(No Model.) 2 Sheets—Sheet 1.

# J. H. CHASE.

## MECHANICAL MUSICAL INSTRUMENT.

No. 318,448. Patented May 26, 1885.

Fig. 1.

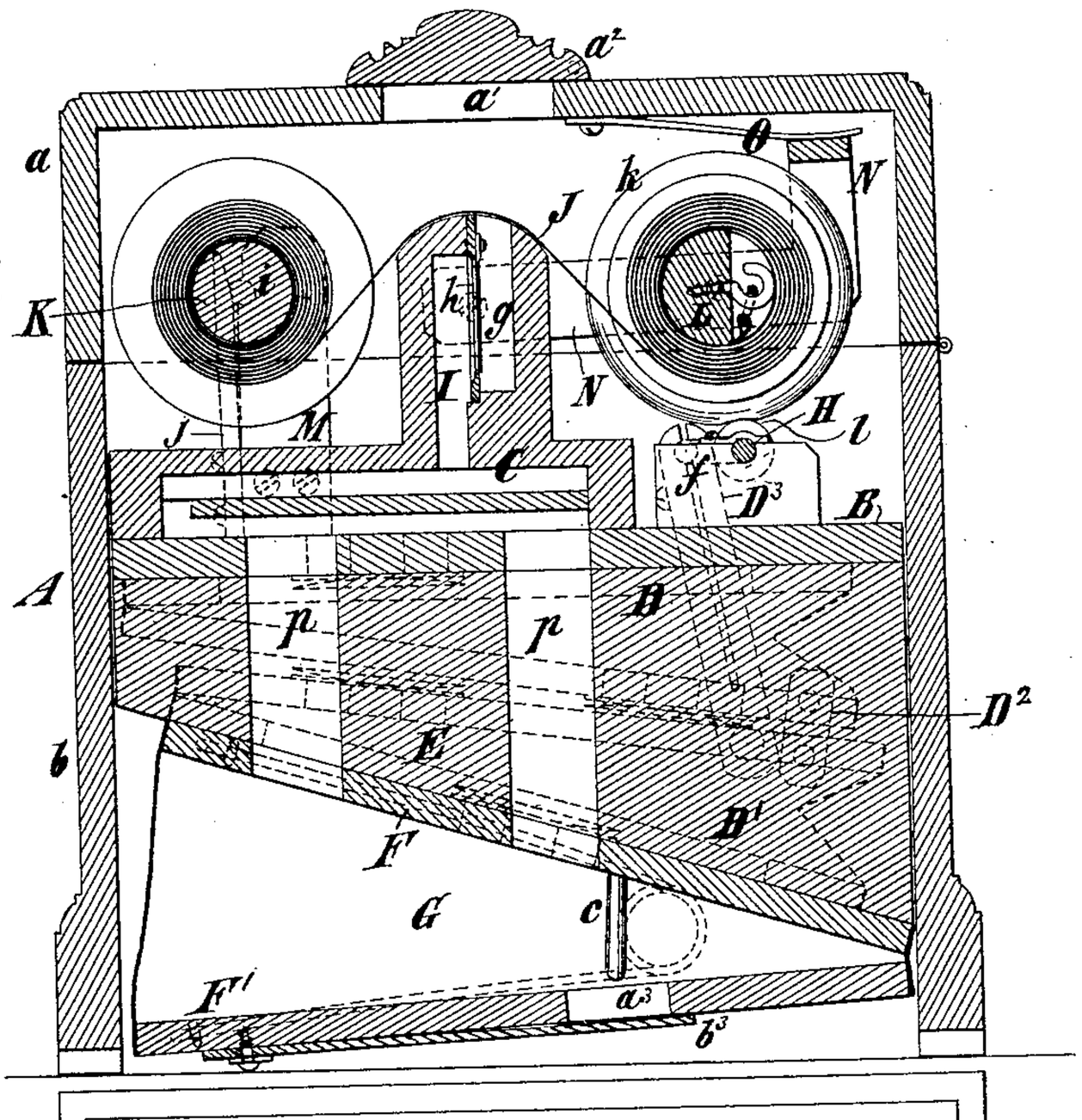
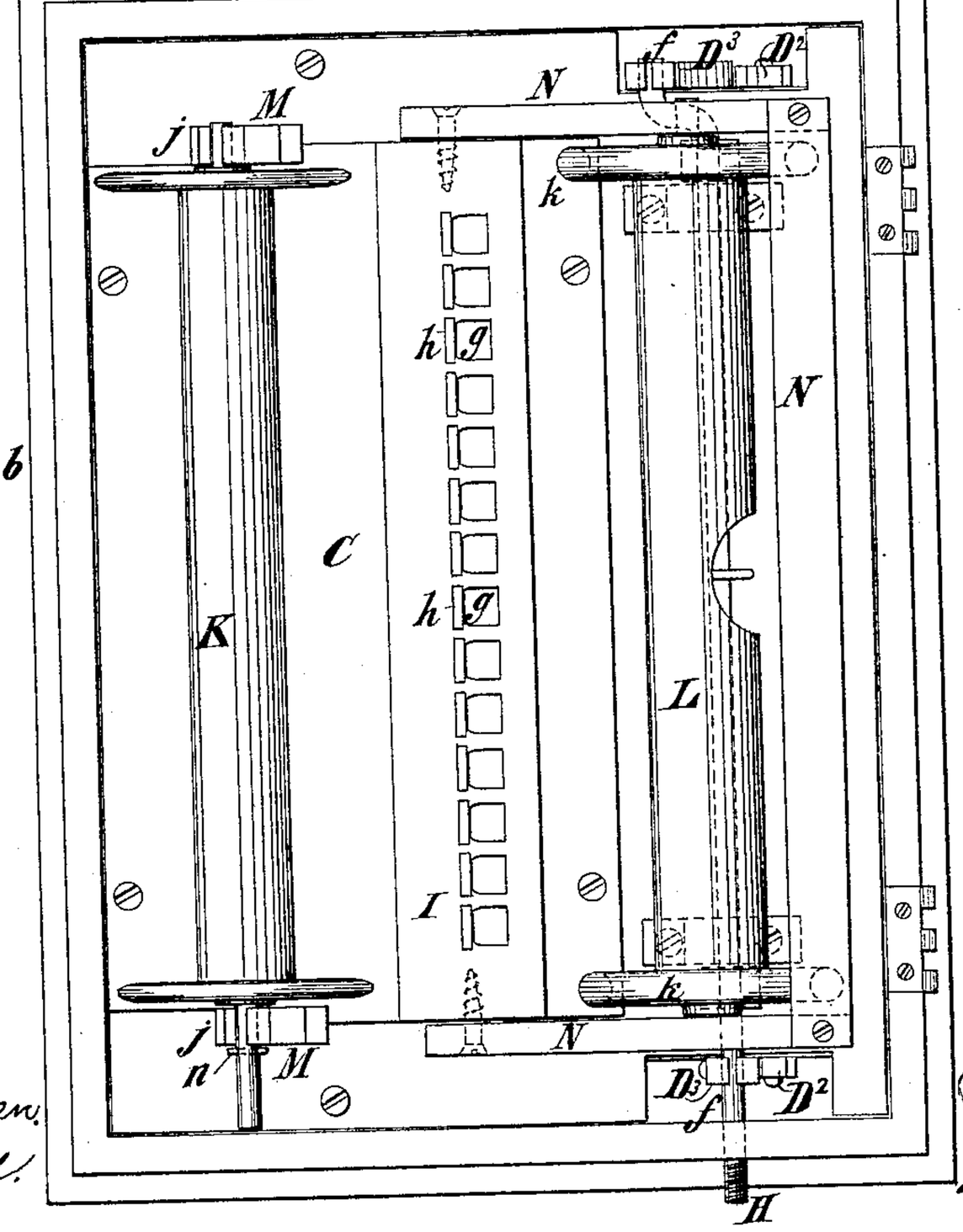



Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

# J. H. CHASE.

## MECHANICAL MUSICAL INSTRUMENT.

No. 318,448. Patented May 26, 1885.

*Fig. 4.*

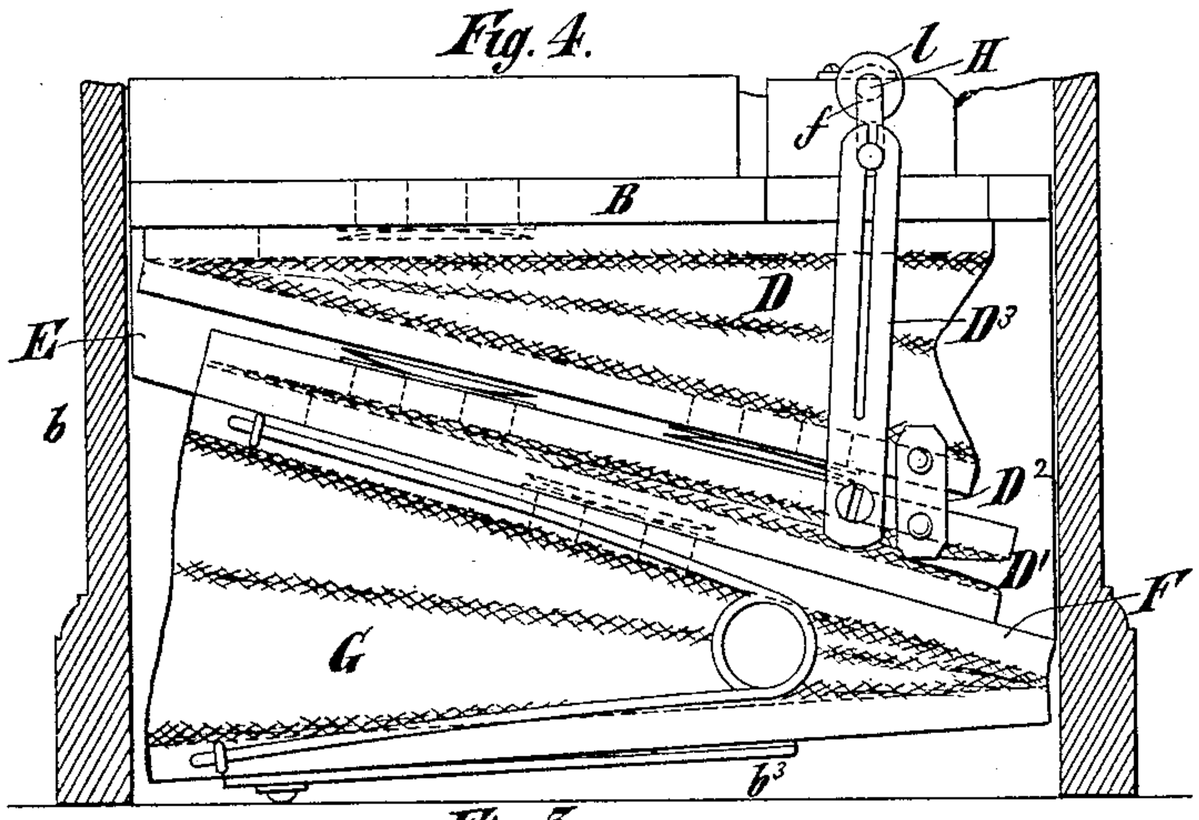



*Fig. 3.*

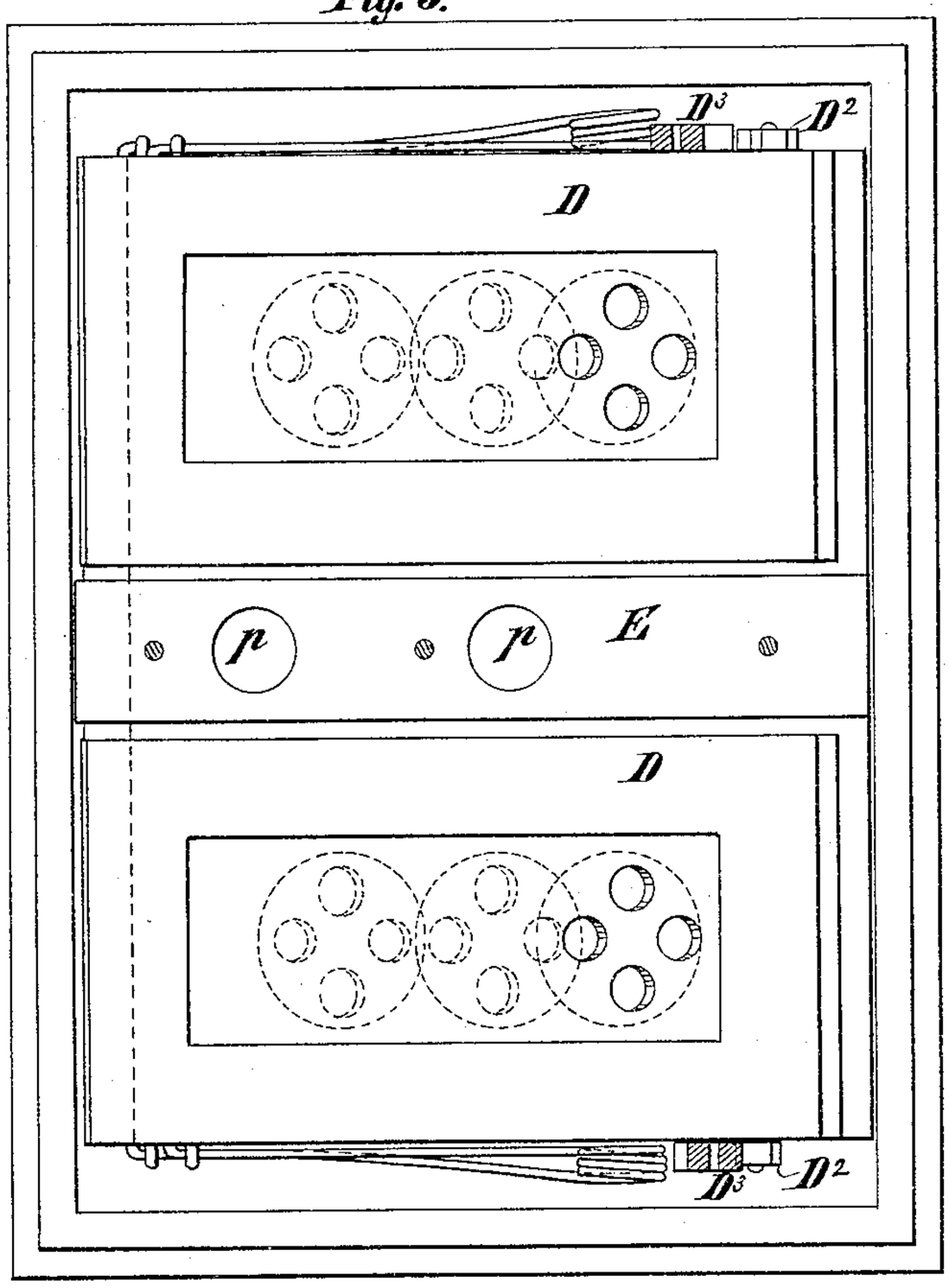
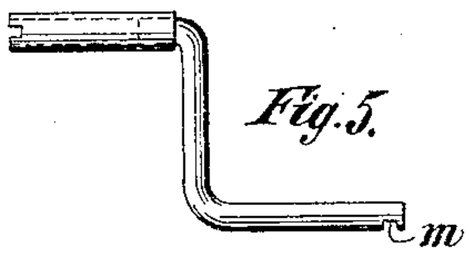



*Fig. 5.*

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# UNITED STATES PATENT OFFICE.

J. HERBERT CHASE, OF BROOKLYN, NEW YORK.

## MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 318,448, dated May 26, 1885.

Application filed September 7, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, J. HERBERT CHASE, of Brooklyn, in Kings county and State of New York, have invented a certain new and useful Improvement in Mechanical Musical Instruments, of which the following is a specification.

This improvement will be fully described, and then pointed out in the claims.

In the accompanying drawings, Figure 1 is a central longitudinal section of a mechanical musical instrument embodying my improvement. Fig. 2 is a plan of the same with the cover of the case and the music-sheet removed. Fig. 3 is a horizontal section taken below the board that forms the base of the wind-chest. Fig. 4 is a side view of the lower part of the instrument, with one side of the case removed, and Fig. 5 is a side view of a combined crank and reed-hook.

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

A designates the case of the instrument. It is shown as of rectangular form, and may be made of wood. Any desired ornamentation may be made in or on the case. Preferably the case will comprise a cover, *a*, hinged to the body *b* at the back, and fastened by a spring-catch or other device at the front. It may, however, be unconnected with the instrument, and need not have any catch, as it can be maintained in place merely by gravity, if desirable. The cover has in the top an aperture, *a'*, furnished with a hinged lid, $a^2$. This lid may be manipulated to serve as a swell.

B designates a board, which rests upon and is secured by screws or other suitable means to rails that are fastened to the inner surfaces of the sides of the case. This board B forms the base of a wind-chest, C, and has bellows D arranged beneath it. The stationary boards of the bellows are affixed by screws or otherwise to the under side of the board B. I have shown two bellows D thus arranged. Between them is a block of wood, E, that is secured at the upper end to the board B, and has secured to the lower end, at an angle to the board B, a board, F.

On the top of the board F are arranged two bellows, D'. These bellows D' are arranged on opposite sides of the block E and immediately opposite the bellows D. Their stationary boards are affixed by screws or other appropriate means to the board F. The movable boards of the bellows D are connected to the movable boards of the opposite bellows, D', by links $D^2$. Each of the bellows D and the opposite bellows, D', work in unison as a pair of bellows, and the pairs of bellows work alternately. The bellows, as here shown, are of the type known as "exhaust" or "suction" bellows.

On the under side of the board F is an equalizer, G. It is constructed, as usual, like a bellows. The board F constitutes the stationary board of the equalizer. The movable board F' is hinged to the board F. The equalizer extends almost entirely across the case. The bellows D communicate with the wind-chest C, and the bellows D' communicate with the equalizer. The block E has through it passages *p*, whereby communication is established between the wind-chest and equalizer. The movable board of the equalizer has a relief-aperture, $a^3$, furnished with a valve, $b^3$. This valve $b^3$ may be made of a strip of wood faced with leather at or near one end and fastened rigidly near the other end to the outer side of the movable board of the equalizer. A pin, *c*, attached to the stationary board of the equalizer and extending through the aperture $a^3$, is adapted to come in contact with the valve $b^3$ and arrest the further movement of the valve; hence if the movable board is moved farther toward the stationary board after the valve is arrested the valve will be bent, so as to open or uncover the aperture $a^3$ and relieve the equalizer. The overstraining of the equalizer will thus be prevented.

H designates the driving-shaft of the instrument. It is journaled in bearing-blocks that are mounted on the board B, and one end extends through the case A, so that it may have applied to it a hand-crank, whereby rotary motion may be imparted to it. This shaft is provided with two cranks, *f f*, set at about right angles to each other, and connected by rods or pitmen $D^3$ to the movable boards of the bellows D'. Motion is thus transmitted from the driving-shaft to the movable boards of the bellows D', and thence through the links $D^2$ to the bellows D.

I designates a reed-board, which is mounted

upon the wind-chest C. It has cells *g*, which receive reeds *h* and communicate with the wind-chest.

*J* is a perforated traveling music-sheet, which may be made of paper or other suitable material, and passes over the apex of the reed-board to control the speaking. At one end this music-sheet is permanently attached to a roller, K, termed a "music-roller," because, ordinarily, the music-sheet is kept wound upon it, and at the other end the music-sheet is detachably secured to a roller, L, termed a "take-up roller," because it takes up or winds up the music-sheet during the playing of the instrument.

The music-roller K is supported in bearing-pieces M, that are attached to the sides of the wind-chest. These bearing-pieces have in their front edges cavities *i*, in which the journals of the music-roller fit, and the journals of the roller are held in the cavities by resilient pieces of wood or other material *j*, that are secured near one end to the bearing-pieces and near the other press upon the journals of the roller.

The take-up roller L is journaled in a frame, N, that is pivoted at the ends to the ends of the reed-board. The frame N may be made of wood. Its end pieces will be made stiff, but the cross-piece will preferably be made thin and resilient. The heads of the take-up roller have peripherical grooves, in which are fitted bands *k*, of india-rubber or analogous material. When the take-up roller is in position for use, the bands *k* are in contact with wheels *l* on the driving-shaft, and thus motion is transmitted from the driving-shaft to the take-up roller.

The music-sheet may be connected to the take-up roller by any suitable means—as, for instance, a hook on the roller and an eye or ring on the music-sheet. The music-sheet passes from the under side of the music-roller to the apex of the reed-board, and thence to the under side of the take-up roller. By supporting the take-up roller in a frame pivoted to the reed-board, this roller may be swung over into a position above the music-roller, so as to afford access to the reed-board. Provision is also afforded for varying the pressure with which the heads of the take-up roller impinge against the wheels *l* of the driving-shaft. To vary this pressure, the hand of the operator is placed on the cross-piece of the frame N and moved downward with more or less force. If the pressure is relaxed to such a degree that the wheels *l* of the driving-shaft will fail to impart motion to the take-up roller, then the music-sheet will dwell or stop and prolong a note or chord. By varying the pressure the expression of a tune being played may be varied considerably.

The cover *a* of the case A of the instrument is provided with a spring, O, which, when the cover is shut down, presses upon the cross-piece of the frame N, and holds the heads of the take-up roller L with a yielding pressure against the wheels *l* of the driving-shaft. By raising and lowering the cover the pressure with which the heads of the take-up roller impinge against the wheels *l* of the driving-shaft may be varied in the same way that such pressure may be varied by direct pressure of the hand of the operator upon the cross-piece of the frame N. When the cover *a* is raised entirely away from the frame N, the music-sheet may be rewound on the music-roller, as the take-up roller will then impinge on the wheels *l* of the driving-shaft with a pressure due only to its gravity. When the take-up roller is held down on the wheels *l* of the driving-shaft merely by gravity, the driving-shaft will offer such resistance to the turning of the roller that the music-sheet may be wound up tightly on the music-roller.

If desirable, a push-piece may be arranged in the cover *a* of the case of the instrument in such manner that it may be shifted when the cover is closed, so as to vary the pressure on the cross-piece of the frame N.

The end of the driving-shaft that protrudes through the case of the instrument is screw-threaded, and the hand-crank (see Fig. 5) which is fitted thereto has an internally-screw-threaded socket, that may be engaged with the screw-threaded end of the driving-shaft.

One of the journals of the music-roller is provided with a cross-pin, *n*, with which a hand-crank having a socket notched across the end may engage for the purpose of rewinding the music-sheet upon the music-roller.

The end of the driving-shaft that receives the hand-crank and the journal of the music-roller that receives the other hand-crank may be made alike, so that a single crank may be used to operate either.

The handle of one of the cranks has formed in it near the outer end a notch, *m*, which adapts it to be used as a hook, whereby the reeds may be drawn out of their cells when desirable. I have shown this feature in the crank whereby the music-roller is driven.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a mechanical musical instrument, the combination of a driving-shaft, a music-sheet, a take-up roller, whereby the latter is taken up in playing, and a movable frame provided with bearings for both journals of the take-up roller, and adapted to be moved to vary the position of the take-up roller relatively to the driving-shaft and the pressure under which it is subjected to the action of the driving-shaft, substantially as specified.

2. In a mechanical musical instrument, the combination of a driving-shaft, a music-sheet, a take-up roller, whereby the latter is taken up in playing, a movable frame provided with bearings for both journals of the take-up roller, and adapted to be moved to vary the position of the take-up roller relatively to the driving-shaft and the pressure under which it is subjected to the action of the driving-shaft, and a resilient cross-bar on said frame, whereby a

yielding pressure may be exerted upon the take-up roller, substantially as specified.

3. In a mechanical musical instrument, the combination of a driving-shaft, a music-sheet, a take-up roller, whereby the latter is taken up in playing, a movable frame pivoted to a fixed portion of the instrument, and provided with bearings for both journals of the take-up roller, and adapted to be moved to vary the position of the take-up roller relatively to the driving-shaft and the pressure under which it is subjected to the action of the driving-shaft, substantially as specified.

4. In a mechanical musical instrument, the combination of a driving-shaft, a music-sheet, a take-up roller, whereby the latter is taken up in playing, a movable frame provided with bearings for both journals of the take-up roller, and adapted to be moved to vary the position of the take-up roller relatively to the driving-shaft and the pressure under which it is subjected to the action of the driving-shaft, a cross-bar on said frame, and a hinged cover provided with a presser for bearing upon the cross-bar and acting upon the same with a yielding force, substantially as specified.

5. In a mechanical musical instrument, the combination of a driving-shaft, a reed-board, a music-sheet, a take-up roller, whereby the latter is taken up in playing, and a frame in which the said roller is journaled, and which is pivoted to the ends of the reed-board, substantially as specified.

J. HERBERT CHASE.

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JAMES R. BOWEN.