(No Model.)

L. G. WOOLLEY.

2 Sheets—Sheet 1.

Electric Music Box.

No. 237,355. Patented Feb. 1, 1881.

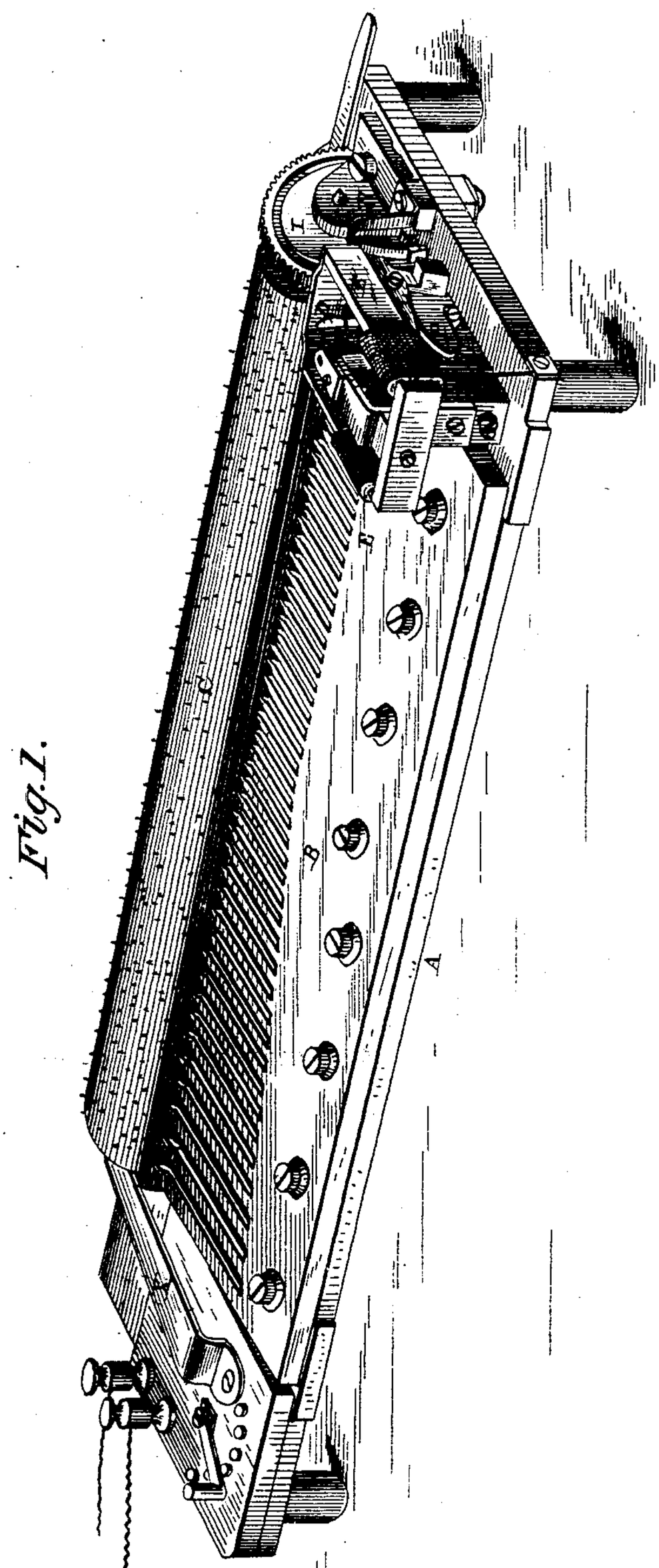

Fig. 1.

Witnesses.
Fred. G. Dieterich
Wm. H. Mortimer

Inventor.
L. G. Woolley,
per
F. A. Lehmann,
Atty.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

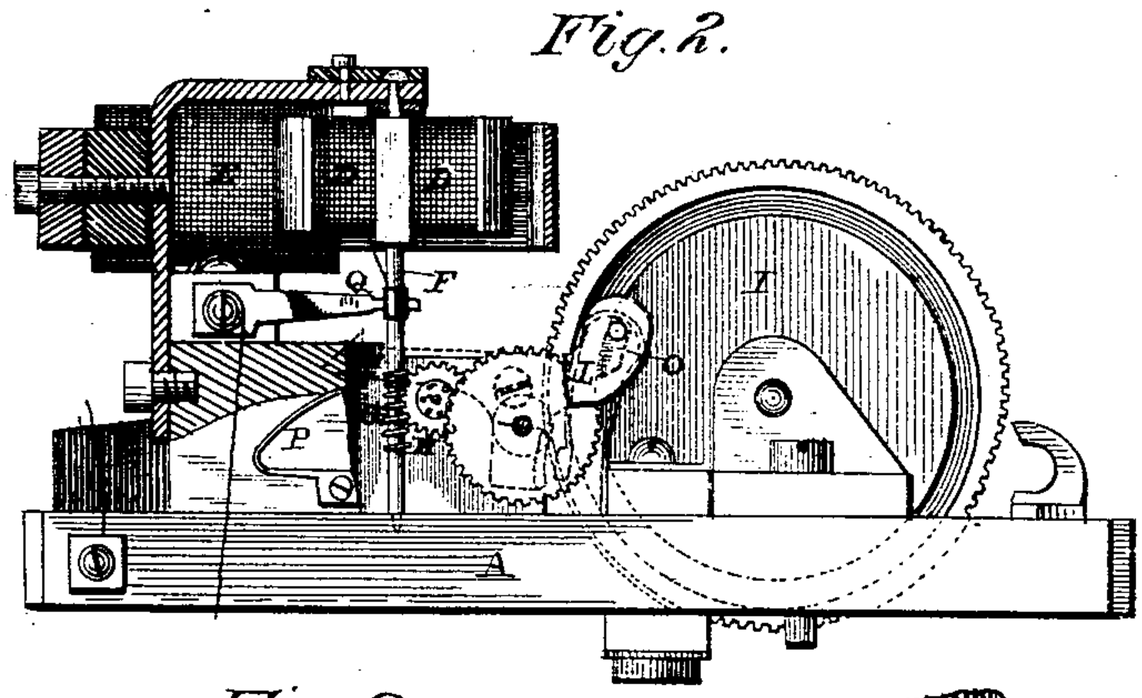


Fig. 3.

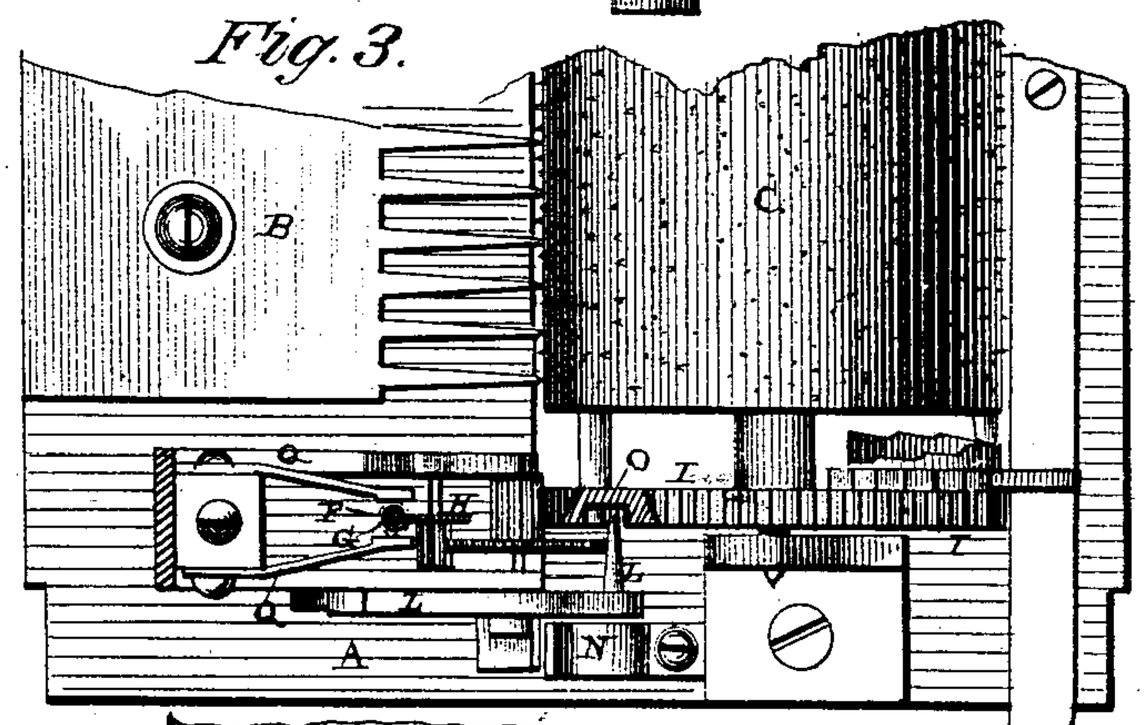
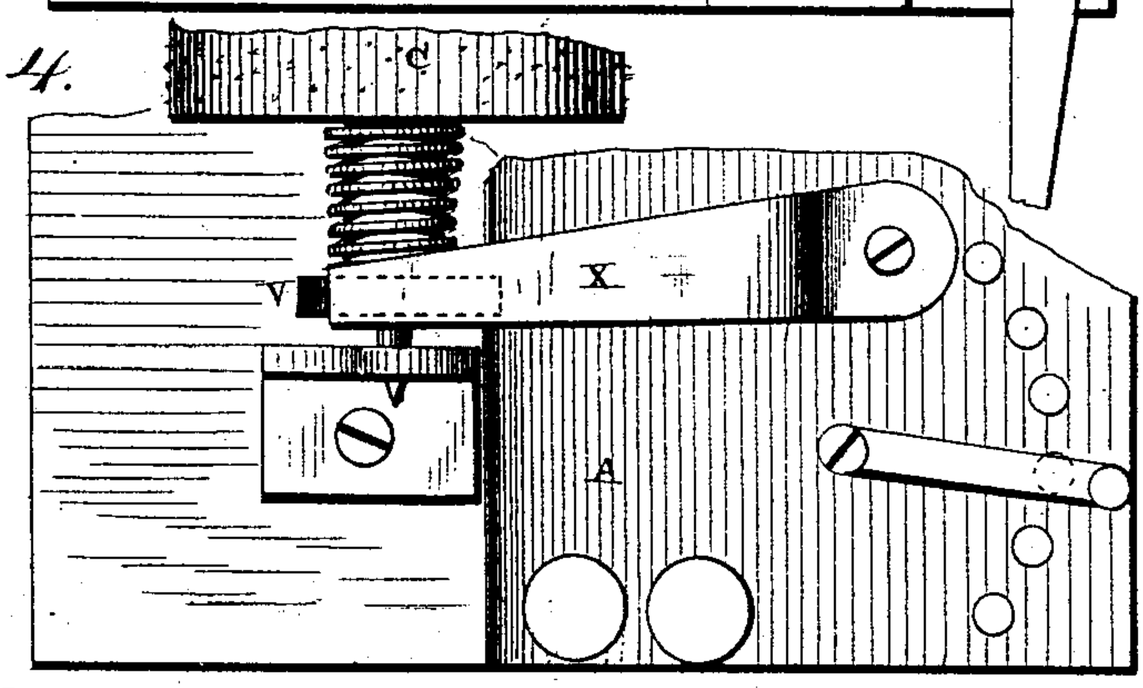


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEONIDAS G. WOOLLEY, OF MENDON, MICHIGAN.

ELECTRIC MUSIC-BOX.

SPECIFICATION forming part of Letters Patent No. 237,355, dated February 1, 1881.

Application filed November 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, LEONIDAS G. WOOLLEY, of Mendon, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Electric Music-Boxes; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in electric music-boxes; and it consists in the application of electricity in the operation of the box, in such a manner that the revolving armature will act not only as the driving-power, but as the balance-wheel for making the parts run smoothly.

It further consists in the arrangement and combination of parts, which will be more fully described hereinafter, whereby the circuit is broken at the end of every tune and the machine stopped.

Heretofore music-boxes have been operated by powerful springs which were placed at one end of the cylinder and geared thereto, and which spring caused a great strain upon all of the operating parts. In case of any slipping or giving away of any of the parts, the full power of this spring was brought into play in moving the cylinder so rapidly around that not only were the pins upon the cylinder but the teeth of the comb broken out; or, in case the spring itself should break, the recoil of the parts always ruins a part or the entire mechanism. Another great disadvantage connected with the use of a spring is the great wear and tear of the parts, owing to the tremendous force exerted by the spring upon all of the moving parts. When the spring is applied to the end of the cylinder away from the flutter-wheel it is estimated that fully twenty times as much power is required to run the box as when the power is applied directly at the end where the flutter itself is placed.

The object of my invention is to do away entirely with this spring and the great strain upon the moving parts, and to substitute a small revolving armature, not only as the driving-wheel, but as the regulator of the entire movement.

Figure 1 is a perspective of my invention complete. Fig. 2 is an end view of the same, partly in section. Fig. 3 is a plan view of the end to which the motor is applied, also partly in section. Fig. 4 is a detail plan view of the opposite end of the cylinder from the one to which the motor is applied, showing the frictional spring for preventing the cylinder from making a sudden movement when a full chord is struck.

A represents the usual supporting-frame; B, the comb attached thereto, and C the cylinder. These parts are constructed in any desired manner, as they form no part of my invention.

At that end of the cylinder at which the flutter or regulating wheel has heretofore been applied, and upon the same shaft, I place a revolving armature, D, of any desired size, and which is made to revolve between the poles of a U-shaped magnet, E. Instead of the motive power being applied to the opposite end of the cylinder by a large spring, as has heretofore always been the case, this revolving armature becomes the motive power, as well as the balance-wheel for regulating the movement of the cylinder. Upon the shaft F, upon which this armature is placed, is a worm-gear, G, which meshes with a pinion, H, and this pinion H, through a suitable train of wheels, communicates its motion directly to the large wheel I, which is secured upon the end of the cylinder-shaft. This cylinder is made to move back and forth upon its shaft, for the purpose of changing the tunes in the usual manner, and is provided with the usual lever or catch L for stopping the cylinder at the end of a tune. This lever, however, instead of being made to catch against the flutter at the end of a tune, is here made to bear against the curved spring N, which bears against the lever while the lever is forced back out of the notch O, in which it catches at the end of every tune. This spring is insulated from the frame and connected with a wire which connects the spring with the circuit. As long as the cylinder is in motion this lever has one end held in the groove which is made in the

wheel on the end of the cylinder, and is thus forced against the spring, and the current passes from the spring through the catch, thus completing the circuit; but as soon as the end of a tune is reached and the end of the lever drops into the notch O, the lever L is moved by the spring P in such a manner as to move it away from the curved spring and thus break the circuit, when the machine instantly stops.

The shaft upon which the armature revolves is provided with suitable commutators Q in the usual manner.

At the other end of the cylinder from which the motor is placed, or at any suitable point, is placed a resistance-coil or any other well-known device or mechanism by means of which the power of the motor may be increased or decreased at will.

Upon the end of the cylinder-shaft, at the opposite end from the one at which the motive power is applied, is secured a frictional disk, V, upon which bears a flat or other suitable spring or device, X, for the purpose of causing sufficient friction upon the shaft to prevent the cylinder from suddenly moving around when a full chord has been struck. Were it not for this friction device the cylinder would move suddenly at those places where no pins are being struck by the comb during its revolution, and it is to prevent this sudden movement that the train is applied.

This invention is specially applicable to the large orchestrians and music-boxes of large size which require so much power to operate.

In practice there will not be as many wheels placed between the large wheel on the end of the cylinder and the driving-shaft. The train of wheels are here shown simply because my electro-motor has been applied to a common music-box by removing the flutter from its shaft and putting the armature in its stead.

When the motor is increased in size it will revolve more slowly, and then but a simple pinion will be used to connect it to the large wheel.

Having thus described my invention, I claim—

1. In an electric music box or machine, the combination of the lever L, the wheel upon the end of the cylinder provided with a groove, and the notch O, with the spring or device which is connected with the circuit, whereby at the end of a tune the end of the lever catches in the notch O and breaks the circuit for the purpose of stopping the machine, substantially as set forth.

2. In a music-box, the combination of the comb B, the cylinder C, a revolving armature which drives and regulates the movement of the cylinder, and an automatic mechanism for breaking the circuit when the end of a tune is reached, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of November, 1880.

LEONIDAS G. WOOLLEY.

Witnesses:
WM. W. MORTIMER,
A. C. KISKADDEN.