

(No Model.)

2 Sheets—Sheet 1.

M. J. MATTHEWS, dec'd, & G. B. KELLY,

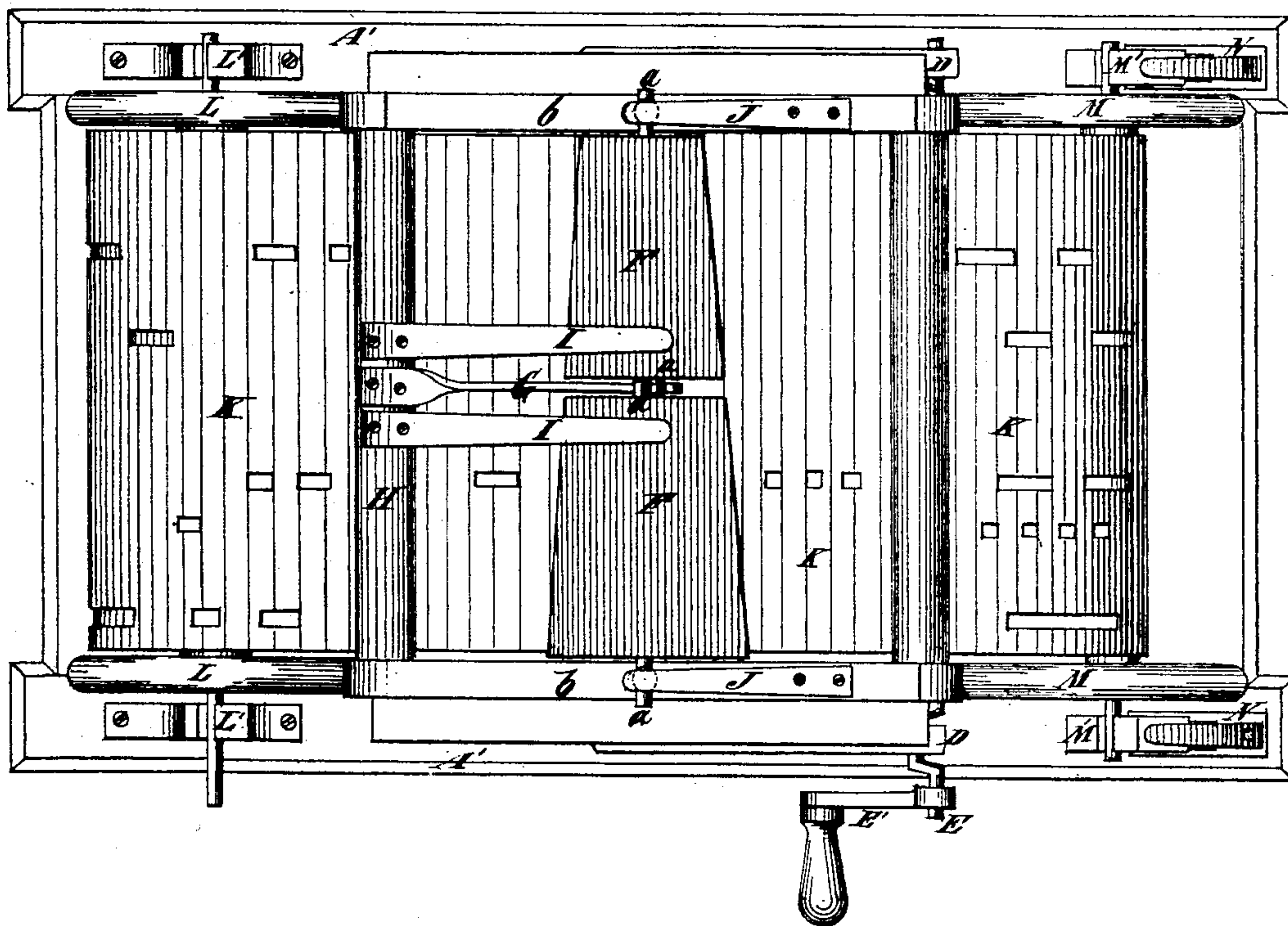
J. MATTHEWS & J. MORGAN, Executors of M. J. MATTHEWS.

Mechanical Musical Instrument.

No. 238,139.

Patented Feb. 22, 1881.

Fig 1.



Witnesses:  
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Inventors:  
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George B. Kelly  
By their Attorneys  
Barnett Brown

(No Model.)

2 Sheets—Sheet 2.

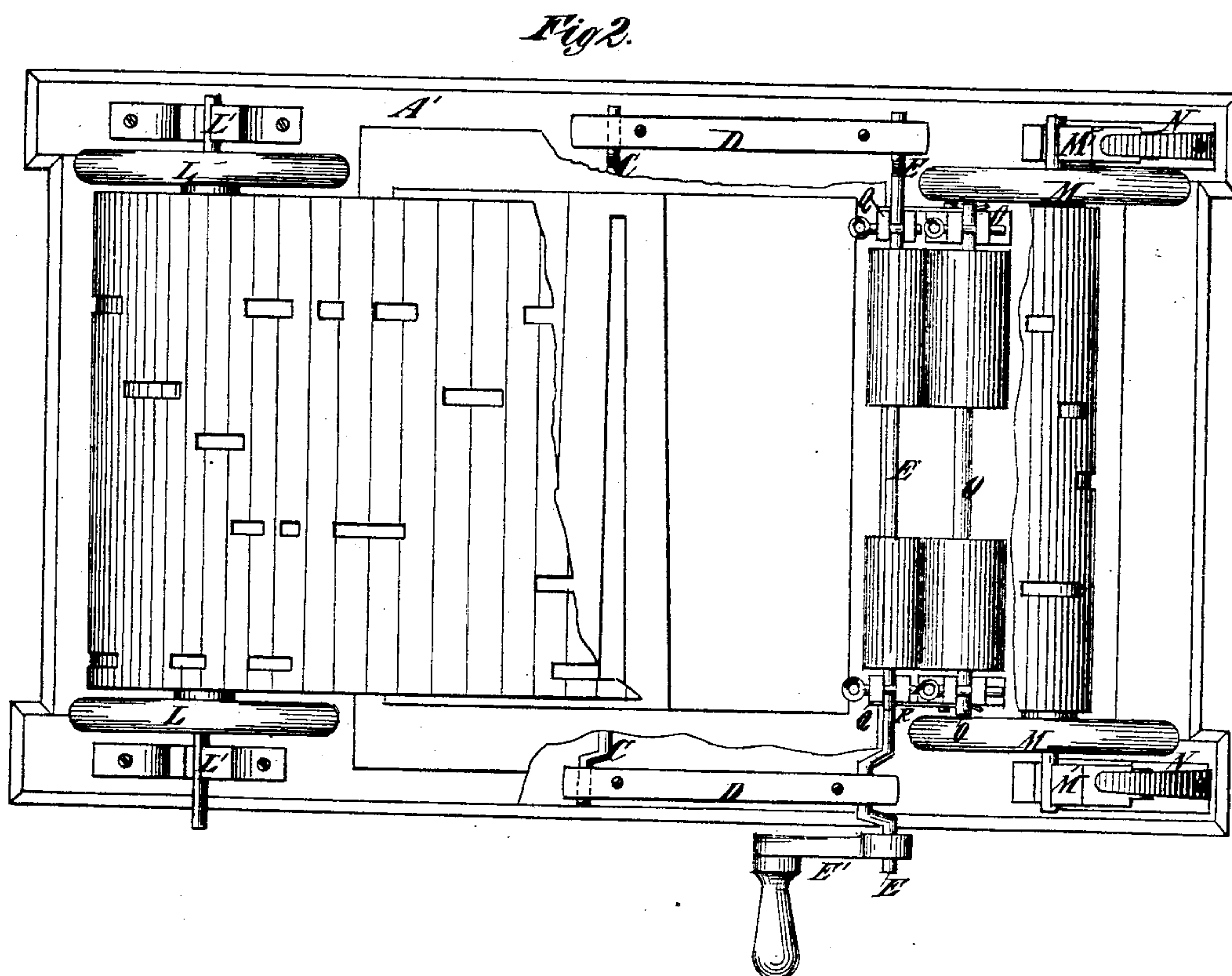
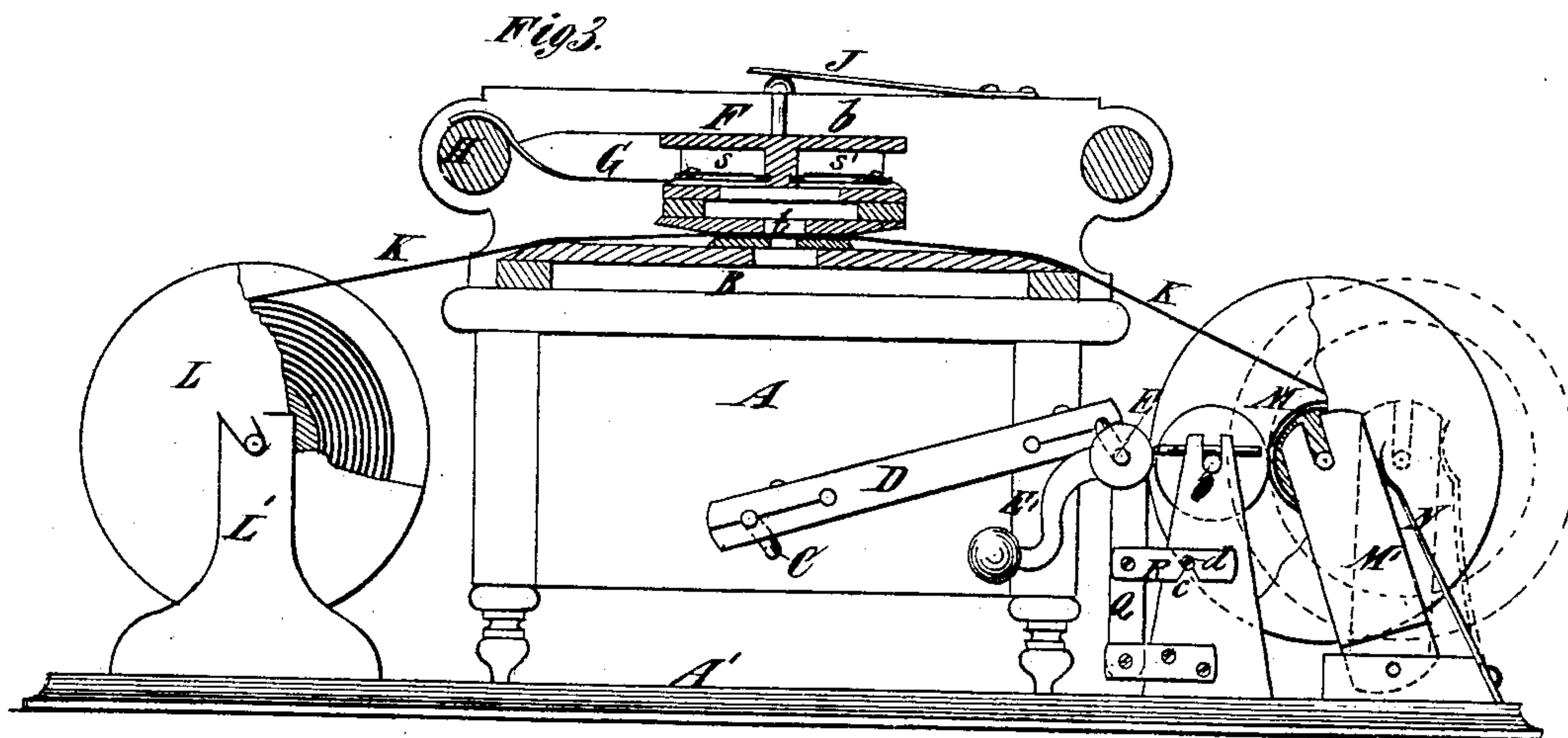
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# UNITED STATES PATENT OFFICE.

MASON J. MATTHEWS AND GEORGE B. KELLY, OF BOSTON, MASS., (JANE MATTHEWS, OF NEW YORK, AND JAMES MORGAN, OF BROOKLYN, N. Y., EXECUTORS OF SAID MASON J. MATTHEWS, DECEASED.)

## MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 238,139, dated February 22, 1881.

Application filed April 21, 1880. (No model.)

*To all whom it may concern:*

Be it known that we, MASON J. MATTHEWS, of Boston, in the county of Suffolk and State of Massachusetts, and GEORGE B. KELLY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Musical Instruments, of which the following is a specification.

10 These improvements relate particularly to mechanical musical instruments wherein a traveling perforated music-sheet controls the passage of air to or from reeds or other sound-producing devices to effect the playing of desired tunes.

15 One improvement consists in a reed-board composed of separate sections, arranged in line with each other, and means whereby said sections may be detachably connected with the instrument, so that leakage occasioned by warping will be lessened.

20 Another improvement consists in the combination of a double reed-board composed of separate sections arranged end to end in one horizontal plane, and provided with two sets of reeds and reed-ducts communicating with passages common to both, and a perforated music-sheet, arranged to travel between the wind-chest and reed-board, substantially as specified.

25 Other improvements consist in a novel combination of parts whereby the take-up roller for the music-sheet is impelled more and more slowly as the music-sheet rolled or wound upon it increases in diameter, so that the said sheet will be caused to travel at a uniform speed.

30 Another improvement consists in a novel combination of parts whereby the driving-shaft may be released from the music-sheet while the latter is being rewound.

35 In the accompanying drawings, Figure 1 is a plan of a mechanical musical instrument embodying the improvements. Fig. 2 is a plan thereof with the reed-board removed and the music-sheet broken away, and Fig. 3 is a partial side view and partial central longitudinal section of the same.

40 Similar letters of reference designate corresponding parts in all the figures.

A designates the case inclosing suction-bellows and a receiver, and B designates the wind-chest, protruding through the top of the same. The bellows are actuated by a cranked shaft, C, deriving motion through rods or pitmen D from a cranked shaft, E, which, as here shown, constitutes the driving-shaft of the instrument, and is operated by a crank, E'.

50 F designates a reed-board, consisting of two separate sections arranged end to end in the same horizontal plane, and provided at the ends with arms *a*, fitting in slots or housings, whereby they are retained in position. The arms *a* at the outer ends of these sections fit in slots or housings in side pieces, *b*, projecting from the top of the case A; but the arms *a* at their inner or adjacent ends fit in slots or housings in a bar, G, extending from a stretcher, H. Springs I, extending from the stretcher H and impinging on the sections of the reed-board near their adjacent ends, and other springs J, extending from the side pieces, *b*, and impinging on the outer arms, *a*, or pins arranged above the same, retain all the arms *a* of said sections in their slots or housings, and press the sections down on the perforated music-sheet K, which travels between the same and the wind-chest. By making the reed-board in sections the liability of warping, so as to cause leakage between it and the music-sheet, is avoided, especially where so large a number of reeds are desired as to necessitate the use of a very long reed-board. These sections of a reed-board may be readily removed by lifting them against the resistance of the springs I J, so as to free their arms *a* from the slots or housings. The reed-board which is here shown is what may aptly be termed a "double reed-board," inasmuch as it has two sets of reeds, one on each side of the center line, arranged in ducts or cells *s s'*, communicating with air-passages *t*, common to both sets, and controlled by the music-sheet. The bellows, when permitted by the music-sheet, draw air into the reed-ducts from the outer ends of their ducts or cells, and cause the pairs of reeds to speak in unison, thus producing very pleasing tones.

The music-sheet K is permanently secured



at one end to a roller, L, termed a "music-roller," removably supported in bearings L', erected outside the case A, on the base-board A' of the instrument, and it may be detachably secured at the other end to a roller, M, erected on the base-board A', also outside the case A. As shown, this roller M is also removable. Its bearings M' are pivoted to the base-board, so that they may swing toward and from the driving-shaft E, and are impelled toward the driving-shaft by springs N, as also by the tension on the music-sheet during playing.

Between the driving-shaft and the take-up roller M, and in frictional engagement with the driving-shaft, is a shaft, O, also in frictional engagement with the take-up roller and with the music-sheet as the same winds on said roller.

To obviate slipping, rollers faced with india-rubber may be arranged on the driving-shaft E and shaft O, and these rollers may be larger on the latter than on the former, to maintain the proper relative speed between the driving-shaft and take-up roller.

It will be seen that by this combination of parts the driving-shaft serves to transmit motion to the take-up roller to effect the travel of the paper in playing, and that by the use of the shaft O the said roller may be impelled in the same direction as the driving-shaft, whereby mistakes as to the direction the driving-shaft should be turned will be avoided. As the paper winding on the take-up roller increases in diameter the roller swings back in its bearings, so as to accommodate itself relatively to said shaft. The shaft O, in winding up the music-sheet on the take-up roller, acts on a roller of constantly-increasing diameter, and hence impels it more and more slowly, wherefore the music-sheet is impelled forward with an almost absolute uniform speed.

The driving-shaft E is supported in standards Q, pivoted in place at the bottom, and secured in an upright position for use by arms R, provided with notches c, which may be made to engage with pins d on the standards which support the shaft O. By disengaging the arms R from these pins d the standards Q may be rocked or swung backward to free the shaft E from the shaft O, whereupon if a crank be applied to the music-roller it may be rotated, so as to wind up the music-sheet without actuating the bellows. We do not, however, make any claim to a swinging driving-shaft, or to a lever outside the case for adjusting the same.

It will be seen that by this invention is produced a musical instrument wherein reed-boards of almost any length may be used and the music-sheet impelled forward with a uniform motion.

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

1. The combination, with a musical instrument, of a reed-board composed of separate sections arranged in line with each other end to end in one horizontal plane, and means for securing said sections so that they may be

readily detached from each other and from the other parts of the instrument, substantially as specified.

2. The combination, with a musical instrument, of a reed-board composed of separate sections arranged in line with each other and provided with arms a, fitting in slots or housings, and pressed downward by springs I J, substantially as specified.

3. The combination, in a mechanical musical instrument, of a perforated music-sheet and a reed-board composed of separate sections arranged in line with each other, substantially as specified.

4. The combination, in a mechanical musical instrument, of a wind-chest, a double reed-board composed of two sections placed end to end in the same horizontal plane, and provided with two sets of reeds and reed-ducts communicating with passages common to both sets of reeds, and a perforated music-sheet arranged to travel between the wind-chest and reed-board, substantially as specified.

5. The combination, in a mechanical musical instrument, of a music-sheet, a take-up roller therefor, and a shaft arranged substantially as described and shown, to have frictional contact with the portion of the music-sheet which is wound on said take-up roller to impart motion to it.

6. The combination, in a mechanical musical instrument, of bellows, pitmen or rods for operating the same, a music-sheet and music and take-up rollers therefor, and a driving-shaft connected to said pitmen or rods, and arranged substantially as described, to rotate the said take-up roller through frictional contact with the portion of the music-sheet wound on said take-up roller.

7. The combination, in a mechanical musical instrument, of a music-sheet, a take-up roller therefor supported in adjustable or swinging bearings, and a shaft for imparting motion thereto, arranged substantially as described and shown, to have frictional contact with that part of the music-sheet which is wound on said roller.

8. The combination, in a mechanical musical instrument, of a music-sheet; a take-up roller therefor, a driving-shaft, and a shaft arranged in engagement with the driving-shaft, substantially in the manner described, for transmitting motion therefrom to said roller by frictional contact with the portion of the music-sheet which is wound on said roller.

9. The combination, in a mechanical musical instrument, with a music-sheet and a take-up roller therefor, of a driving-shaft arranged and adapted to operate in the manner described, whereby it may be moved aside so as not to be affected by the music-sheet while it is being rewound on the music-roller.

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