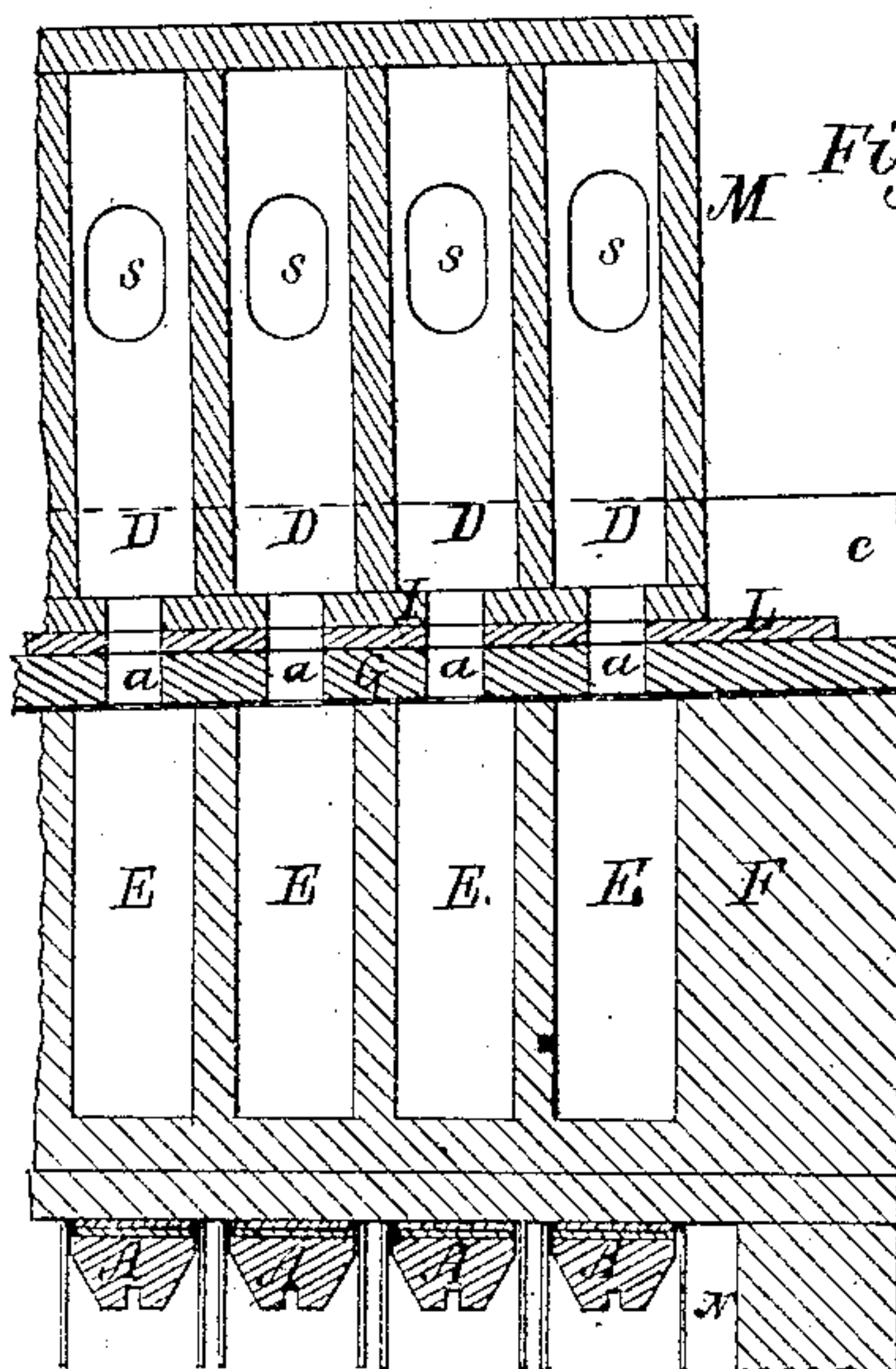


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES BAILLIE HAMILTON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR,
BY DIRECT AND MESNE ASSIGNMENTS, TO THE HAMILTON VOCALION
ORGAN MANUFACTURING COMPANY, OF SAME PLACE.

REED-ORGAN.

SPECIFICATION forming part of Letters Patent No. 350,739, dated October 12, 1886.

Application filed February 25, 1886. Serial No. 193,162. (No model.)

To all whom it may concern:

Be it known that I, JAMES BAILLIE HAMILTON, of England, but residing at present in the city of Worcester, in the county of Worcester, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Reed-Organs; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a longitudinal section, and Figs. 3 and 4 transverse sections, of part or parts of a reed organ provided with my invention, the nature of which is defined in the claims hereinafter presented. The plane of section of Fig. 3 is through the front set of the eduction-passages of the reeds, while that of Fig. 4 is through the next set in rear of the said front set. Fig. 5 is a similar section to Fig. 3, but showing the front series of mouths as stationary, but provided with a perforated valve or slide arranged upon the closure-board and in the lower part of such mouths, all being as hereinafter explained. Fig. 6 is a top view of the block containing the reeds and their induction and eduction passages. Fig. 7 is an under side view, and Fig. 8 a top view, of the closure-board, hereinafter mentioned, which is hinged to the reed-block.

My invention involves a structural arrangement of parts whereby I am enabled to secure the fullest requirements of a reed as regards development of tone by pipes or tubes, and at the same time render the reeds accessible to the tuner or operator.

In order to explain my invention more clearly, I will first refer to the fact, which is now generally recognized by organ experts—viz., that the conjunction of a reed with its proper proportional tube and under the proper conditions will produce the highest standard of of tone procurable. These proportions and conditions are, however, not compatible with the structural requirements of reed-organs as heretofore generally made. An organ must necessarily consist of several ranks or series of tones, and these must be controlled by a common valve, if expenditure is to be considered. If, as in the mechanism hereinafter ex-

plained, the valve used in pipe-organs is employed, it is evident that though the outside ranks of tubes may be accessible to the tuner, the interior ones cannot be so consistently with the rigidity of structure which is necessary in such a case.

I will now proceed to describe my invention in detail.

Within the wind-chest I employ a valve, A, such as is usually adopted in pipe-organs. This admits the wind into a series of induction-passages, B, leading to the reeds C, each of such passages being, as shown in Fig. 2, preferably set at a right angle to the valve A. Each of these reed induction-passages is open at the bottom thereof toward the valve, and also at the top, to admit of the withdrawal of the reed C, which is inserted in grooves between the induction and eduction passages of such reed. On the front side of each reed there is, parallel to the reed and leading eventually into the pipe or mouth D, an eduction-passage, E. This eduction passage or channel is closed at the bottom or toward the valve, but is open at the top, like its adjacent reed induction-passage. These induction and eduction passages are formed within a solid block, F, affording a rigid and level surface to the valves applied to its under side. Its upper surface is represented in Fig. 6. This block I call the "reed-block." The upper surface of the said reed-block encounters the lower surface of what I term a "closure-board," G. This closure-board consists of a board whose lower surface corresponds to the upper surface of the reed-block, such board having in it holes *a*, as shown, which, when the board is down upon the reed-block, come directly over the mouths of the eduction-passages of the reeds, in which case the induction-passages at their upper ends are closed by such closure-board and the eduction-passages are open. This closure-board is hinged to one edge of the reed-block, and when it is raised into a vertical position all the reeds become accessible to enable any one to be manipulated, as occasion may require. This closure-board is strengthened by a series of ribs, *c*, which extend upward from it, parallel to each other,

and serve a purpose hereinafter explained. The upper surface of the said board is represented in Fig. 8. Over the said upper surface of the closure-board are several series of pipes or mouths D, each series extending up from a bottom board, or what I term a "slide-rack," I, which I will proceed to explain.

In order to control the exit of the wind through the reed eduction-passages and the openings directly over them in the closure-board it would be necessary to use what is known in organs as a "slide-valve" or "register," which is shown at L in Fig. 5. This valve lies between two surfaces, the upper one being the board over which the mouths rest. Instead of employing such a perforated and intervening "slide," I take advantage of the comparative lightness of the box M, in which is the series of mouths, and allow the board which sustains them to be movable with them lengthwise of it. This board, being perforated with apertures which correspond to those in the closure-board, enables me to cut off the wind from its series of mouths, by giving to it (the box M) a movement lengthwise of it.

Instead of the series of mouths, separate organ-pipes may be used with the perforated slide or bottom of the said box.

The ribs of the closure-board, to which I have before referred, serve as guides to the boxes M that may be between them, it being understood that there is to be such a box over each range of eduction-passages of the reeds.

The natural weight of the box will serve to establish the necessary contact of its lower surface with the upper surface of the closure-board; but this I usually supplement by a spring-pressure, operating preferably on small wheels, whereby the box is kept in its place, and also operates smoothly and efficiently—that is to say, I have to each of the opposite sides of the box a friction-roller, *g*, upon the upper part of which rests a bar, *h*, that has going down through it two screws, *i*. These screws also go through two spiral springs, *k*, arranged in sockets *l* in the said bar, the heads of the screws bearing on the tops of the springs. The screws screw into that rib of the closure-board which is directly under the bar *h*.

By means of the screws and springs, the bars *h*, and the rollers under them the pressure of the box on the closure-board may be regulated as may be desirable. Thus, by means of the closure-board, I enable the several series of boxes M to be lifted so as to expose the reeds to the tuner for any necessary action on his part thereto.

In order to further develop the resonance of this instrument, I form the bottom of the wind-chest N, which contains the valves, into a "diaphragm," which I preferably construct of a thin board, *l*, coated with leather *m*, which enables the board to be reduced to a great de-

gree of thinness. This diaphragm is thrown into intense vibration by the action of the air in the "wind-chest," and I further transmit these vibrations to the outer air by treating this diaphragm as the upper head of a shallow drum, R, whose lower head is shown at *p*, and is of thicker and less vibratile substance and pierced with one or more sound-holes; or the sound-holes may be in the side or sides of the air-drum.

The figures of the drawings are drawn to represent an instrument worked by wind-pressure, and under the same general conditions as a pipe-organ.

Each mouth, as hereinbefore mentioned and as represented, has an opening, *s*, in its front, to allow of the exit of air and sound from the mouth, and such mouth is a narrow chamber in the box M.

The organism hereinbefore described operates in a manner very analogous to that of the vocal organs of an individual or human being, and in such respect its action is materially different from that of reed-organs as constructed prior to my invention, each mouth or compartment D of the box M being to emit the sound as does the human mouth in singing.

I claim—

1. The combination, with the series of reeds and their induction and eduction passages and the valve or valves thereof, of the closure-board provided with an orifice extending through it over the upper end of each of such eduction-passages, and of the series of mouths arranged upon such closure-board and having eduction-openings in their bottoms, all being substantially as described.

2. The combination of the air-drum or tone-augmenter, substantially as described, arranged below the valves, with the series of reeds and their induction and eduction passages and the valve or valves thereof, and with the closure-board and the series of mouths arranged on such board and with it provided with openings, as specified.

3. The combination, with the closure-board and the series of mouths applied to the reeds and their induction and eduction passages, as described, of means of pressing such mouths upon the said board, such means, as specified, consisting of the friction-rollers, the guide-rails, and the pressure-bars and their screws and springs, all arranged and applied essentially as set forth.

4. The combination, with the closure-board applied to the reed-passages block, of the series of rails or ribs extending upward from and arranged upon such board, essentially as described.

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Witnesses:

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