

No. 610,504.

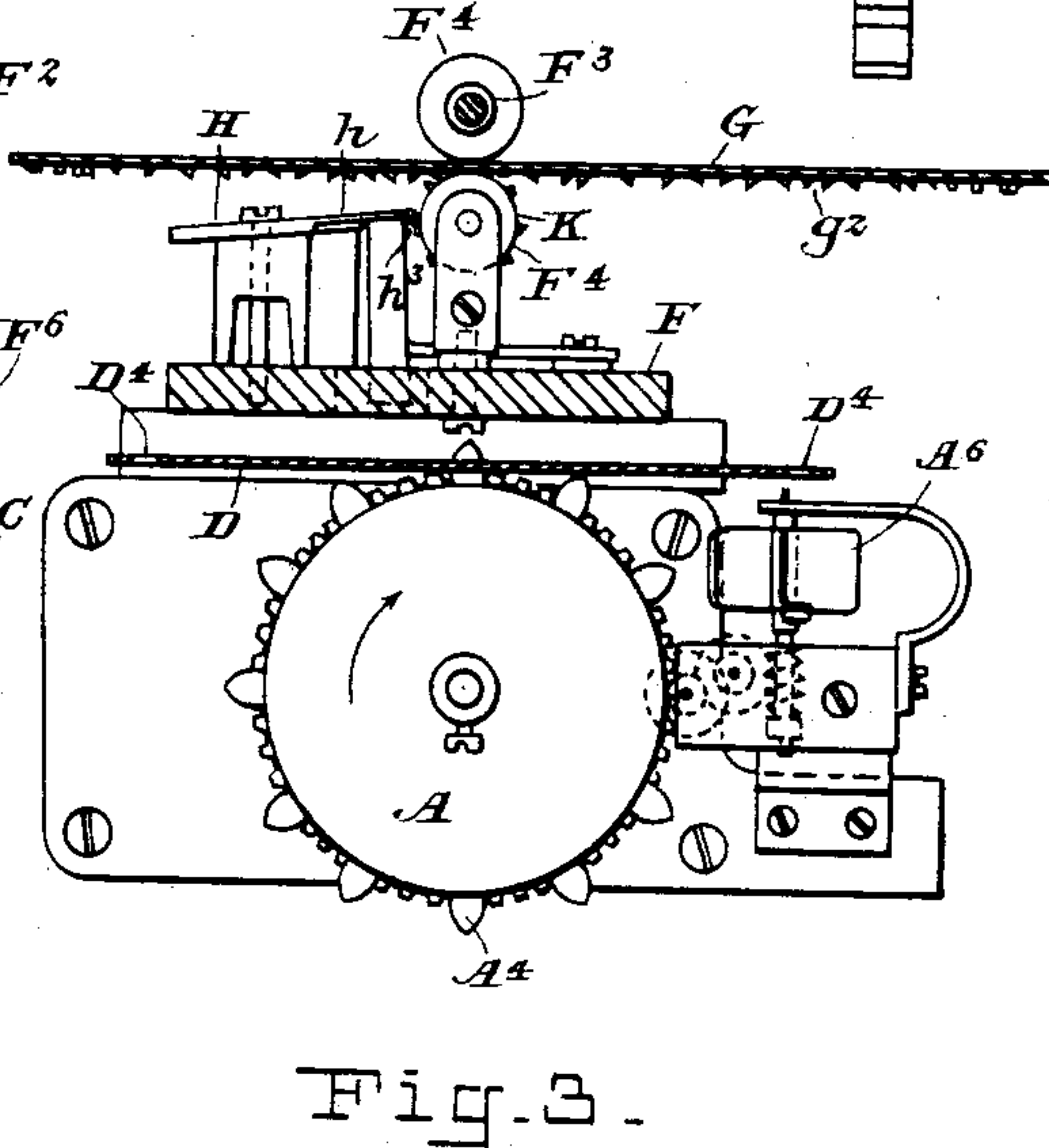
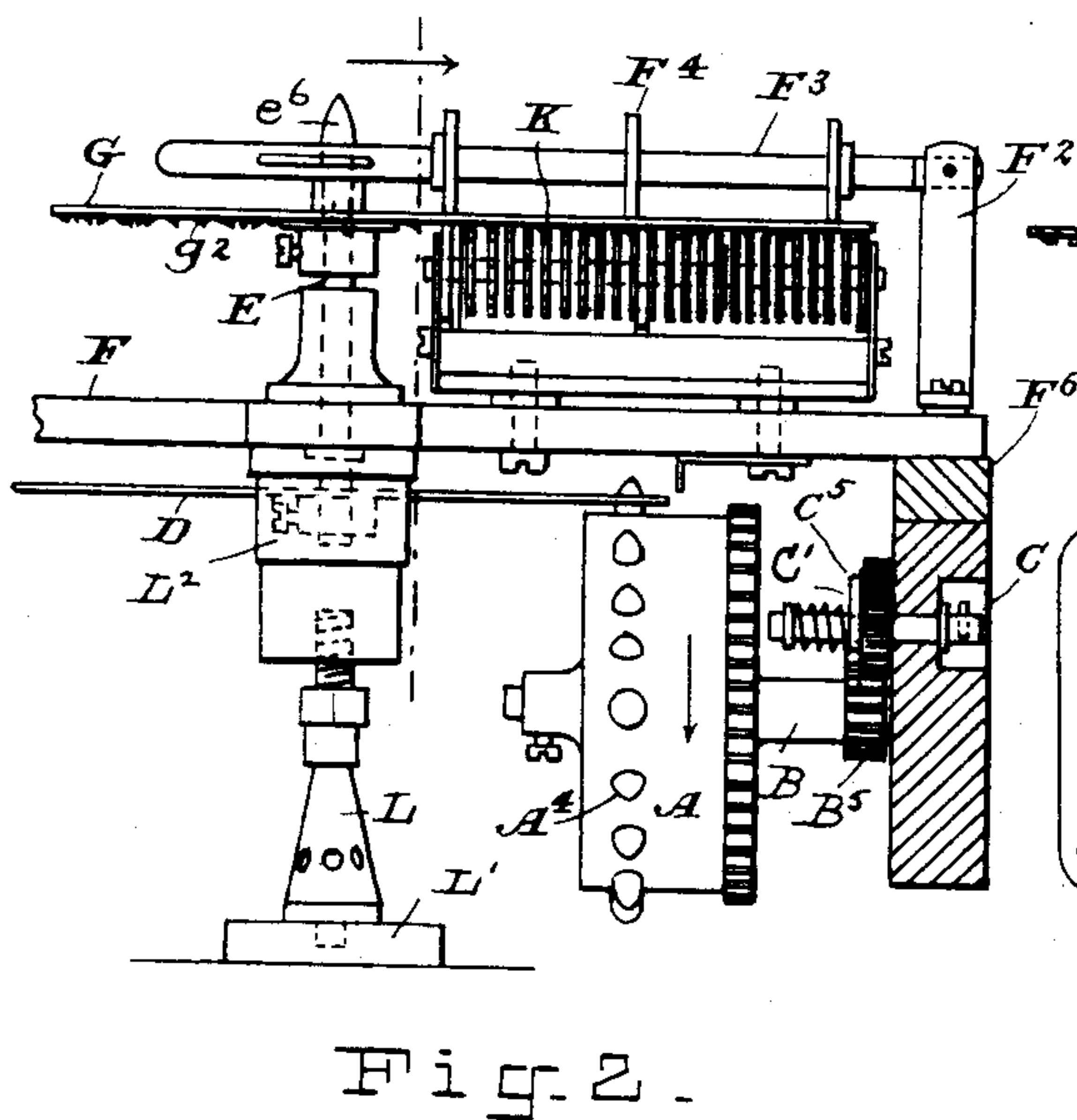
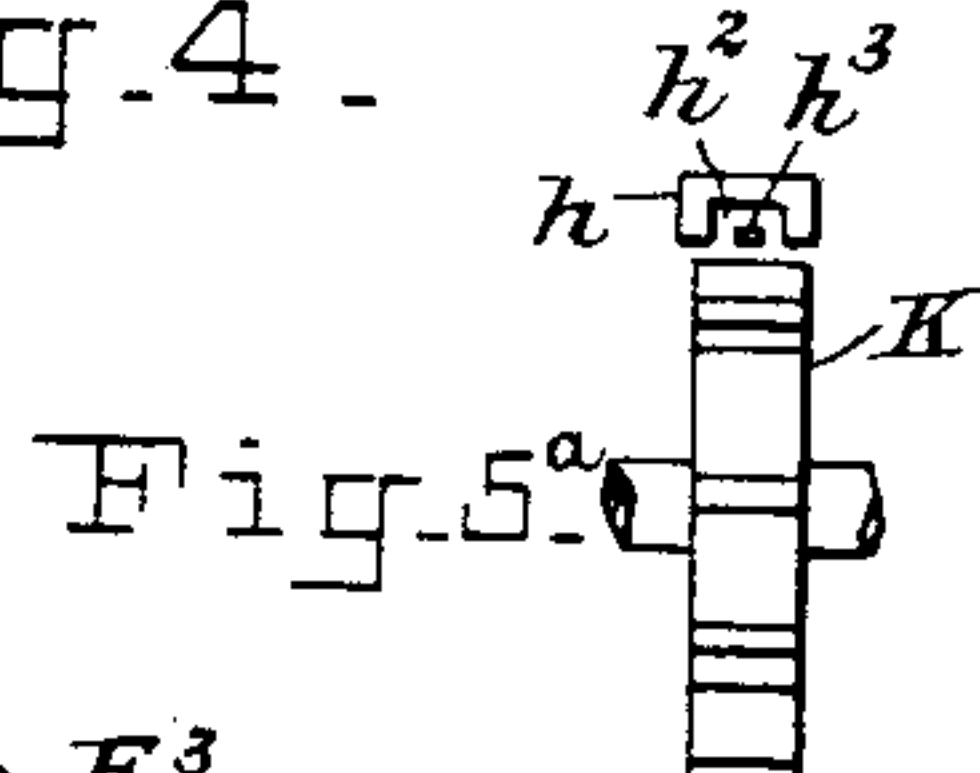
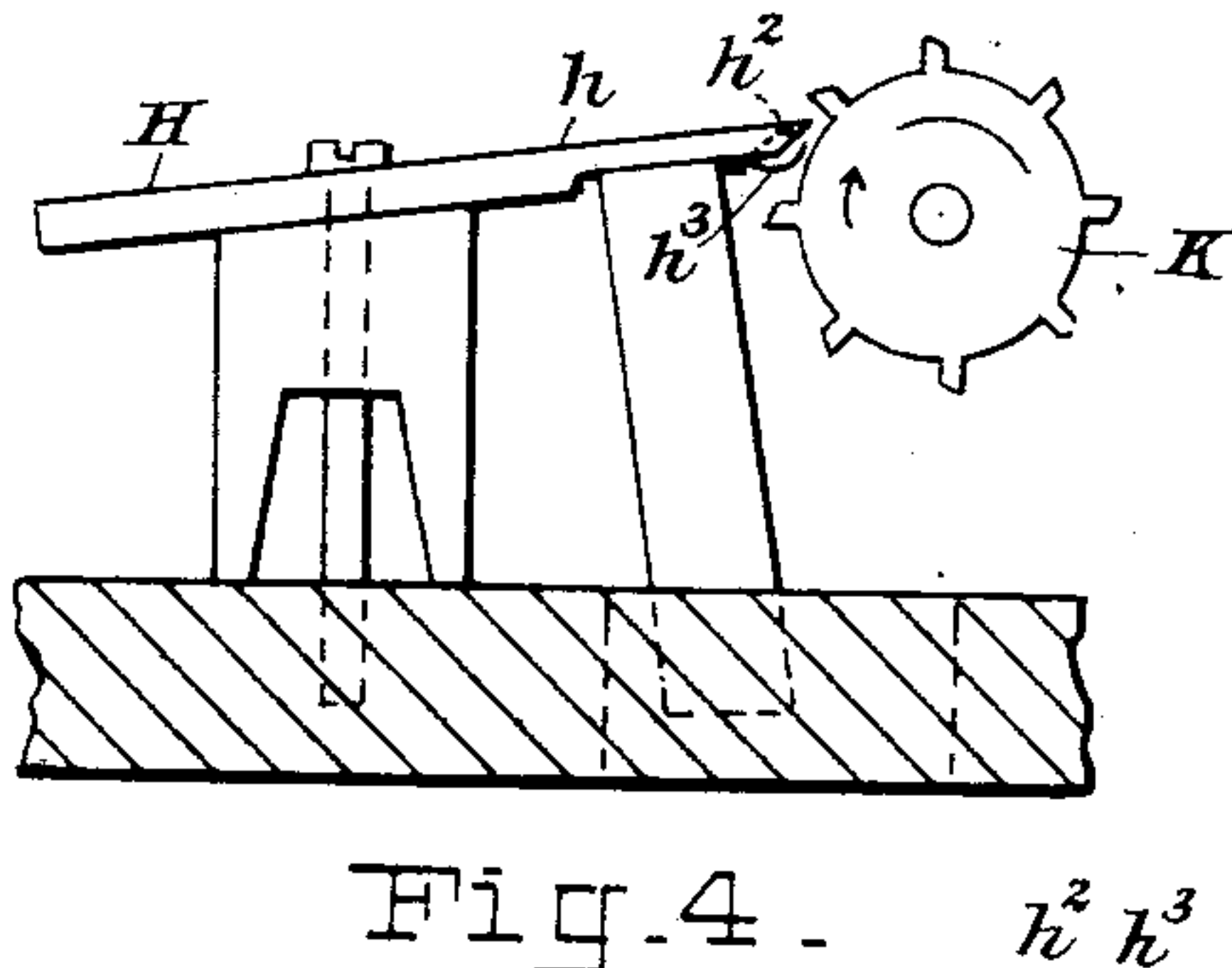
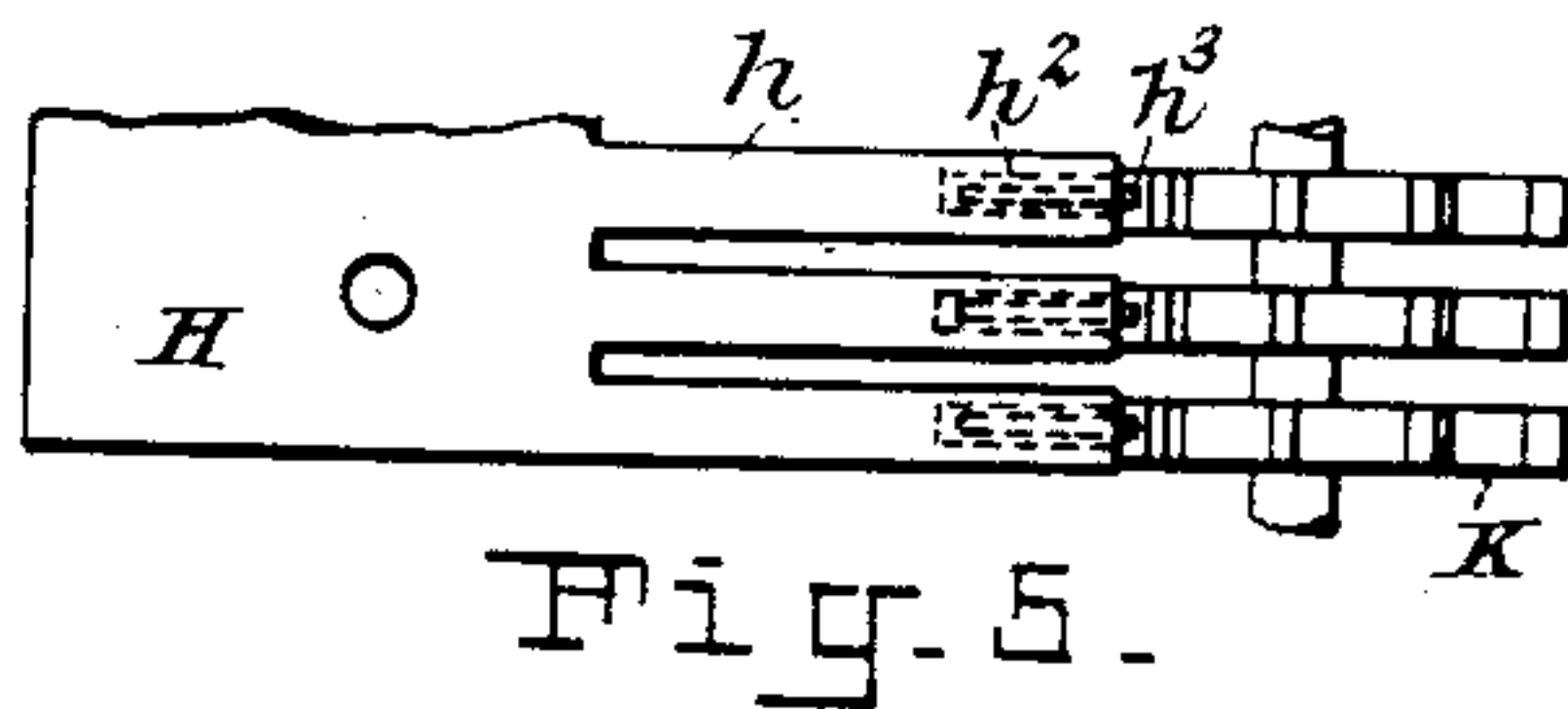
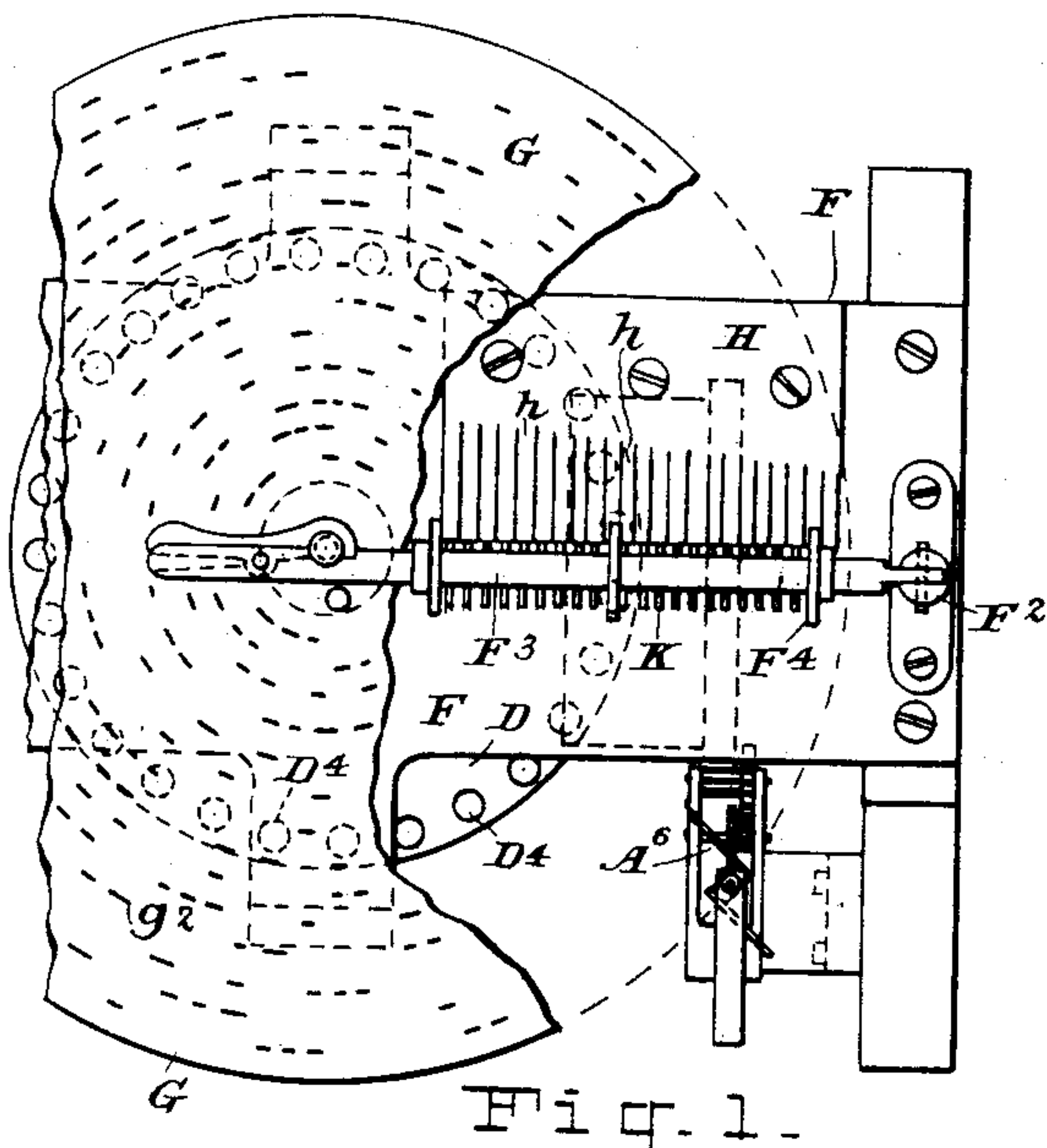
Patented Sept. 6, 1898.

L. P. VALIQUET & A. SUEUR.
MUSIC BOX.

(Application filed June 14, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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2 Sheets—Sheet 2.

Fig. 9.

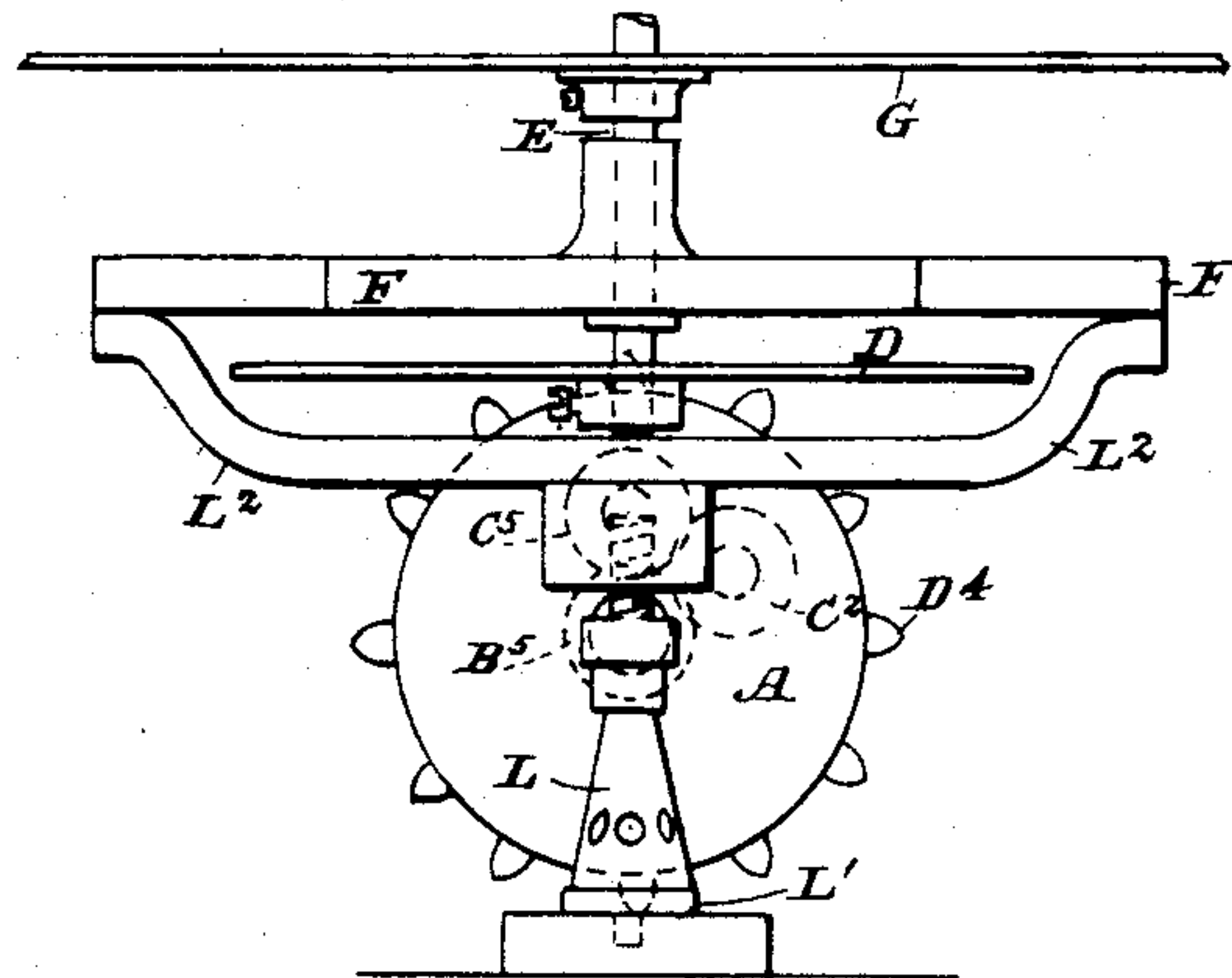
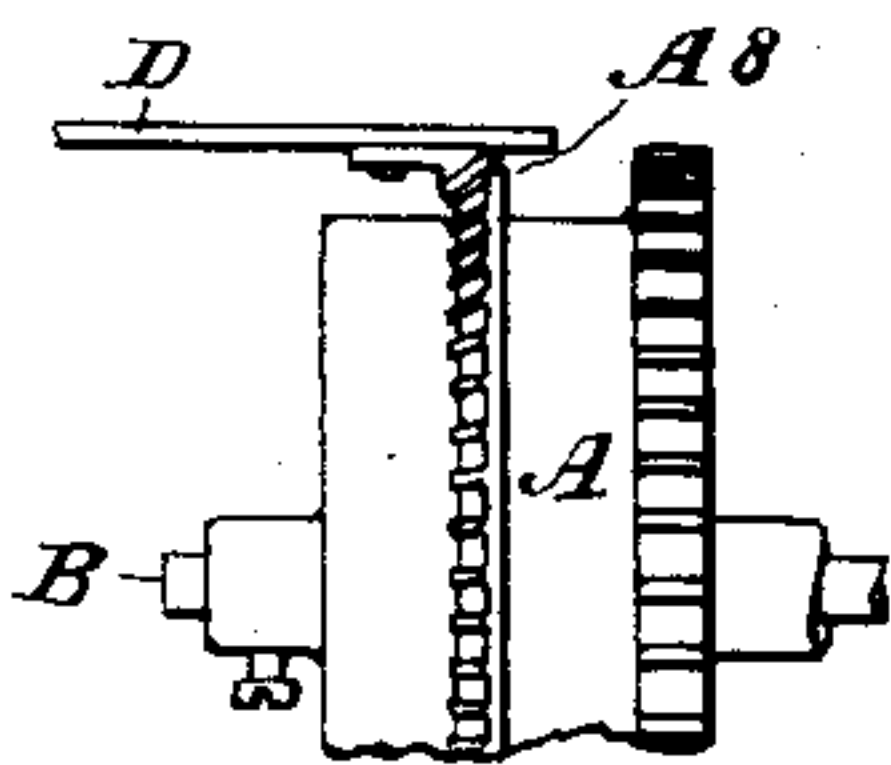


Fig. 6.

Fig. 8.

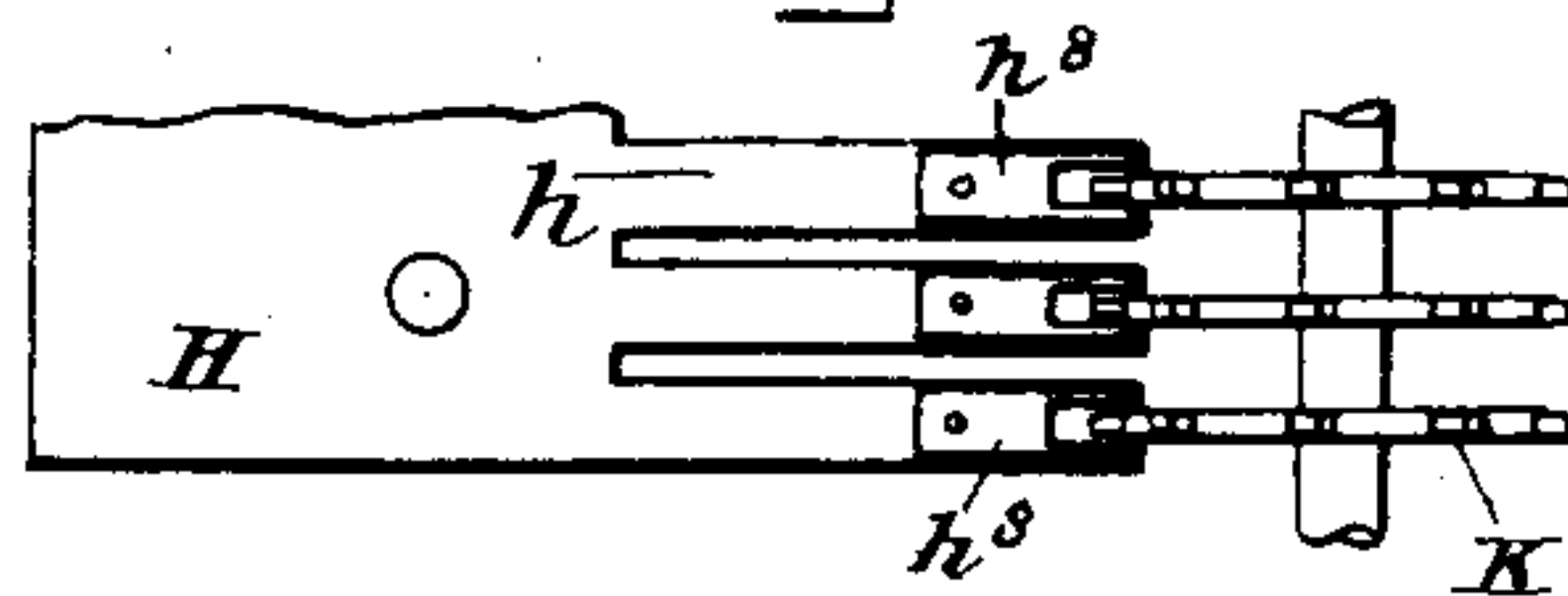


Fig. 7.

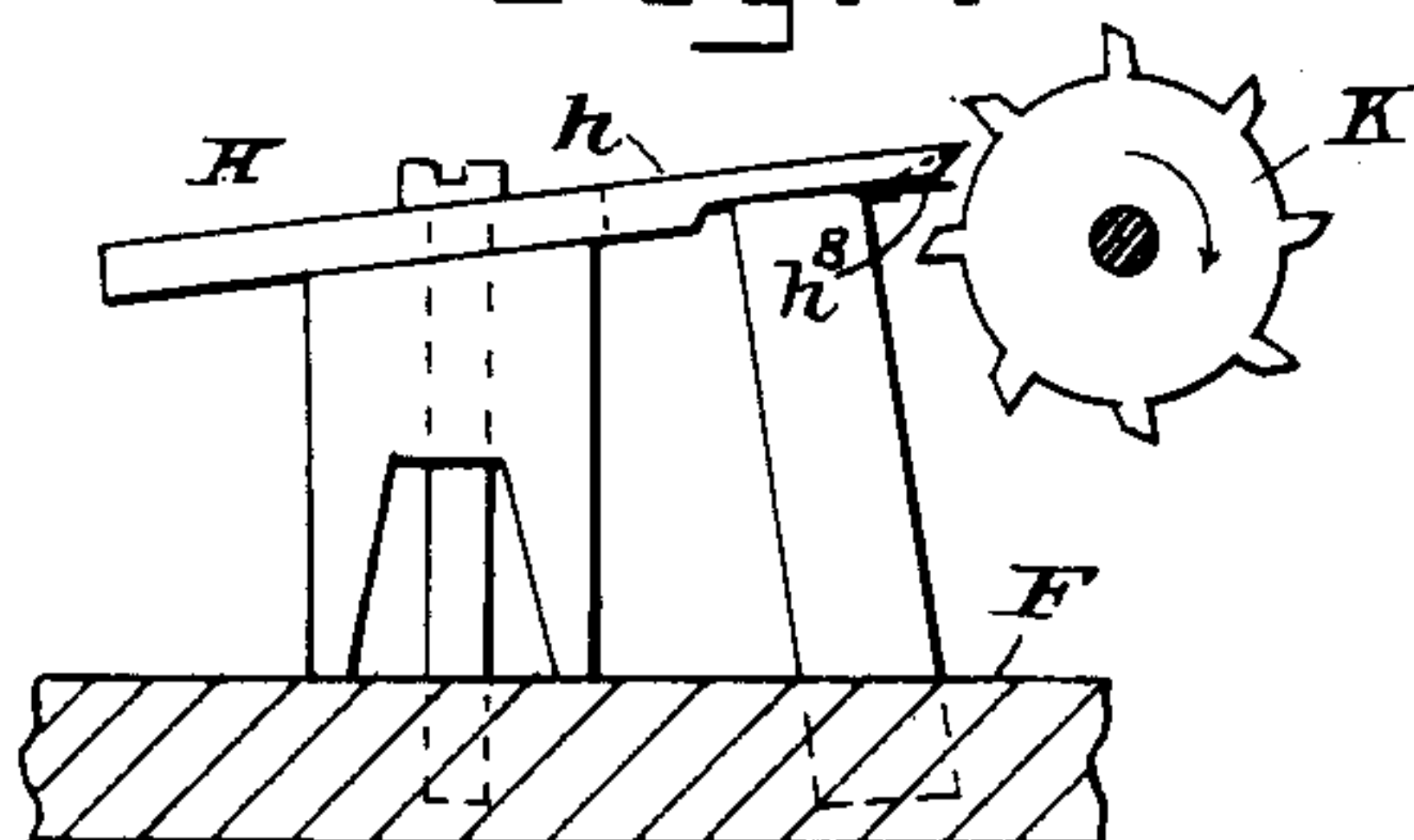


Fig. 10.

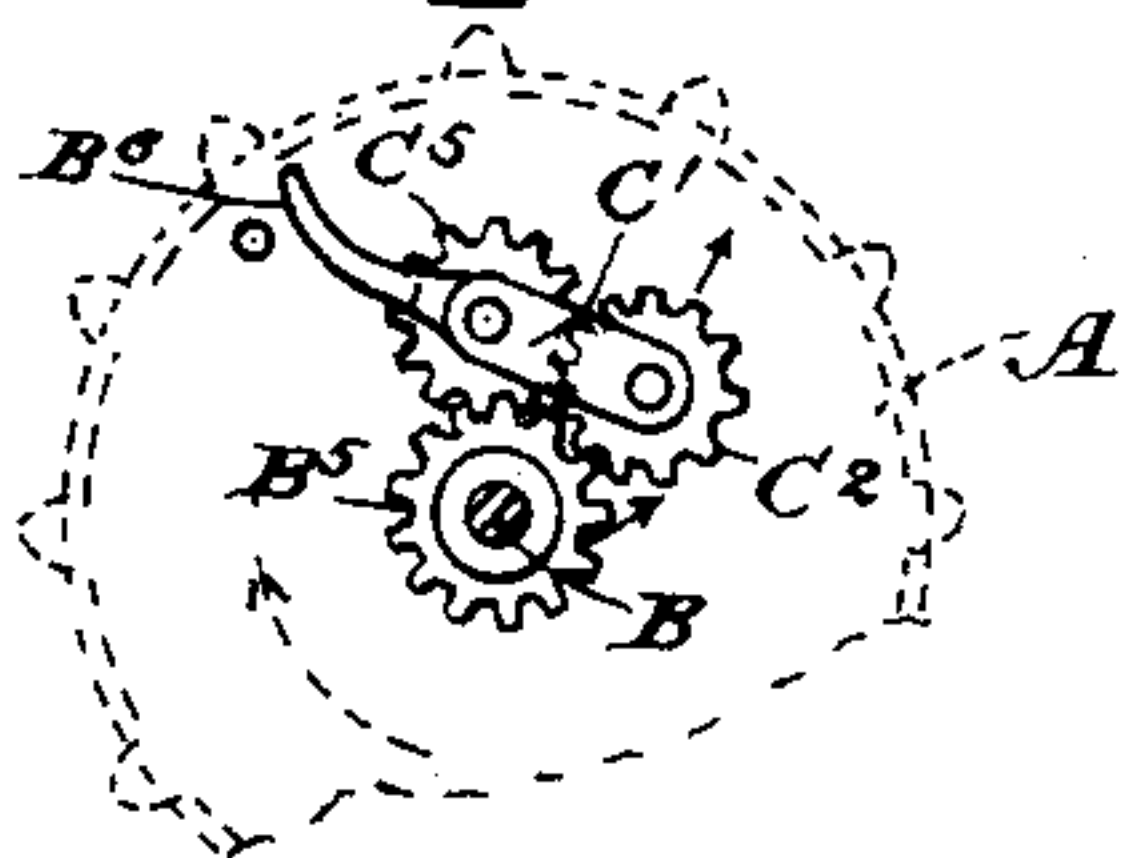
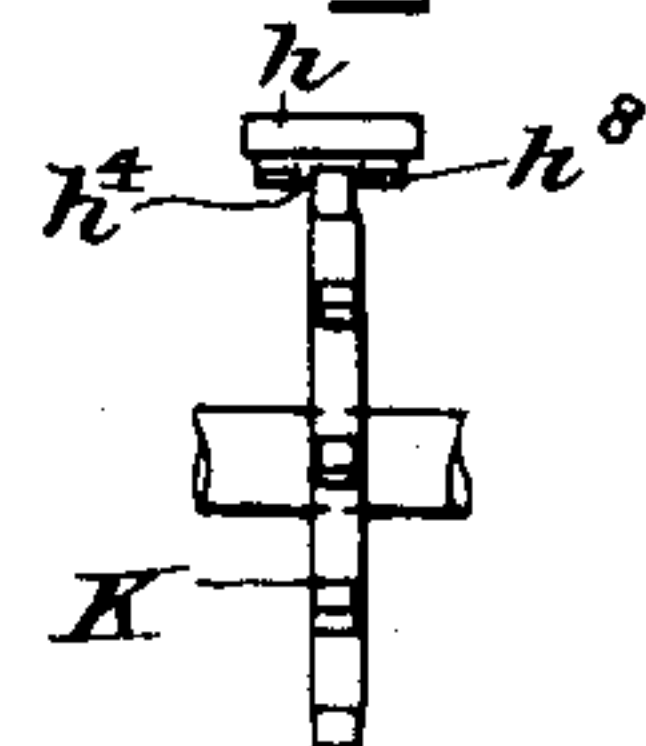


Fig. 8^a.



Witnesses.

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UNITED STATES PATENT OFFICE.

LOUIS P. VALIQUET, OF HOBOKEN, AND ALFRED SUEUR, OF JERSEY CITY,
NEW JERSEY, ASSIGNORS TO ANNA L. VALIQUET.

MUSIC-BOX.

SPECIFICATION forming part of Letters Patent No. 610,504, dated September 6, 1898.

Application filed June 14, 1897. Serial No. 640,656. (No model.)

To all whom it may concern:

Be it known that we, LOUIS P. VALIQUET, a citizen of the United States, and a resident of Hoboken, and ALFRED SUEUR, a citizen of Switzerland, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Music-Box, of which the following is a specification.

Our invention relates to music-boxes, 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 damping devices for said combs and to driving or operating mechanism for said tune-disks; and it has for its object the provision of an organization of the class described simple in construction, inexpensive to manufacture, and which operates smoothly and steadily in practical use.

To attain the desired end, this our 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; Fig. 2, a front elevation. Figs. 3, 4, 5, 6, 9, and 10 are views in detail of driving-gear mechanism, and Figs. 4, 5, 5^a, 7, 8, and 8^a are views in detail of combs constructed according to our invention.

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

We have found it desirable to make a music-box of simple construction and which may be wound noiselessly and which also may be provided with an edge driving device for the tune-sheet mechanism, and we have therefore constructed according to our 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 our spring-motor, provided with a mainspring of ordinary construction. A pinion C⁵ on the winding-post C meshes with the gear B⁵ of the sleeve B, and the said winding-post is prevented from backward movement by the noiselessly-operating friction detent mechanism and pinion

C², mounted on one end of the friction-plate C', hung on the shaft C, the opposite extremity of the friction-plate resting, when the spring is being wound up, against the pin B⁶. When the spring is 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 backward, and the consequent engagement of both the pinions C⁵ and C² with the gear B⁵ holds the part from further rearward movement.

The drum A is provided with engaging means—as, for example, the teeth or sprockets A⁴—constructed and arranged to turn a horizontal plate or disk D, provided with suitable engaging means, as depressions or perforations D⁴, located at or near the outer edge thereof.

A vertical shaft E, rigidly secured to the plate D, passes through the bed-plate F and is constructed and arranged to carry in a detachable relation and also to turn a tune disk or sheet G, the motion being primarily given to the plate D and thence imparted from the shaft E to the said tune-sheet G. Each tongue h of our comb H is provided at its free end with a thin vibrating spring h³, which acts as a damper on account of the difference of length and thickness of the spring-tongue h and vibrating spring h³ and the consequent differential and opposite vibration of the same when the tongue is struck. We also provide each tongue with means to protect or shield the vibrating spring h³ from injury from being impinged or impacted by the adjacent star-wheel K when it engages the said spring-tongue h, as the groove h² of the tongue h or the slot h⁴ of the spring h³, which is a modification of Fig. 8^a, which is, as shown, intermediate of the star-wheel and the tongue. Upon the tooth of a star-wheel striking a comb-tongue h the same commences to vibrate and to sound a musical tone. The si-

multaneous differential vibration of the hair-spring or damper h^3 , however, causes the vibrations of the tongue to gradually shorten, and a harmonious blending of the notes is thus secured, which effect has hitherto been unattainable except in the best Swiss cylinder music-boxes. If means, as the recess or groove h^2 , were not provided to shield the spring h^3 from the impact of the star-wheel, it is obvious that the tooth of the said star-wheel would loosen or tear the spring or damper h^3 from the comb-tongue. The bed-plate F is supported in any suitable manner and held in proper position, as by plates F⁶. We also arrange auxiliary adjustable means to regulate the rigidity, tension, or pitch, as it were, of the bed-plate F, consisting in this instance of a post L, standing ordinarily on a base-plate L' and supported thereby in a revoluble relation, the upper portion of the said post being preferably screw-threaded and engaging a bracket L², which bears against the bed-plate intermediate of the ends thereof. By turning the post L the bracket L² is caused to approach or be removed from the base-plate L', and upon thus finding the proper tension of the bed-plate the long vibration of a free bed-plate F is obviated and the said bed-plate, together with the posts and the bottom of the case containing our mechanism, is caused to vibrate in unison and a much fuller volume of sound is produced when the music-box is in action.

It is manifest that various omissions of some particulars could be made without materially affecting the essential features of our invention or the operation of the remaining parts, and we 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. We accordingly use the words "horizontal," "vertical," and the like in a relative sense. The said bed-plate F is also provided with a vertical projection F², which supports in a pivoted relation a rod F³ or tune-disk arm, which carries loosely mounted thereon friction wheels or rollers F⁴ and engages at its free end with the pin formed at the top of the shaft E. The star-wheels K, which contact with the vibrating tongues of the comb H, are actuated by the teeth g^2 , of approved form, located in the tune-disk G. The drum A is connected with a suitable train of wheels provided with a governor of approved construction, as A⁶.

In operation a suitable key or crank is attached to the winding post or arbor and operated to turn the pinion C⁵, which movement, as stated, swings the friction-plate C' outward and disengages the pinion C² and gear B⁵ while the spring is being wound up. By the use of our detent mechanism in lieu of a pawl and ratchet we secure means for noiselessly winding up the spring.

By the use of a direct engagement of the

spring-drum A with the secondary plate D we secure an outer-edge driving means for the same at the greatest economy of power, and the rotatory movement is transmitted to the tune-disk G through the shaft E.

By lifting the cross-arm F³ the tune-disk may be detached and a new one substituted therefor at will. By the use of our guarding or protecting means in connection with the tongues for the vibratory spring-wire all danger of the said spring being injured or torn away by the rotation of the star-wheels is avoided.

It is obvious that in lieu of star-wheels a cylinder with pins located upon the periphery thereof may be used in connection with our tongues and intermediate vibratory spring and means to guard, shield, or protect the same from impact directly with the device to strike the said tongues. If desired, a bevel-gear A⁸ may be substituted for the sprocket-teeth of the drum A and the perforations of the secondary plate D.

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 our invention, we would have it understood that we do not restrict ourselves to the particular construction and arrangement of parts shown and described, but that such changes and equivalents may be substituted therefor, and that

What we claim as our invention is—

1. In a music-box, a tune sheet or disk, and a comb-tongue provided with a vibrating spring or damper in combination with means controlled by said tune-sheet to actuate the said tongue.

2. In a music-box, a tongue, means, as a star-wheel to actuate said tongue, a smaller vibrating spring or damper, and means to shield, guard, or protect the same from injury from the device to strike the said tongue.

3. In a music-box, a tongue, a star-wheel to actuate said tongue, a small vibrating spring or damper, and means to shield, guard or protect the same from injury from the star-wheel.

4. In a music-box, a tongue, a star-wheel to actuate said tongue, a smaller vibrating spring or damper, means to shield, guard or protect the same from injury from the star-wheel, a tune sheet or disk, a secondary plate or sheet, means to connect the two together, and means to drive the said secondary plate or sheet from the outer edge thereof consisting of a spring-drum provided with driving means as sprocket-teeth to engage the said secondary plate.

5. In a music-box, a comb, a bed-plate, means to support the same, and adjustable auxiliary means to also support the bed-plate intermediate of the ends thereof, a tongue, a star-wheel and an intermediate vibrating spring.

6. In a music-box, a comb, a bed-plate, means to support the same, and adjustable

auxiliary means to also support the bed-plate, intermediate of the ends thereof, said means being provided with an adjustable device to raise and lower the same at will.

5 7. In a music-box, a tongue, a star-wheel to actuate said tongue, an intermediate smaller vibrating spring, means to shield, guard or protect the same from injury from the star-wheel, a tune sheet or disk, a second-
10 ary plate or sheet, means to connect the two together, means to drive the said secondary sheet or plate from the outer edge thereof consisting of a spring-drum provided with driving means as sprocket-teeth to engage the

said secondary plate, a comb, a bed-plate, 15 means to support the same, and adjustable auxiliary means to support the bed-plate intermediate of the ends thereof.

In testimony of the foregoing specification we do hereby sign the same, in the city of Ho- 20 boken, county of Hudson, State of New Jersey, this 4th day of June, A. D. 1896.

LOUIS P. VALIQUET.
ALFRED SUEUR.

Witnesses:

GEO. F. SEYMOUR,
J. ODELL FOWLER, Jr.