

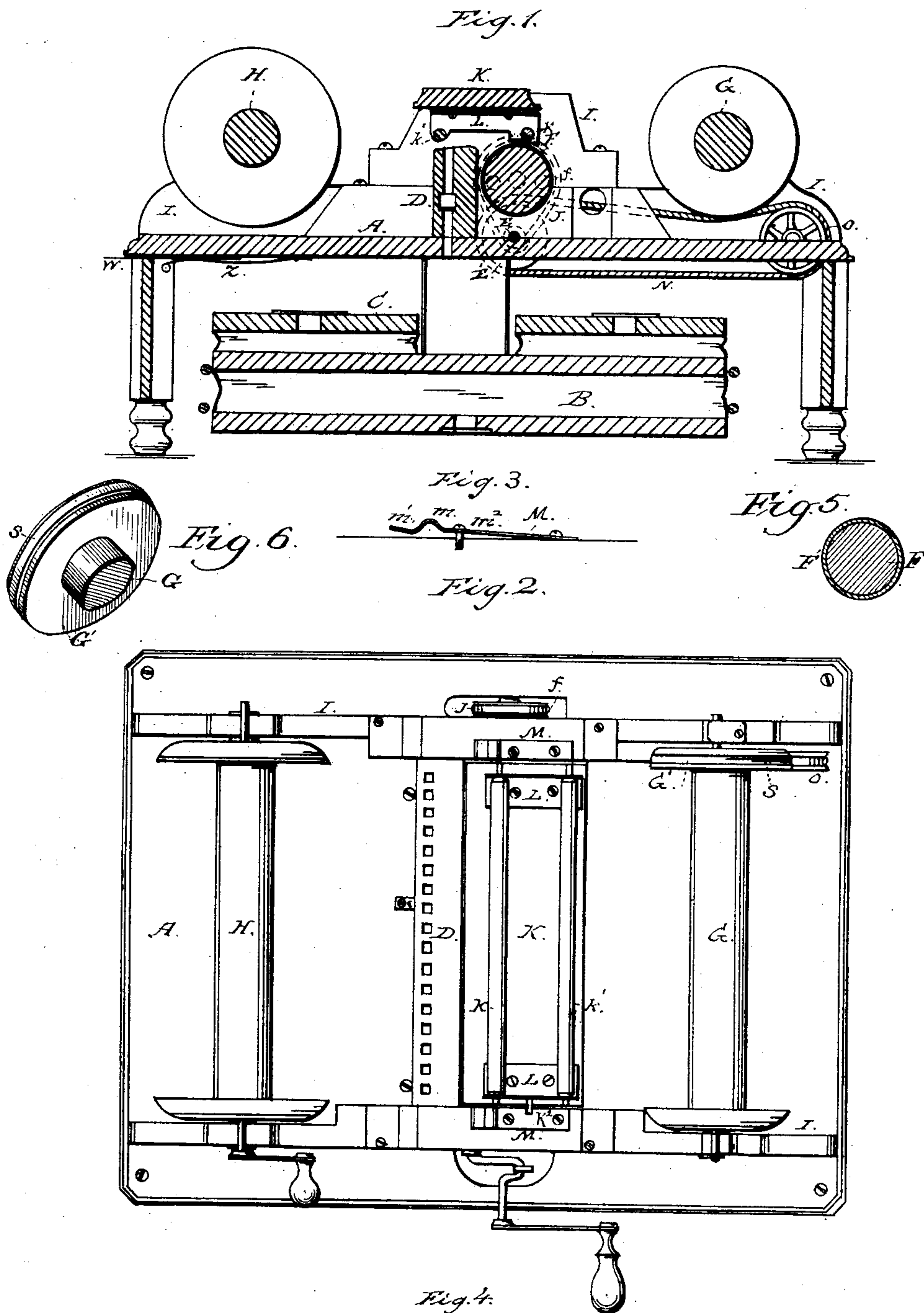
(No Model.)

J. McTAMMANY.

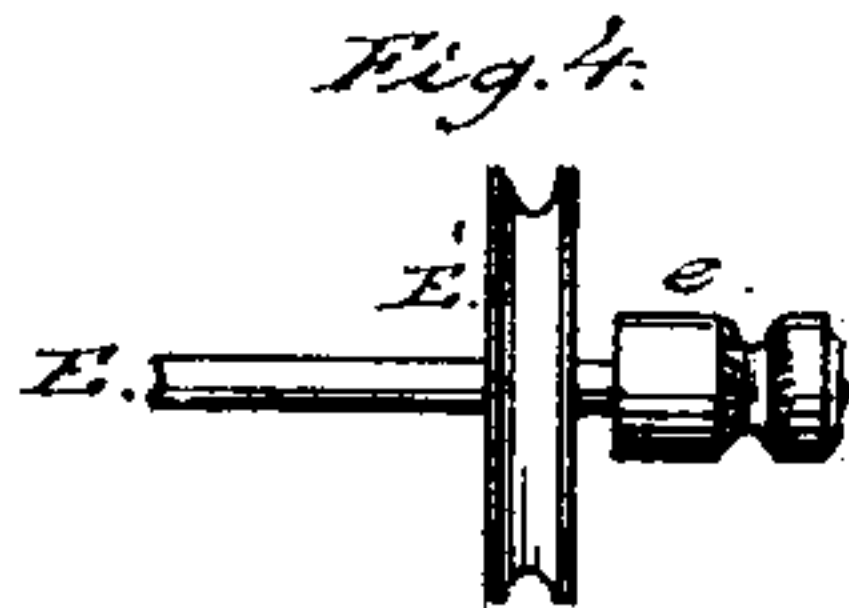
AUTOMATIC MUSICAL INSTRUMENT.

No. 328,503.

Patented Oct. 20, 1885.



Attest;  
H. W. Howard  
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Inventor,  
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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 328,503, dated October 20, 1885.

Application filed March 19, 1884. Serial No. 124,733. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN MCTAMMANY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new useful Improvements in Automatic Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to automatic musical instruments which are adapted to be used at will either with an endless music-sheet or with a music-sheet having its ends attached to winding-rolls.

The nature of said invention consists partly in certain improvements in the rack and in devices for pivoting and applying spring-pressure to the same; partly in the lower feed-roll and the devices for driving the same and the winding-roll, whereby, when the rack is turned back out of its operative position or removed altogether, the feed-roll becomes a friction device regulating the rapidity of motion of the music-sheet as it is drawn forward by the winding-roll, and partly in certain means for preventing rattling, and in other improvements hereinafter particularly set forth and claimed.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section through an instrument embodying my invention, the rack being in position for operation. Fig. 2 represents a plan view of the same with the rack turned back, and Fig. 3 represents a detail view. Fig. 4 represents in detail an elevation of the pulley, small drum, and shaft whereby the feed-roll operates the belt which drives the winding-roll. Fig. 5 represents in detail in cross-section the feed-roll and its covering of rubber; and Fig. 6 represents a detail perspective view of the grooved pulley which forms the head of the winding-roll, the packing of rubber in its groove, and the chain which is in contact with said rubber.

In the said drawings, A designates the body of the instrument, containing the usual reservoir-bellows, B, and pump or feeder bellows C, the latter being two in number, though only one is illustrated, their construction, function, and arrangement being well known in the art.

D designates the reed-board, rising above the body of the instrument and supplied with reeds, reed-cells, and reed-ducts which communicate with the reservoir-bellows after the ordinary manner.

The instrument is operated by a driving-shaft, E, which is connected to the feeder-bellows by cranks and pitmen, and which also gives motion to the feed-roll F and the winding-roll G. Both of these rolls and the rewinding-roll H are journaled in or on longitudinal side walls, I, which are raised on the top of the case A near the sides thereof, the rewinding-roll H being at or near one end of the instrument, the winding-roll G being at the other end, and the feed-roll F in the middle. The driving-shaft E is provided with a small grooved drum, e, which is geared by an endless chain or belt, J, to a grooved pulley, f, on the shaft (or a gudgeon) of feed-roll F, and thus transmits motion thereto. When an endless music-sheet is used, the motion of said sheet is derived wholly from said feed-roll. Under such circumstances the rack K is retained in the position shown in Fig. 1, the upper feed roll or idler, k, being on the forward side with respect to the travel of the music-sheet while the instrument is playing of the axial line of feed-roll F, (see Fig. 5,) and holding the music-sheet against the same, while the presser-roll k', near the other end of the rack, bears similarly against the reed-board D, holding the music-sheet in proximity to the mouths of the reed-ducts. These small rolls k k' are journaled in two angular plates, L, arranged longitudinally of the instrument and attached to the under side of the rack K. This rack is held down to its work partly by the elasticity of the rubber F', which forms the surface of the former, and partly by the draft of the music-sheet between the rolls F and k, this sheet tending to raise the forward



end of the rack and consequently holding down the rear end thereof, so that the rack as a whole will keep the position shown in Fig. 1; and in addition, by the downward pressure of spring-plates M, which are secured at one end to the tops of the respective side walls before mentioned, and provided at the other end with slight curves or recesses *m*, (one in each plate,) which fit over the respective pivots or guides K' of said rack K, the free ends of said plates are inclined upward, as shown at *m'*, to facilitate the lifting of them when it becomes desirable to remove the rack from the instrument, and each of them is provided with a set-screw, *m*<sup>2</sup>, near its free end, which passes through said plate and takes into the top of the side wall below, serving to regulate the degree of spring-pressure applied by said plate to the pivot on which it bears. These spring-plates afford very secure means of attachment for said rack, though allowing its easy withdrawal, and they obviate all need for springs pressing directly on the rolls *k* *k'*, or the bearings thereof. They are also exceedingly simple, easily accessible, strong, and readily replaced. These plates allow the rack K to be turned back into the position shown in Fig. 2, and prevent its separation from the instrument. One side of said rack is provided with a lateral stud, K<sup>2</sup>, as shown in Fig. 2, which, by contact with the top of the proximate side wall I, prevents the inverted rack from turning too far and holds it in a horizontal position.

When an endless music-sheet is used, there is no need for the winding-rolls G H; but, on the other hand, when a music-sheet of the other form is used there is no necessity for the rack K, and the feed roll F ceases to feed and becomes operative only as a friction-brake or tension-regulator, which controls the forward movement of the music-sheet by checking it more or less, according to the degree of rapidity of its own rotation and the increasing accumulation on roll G, corresponding to that of the driving-shaft. The music-sheet is not held against the said roll F under such circumstances by the roll *k*, (the rack being turned back into the position shown in Fig. 2,) but is drawn against it by the winding-roll G with a greater or less tension, depending on the diameter of the accumulation of the music-sheet wound on said roll. Thus as the roll G continually increases in leverage and consequent strain the resistance of roll F increases likewise.

The roll G is operated by means of a belt or endless chain, N, which extends from a pulley, E', on the driving-shaft E to a pulley, O, turning on a stud attached to the case of the instrument, the said chain or belt N being at an intermediate point in contact with a grooved pulley, G', which forms one of the heads or ends of roll G. The frictional engagement thus made suffices to turn the said winding-

roll G, except when the resistance caused as aforesaid becomes sufficiently great to exceed the adhesion of pulley G' to chain N. The chain will then slip over said pulley without turning it, and roll G will be stationary until roll F has turned sufficiently to make the resistance less than said adhesion. In practice the pause would be hardly perceptible as the braking and relieving action of the devices will be nearly simultaneous, and the total effect will be that of a delicate tension speed-regulator governing the feeding (or, more exactly, the drawing) of the music-sheet. A chain is preferable to a belt in the gearing N.

To prevent rattling, I employ a ring or packing, *s*, of rubber, which fits into the groove of pulley or roll-head G'. This also increases the friction between said pulley and said chain.

Z designates a flat spring, secured at one end to the under side of the top of case A and bent just enough to give it resiliency. Its free end serves to hold up against said under side of the top of the case the perforated tester-strip W, which is used for trying the individual reeds, the openings being so arranged that only one reed-duct will be uncovered at a time.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic musical instrument, a feed-roll, F, in combination with a driving-shaft geared to said feed-roll, an idle roll, *k*, which may at will be used to hold the music-sheet against said feed-roll or turned back out of engagement therewith, and a winding-roll and rewinding-roll arranged on opposite sides of said feed-roll, in order that the latter may serve as a tension device when the roll *k* is removed from contact therewith, substantially as set forth.

2. In an automatic musical instrument, the combination of a winding-roll having a pulley with a driving-shaft, a belt driven by said shaft, and in contact with said pulley, and a feed-roll, F, over which the music-sheet passes, said feed-roll in the absence of the upper roll, *k*, acting as a tension-roll to regulate the winding of the music-sheet on said winding-roll, substantially as set forth.

3. The tester-holding spring Z, in combination with the top of the instrument-case, substantially as set forth.

4. The ring or packing *s* and the winding-roll pulley to which it is applied, in combination with a chain from the driving-shaft of an automatic musical instrument, said chain being in contact with said ring, substantially as set forth.

5. The combination, with the driving-shaft E and feed-roll F, of the winding-roll G and the endless chain or belt which passes around pulley O and touches (without passing around) the pulley G' on roll G, the feed-roll F being arranged to be always in contact with the

music-sheet and to operate as a permanent tension-regulating device after the roll *k* has been removed from contact therewith, substantially as set forth.

- 5 6. The rack *K*, provided on its under side with the fixed angular plates *L*, in combination with the rolls *k k'*, which are journaled in said plates, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN McTAMMANY.

Witnesses:

JULIUS GUNTHER,  
HENRY F. HARRIS.