

No. 790,045.

PATENTED MAY 16, 1905.

W. I. FOLLETT.
TIME STAMP.

APPLICATION FILED DEC. 13, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

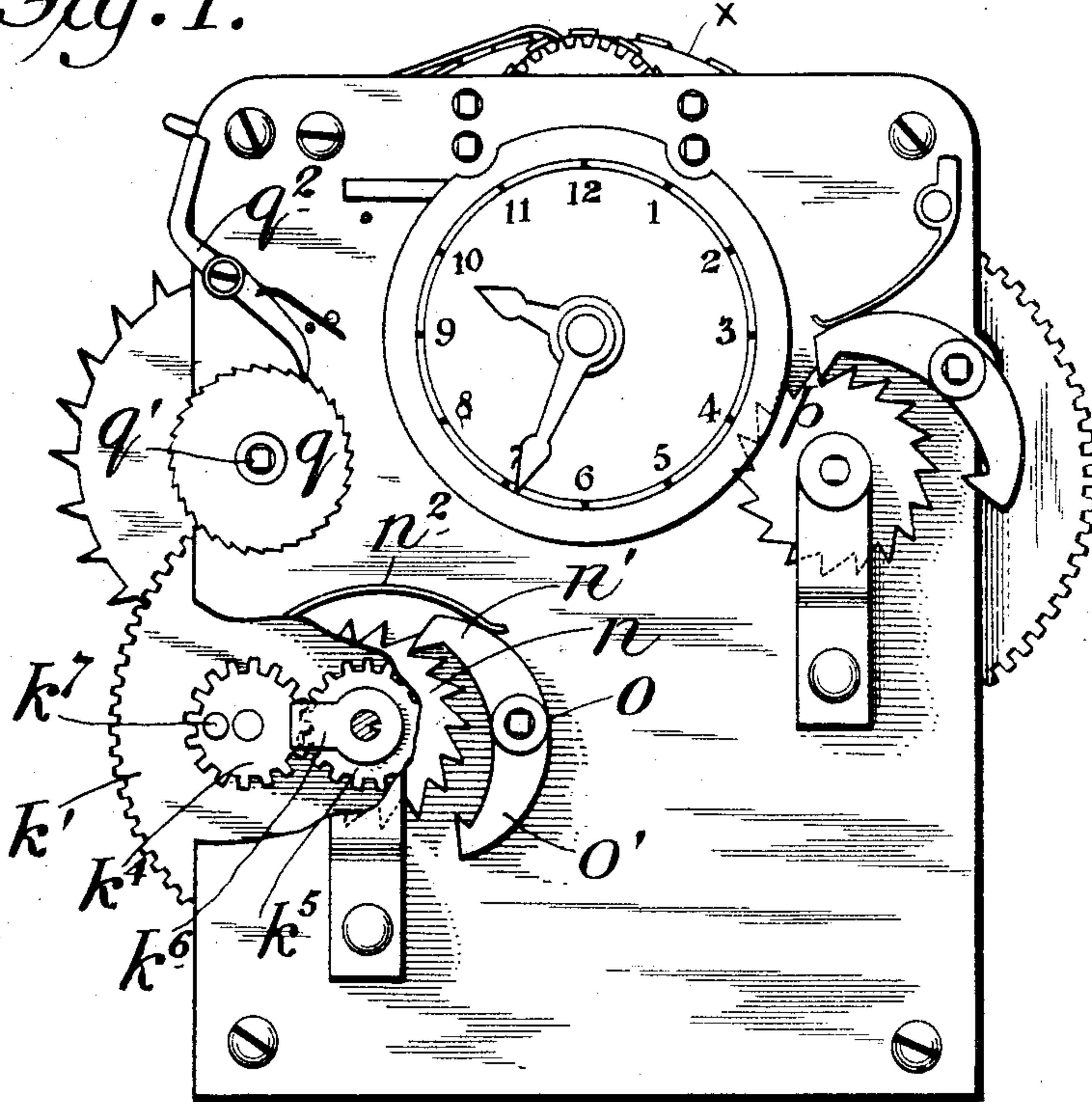


Fig. 4.

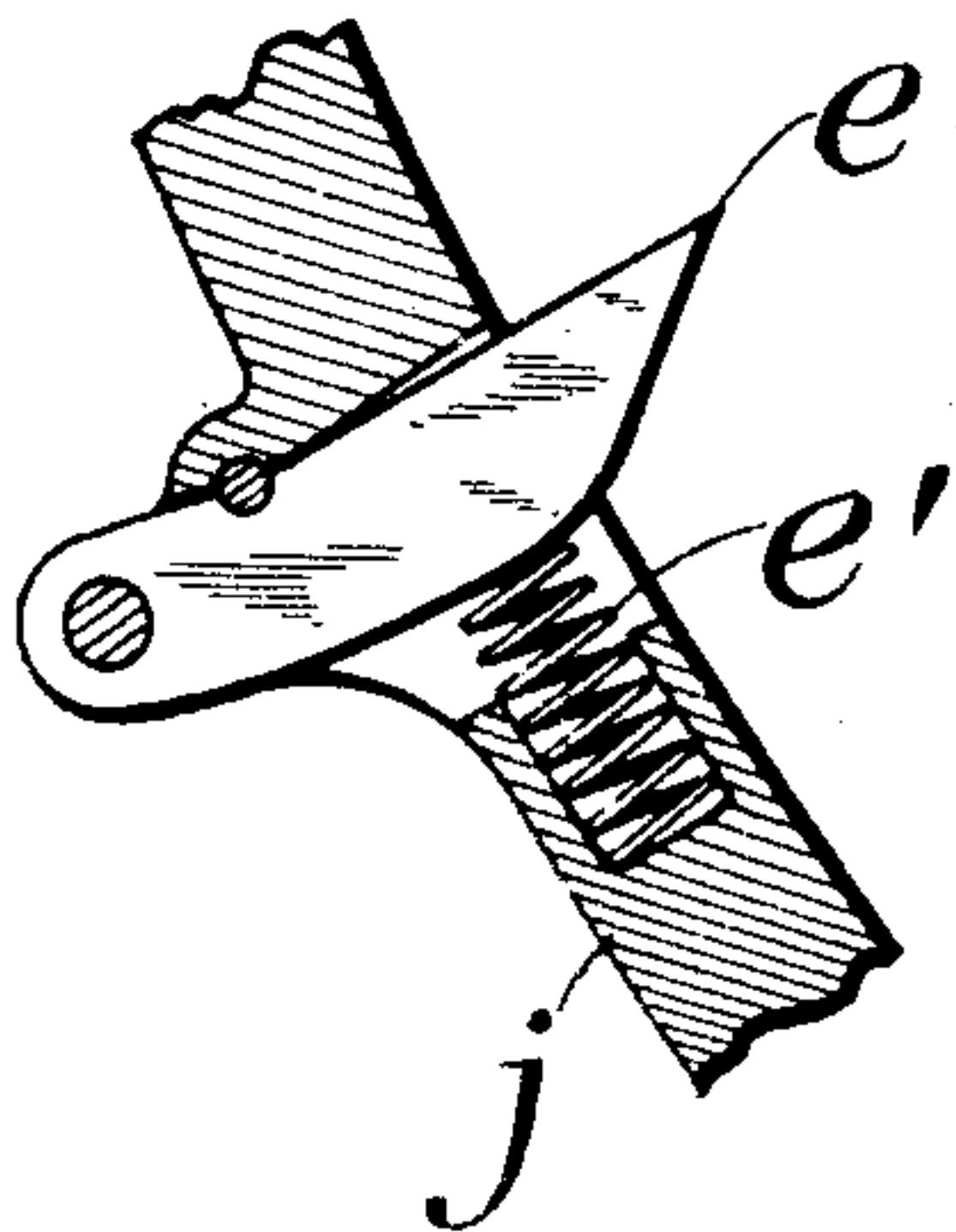
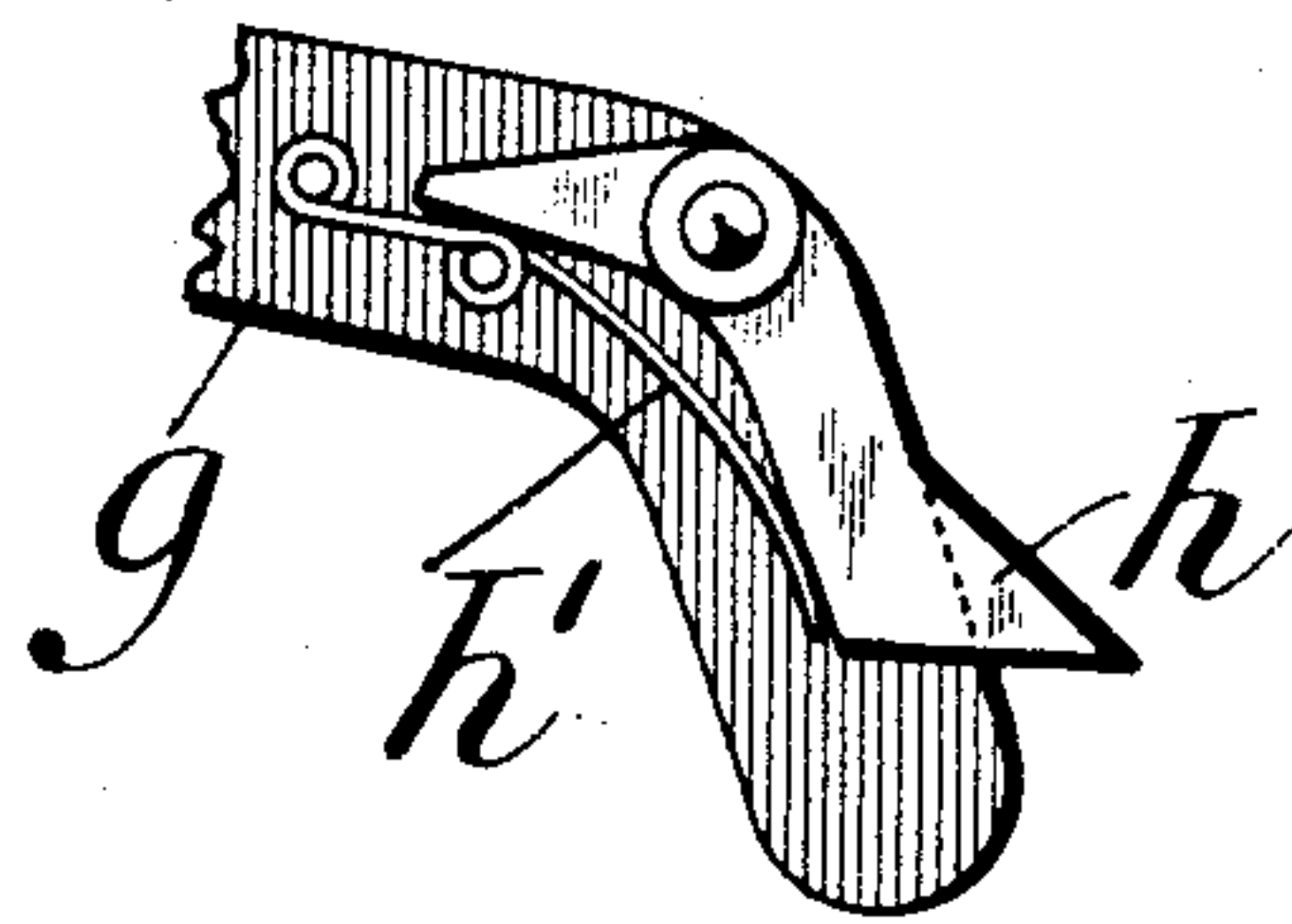


Fig. 5.



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3 SHEETS—SHEET 2.

Fig. 2.

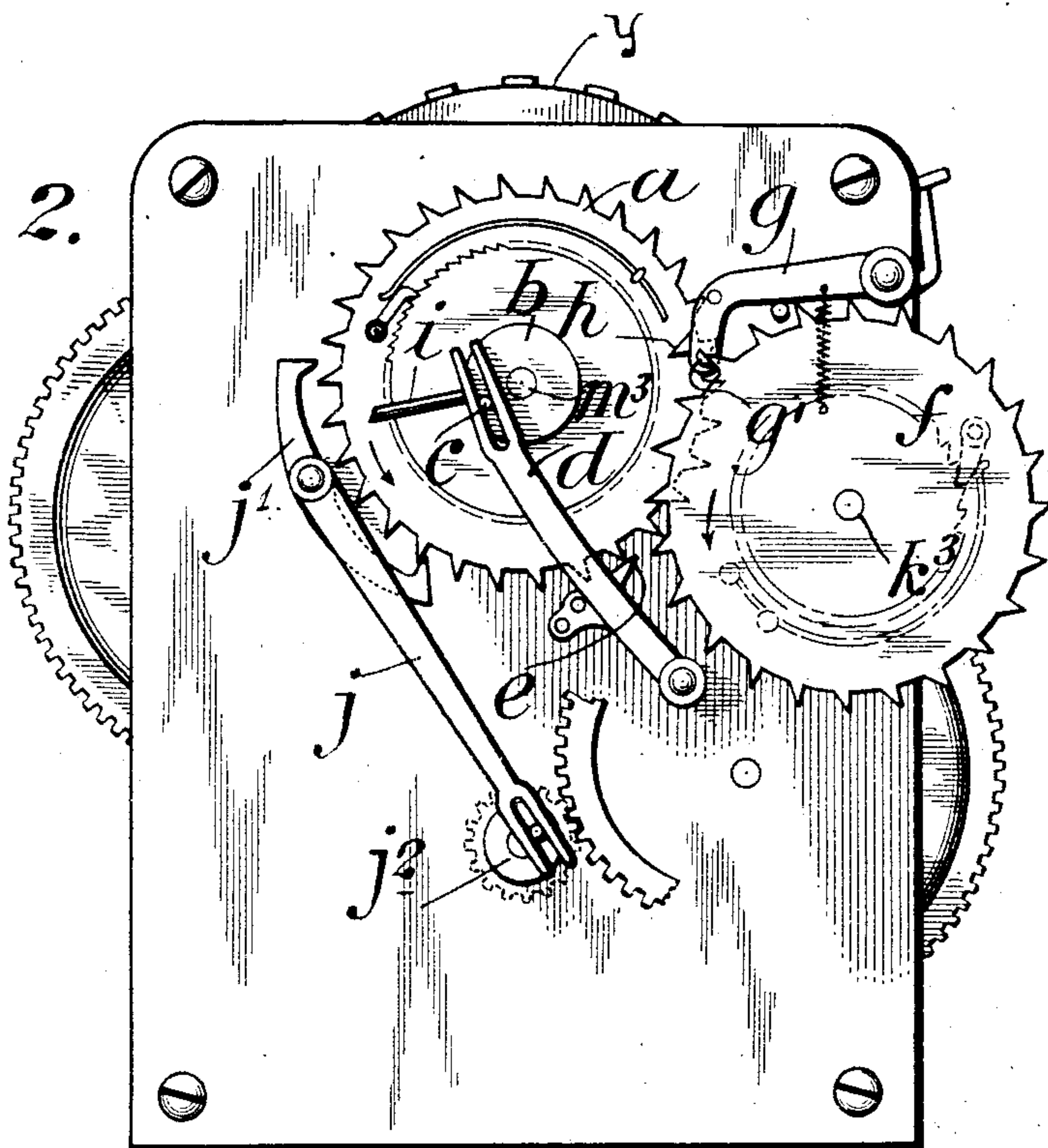
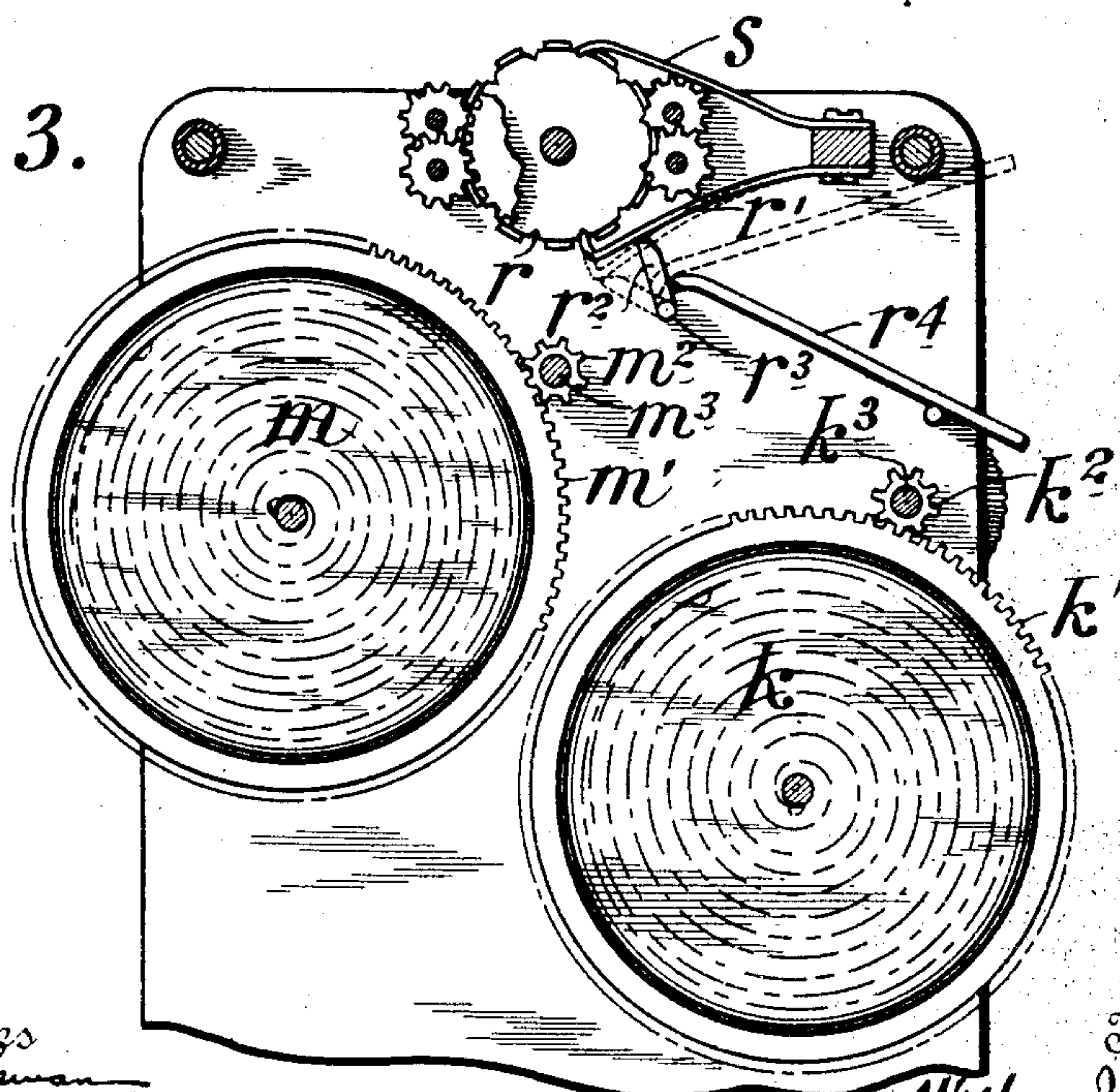


Fig. 3.



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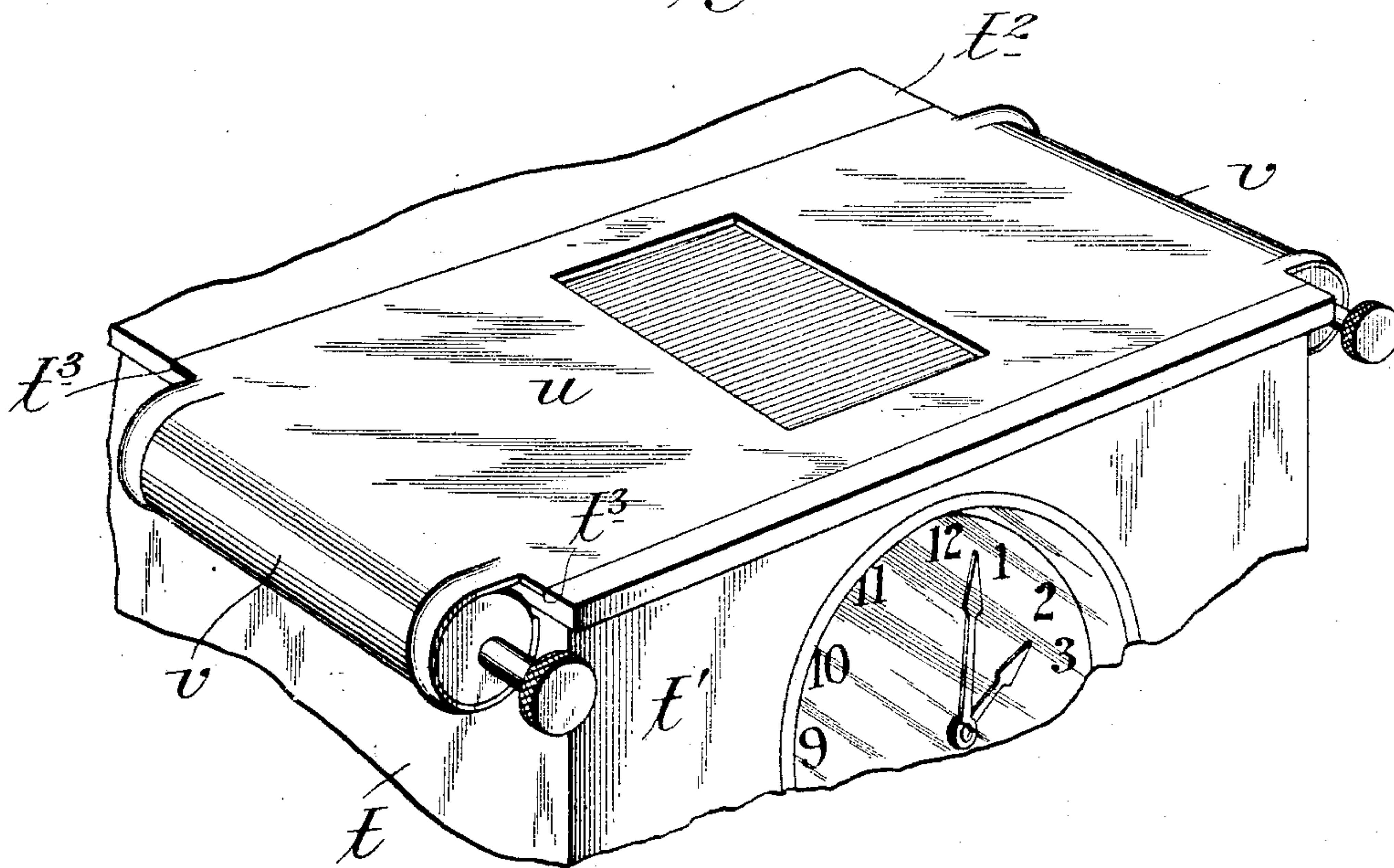
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3 SHEETS—SHEET 3.

Fig. 6.



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TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 790,045, dated May 16, 1905.

Application filed December 13, 1904. Serial No. 236,770.

To all whom it may concern:

Be it known that I, WILBUR I. FOLLETT, a citizen of the United States, residing in the borough of Brooklyn, city of New York, State of New York, have invented certain new and useful Improvements in Time-Stamp, of which the following is a specification.

The purpose of this invention is to improve the construction of time-stamp mechanism in several respects, hereinafter specifically described and explained.

In the accompanying drawings, Figure 1 is a front elevation, partly broken away, with the casing removed. Fig. 2 is a similar rear elevation; Fig. 3, an elevation showing the rear side of the front plate that carries the clock-face. Fig. 4 is a detailed sectional view, on an enlarged scale, showing part of the forked lever controlled by the revolution of the minute ratchet-wheel and the loose spring-supported tooth pivoted in it that engages the hour ratchet-wheel when released by its escapement-lever; Fig. 5, a similar view showing the hour-wheel escapement-lever and its loose tooth; Fig. 6, a perspective view illustrating the upper part of the casing within which the time mechanism and printing-wheels are inclosed and having applied to it a ribbon-holder, which latter, however, forms no part of the present invention.

The machine shown in the drawings, with the exception of the special features of construction about to be described, is or may be of the same construction and arrangement as disclosed in my Patent No. 777,891, dated December 20, 1904. To reduce friction and provide a wider margin for alining the printing-wheels when assembling, the following arrangement is adopted in lieu of the cam construction shown in the above-mentioned patent.

The minute escapement-wheel *a* has projecting from its face a hub or bushing *b*, in the face of which is a pin *c*, working in the forked end of a lever *d*, having pivoted in it a loose tooth *e*, supported by a spring *e'*, Fig. 4.

f is an hour escapement-wheel, and *g* its escapement-lever, the lateral tooth *g'* of which normally engages a tooth of the escapement-

wheel and holds it against the stress of the driving-spring. On the rear face of the escapement-lever *g* is pivoted a loose tooth *h*, supported by a spring *h'*, Fig. 5, which is rigid against strain in one direction, but yields under the tension of the spring in the other direction. Projecting radially from the bushing *b* is a pin or rod *i*, which engages the tooth *h* and lifts the escapement-lever *g* out of engagement with the hour escapement-wheel at the proper time. The operation may be followed upon Fig. 2 of the drawings.

As the minute escapement-wheel moves round in the direction indicated by the arrow the lever *d* and its tooth *e* are carried toward the hour escapement-wheel, and as the pin *i* engages the tooth *h*, and so commences to lift the escapement-lever *g* to carry its tooth *g'* away from the tooth of the hour escapement-wheel with which it is in contact, the loose tooth *e* passes into the path of an adjacent tooth of the hour escapement-wheel. When by continuation of the movement, *g'* passes out of engagement with the tooth of the hour escapement-wheel, that wheel by the stress of its spring is moved in the direction of the arrow and, the loose tooth *e* yielding, the wheel is permitted to advance one tooth or step, being then arrested when the loose tooth *e* reaches the limit of its yielding. With this construction the lever *d* may be made very light, it only being necessary that the part carrying the loose tooth should be of sufficient strength and dimensions to support and sustain the tooth. The loose pin-and-slot connection by which the lever is driven very greatly eliminates friction, and therefore reduces the constant load imposed upon the motor-shaft.

The tooth *h*, carried by the escapement-lever *g*, is made capable of yielding downwardly, so as to permit the setting back of the minute-printing wheel and its escapement-wheel, the end of the pin *i* preferably being beveled, as shown, so as to easily snub back the tooth *h* when the minute-wheel is turned backwardly.

The forked lever *j*, controlling the minute escapement-lever *j'* and the clock-driven wheel *j''*, having pin working in the fork or slot of

the lever j , is the same as in my prior patent above mentioned.

Heretofore in time-stamps there has been difficulty due to overwinding or too tightly winding the driving-spring of the printing-wheels. In such case, there being no further movement possible of the printing-wheels to set them, users of the apparatus frequently by inadvertence completely winding the spring before setting the wheels. To remedy this difficulty, I have provided means by which the spring of the motor may be unwound in order to permit the necessary range of movement of the printing-wheels to properly set them. I prefer also in connection with such arrangement to use a Geneva stop to prevent overwinding of the spring.

k is the spring drum or motor for driving the hour-printing wheel x . Its driving-gear k' drives the pinion k^2 on the shaft k^3 of the hour escapement-wheel f .

m is the spring drum or motor which drives the minute-printing wheel. Its driving-gear m' drives the pinion m^2 on the shaft m^3 of the minute escapement-wheel a . The hour-printing wheel x , Fig. 1, and the meridian-printing wheel y , Fig. 2, which moves with it, are or may be the same as in my Patent No. 777,891, as may also be the minute-printing wheel, which is not shown. Each of these motors is provided with stop mechanism to prevent overwinding, that of the hour-escapement-wheel motor being shown in Fig. 1. This stop comprises the small gear k^4 , turning on a stud-shaft on the side of the driving-gear k' and meshing with a small gear k^5 , fast on the axis or shaft of the gear k' , and on this shaft is keyed a laterally-projecting stop k^6 , with which, upon the desired extent of winding of the spring, a pin k^7 on the side of the gear k^4 engages.

n , Fig. 1, indicates the ratchet of the spring-motor, and n' is the back-stop pawl which engages it and which is acted upon by the usual spring n^2 . This pawl is mounted upon a rock-shaft o , the projecting end of which is squared for the reception of a key, and from the opposite side of the shaft extends a similar pawl o' , the two pawls n' o' constituting an ordinary escapement-pallet. When the spring is completely wound and some play or margin for setting the hour-printing wheel is desired, a key may be applied to the squared end of the shaft o and by rocking the escapement-pallet n' o' the spring may be unwound to the desired extent.

Precisely the same arrangement is shown for the motor that drives the minute-wheel, p being the ratchet-wheel of the motor.

In my former patent above mentioned a locking stop-lever (marked 21 in Fig. 3 of the drawings of that patent) was employed to lock the minute-printing wheel against being set back; but by the opening of the door and disengagement of the locking-lever from the

ratchet of the minute-printing wheel the wheel could be set back as desired. In the present case a similar arrangement is provided for locking the hour and meridian wheels. A ratchet-wheel q is applied to the shaft outside of the front plate of the frame and a thumb-button q' secured to the end of the shaft. A locking-lever q^2 normally engages the ratchet q and prevents the hour and meridian wheels being set backward, but may be rocked out of engagement with it, when by turning the thumb-button q' the hour and meridian wheels may be set backward, as desired.

To prevent the turning of the year, month, and day wheels from the outside, I provide a means for positively locking them when set. The spaces between the printing faces or characters upon the wheels are notched or recessed, as seen at r , Fig. 3. Spring locking-arms r' , of which there may be one for each wheel, are provided and engage the recesses in the wheels, and so lock them. The reaction of these spring-arms tends to carry them out of engagement with the wheels; but they may be forced into the recesses in the wheels by a paddle or wiper r^2 , pivoted at r^3 and controlled in position by an extended arm or lever r^4 . When this latter arm or lever is turned downwardly, as in Fig. 3, the locking-arms r' are forced into engagement with the recesses in the wheels, positively locking them, so that they cannot be disturbed from the outside. Of course in setting the year, month, and day wheels the front of the casing is opened and the lever-arm r thrown upwardly. To prevent overthrow of the wheels in setting them and to properly aline them, I provide the ordinary bank-springs s , which bear upon the upper faces of these wheels.

In the construction herein shown two motor-springs are provided, one, m , for the minute escapement-wheel, and one, k , for the hour escapement-wheel, this being indicated in Figs. 2 and 3, whereas in my former patent above mentioned a single motor only is shown, one of the escapement-wheels being driven from its drum and the other from its shaft.

In Fig. 6, t indicates the casing, the front t' of which is provided with hinges, as indicated, and is to be secured by a suitable lock, as usual. It has the usual opening through which the clock-face carried by the front plate of the contained frame is exposed. The top plate t^2 of the casing is provided with the usual opening across which the ribbon z travels and is recessed across its face, as indicated at t^3 , to receive the plate u of the ribbon-holder. This ribbon-holder comprises a plate u with a central opening, which fits snugly into the recessed face of the top plate of the casing and is at each end extended and curled into cylindrical form to form housings v for the ribbon-bobbins, the ribbon traversing beneath the plate and across the opening therein.

I claim as my invention—

1. In a time-stamp, the combination of the spring-driven hour escapement-wheel, its escapement-lever, a spring-driven minute escapement-wheel, a part rotated in unison with the minute escapement-wheel and operating once in each revolution of the latter, to disengage the hour escapement-lever from its wheel, and a part actuated in unison with the movement of the minute escapement-wheel toward and from the hour escapement-wheel, and a spring-supported loose tooth carried by the last-named part, which catches and holds the hour escapement-wheel when its escapement-lever is disengaged therefrom.

2. In a time-stamp, the combination of a spring-driven hour escapement-wheel, a spring-driven minute escapement-wheel, an escapement-pallet for the latter wheel adapted to be actuated by time mechanism, the escapement-lever of the hour escapement-wheel which normally holds it at rest, a projecting part rotated in unison with the minute escapement-wheel, and operating once in each revolution of the latter to disengage the hour escapement-lever from its wheel, a pivoted, slotted lever, a pin on the minute escapement-wheel engaging the slot therein and thereby moving the lever toward and from the hour escapement-wheel, and a yielding spring-supported tooth moving in unison with the slotted lever toward and from the hour escapement-wheel, whereby when said wheel is released by its escapement-lever, the spring-supported tooth arrests it, after it has moved a step or tooth.

3. In a time-stamp, the combination of a spring-driven minute escapement-wheel, a spring-driven hour escapement-wheel, the escapement-lever of the latter wheel, a spring-supported yielding tooth mounted thereon and capable of yielding in one direction only, the escapement-pallet of the minute escapement-wheel adapted to be driven by a timepiece, a projecting part moving in unison with the minute escapement-wheel and adapted, once in each revolution of the latter, to engage the loose tooth on the escapement-lever of the hour-wheel and thereby lift said lever out of engagement with its wheel, and a spring-supported loose tooth moved in unison with the minute escapement-wheel toward and from

the hour escapement-wheel, whereby the last-named spring-supported tooth arrests the hour escapement-wheel, after its lever is disengaged therefrom, and when it has moved a step or tooth.

4. In a time-stamp the combination of a spring-driven minute escapement-wheel, means for controlling its step-by-step movement by an appropriate timepiece, the spring-driven hour escapement-wheel, its escapement-lever which normally holds it at rest, a spring-supported yielding tooth pivoted upon such escapement-lever, and capable of yielding in one direction only, and a projection moving with the minute escapement-wheel and engaging the yielding tooth on the hour escapement-wheel lever once in each revolution, to lift the lever out of engagement with its wheel, the arrangement being such that the minute escapement-wheel may be turned in reverse direction to set the minute-printing wheel without disturbing the hour escapement-wheel.

5. In a time-stamp, a spring-motor, a printing-wheel actuated thereby, and means applied directly to the axis of the spring-motor whereby it may be unwound at will to afford margin of movement for adjustment or setting of the printing-wheel.

6. In a time-stamp, the combination of a printing-wheel and spring-motor for actuating it, a stop device to prevent overwinding of the spring-motor, and means applied directly to the axis of the motor for at will unwinding the spring to afford a margin of movement of the printing-wheel for its adjustment.

7. In a time-stamp, the combination of a date-wheel, as a year, month or day wheel, having recesses between its peripheral characters a locking-lever engaging said recesses and means located entirely within the casing of the apparatus and accessible only on opening the casing for throwing the locking-lever into and out of engagement with the dating-wheel.

In testimony whereof I have hereunto subscribed my name.

WILBUR I. FOLLETT.

Witnesses:

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