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Patented Dec. 13, 1898.

L. P. VALIQUET.

OPERATING MECHANISM FOR MUSIC BOXES.

(Application filed Mar. 16, 1897.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

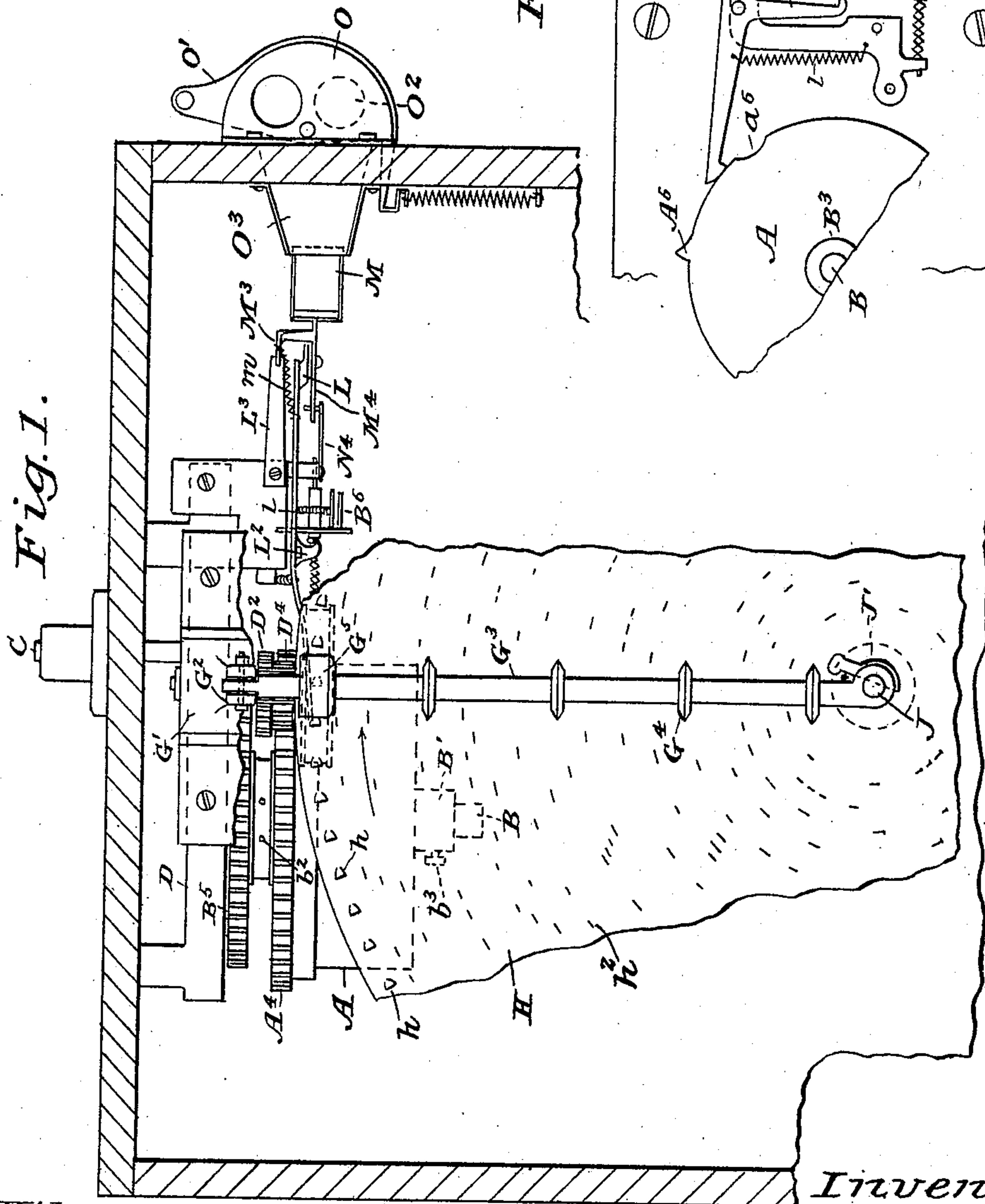


Fig. 4.

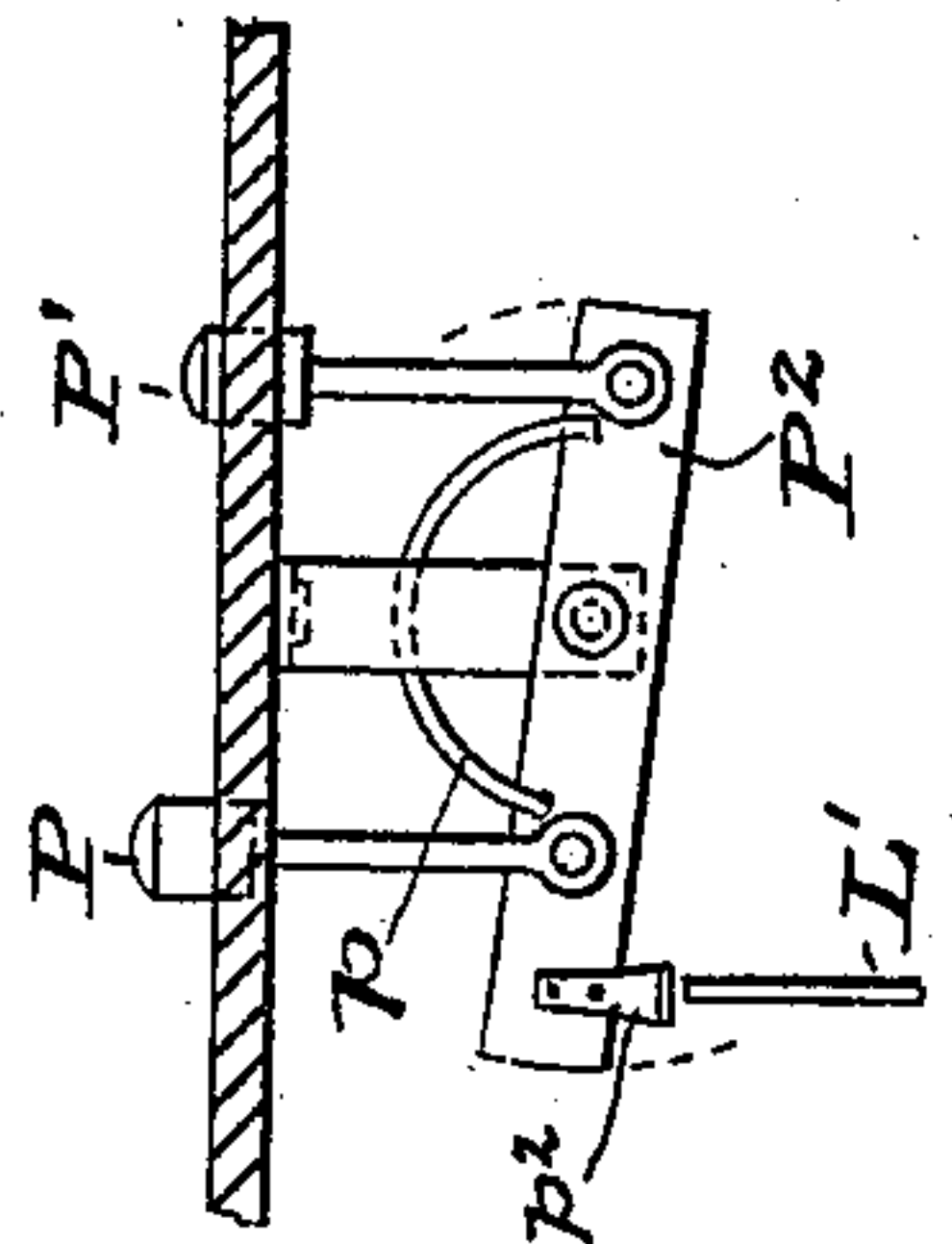
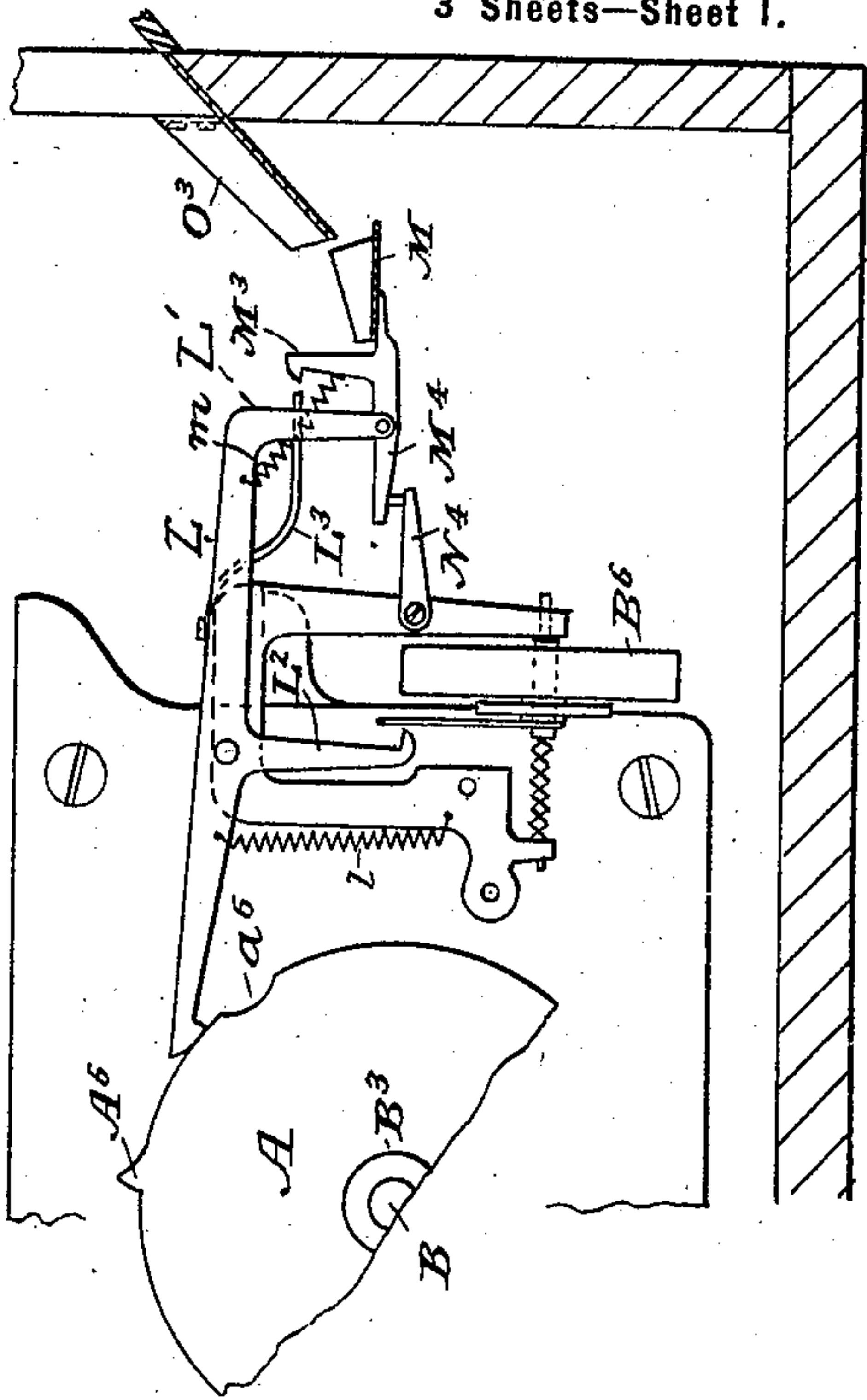


Fig. 5.



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3 Sheets—Sheet 3.

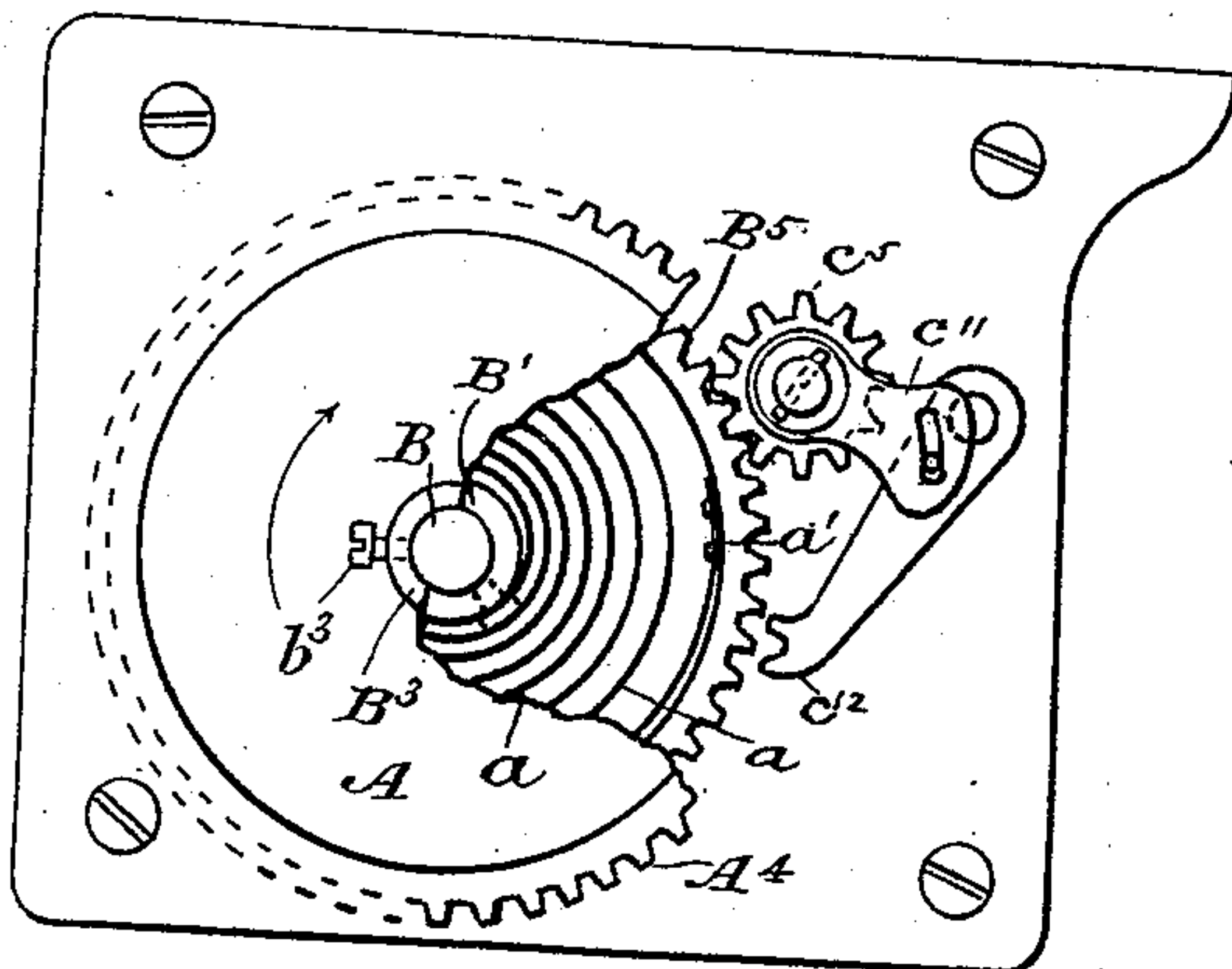


Fig. 7.

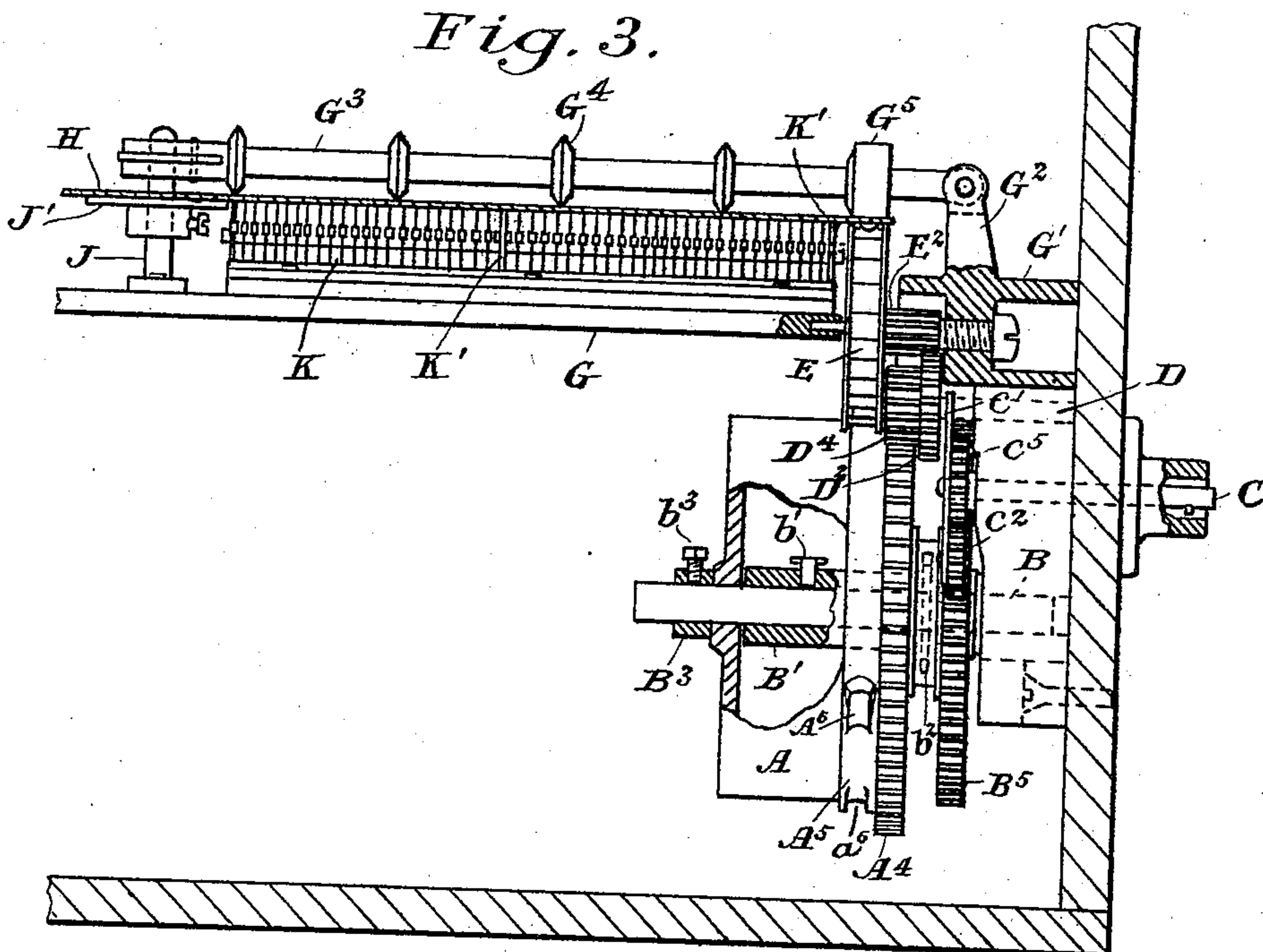


Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS P. VALIQUET, OF HOBOKEN, NEW JERSEY.

OPERATING MECHANISM FOR MUSIC-BOXES.

SPECIFICATION forming part of Letters Patent No. 615,765, dated December 13, 1898.

Application filed March 16, 1897. Serial No. 627,848. (No model.)

To all whom it may concern:

Be it known that I, LOUIS P. VALIQUET, a citizen of the United States, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented a certain new and useful Operating Mechanism for Music-Boxes, of which the following is a specification.

My invention relates to operating mechanism for music-boxes and other spring-controlled mechanisms, and particularly to that class of music-boxes wherein rotary tune or note sheets, plates, or disks are used to actuate the vibrating tongues or combs, and also to driving or operating mechanism therefor and coin-actuated devices used in connection therewith, and has for its object the provision of an organization comparatively simple in construction, inexpensive to manufacture, and which operates in a smooth, steady, and certain manner in practical use.

To attain the desired end, this my invention consists in the construction, arrangement, and operation of parts herein set forth.

In the drawings which accompany and form a part of this specification, Figure 1 represents a plan view of my music-box, partly in section, with the cover removed, and also part of the operating mechanism. Fig. 2 is a side elevation of the same, also partly in section. Figs. 3 and 4 are views in section, taken, respectively, on the lines 3 3 and 4 4, Fig. 2. Fig. 5 is a view in detail of my coin-actuated mechanism in operation. Fig. 6 is a detail of my driving-gear. Fig. 7 is a modified form of a winding device constructed according to my invention, and Fig. 8 is a plan of a portion of my bed-plate.

Like letters of reference indicate like parts in all the views.

I have found it desirable to construct a music-box of simple construction and that may be wound noiselessly and that also may be controlled either manually or by a coin-actuated mechanism or in both these manners, and I have therefore constructed, according to my invention, an organization of the class described embodying the preferred construction of parts and their mutual relationship, combination, arrangement, and organization in a composite body or structure, as hereinafter described.

Referring particularly to the drawings, A denotes the drum of my spring-motor, and α the mainspring thereof. The outer end of the spring α is connected with the drum A, as at a' , and the inner end of the same is connected with the sleeve B' of the spindle B of the motor, as at b' , the sleeve and spindle being rigidly yet detachably secured together by two pins b^2 , passing through a boss of the said sleeve. The drum is held on the spindle B by the screw b^3 of the retaining-sleeve B³. I thus form a strong inexpensive reliable motor of few parts and so constructed and arranged that the spring α may be detached and replaced by another one at will without disarranging any of the other parts of the mechanism. A pinion C⁵, on the winding-post C meshes with the gear B⁵ of the shaft B, and the said winding-post is prevented from backward movement by the noiselessly-operating detent mechanism, consisting of the pinion C², mounted on one end of the friction-plate C', located adjacent to the pinion C⁵ and hung on the shaft C, the opposite extremity of the same resting, when the spring is being wound up, against the spindle D. When the spring is in the act of being wound up, the rotation of the pinion C⁵ will cause the friction-plate C' to move outwardly and the pinion C² to swing away from the gear B⁵. Upon disengaging the key or crank from the winding-post or arbor or upon ceasing to turn the said key in a forward direction the tension of the spring serves to rotate the pinion C⁵ in a contrary direction and by said reverse movement causes the end of the friction-plate C', carrying the pinion C², meshing with the pinion C⁵, to move inward, and the consequent engagement of both the pinions C⁵ and C² with the gear B⁵ holds the parts from further reverse movement.

The gear A⁴ of the drum A meshes with the pinion D⁴ of the spindle D, the concentric pinion D² of which meshes with the pinion E² of my driving-wheel, which serves to rotate the tune sheet or disk. My driving-wheel consists of the regular obliquely-disposed gear-teeth E, the central longitudinal planes of which teeth pass, respectively, through the edge of the central orifice of said driving-wheel and of two side disks E', the periphery of which registers with the said teeth at the

circular pitch. When engaging the teeth h of the tune-sheet H, each spur gear-tooth E rolls, as it were, from the pitch-line to the point of the tooth, thus affording an easy smooth action and avoiding the scraping noise occasioned by the use of the ordinary ratchet-tooth.

The pinion E^2 is provided with a hub which passes through the center of said disks and gear and is riveted on the outer face thereof. The driving-wheel and pinion E^2 are supported by and pivoted to a bed-plate G, the said pinion E^2 engaging the pinion D^2 of the movement, which is supported by suitable means within my music-box. It will be observed that the side disks or flanges E' of my driving-wheel serve to support the tune-disk H and that a plurality of the gear-teeth E are always in engagement with the teeth h , formed upon the edge of the said tune-disk, there ordinarily being three teeth in action, one coming out of the teeth of the tune-sheet and one entering the same and the center one pulling the said tune-sheet around. Thus as one tooth is always holding the tune-disks until another one engages the same regularity and smoothness of action is secured. The note or tune disk is constructed and arranged to rotate upon a suitable vertical pin or pivot J, provided with a horizontal disk J' , which pin J is supported, together with the star-wheels K, for vibrating the tongues and the guide-disks K' by the bed-plate G. The said bed-plate G is also provided with a bridge G' and with a vertical projection G^2 , which supports in a pivoted relation a rod or half-tune-disk arm G^3 , which carries loosely-mounted friction wheels or rollers G^4 and a wide friction-wheel G^5 , located over my driving-wheel, and engages at its free end with the pin J.

The star-wheels K, which contact the vibrating tongues of the comb, are actuated by the teeth h^2 , of approved form, located in the tune-disk H, which works between the wheels G^4 G^5 and disk J' , star-wheels K, guide-disks K' , and driving-wheel E. The bed-plate, together with the driving-wheel, half-tune-disk arm, star-wheels, and combs, may be removed and replaced at will and are thus independent of the spring-movement. The bed-plate also serves to cover and protect the mechanism located beneath the same. The gear B^5 is connected with a suitable train of wheels provided with a governor of approved construction, as B^6 . The flange A^4 of the spring barrel or drum A is provided with a recess a^6 and an enlarged portion or tooth A^6 . The inner end of a bar-lever L, pivoted to the frame of the movement, normally rests in the recess a^6 , the outer extremity of which lever is provided with two depending portions or arms L' L^2 , the latter of which normally engages the governor B^6 . The outer depending arm L' of the lever L supports in a pivoted relation a coin-bucket M, provided with a hook M^3 , normally engaging the detent L^3 , secured to the movement, and an extension

or tailpiece M^4 , which normally rests against a stationary fixed arm N^4 , rigidly secured to the movement. A coin-receptacle O is provided with a coin-orifice, beneath which works a horizontally-reciprocating coin-injector plate O' , provided with an orifice which normally registers with the said coin-entrance orifice. Another orifice O^2 is located beneath the said discharge-plate and communicates with my coin-chute O^3 . I also provide my box with manual actuating means, as the push-buttons P P' , located at opposite ends of the passive lever P^2 , held in any desired position by the friction-spring p . Upon depressing the button P the arm p^2 of the same will first disengage the hook M^3 from the detent L^3 , and the adjacent end of the lever P^2 will then contact and depress the outer end of the bar-lever L.

It is manifest that various omissions of some particulars could be made without materially affecting the essential features of my invention or the operation of the remaining parts, and I do not therefore wish to be limited to the specific structural details of the organization herein set forth. Obviously the elements of the structure described may be located at an angle to the plane in which they are shown. I accordingly use the words "horizontal," "vertical," and the like in a relative sense.

In operation a suitable key or crank is attached to the winding post or arbor and operated to turn the pinion C^5 , which movement, as stated, swings the friction-plate C' outward and disengages the pinion C^2 and gear B^5 while the spring is being wound up. By the use of my detent mechanism in lieu of a pawl and ratchet I secure means for noiselessly winding up my spring. In lieu of the gear C^2 I sometimes use a pivoted pawl C^{12} , similarly actuated by a friction-plate C^{11} , as shown in Fig. 7. My spring-drum and train of wheels connected therewith are normally prevented from rotating by means of the detent-arm L^2 , which engages the governor B^6 . When the cover of the box containing my music mechanism is closed and a coin is inserted in the coin-entrance orifice, by manipulating the reciprocating coin-injector plate O' the coin is allowed to drop to the orifice O^2 and chute O^3 into the bucket M. The spring m , which serves to hold up the bucket, is of such tension as to allow the bucket to move downwardly a short distance when weighted by a coin, thus disengaging the hook M^3 from the detent L^3 . The weight of the coin also causes the outer end of the bar-lever L to fall a short distance, thus disengaging the inner end of the lever from the recess a^6 and the detent-arm L^2 from the governor B^6 . The mechanism hereinbefore described will now be set in operation, and the same will operate at a uniform rate of speed until the spring-drum has made an entire revolution and the lever L, pulled downward by spring l , drops into the recess a^6 again, whereby the parts are

stopped. In order to allow the said lever to engage the recess a^6 upon the discharge of the coin from the bucket, I provide upon the periphery of the drum A, as stated, a projection or tooth A^6 , the engagement with which of the inner end of the lever L causes the outer end of said lever, together with the coin-bucket, to fall, and the tailpiece M^4 , thereupon engaging the fixed arm N^4 , causes the bucket M to rotate on its pivot, and thus to depress the mouth of the bucket sufficiently to allow the coin therein contained to fall into the money-receptacle below. In case it is desired to actuate the music-box manually, I ordinarily open the cover of the box and depress the button P, which movement serves to disengage the hook M^3 from the detent L^3 , and also to depress the outer end of the lever L and to withdraw the detent L^2 from the governor B^6 , thus starting the parts. If the button P is not moved again and the passive lever P^2 remains stationary, the parts will not cease their movement at the expiration of one revolution of the drum A, which coincides with the playing of a single tune, but will continue in operation until the spring has run down. If, however, after the button P has been depressed the button P' is pushed down, the end of the lever P^2 adjacent to the bar-lever L will be raised and will allow the extremity of the lever L adjacent to the recess a^6 to fall into the same by means of its own weight, which action may be supplemented by a spring l , if desired, thus stopping the parts at the end of the tune.

The locking-arm M^3 serves to prevent the automatic mechanism from being set in operation by jarring or pounding the music-box, and after the mechanism is once set in operation the said arm M^3 engages with the detent L^3 again after the parts are stopped automatically in the manner hereinbefore described.

As it is evident that many changes in the construction and relative arrangement of parts might be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described, but that such changes and equivalents may be substituted therefor.

While parts are shown and described that relate to music-boxes and coin-chutes, they are not intended to be claimed in this application.

What I claim as my invention is—

1. A winding-post, a gear of a train of wheels and a spring to control the same, a pinion in mesh with the gear and supported on said winding-post, a friction device located adjacent to said pinion, a pivoted detent adapted to be actuated by the winding-post pinion and to engage the said train-gear to lock the parts.

2. The combination, in a spring-movement, of a winding-spindle, a sleeve provided with

a boss the said boss being secured to the winding-spindle with pins, a spring drum or barrel to rotate on said sleeve, and held against inward movement by said boss, the said drum being provided with a recess, and also of a train of wheels and a governor and of a pivoted lever to engage the said recess and the governor.

3. The combination, in a spring-movement, of a spring barrel or drum, a spring, a sleeve, secured to the spring in the barrel, the outer end of the sleeve secured to the winding-spindle, with two pins and a retaining-sleeve to hold the spring-drum on said spindle, the said drum being provided with a recess, and of a train of wheels and a governor, and a pivoted lever to engage the said recess and the governor and of two push-buttons, and also of a lever controlled by two push-buttons at opposite ends thereof.

4. The combination, in a spring-movement, of a spring barrel or drum, a spring, a sleeve secured to the spring in the barrel, the outer end of the sleeve secured to the winding-spindle with pins and a retaining-sleeve to hold the spring-drum on said spindle, the said drum being provided with a recess, and of a train of wheels and a governor, and a pivoted lever to engage the said recess and the governor, and of two push-buttons and also of a pinion located on a winding-post, a friction device supported by said pinion, and a pivoted gear carried by said friction device to engage the winding-gear.

5. A movement, a detent-lever to engage the periphery of a rotatable part actuated by said movement, a lever, two passive push-buttons, each connected to said lever on opposite sides of the pivot thereof, said lever being constructed and arranged to be engaged with the outer end of said detent-lever to disengage the same from said periphery by manipulating one of said push-buttons, and said lever to be disengaged from same by manually actuating the other push-button.

6. The combination, in a spring-movement, of a spring barrel or drum, a spring, a sleeve, secured to the spring in the barrel, the outer end of the sleeve secured to the winding-spindle with two pins, and a retaining-sleeve to hold the spring-drum on said spindle, and of a detent-lever to engage the periphery of a rotatable part actuated by said movement, a lever and two passive push-buttons, each connected to said lever on opposite sides of the pivot thereof said lever being constructed and arranged to be engaged with the outer end of the detent-lever to disengage the same from said periphery by manipulating one of the push-buttons, and to be disengaged from said lever by manually actuating the other push-button.

7. A winding-post, a gear, a spring to control the same, a pinion in mesh with the said gear, and located on said winding-post, a friction device adjacent to and constructed and arranged to be moved back and forth by said

pinion, and a pivoted gear carried by said friction device to mesh with said pinion, and to be engaged with and disengaged from the first-named gear by manipulating the winding-post.

5 ing-post.
8. A movement, a rotated drum, a detent-lever, pivoted to the movement to engage the periphery of said rotatable drum, a lever, two passive push-buttons, each connected to said
10 lever, on opposite sides of the pivot thereof, a passive rock-bar to engage the outer end of said lever to disengage the same from said drum, by manipulating one of the push-buttons and to be disengaged from the said lever by manually actuating the other push-button.

9. The combination, in a spring-movement, of a drum A, a spring a , a sleeve B' secured to the spring in the barrel, the outer end of
20 the sleeve being secured to the winding-spindle B, with pins b^2 , and of a retaining-sleeve B³, to hold the spring-drum on said spindle,

in combination with a winding-post, a pinion located on said winding-post, a friction device adjacent to said pinion, and a pivoted
25 gear carried by said friction device, to mesh with said pinion, and to engage the winding-gear.

10. A winding-post, a gear, and a spring to control the same, a pinion in mesh with the
30 gear and supported on said winding-post, a friction device located adjacent to said pinion, a pivoted rotary detent controlled by said friction device to engage the winding-post pinion and normally to mesh with the
35 first-named gear.

In testimony of the foregoing specification I do hereby sign the same, in the city of Hoboken, county of Hudson, and State of New Jersey, this 12th day of March, A. D. 1897.
40 LOUIS P. VALIQUET.

Witnesses:

J. ODELL FOWLER, Jr.,
JESSE C. HANSEE.