

(No Model.)

3 Sheets—Sheet 1.

J. H. CHASE.

MECHANICAL MUSICAL INSTRUMENT.

No. 256,101.

Patented Apr. 4, 1882.

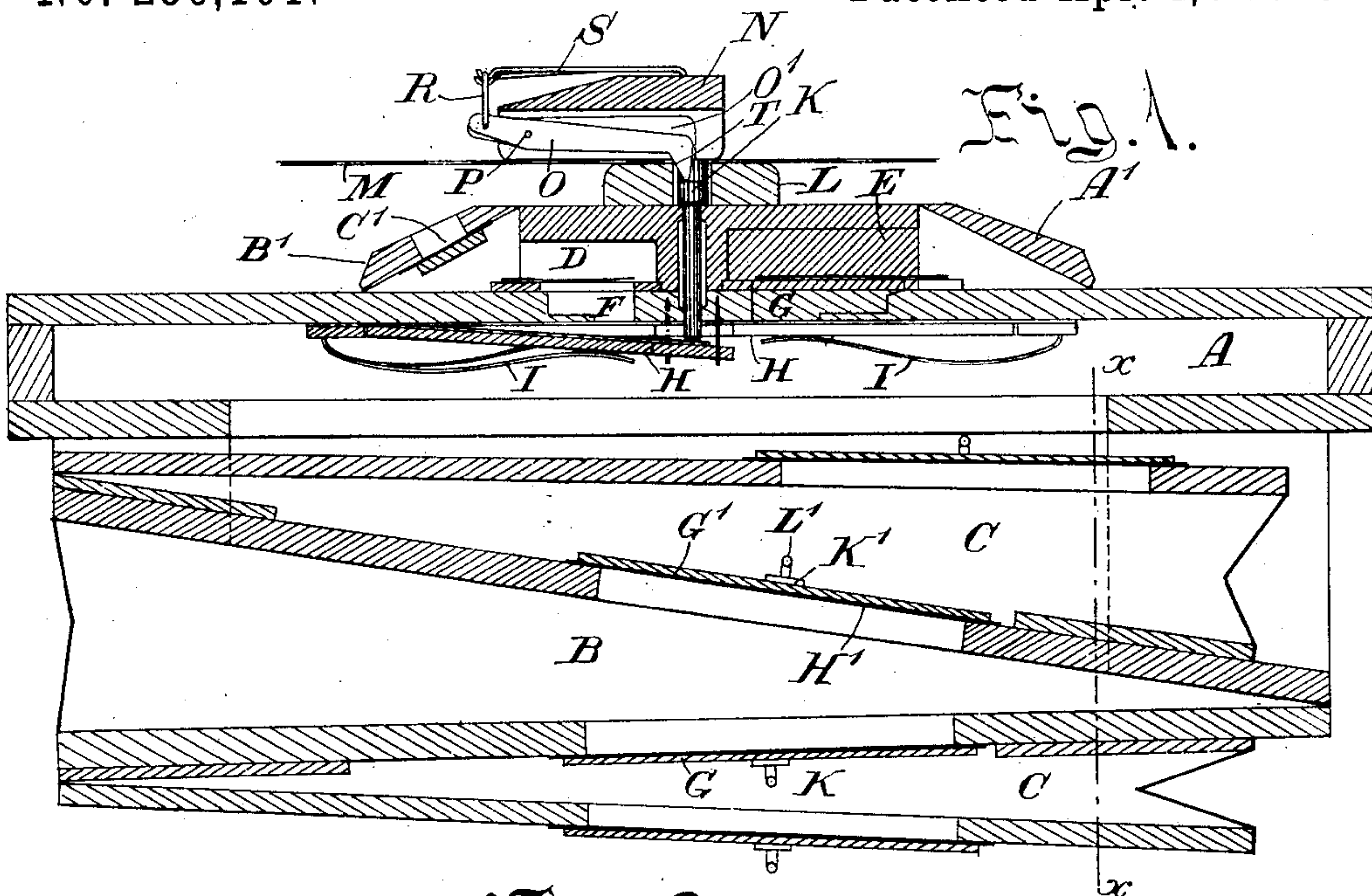
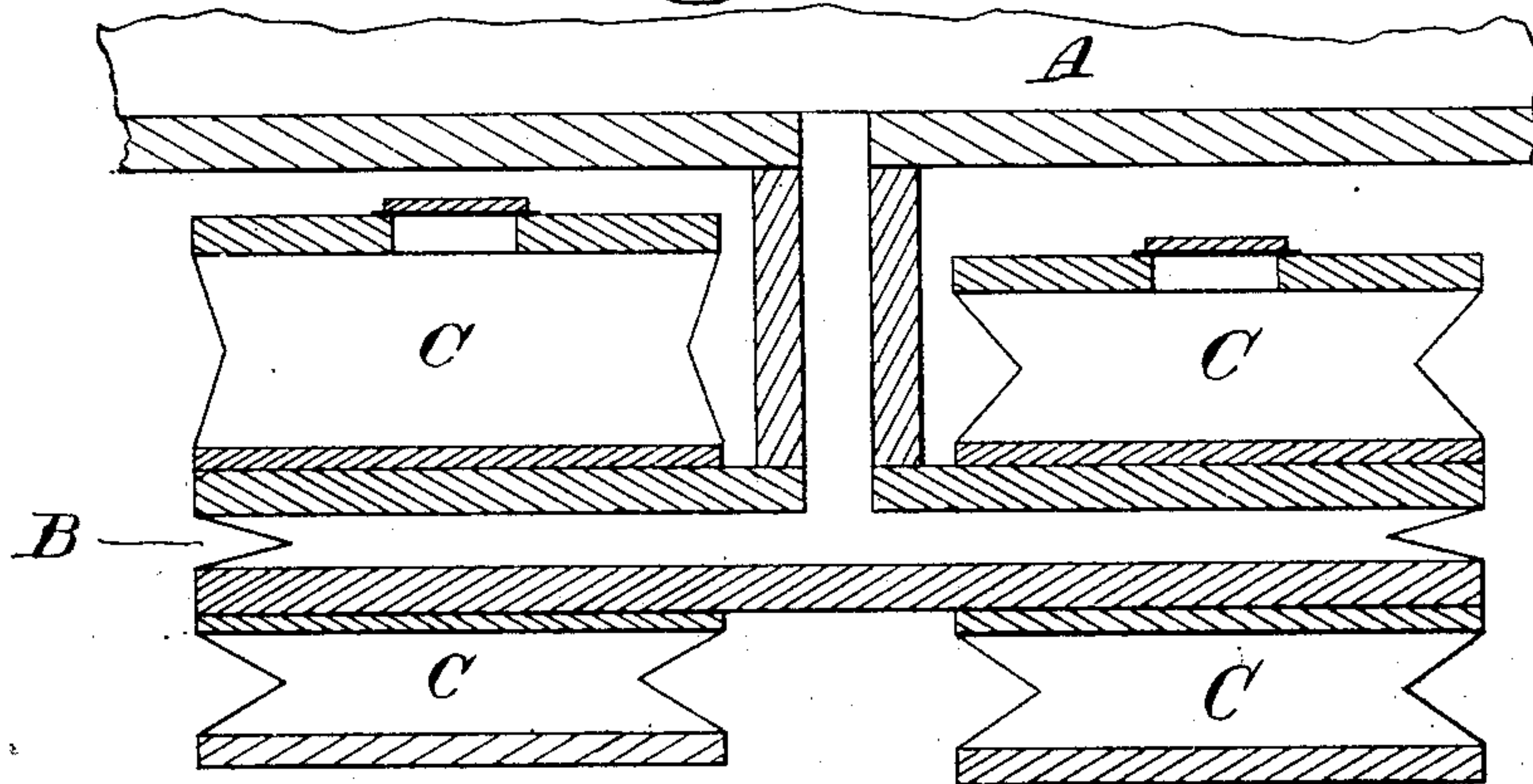


Fig. 2.



Witnesses:  
Charles H. L. Simpson  
W. E. Fudge

Inventor  
J. Herbert Chase

(No Model.)

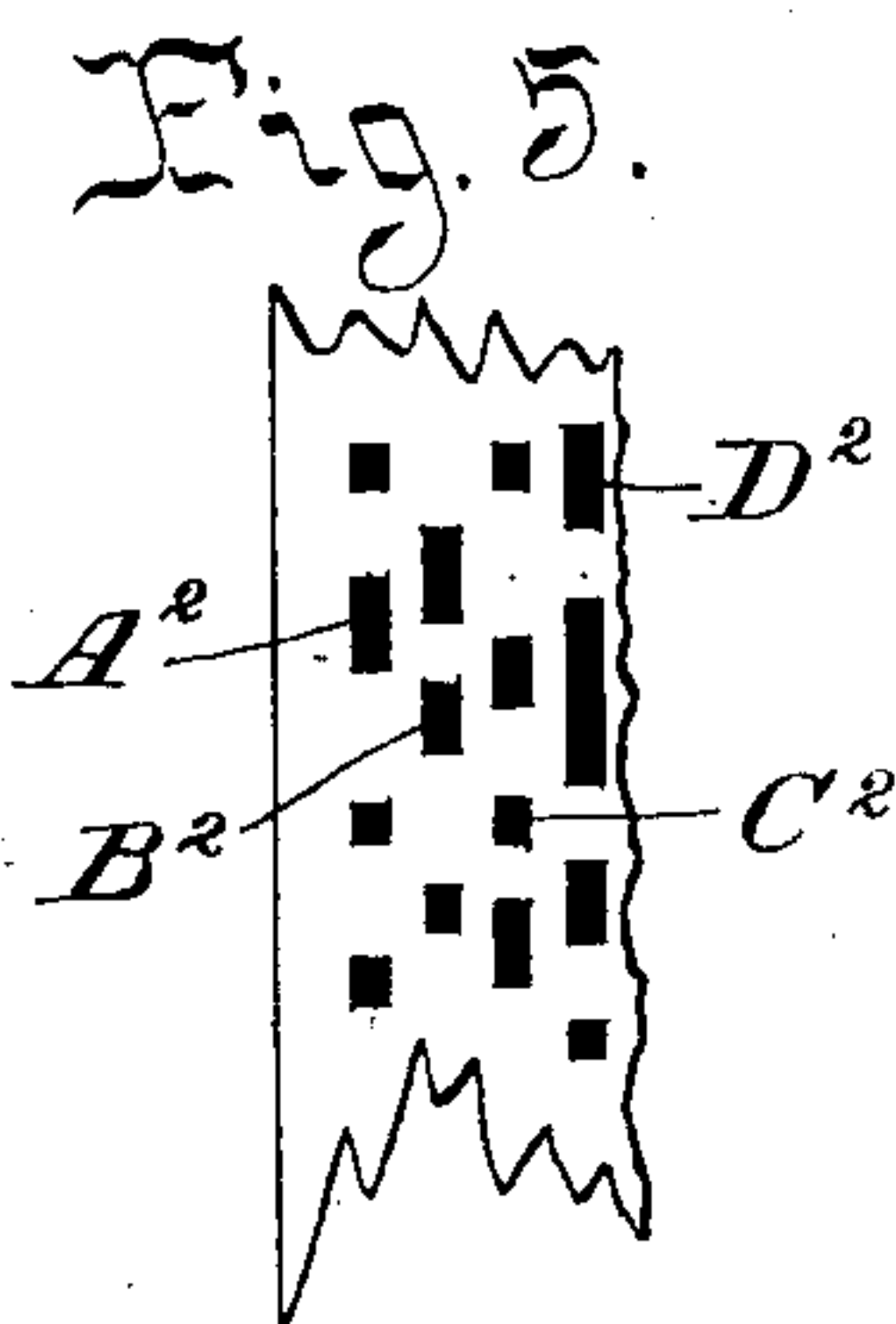
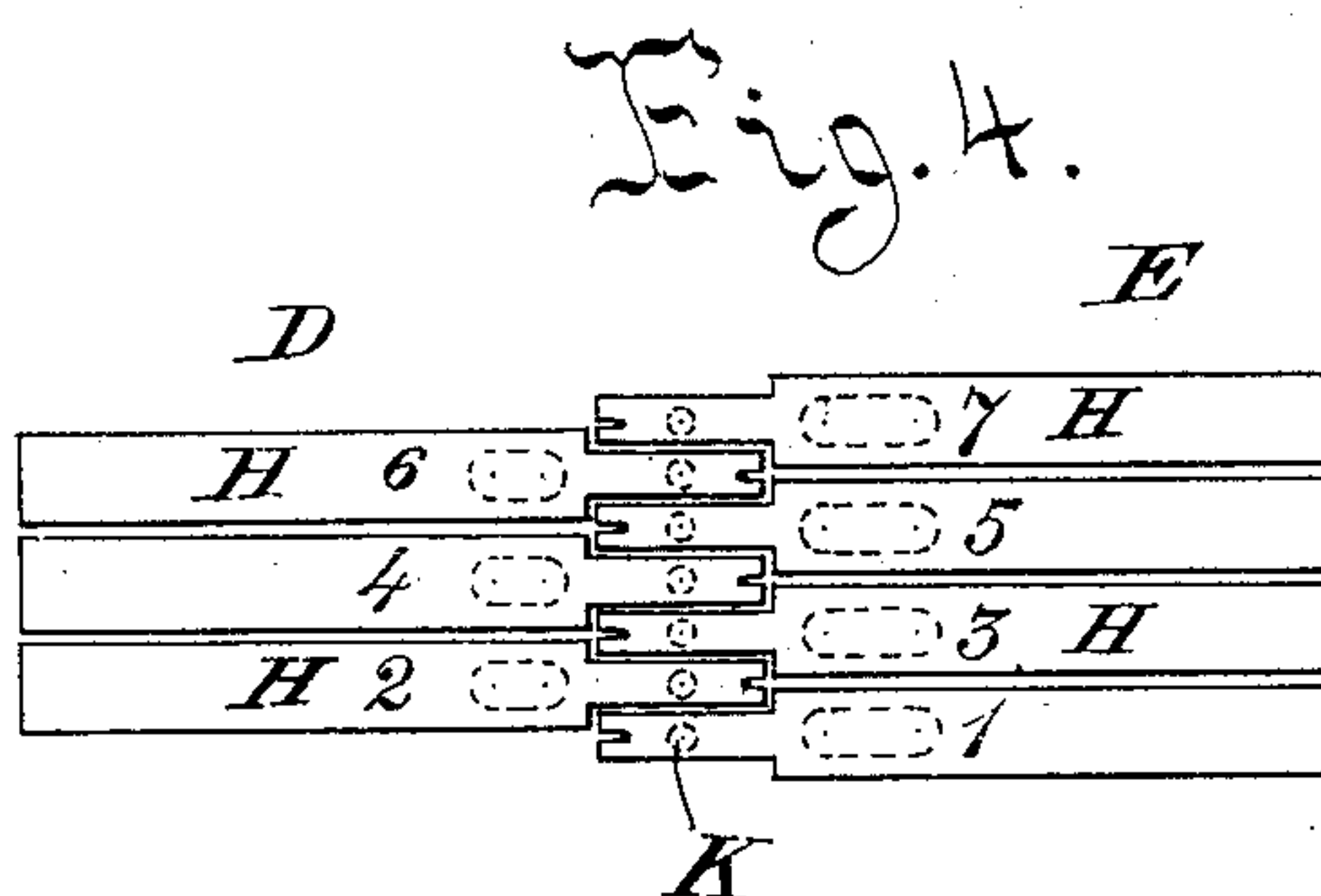
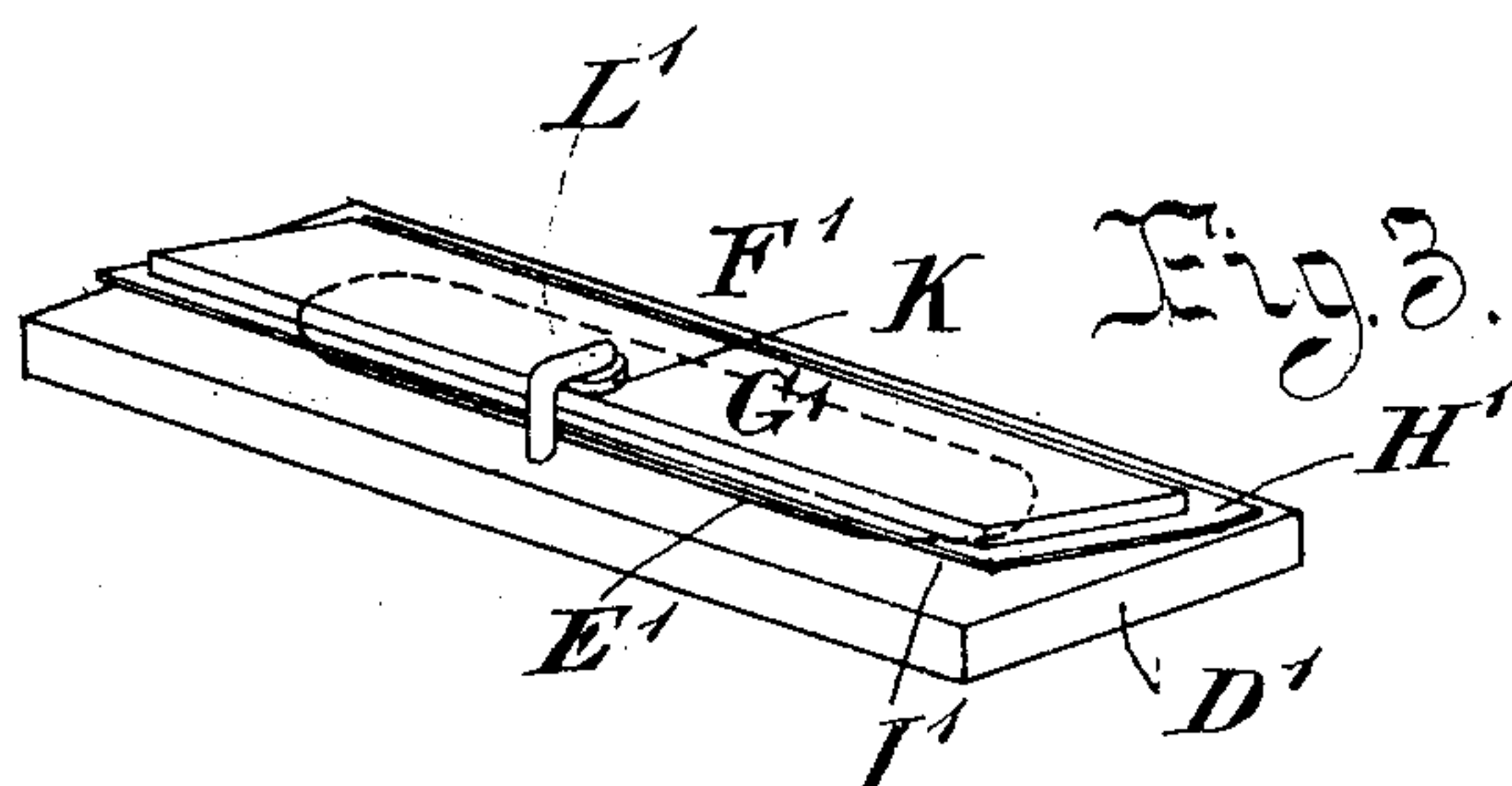
3 Sheets—Sheet 2.

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Witnesses:-

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W. E. Fudge

Inventor:

J. Herbert Chase.

(No Model.)

3 Sheets—Sheet 3.

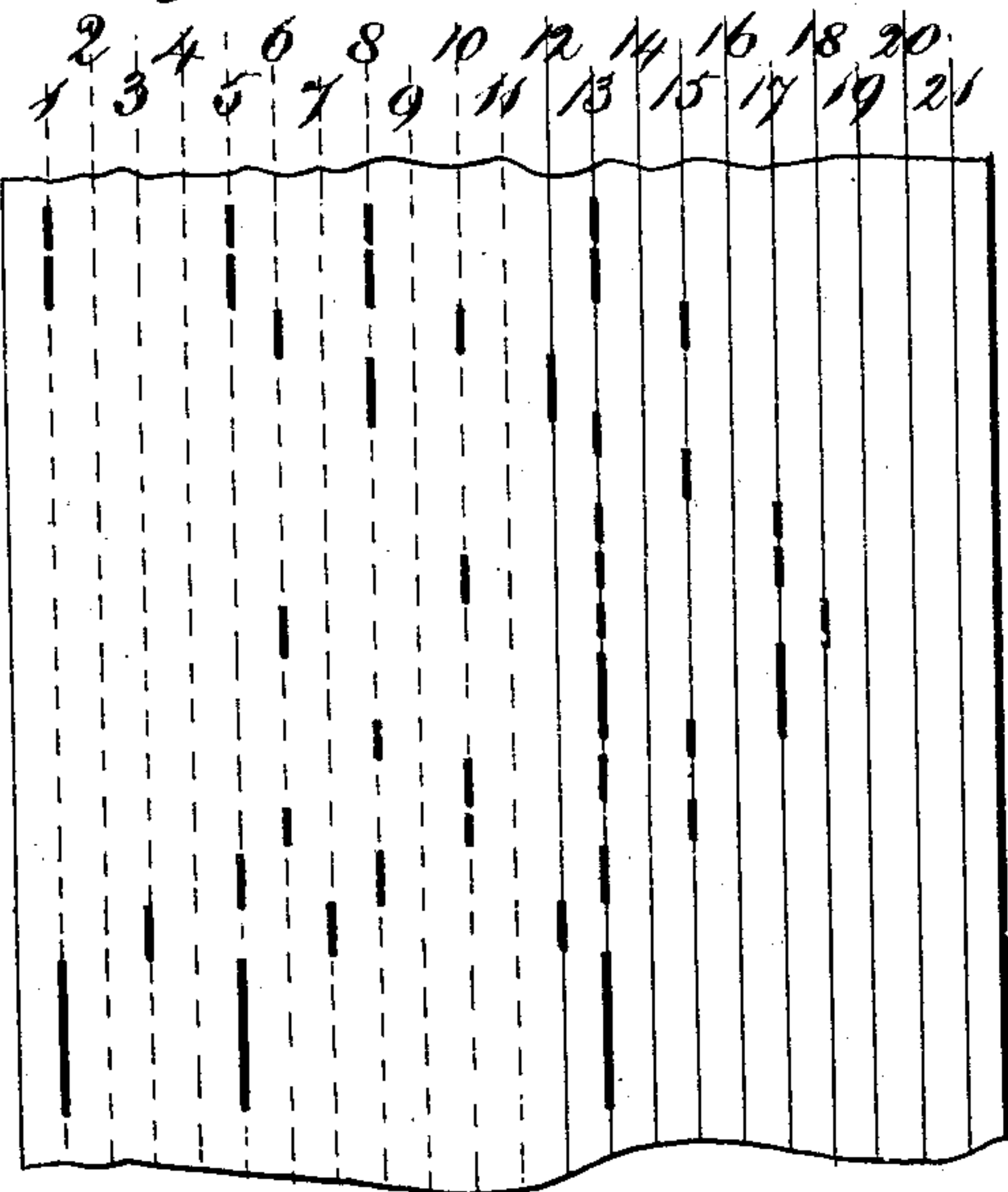
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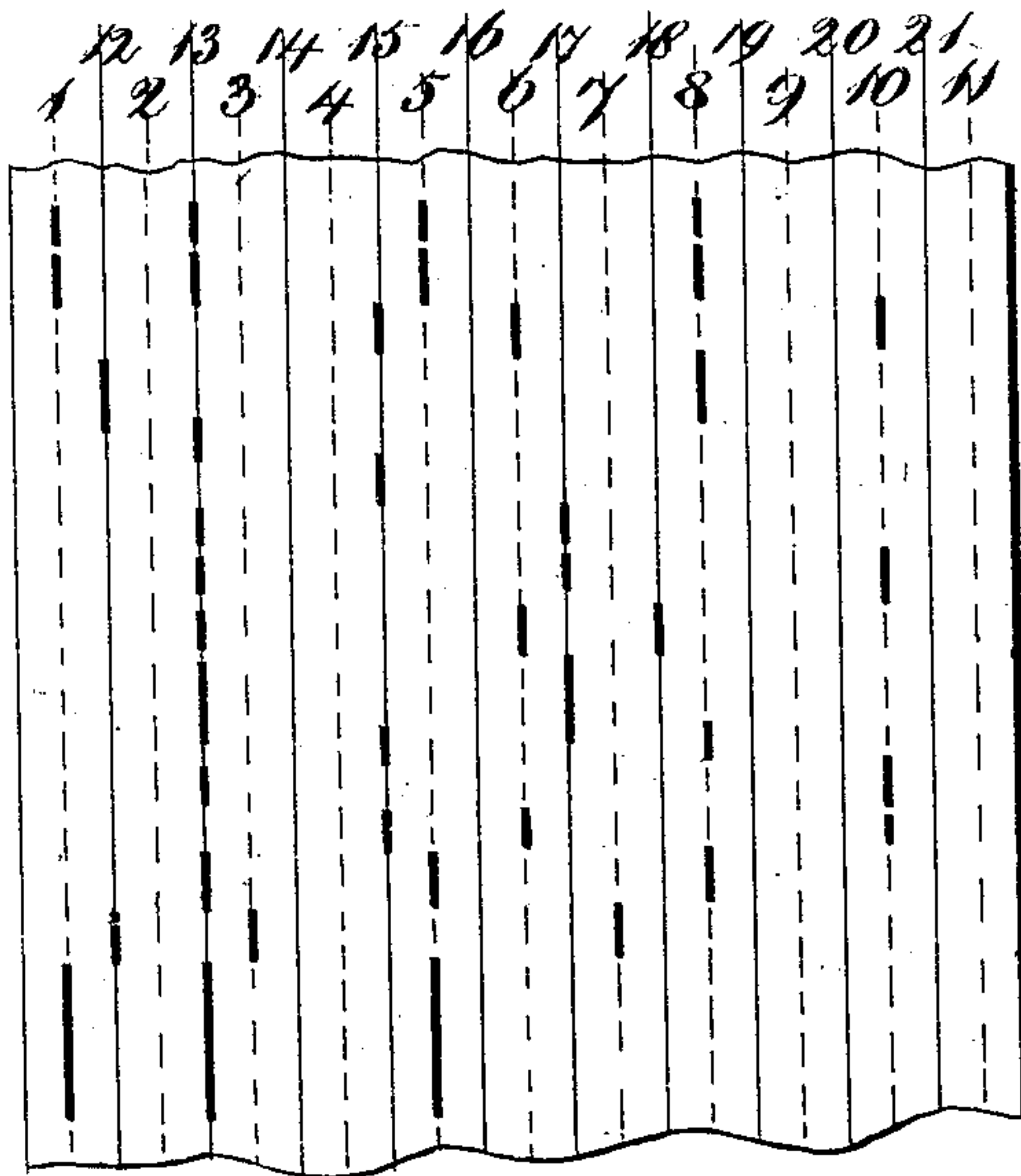
Patented Apr. 4, 1882.

*Fig. 6.*



*Old Style*

*Fig. 7.*



*New Style*

*Witnesses*

*A. Irwin.*

*J. P. Falardeau.*

*Inventor*

*Joseph H. Chase.*  
*By his Attorney*  
*Charles G. L. Simpson*



# UNITED STATES PATENT OFFICE.

JOSEPH HERBERT CHASE, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO  
WALTER F. ABBOT, OF NEW YORK, N. Y.

## MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 256,101, dated April 4, 1882.

Application filed August 15, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH HERBERT CHASE, of the city and District of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Mechanical Musical Instruments; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to improvements on mechanical musical instruments, providing in the first place an improved arrangement of the scale of reeds, whereby the bass or lower part of the scale is opposite to the treble or upper part. This arrangement further allows of a separate swell for each—that is to say, the bass and the treble—and it also allows of the use of a tremulant operating on the treble or upper part of the scale only.

My invention further consists in the combination of a perforated music-sheet, a finger, a push-pin, a valve, and a reed-chamber provided with a reduced air-passage arranged below the reeds, the combination and construction being such that the reeds are sounded through the instrumentality of the music-sheet and an air-bellows, while by the provision of the reduced air-passage a spring of comparatively small force can be employed for holding the valve on its seat, whereby the strain or pressure necessary on the music-sheet to open the valve is materially reduced.

My invention further consists in an improved form of valve for the bellows and feeders and other points, as will be hereinafter fully described.

In the drawings hereunto annexed, similar letters of reference indicate like parts; and Figure 1 is a longitudinal sectional elevation of a mechanical musical instrument embodying my invention. Fig. 2 is a cross-section of the lower part of Fig. 1 on line *x x*. Fig. 3 is an isometrical view of improved valve. Fig. 4 is a plan of the arrangement of the valves to reeds. Fig. 5 shows a portion of the perforated music-sheet. Figs. 6 and 7 are diagrams of perforated music-sheets, showing the old style and my new style of location of perforations, said new style being required to agree with the novel arrangement, situation, or distribution of the notes.

Letter A is the reservoir or wind-chest, of ordinary construction.

B are the bellows, and C are the feeders or exhausters, according to the class of instrument. I have, however, shown in the drawings an instrument intended to be on the exhaust plan.

D are the treble, and E the bass, clefs.

F and G are the respective air-passages from the reeds to the wind-chest A. It will be observed that the passages F and G are of the ordinary length, allowing freedom to the reed, but are contracted before coming through the board to about half the size. Consequently the valves H will only require about half the amount of force of the springs I to hold them on their seats against the pressure of the incoming air. These valves are each of them operated by a push-pin, K, guided in the usual manner.

L is a bed for the perforated paper M to pass over and rest upon. Above the perforated paper is situated a removable grooved bar, N, which is held in place at its extremities in any desired manner. In the grooves of the bar N are pivoted fingers O, one of which is provided for each of the push-pins K, and operates them whenever an opening in the paper M comes under any one of the fingers O. The construction of the fingers is as follows: By a pivot-pin, P, each finger is held in place in the bar N. This pin forms the fulcrum of the finger. Toward one end is attached a link, R, connecting with a spring, S, by which the foot of the finger is pressed downward. It will be observed that the said foot is provided with an incline, T. This incline, acting upon the edge of the perforations in the paper M as the said paper travels along in the ordinary manner, causes the finger to move from the position shown at O to that shown by the finger marked O'. As it will be seen that the edges of the paper forming the back end of each perforation are obliged to stand the wear and tear of the operation of forcing up the fingers O by acting upon the incline T, it will at once be understood that it is a great advantage to have the springs used on said fingers O as light as possible to reduce the wear or strain on the paper as much as possible. As these fingers



must have sufficient downward force to overcome the springs I, the lighter the springs I can be made the less force will be required from the fingers O, and consequently less wear and tear on the back edges of the perforations of the paper M. This lightness of the force of the springs I is obtained, as has been before said, by reducing the size of the openings F and G.

Referring to Figs. 1 and 4 it will be seen that the reeds are in two rows, running in a continuous scale in each. Those marked D are the treble and E the bass, the reeds in the one clef being set intermediate with those of the other clef. This enables the push-pins K to be brought into a line of equally-distant pins of half the space that they would occupy were all the reeds situated side by side in one line.

In the instruments heretofore constructed the scale has been formed continuously from the bass at one end up to the treble at the other; but by my method I place the reeds alternately, as shown by the figures 1 2 3 4 5 6 7 in Fig. 4, and so on up to the end of the scale, to whatever number of reeds are employed, so that about half of the bass and half of the treble are situated on each side. In the aforesaid instruments, if a tremulant is used on either side it must be applied to the bass notes as well as the treble, which gives a very undesirable effect in many cases. This objection is altogether obviated by my arrangement of the reeds, and it also allows the swells to be applied separately to either bass or treble. In Fig. 1, A' is the swell for the bass, and B' the swell for the treble. C' is the tremulant, applied, if so desired, only to the treble.

In Fig. 3, D' represents one side of the bellows or feeders, as the case may be, having an elongated opening, E', over which is secured a valve, F', constructed as follows: I take a thin piece of wood or other suitable material, G', a little larger than the size of the opening, and to it attach by glue, &c., a sheet of leather or other flexible material H, extending beyond the four sides of G' a considerable amount, one side being sufficiently extended to serve as an attachment to D', for the purpose of acting as a hinge for the valve, leaving the opposite side, as shown at I', free to lift.

K' is a pad secured on G' for the purpose of preventing the valve from rattling while in operation. The lift of the valve is governed by a knee, L', having one end screwed into D'. By making the flexible material considerably larger than the board G' the so extended edges are enabled to lie flat or close on D', although G' may be more or less warped, and by the knee L' being turned on one side the valve may be turned up and cleaned from any dust that may have become embedded in or stuck to the flexible material H'. Instead of governing the "lift" of the valve by the knee L', a small strap may be attached with buttons, &c., to govern the lift. This I consider an equivalent.

In the valves heretofore in use, where a sim-

ple piece of leather is stretched over a number of perforations, if the leather is either too tight or too loose, an objection accrues, and as the leather is always affected by the dampness or dryness of the atmosphere, no matter how skillfully the valve is constructed, it will in a short time get out of order and will not satisfactorily perform its functions. By my improvement a much cheaper quality of material for the flexible part of the valve may be used, and by the board G' being placed over the flexible material and opening E' all passage of air through the body of the flexible material is prevented.

With regard to the paper M and the arrangement of the perforations in it, the different rows of perforations alternate—one a bass and the other a treble. Thus the rows of perforations A<sup>2</sup> and C<sup>2</sup> may be treble, under which circumstances B<sup>2</sup> and D<sup>2</sup> (see Fig. 5) will be bass, and so in corresponding relation, whatever the number of reeds employed.

That my new method of arranging the music-sheet may be fully understood, Figs. 6 and 7 are given, where the same portion of the same tune is shown arranged in the old and the new way of location. The sheets delineated are arranged for an instrument having twenty-one notes in the scale, eleven of which are bass and ten treble. Now, in these figures it will be observed that through eleven rows of the notes dotted center lines are drawn, and these dotted center lines indicate the bass rows, while ten rows have fine solid center lines drawn through them, which solid center lines indicate the treble rows. The figures 1 to 21 at the top of the rows indicate the corresponding notes in music in each figure. From the above it will be seen that in the old way (see Fig. 6) all the consecutive rows are bass up to and including the eleventh row, and that the remainder are treble. In my novel arrangement the alternate rows are bass and treble, as indicated by the alternate dotted and solid center lines, and by the figures at the top also. Now, if we compare the two figures, 6 and 7, we at once see that although the notes are the same in both cases, there is, nevertheless, a very great change in the relative location of the notes on the sheet of music, so that the one could not be used in an instrument adapted for the other. The center lines shown will not be used in ordinary or merchantable sheets of music.

What I claim, and wish to secure by Letters Patent, is as follows:

1. In combination with a perforated sheet of paper, &c., the reeds of a treble clef, D, set opposite to and intermediate with the reeds of a bass clef, E, substantially as and for the purpose set forth.

2. In combination with a perforated sheet of paper, &c., the reeds of a treble clef, D, set opposite to and intermediately with the reeds of a bass clef, E, provided with swell-boards A' and B', substantially as and for the purposes set forth.

3. The combination, in a mechanical musical



instrument, of the perforated music-sheet M, finger O, push-pin K, valve H, and reed-chamber F, having reduced air-passage and provided with reed, the whole constructed, arranged, and operating as described, for the purposes set forth.

4. In a mechanical musical instrument, the combination of the pivoted finger O, provided with incline T, link R, spring S, and perforated paper M, substantially as and for the purposes set forth.

5. The combination, with a mechanical musical instrument constructed as described, of a perforated music-sheet having the treble notes placed in rows on said sheet, with the bass notes placed in rows on said sheet, and said rows being, furthermore, alternately the one a bass and the next a treble row, substantially as and for the purposes described.

6. In the construction of valves to feeders

and bellows, the combination, with the opening E', of the sheet of flexible material H', board G', and knee L', the whole constructed, arranged, and operating substantially as described.

7. In combination with a perforated sheet of paper, &c., the reeds of a treble clef, D, set opposite to and intermediate with the reeds of a bass clef, E, provided with swell-board A' and swell-board B', having tremulant C', substantially as and for the purposes set forth.

8. In the construction of valves to feeders and bellows, the combination, with an opening, E', of a sheet of flexible material, H', and board G', governed in their lift substantially as described.

J. HERBERT CHASE.

Witnesses:

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