

(No Model.)

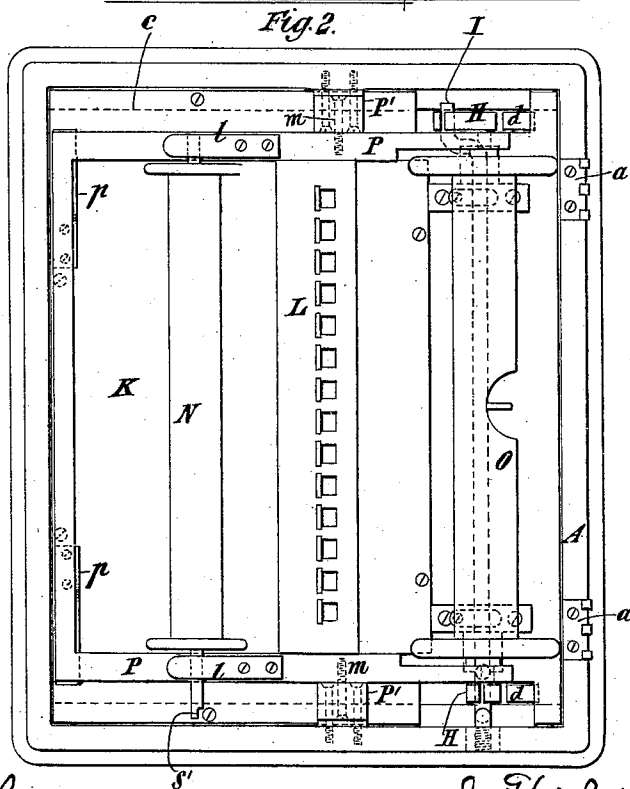
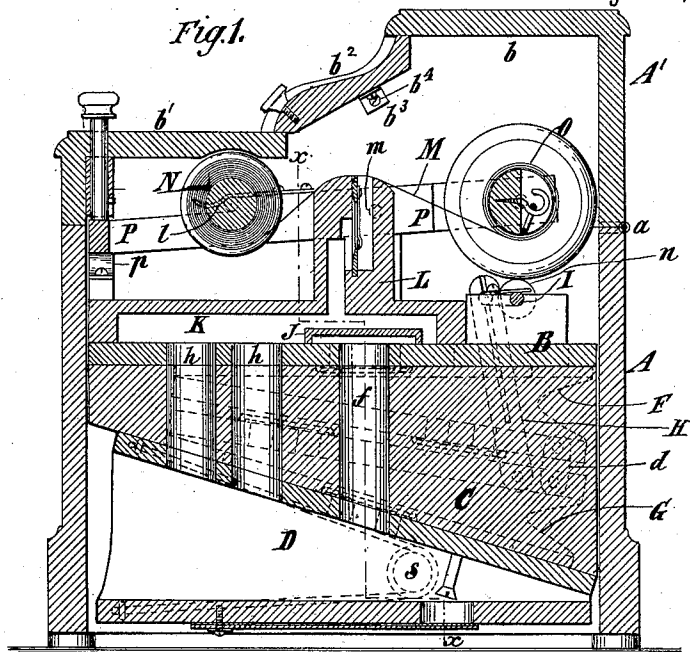
2 Sheets—Sheet 1.

J. H. CHASE.

MECHANICAL MUSICAL INSTRUMENT.

No. 363,591.

Patented May 24, 1887.



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Fig. 3.

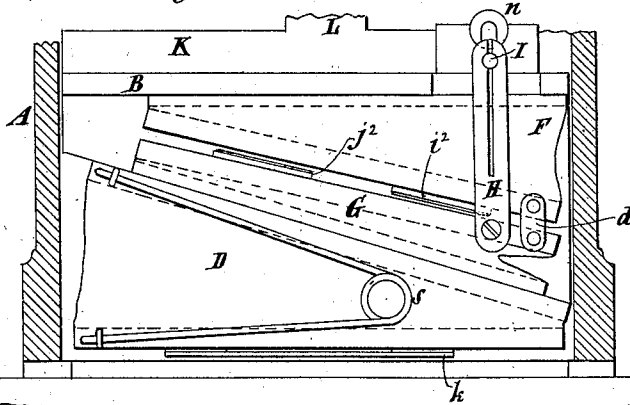


Fig. 8.

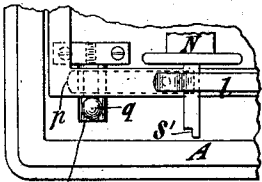


Fig. 7.

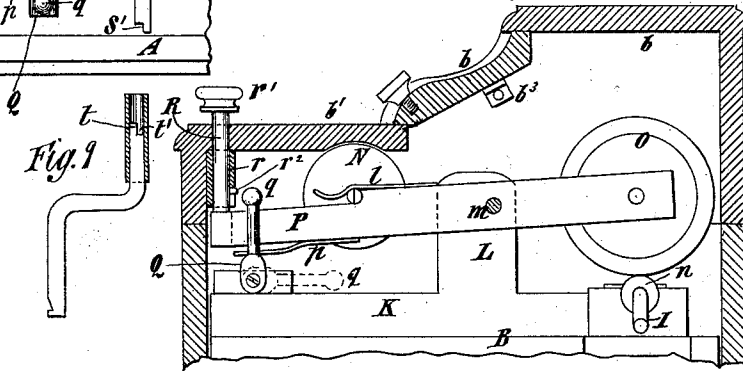


Fig. 5.

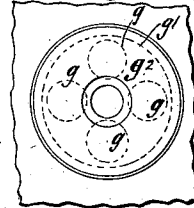


Fig. 9.

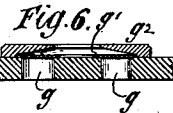
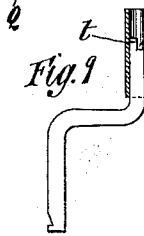
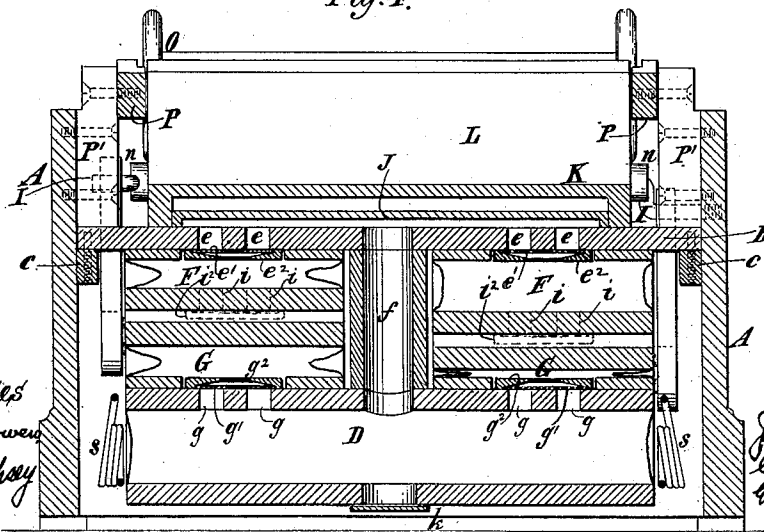


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 363,591, dated May 24, 1887.

Application filed May 12, 1884. Serial No. 131,178. (No model.) Patented in England September 14, 1883, No. 4,410.

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.

Said improvement has been patented in Great Britain with my consent September 14, 1883, No. 4,410.

I will describe in detail a mechanical musical instrument embodying my improvement, and then point out the various features of the improvement in claims.

In the accompanying drawings, Figure 1 is a central vertical section of a mechanical musical instrument embodying my improvement. Fig. 2 is a top view of the same with the cover removed. Fig. 3 is a vertical section of the same taken just inside of one side of the case. Fig. 4 is a transverse vertical section of the instrument taken on the line *xx*, Fig. 1. Fig. 5 is a plan view of a bellows-valve and a portion of a bellows board in conjunction with which it is used. Fig. 6 is a sectional view of the same. Fig. 7 is a longitudinal section illustrative of a modification of certain features of the improvement. Fig. 8 is a plan of certain parts which are shown in Fig. 7, and Fig. 9 is a sectional view of a hand crank.

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

A A' designate the case of the instrument, A being the body, and A' being a cover which is connected to the body at one edge by hinges *a*. The cover may be swung up or down at different angles or entirely beyond the body of the case. The cover is made somewhat peculiar in form—the portion *b*, adjacent to the hinges, being elevated higher than the portion *b'*, which is most distant from the hinges. Between the portions *b* and *b'* is a slat, *b²*, affixed to elbow-pieces *b³*, which are pivotally connected by screws or otherwise to the sides of the cover by screws *b⁴*, or other suitable devices. By swinging the slat *b²* upon the screws *b⁴* the notes emitted from the instrument may have the tones varied.

B designates a board arranged within the body of the case of the instrument and mounted on rails *c*, which are secured by nails, screws,

or otherwise against the inner surfaces of the sides of the body of the case of the instrument. Preferably the board B will be secured to the rails *c* by screws or analogous means.

To the under side of the board B a block, C, is secured by screws or other suitable means. This block extends downward, and is inclined on the under side. On the under inclined side of the block C is secured, by screws or otherwise, a board which forms the fixed board of an equalizer, D. The lower board of this equalizer is hinged to the fixed board at one edge, and at the opposite edge and the side edges it is connected to the fixed board by rubber cloth or analogous material in the usual manner. This equalizer is kept normally distended by springs *s*.

On each side of the block C, between the board B and the fixed board of the equalizer D, is a pair of bellows, F G, of ordinary construction. The fixed boards of the bellows F are secured in any suitable manner to the under side of the board B, and the fixed boards of the bellows G are secured on the upper side of the fixed board of the equalizer D. The movable boards of the bellows F G of each pair are connected by a link, *d*, pivotally fastened thereto by nails, screws, or like devices.

Pitman-rods H are pivotally connected by screws or their equivalents to the movable boards of the bellows G. These pitman-rods are connected at the upper ends to cranks on a shaft, I, which constitutes the driving-shaft of the instrument. The cranks on this shaft, to which the pitman-rods are connected, are set out of line, so that the pairs of bellows will operate successively. The driving-shaft I is rotated by means of a hand-crank, which may be inserted through a hole in the body of the case A and screwed onto the end of the shaft whenever the instrument is to be used.

Over the bellows F there are perforations or holes *e*, extending through the board B. The passage of air through these holes is controlled by valves *e'*, arranged in chambers *e²* within the bellows.

J designates a trunk, which is arranged upon the board B, and establishes communication between holes *e*, and consequently with the bellows F, under control of the valves *e'*. Through the board B and the block C a passage,

f, extends. It establishes communication between the equalizer D and the trunk J. The bellows G communicate with the equalizer D through holes *g* in the fixed board of the equalizer under control of valves *g'*, operating in chambers *g''*.

K designates a chamber located above the board B and communicating with the equalizer D through passages *h h'*, extending through the board B and the block C.

Over the chamber K the reed-board L is arranged. This reed-board is of usual construction, and the reeds are arranged in the cells in such way as to be operated by air entering at the upper ends. In this example of my improvement the bellows are of the kind known as "suction bellows," operating to cause air to enter the reed-cells at the upper ends. The bellows F have in their movable boards holes *i*, controlled by valves, which are arranged in chambers *i'*. Air is discharged through the holes *i*. The bellows G have their movable boards provided with holes, through which air is discharged under control of valves arranged in chambers *j''*. The valves used in conjunction with these bellows are all of the same kind. I have illustrated one in detail in Figs. 5 and 6. I will assume that it is one of the valves *g*, and hence I will so letter it and correspondingly letter the parts with which it operates.

The holes *g* are arranged in a circle or circular row. The valve *g'* is arranged on that side of the part containing the holes from which air passes. It is an annular piece of rubber cloth or analogous material adapted to cover the holes *g*, and arranged within a chamber, *g''*. This chamber has a central opening. Air may pass through the holes toward the chamber *g''*, because it can lift up the valve and pass through its central opening and the central opening of the chamber. Air cannot, however, pass in the reverse direction through the holes, because as soon as it enters the chambers *g''* and reaches the valve it will force the valve to its seat, thereby closing the holes. The chamber may be made of any suitable material—as, for instance, wood.

The equalizer D is provided with a relief-valve, *k*, as usual. This valve consists of a straight strip of wood fastened at one end to the other side of the movable board by a screw or otherwise and covering a hole in said movable board. A screw or equivalent device on the fixed board opens this valve when the movable board is raised to a certain point and air is then admitted.

The speaking of the reeds is controlled by a perforated music-sheet, M, which is moved over the tip of the reed-board. The ends of the music-sheet are attached to rollers N O. To the roller N one end of the music-sheet is permanently fastened. I term this roller the "music-roller." It is detachably journaled in bearings *l*, which are provided in a frame, P, and is to be removed whenever the music-sheet is taken out of the instrument. The other end

of the music-sheet is detachably fastened by a hook or ring or analogous means to the roller O, which I term the "take-up roller." This roller is journaled in bearings provided in the frame P, so as to be retained permanently. It may, however, be detachable, if desirable.

The frame P is pivotally connected by screws or pins *m* to blocks P', which are arranged above the board B, and are secured by screws or otherwise to the sides of the body of the case.

The heads or flanges of the take-up roller O are preferably covered at the periphery with bands of india-rubber or similar material, and are normally in contact with wheels *n*, arranged upon the driving-shaft I, so as to derive motion therefrom. By rocking the frame so as to elevate its end at which the take-up roller is supported the heads or flanges of this roller may be removed from contact with the wheels *n* of the driving-shaft, or the pressure with which they bear upon the wheels *n* may be varied in order to cause the roller to be rotated at different speeds.

The frame is held in position to maintain the heads or flanges of the take-up roller in contact with the wheels *n* of the driving-shaft by means of a spring or springs, *p*, which, as shown in Fig. 1, are arranged in blocks erected on the chamber K and impinge against the under side of the frame P. In the instrument which is illustrated in Fig. 7, (which, by the way, is the preferred form,) springs *p* are arranged on the under side of the frame P and bear on a cam-shaped rock-shaft, Q, which is journaled in bearings erected on the chamber K, and provided with a handle, *q*, whereby it may be actuated. When this rock-shaft is in the position shown, it holds the frame so that the heads or flanges of the take-up roller will be in firm engagement with the wheels *n* of the driving shaft. When the rock-shaft is shifted into a reverse direction, as indicated by the dotted lines, the heads or flanges of the take-up roller will impinge upon the wheels *n* of the driving-shaft with a force due to gravity only, and the friction thus produced will cause a sufficient tension on the music-sheet to retard it in rewinding, so that it may be rewound tightly upon the music-roller.

Both in the form of my invention illustrated in Fig. 1 and in the form illustrated in Fig. 7 the cover of the case is provided with a pin, R, arranged in a slideway, *r*, and secured against detachment by a head, *r'*, at one end and a pin, *r''*, at the other end. By pressing down this pin R the force of the springs *p* may be more or less counteracted, and the force with which the heads or flanges of the take-up roller bear upon the wheels *n* of the driving-shaft may be varied to cause variations in the speed with which the music-sheet is drawn along, and consequently to cause changes of expression.

I have not yet explained how the music-roller is to be driven for the purpose of rewinding the music-sheet upon it. It will be observed by reference to Figs. 2 and 8 that

the end of one of the journals is provided with a notch, *s'*, formed by removing about one-half of the extreme end portion. In Fig. 9 I have shown a hand-crank, which may be applied to this journal of the music-roller when the cover of the case is opened. This crank is provided with a tubular socket adapted to fit upon the journal of the music-roller with which it is to be engaged, and it has inside the socket a tenon-like portion, *t*, adapted to fit into the notch *s'* of the referred-to journal, and a notch, *t'*, adapted to receive the extreme end of the said journal.

It will be observed that the notch *s'* has a surface parallel with the axis of the journal of the roller, and that the notch *t'* has a surface which is parallel with the axis of the portion of the crank within the socket.

I have found that by this combination of parts I am enabled to produce an engagement of a crank with the journal of the music-roller without providing any other support for the crank than that which it has on the journal.

The socket of the crank may be made separate from the crank proper and fitted and secured to the crank proper.

I do not herein claim the combination, with wind-inducing apparatus comprising a board or piece provided with a series of holes for the passage of air, of a valve adapted to cover the holes and having a central opening inward of the range of the holes, whereby when the valve is forced against the holes it may close them, and when it is moved away from the holes air may pass through it and the holes, as I have made the same the subject of a separate application October 5, 1885, No. 178,973.

I have filed an application for Letters Patent upon an improvement in mechanical musical instruments September 7, 1883, No. 105,778. A feature of that instrument consisted in a movable frame provided with bearings for both journals of the take-up roller 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 sub-

jected to the action of the driving shaft. In my present application I do not lay claim to that feature when broadly considered.

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

1. The combination, with the body *A* of the case, of the cover *A'*, consisting of the portion *b'*, the elevated portion *b*, and the adjustable slat *b'*, arranged between the portions *b* *b'*, the cover *A'* being hinged to the body *A* at the back of the case, substantially as specified.

2. The combination, with a frame supporting a take-up roller for a traveling music-sheet, of supports to which such frame is pivotally connected, a driving-shaft for transmitting motion to the said take-up roller, a spring or springs acting on the said frame to cause one or more heads or flanges on the take-up roller to engage with one or more wheels on the driving-shaft, and a pin supported by the cover of the case of the instrument and serving as a means whereby when the cover is closed the said frame may be shifted to vary the speed at which the take-up roller will be driven, substantially as specified.

3. The combination, with a frame supporting a take-up roller for a traveling music-sheet, of supports to which such frame is pivotally connected, a driving-shaft for transmitting motion to the said take-up roller, a spring or springs for causing one or more heads or flanges on the take-up roller to engage with one or more wheels on the driving-shaft, a rock-shaft adapted to shift the said frame so as to cause the one or more heads or flanges of the take-up roller to press forcibly on the one or more wheels of the driving-shaft, and a pin supported by the cover of the case of the instrument and serving as a means whereby when the cover is closed the frame may be shifted to vary the speed at which the take-up roller will be driven, substantially as specified.

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