(No Model.)

R. KARRER.

Spring Motor for Music Boxes.

No. 241,373. Patented May 10, 1881.

Fig. 1

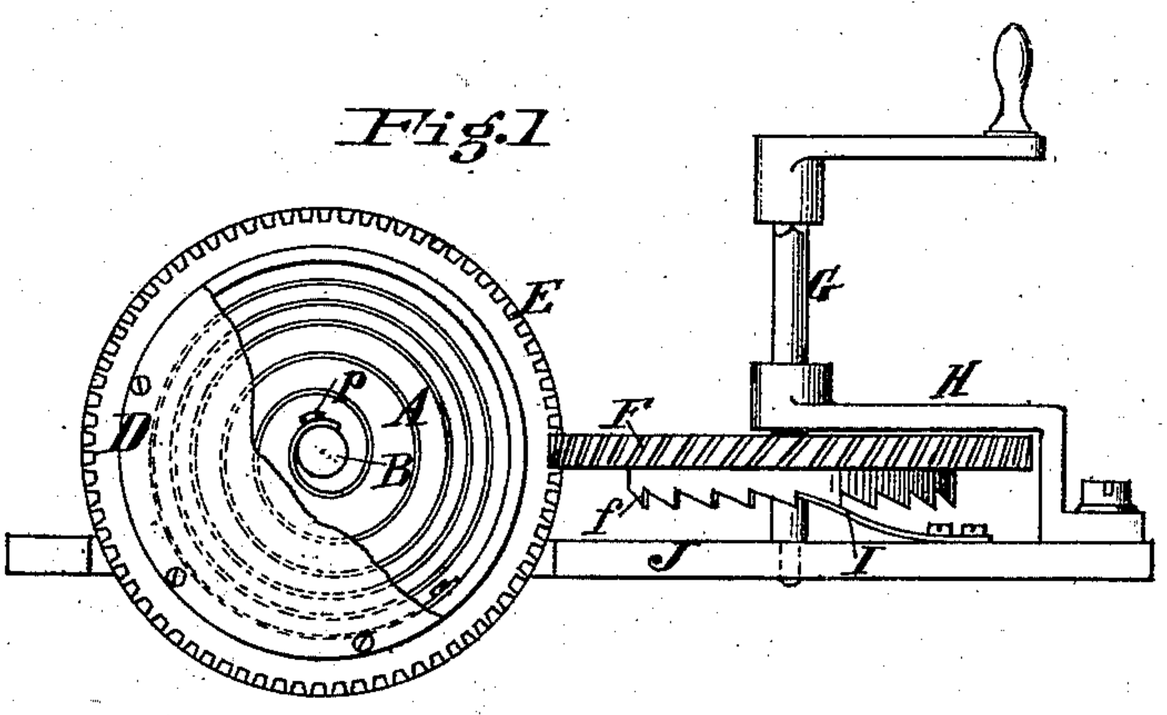


Fig. 2

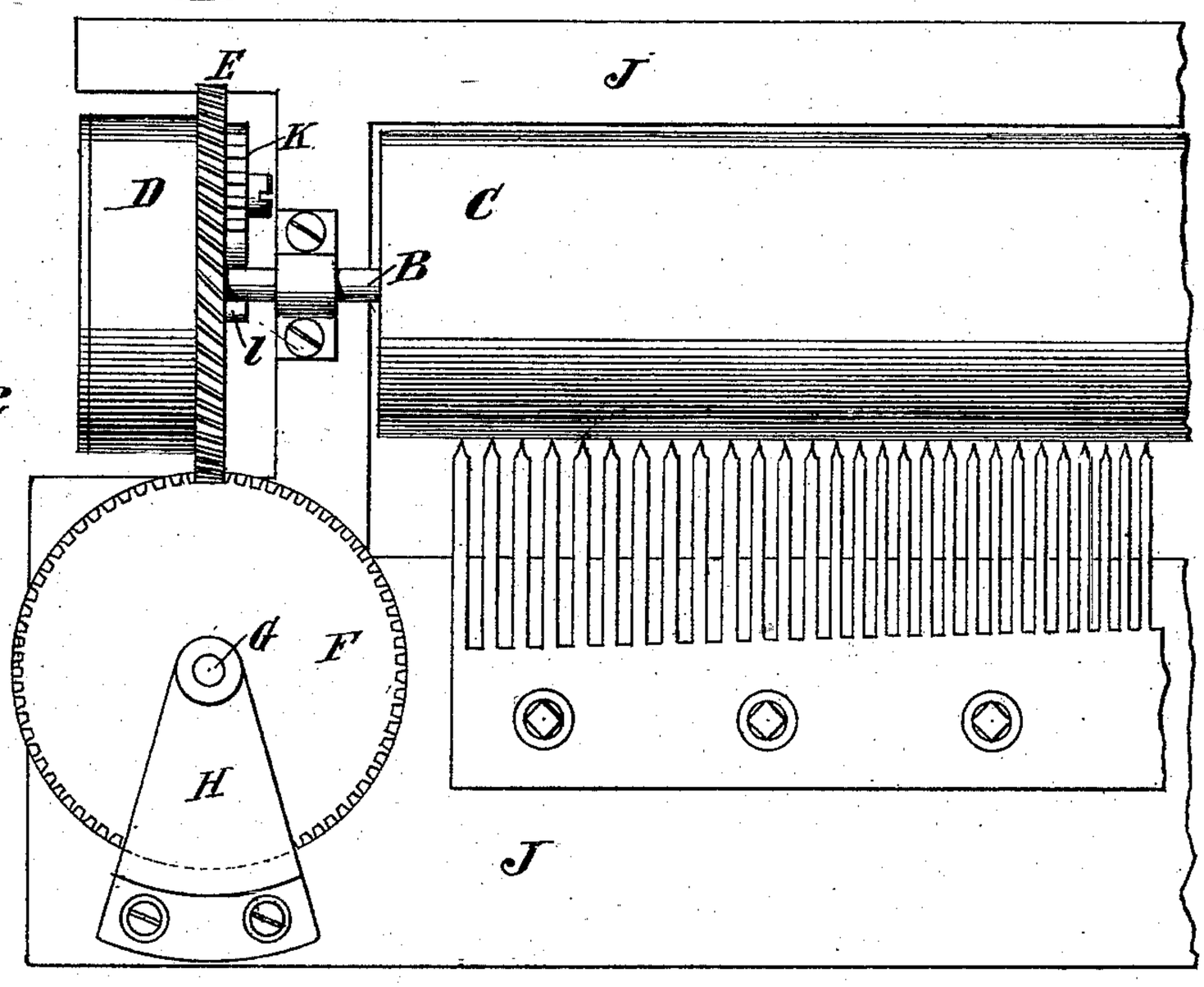


Fig. 3

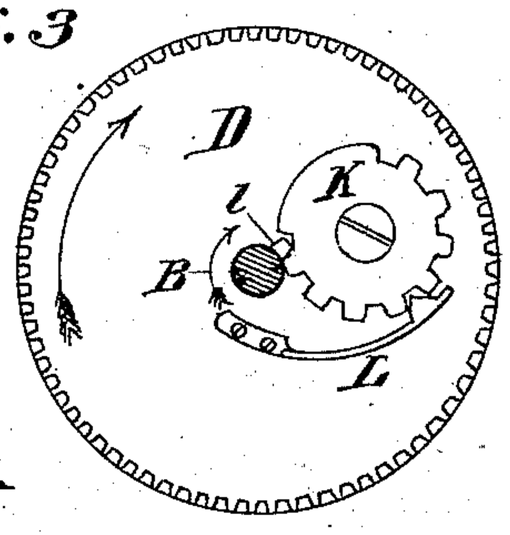
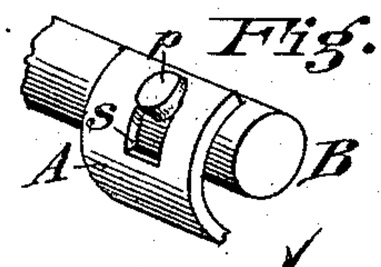


Fig. 4



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UNITED STATES PATENT OFFICE.

RUDOLPH KARRER, OF TEUFENTHAL, SWITZERLAND, ASSIGNOR TO EDMUND LUTHY, OF CINCINNATI, OHIO.

SPRING-MOTOR FOR MUSIC-BOXES.

SPECIFICATION forming part of Letters Patent No. 241,373, dated May 10, 1881.

Application filed February 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH KARRER, a citizen of Switzerland, residing at Teufenthal, in the Canton of Aargau, have invented new and useful Improvements in Musical Boxes, of which the following is a specification.

My invention relates to spring-motors for musical boxes in which the retractile or dilating force of a coiled spring is employed. In such boxes, as ordinarily constructed, the spring is coiled upon an axis, to which one end is attached, and within a drum or case-wheel, to the periphery of which the other end is secured, where, by rotating the axis, the spring is compressed and exerts its expansive force in driving the drum, and through intermediate mechanism, the roller containing the pins for actuating the musical forks. This arrangement is necessarily complicated and expensive.

The object of my invention is to simplify the construction, economize the cost, and render more efficient the driving mechanism of musical boxes; and it consists in the construction and arrangement of the parts as hereinafter described, whereby much of the ordinary mechanism is dispensed with and the motive power of the spring is communicated directly to the roller-shaft, and the latter rendered independent of the spring-barrel, permitting convenient removal.

It consists, also, in the construction and arrangement of the winding mechanism, securing greater convenience and efficiency.

My invention is embodied in mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation of the driving and winding mechanism; Fig. 2, a plan view of the same; Fig. 3, a rear elevation of the spring-barrel, showing its devices; and Fig. 4, a detached perspective view of the end of the roller-shaft, showing the spring-connection.

Similar letters of reference indicate the parts in the specification and drawings.

In a musical box constructed according to my invention a flat ribbon-spring, *a*, is coiled upon itself, directly upon the extended shaft or axis of the roller C and within a drum or barrel, D, loosely centered upon the roller-shaft. The spring is permanently secured at its outer end to the inner periphery of the barrel, while the inner or central end is provided with a slot, *s*, which enables it to be slipped over and thus engage a pin or hook, *p*, set radially in the axis B, by which it is held securely in position when in use, but permitting the ready removal of the barrel and its contained spring from the axis B for repairs, oiling, &c., when required.

The barrel or case D need not be otherwise secured to the shaft B than by the spring-connection, but is arranged to rotate freely thereon. The outer periphery of the case is provided with a worm-wheel, E, adapted to be engaged by a similar worm-wheel, F, secured to a vertical shaft, G, stepped in the containing-frame, and held also in a bracket, H, through which it passes and has a bearing.

Upon the under side of the wheel F is provided an annular concentric flange, *f*, having its edge formed into ratchet-teeth, with which a spring-pawl, I, secured upon the containing-frame J is arranged to engage.

Power being applied to the upper extremity of the shaft G by a crank-handle, the spring-barrel D is rotated by its worm-gear, and the spring thus wound up is enabled to exert its dilating power in rotating the roller C, and the latter, by means of pins set radially in its periphery, actuates the musical forks in the ordinary manner. The pawl I prevents a backward motion of the parts, and the usual devices for regulating, governing, and arresting the motion of the roller C may be employed.

I also attach to the barrel D, upon one end thereof, an idler cog-wheel, K, with a spring-brake, L, arranged to operate in the usual manner, in connection with a fixed pawl, *l*, upon the shaft B, to limit the winding movement in both directions.

In dispensing with the usual train of gearing, transmitting the power of the spring through the barrel to the roller C, and applying the force of the spring, by its expansion inwardly, directly to the roller, the mechanism is much simplified in construction besides avoiding friction.

In my construction and arrangement of parts a feebler may also be employed, less costly and less liable to fracture, and a further advantage

is attained in the convenience of removing the entire motive mechanism for cleaning, oiling, repairs, &c.

In consequence of the less number and simplified construction of the parts in musical boxes made according to my invention, they are less costly to manufacture and to keep in repairs than those of the ordinary kind.

It will be obvious that the principle of my invention may be applied to various other constructions employing a spring motive power.

Having described my invention, I claim and desire to secure by Letters Patent—

1. The combination, with the roller C, which operates the music-forks, and the roller-shaft B, extended at one end of the roller, of the spring A, coiled directly on the extended end of said roller-shaft for transmitting its expansive force inward directly to the roller-shaft, substantially as described.

2. The combination, with the roller C, which operates the music-forks, and the roller-shaft B, extended at one end of the roller, of the spring A, coiled directly on the extended end of said roller-shaft for transmitting its expansive force inward directly to the roller-shaft, and the drum or band D, loosely centered on the roller-shaft and provided with a worm-wheel, E, substantially as and for the purpose described.

3. The combination of the shaft G, bracket H, worm-wheel F, and ratchet-flange *f* with the spring-barrel and roller-shaft, constructed and arranged to operate substantially as described.

4. The stop device consisting of the idler-pinion K, brake L, and the finger *l*, upon the main shaft, in combination with the spring-barrel and the winding devices, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

R. KARRER.

Witnesses:
G. BERNER,
HOCHSTRASSER.