

(No Model.)

2 Sheets—Sheet 1.

C. F. WEBSTER.
COUNTING MACHINE.

No. 452,860.

Patented May 26, 1891.

FIG. 1.

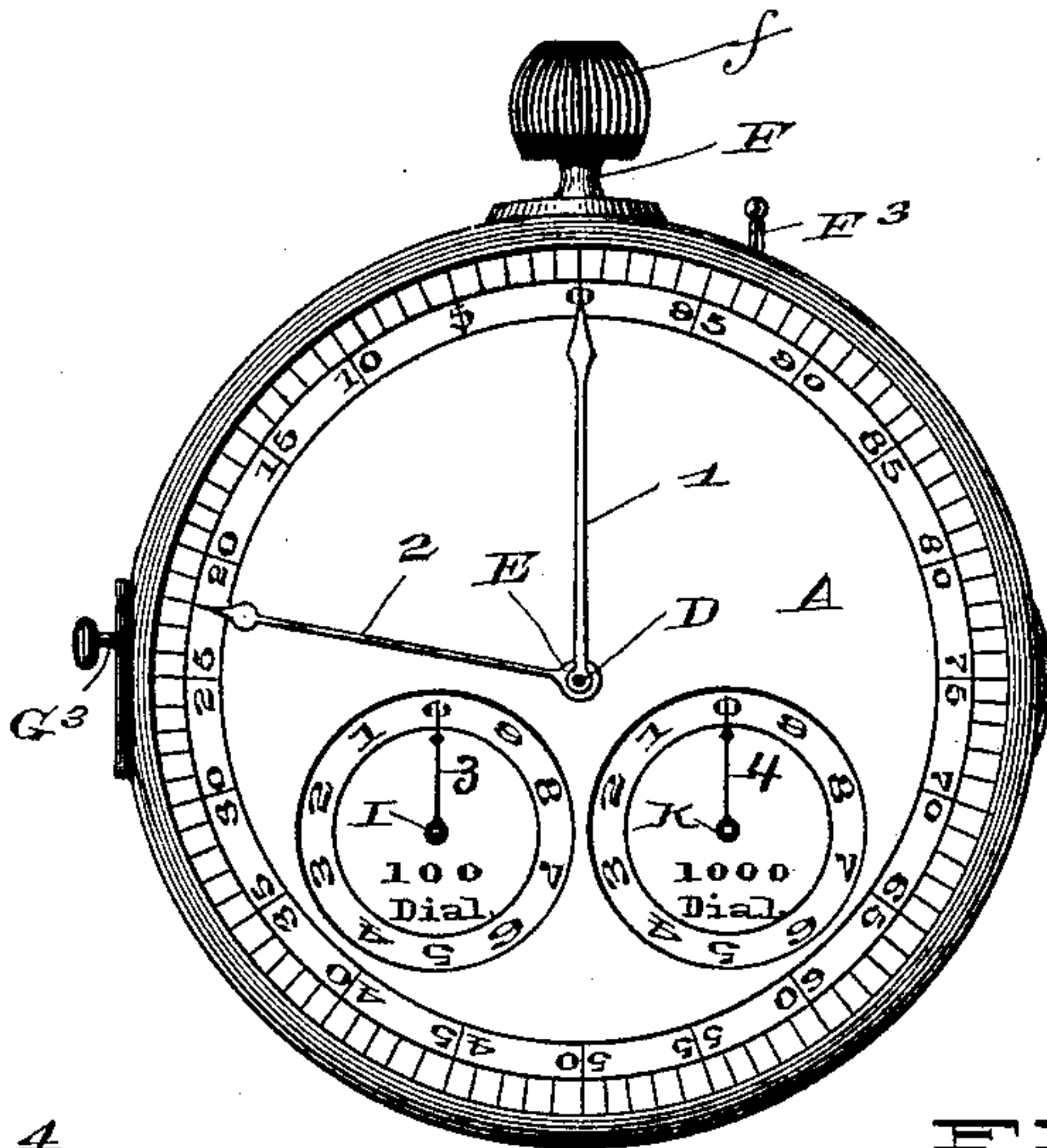


FIG. 2.

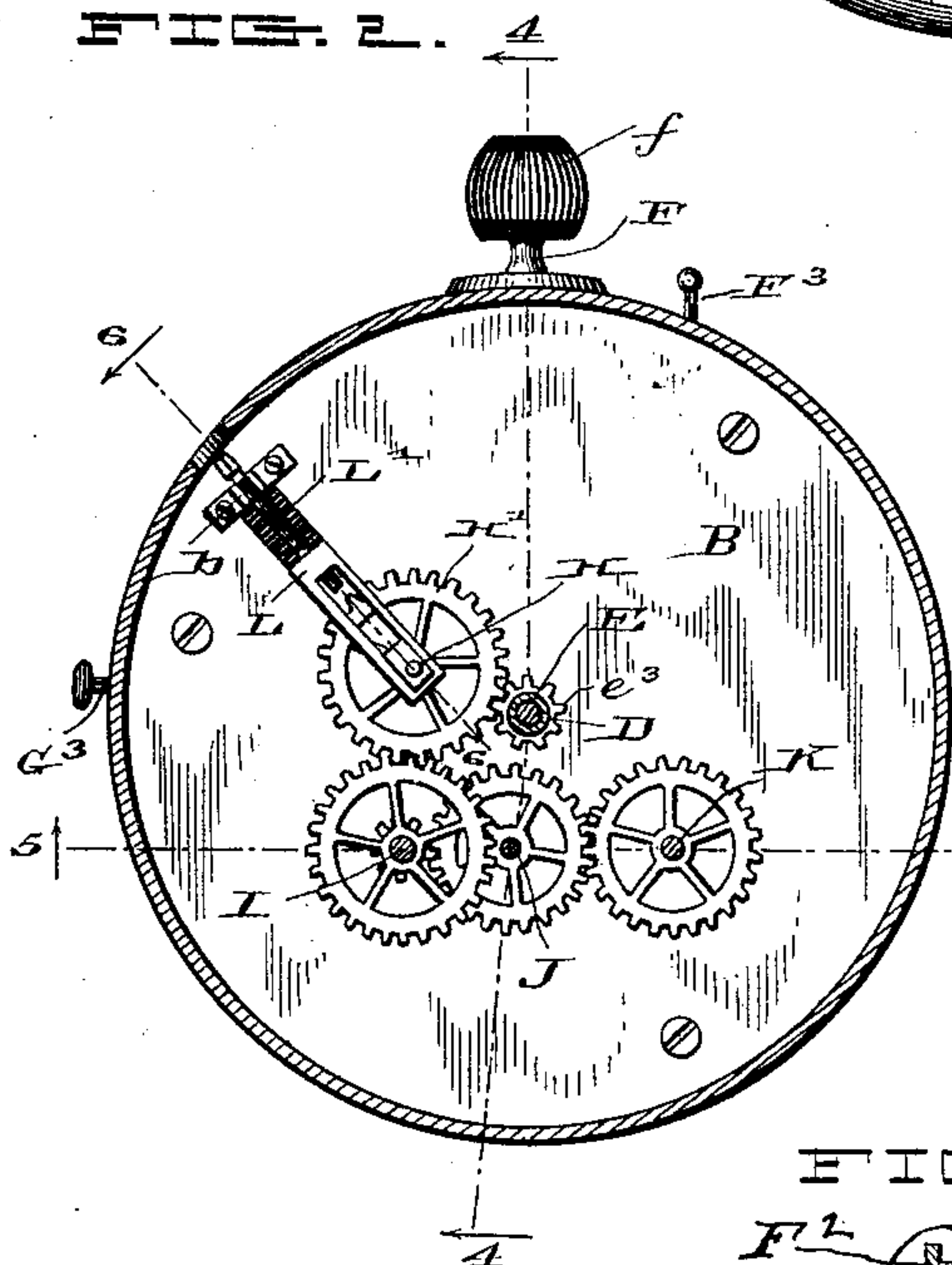


FIG. 3.

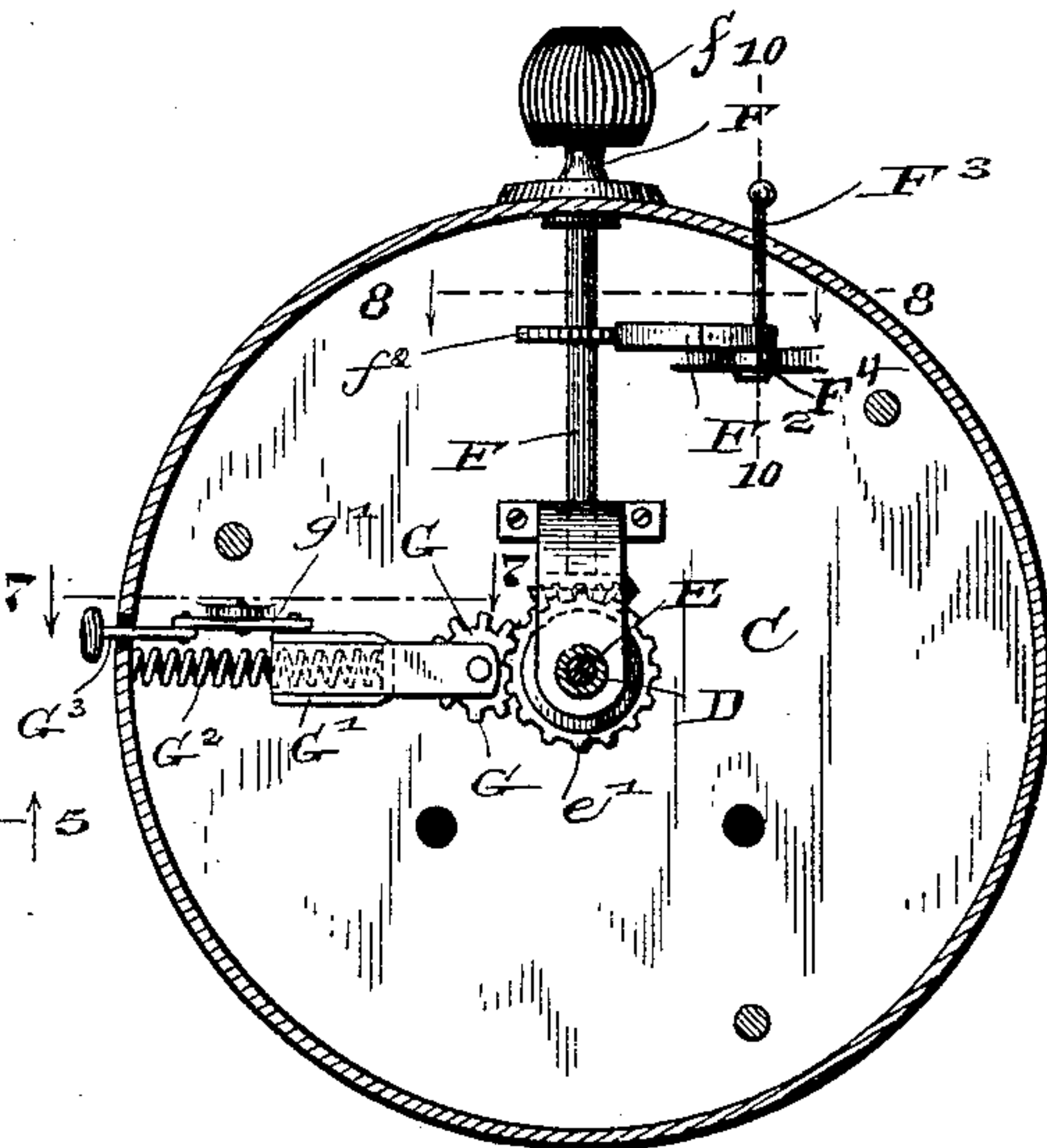
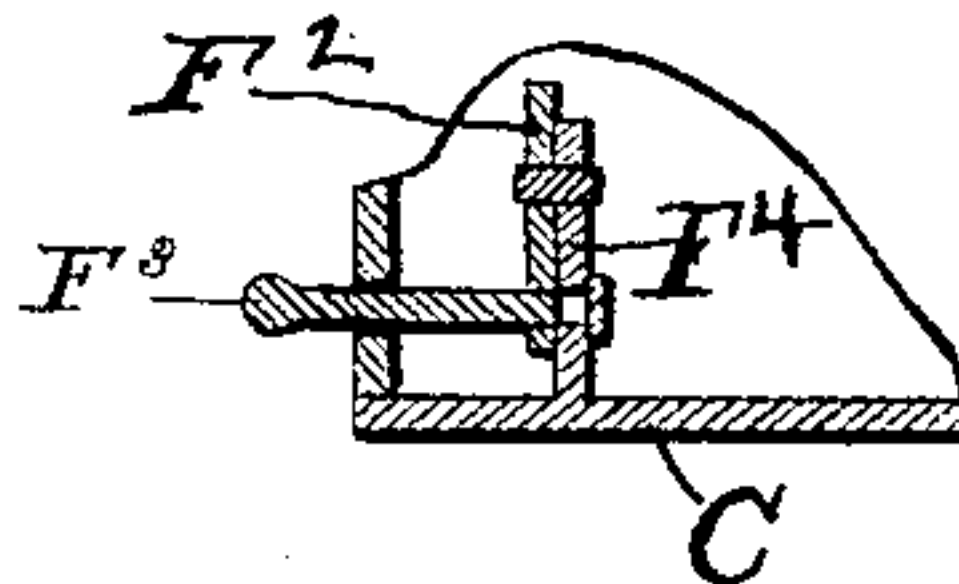


FIG. 10



Witnesses

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FIG. 4.

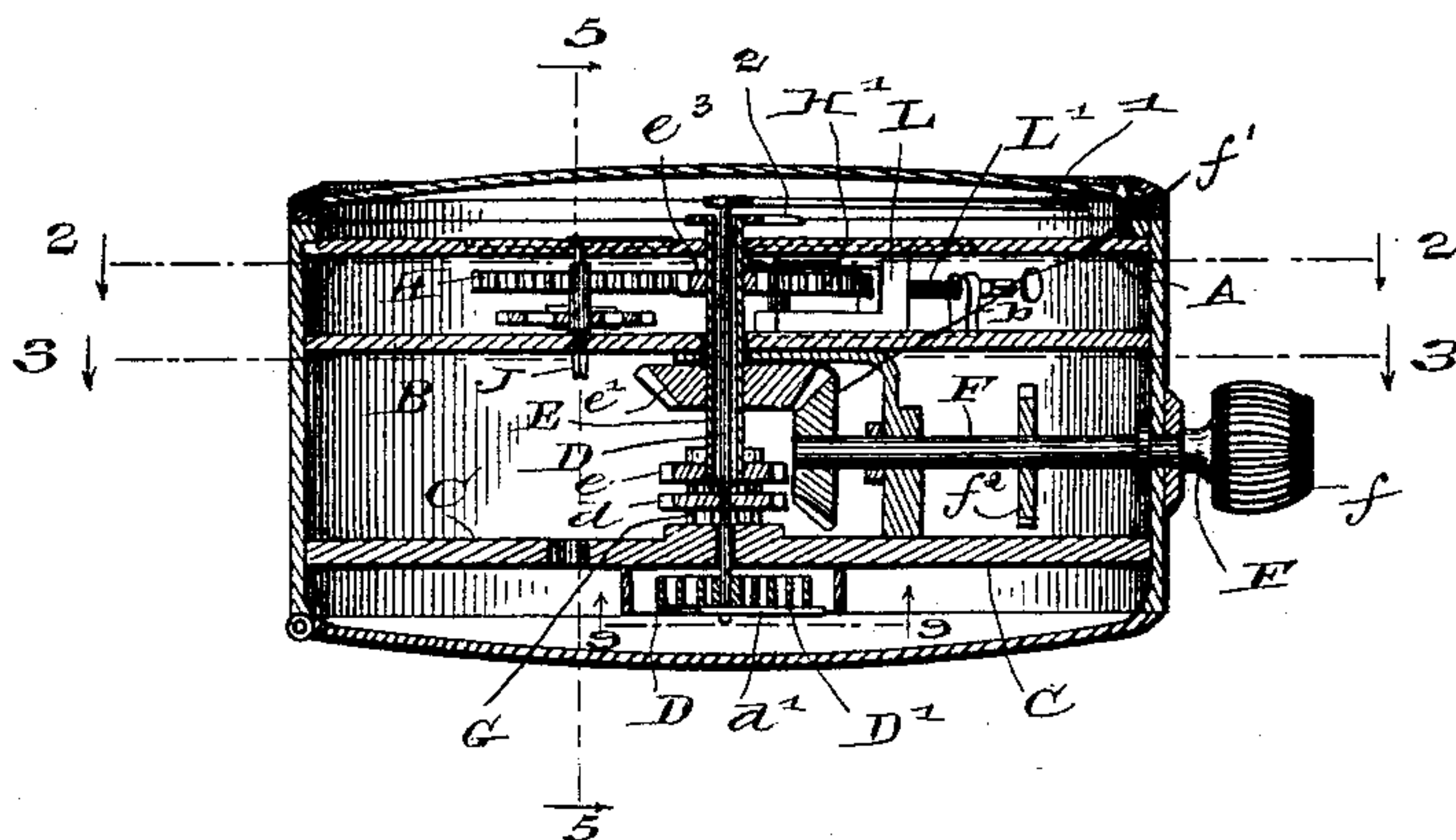


FIG. 5.

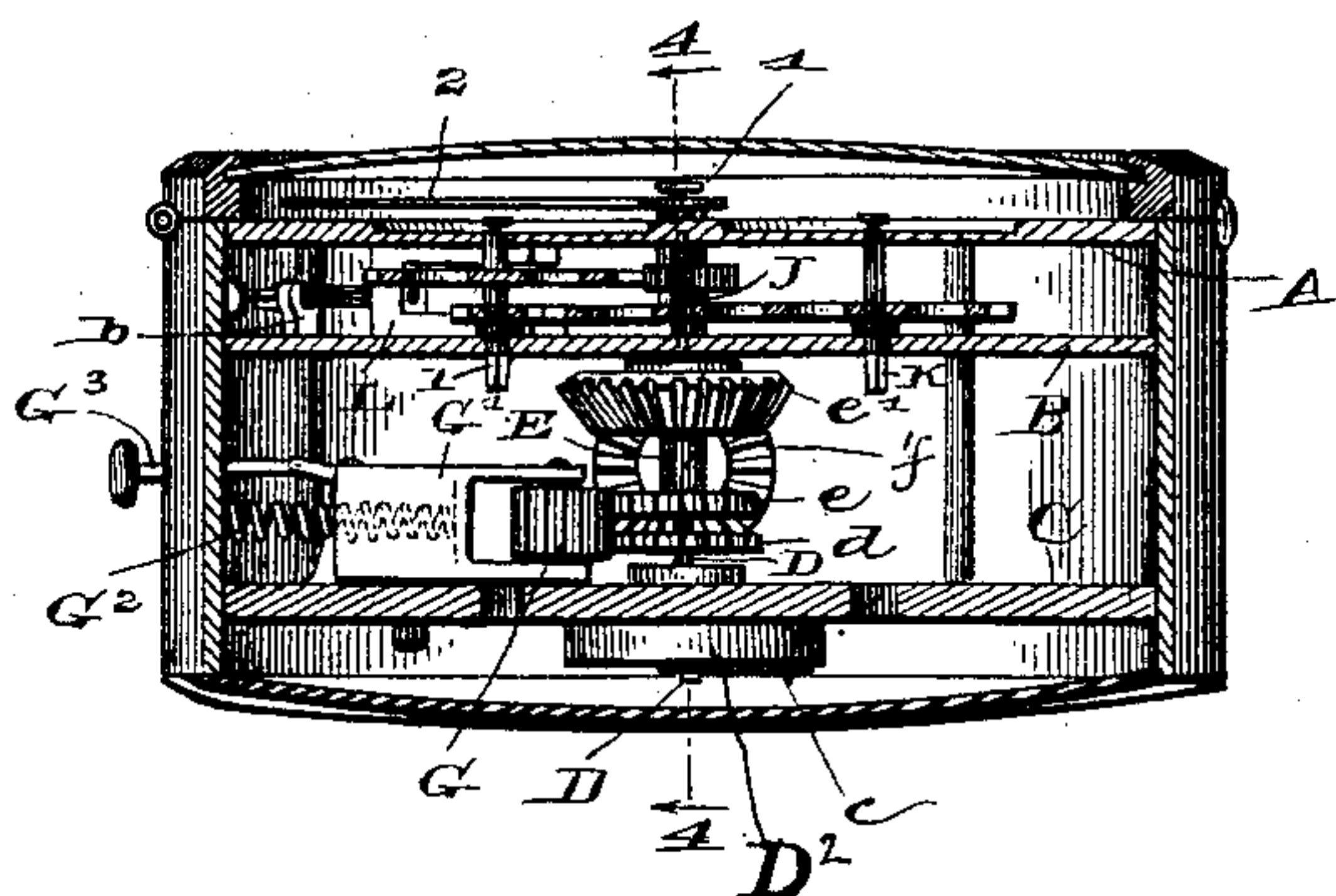


FIG. 6.

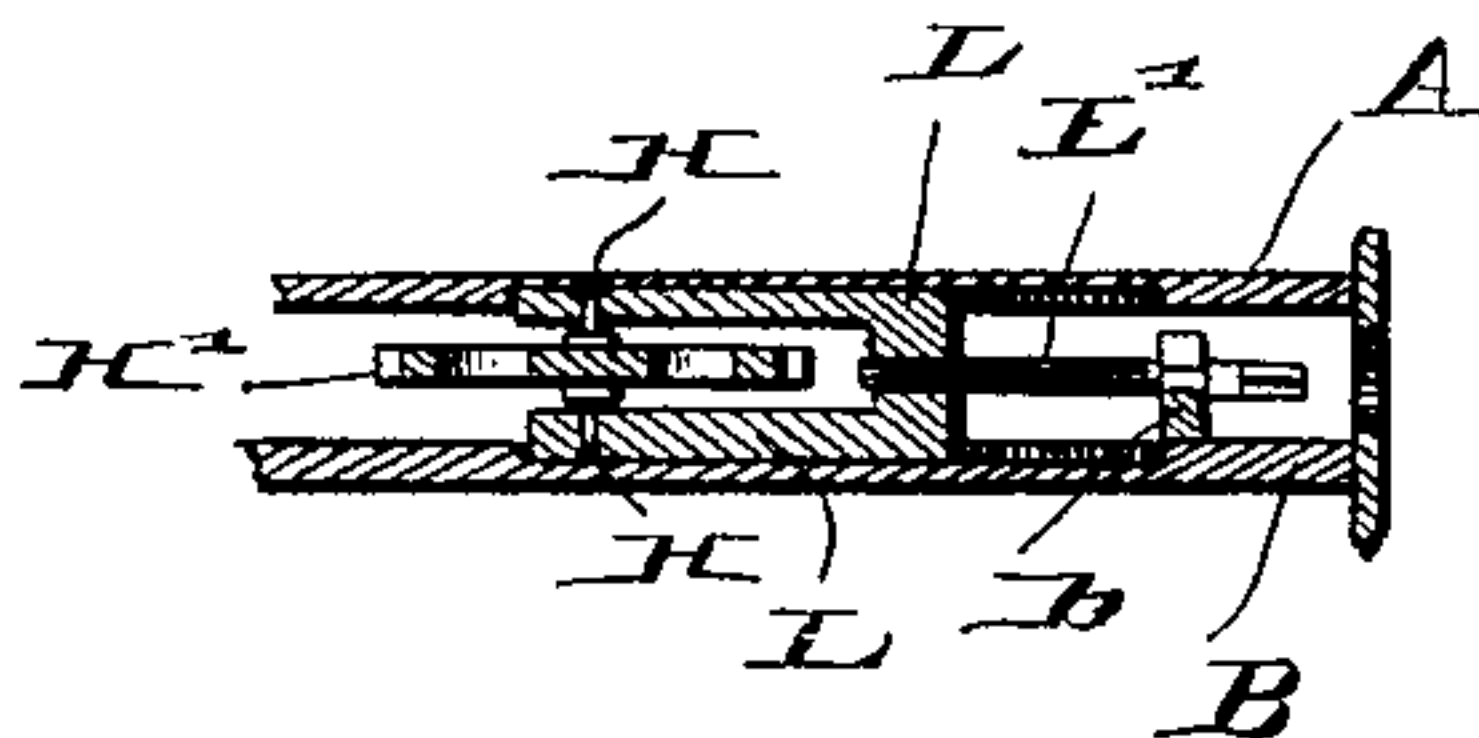


FIG. 7.

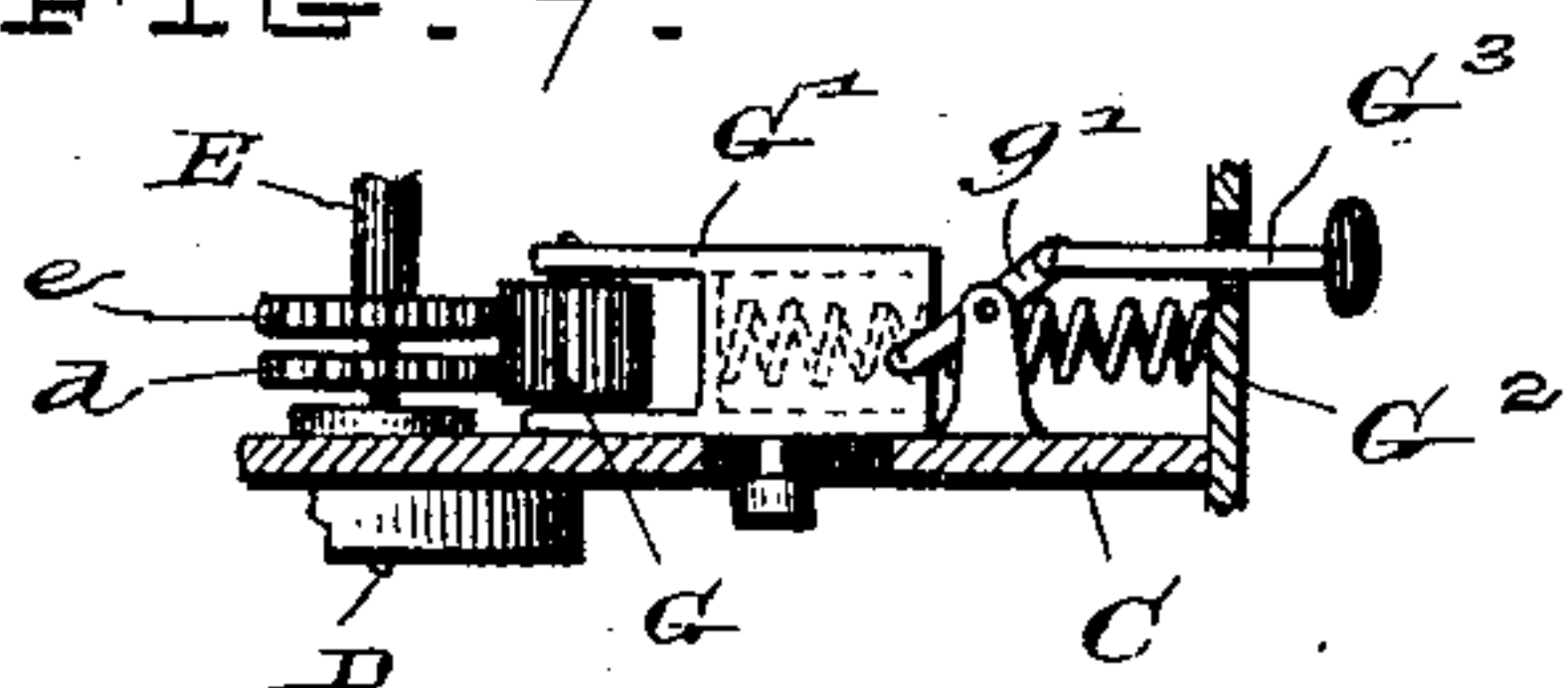


FIG. 8.

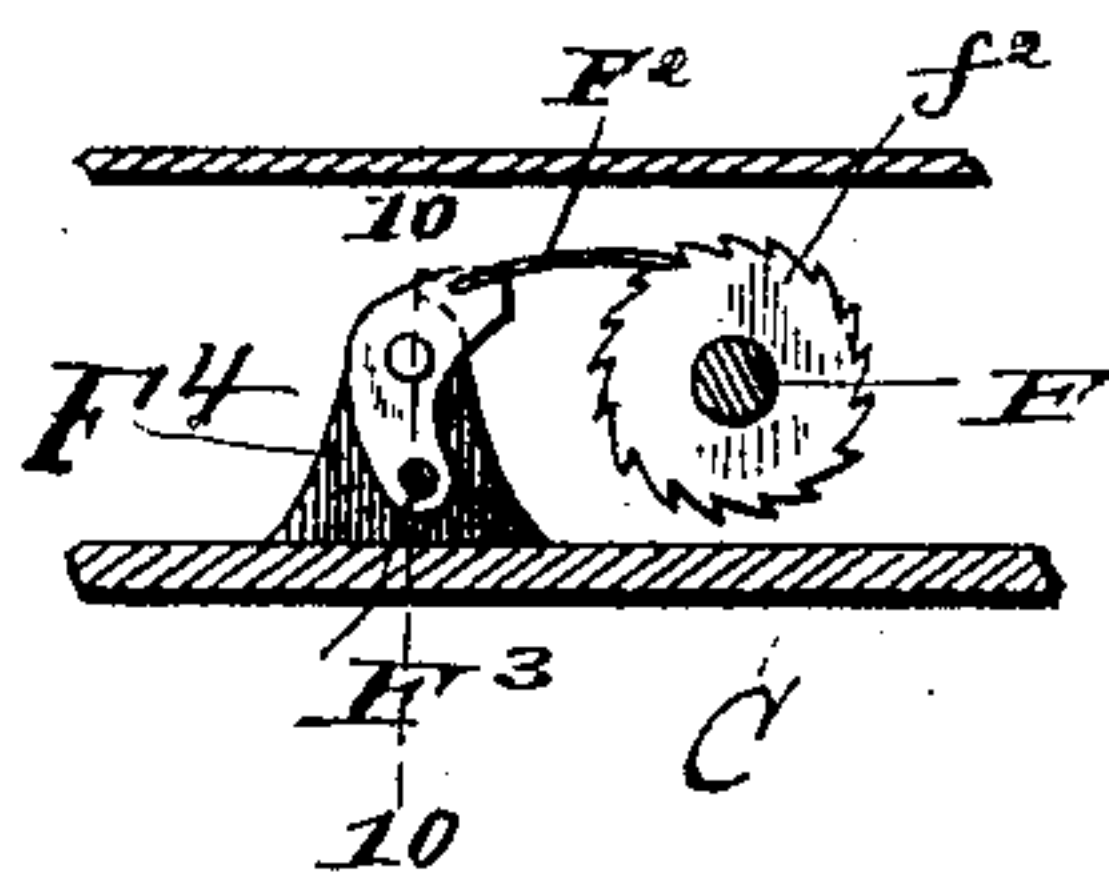
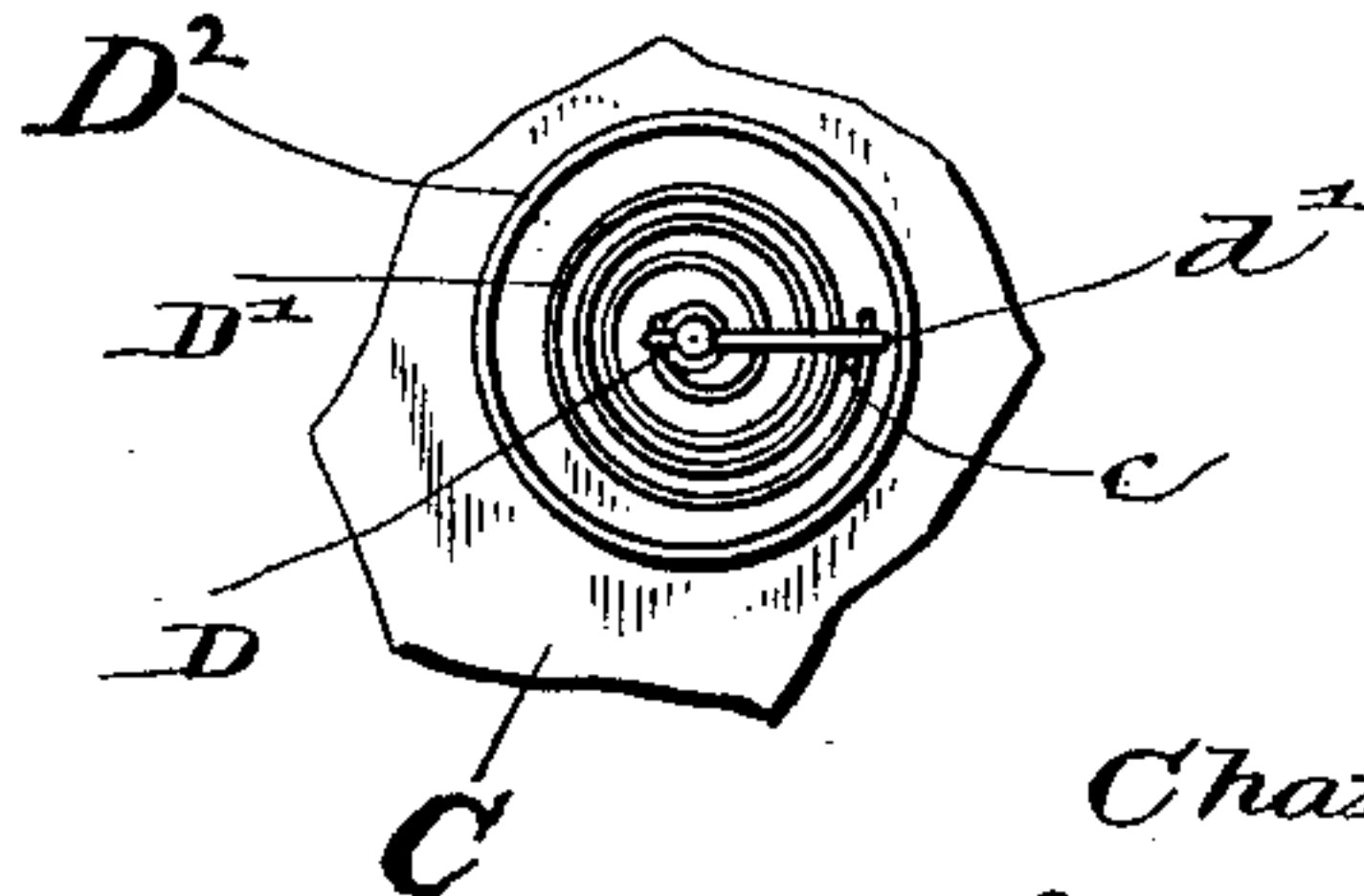


FIG. 9.



Witnesses

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UNITED STATES PATENT OFFICE.

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COUNTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,860, dated May 26, 1891.

Application filed August 19, 1890. Serial No. 362,385. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WEBSTER, a citizen of the United States, residing at Shelbyville, in the county of Shelby and State of Indiana, have invented certain new and useful Improvements in Counting-Machines, of which the following is a specification.

The principal object of my said invention is to produce a counting-machine wherein while two hands move forward together one of them may upon the completion of each movement be returned to the starting-point automatically ready for another forward movement, which the other hand, which has not returned, shall precede by the sum of the previously-computed numbers.

It consists in a construction by which said object is attained, and in certain details of construction and arrangement of parts, all as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters and figures of reference indicate similar parts, Figure 1 is a plan view showing the dial of a counting-machine embodying my said invention; Fig. 2, a horizontal sectional view showing a train of gearing used in said machine; Fig. 3, a similar view showing the operating-gearing; Fig. 4, a transverse sectional view; Fig. 5, a similar view on the dotted line 5 5; Fig. 6, a detail sectional view of a movable housing carrying one of the gear-wheels by which the train of gearing may be disconnected; Fig. 7, a detail sectional view showing the construction and arrangement of the long pinion; Fig. 8, a detail view showing the ratchet and pawl on the stem; Fig. 9, an under side plan showing the spring which when the spindle is released revolves said spindle, carrying the initial counting-hand back to its primary position; and Fig. 10, a transverse sectional view illustrating more fully the operation of the pin or lever F³.

Dotted lines are placed on the drawings, with numerals corresponding to the numbers of the figures of said drawings to which they relate, and arrows pointing from these lines indicate the direction of sight.

In said drawings the portions marked A represent the dial of my improved counting-machine, which also serves as one plate to the

frame-work; B and C, the other two plates to said frame-work; D, a spindle carrying one of the hands; E, a hollow spindle surrounding the spindle D and carrying the other hand; F, a stem or shaft by which through suitable gearing the spindle E is operated; G, a long pinion engaging with spur gear-wheels on the spindles D and E, by which the former is driven from the latter; H, I, J, and K, the shafts of the wheels composing the train of gearing by which the hundreds and the thousands counting-hands are driven, and L a yoke or housing carrying the shaft H.

The dial A is similar in general form to the dial of a watch or clock and has inscribed around its rim a scale running in my present arrangement from 0 to 99. It has two small dials (which are preferably sunk dials) in its face, and which respectively count the hundreds and the thousands in an ordinary and well-known manner common to many counting-machines. It also has on its under side bearings for the various wheels and other parts which constitute the mechanism for operating the hands of the machine. The two plates B and C are ordinary flat plates of substantially the same size as the dial, and have formed therein or secured thereto appropriate bearings for the wheels and other mechanism. The three plates A, B, and C are connected rigidly together by a rim, as shown, or by appropriate studs or posts, as may be preferred by the maker.

The spindle D and the hollow spindle E are arranged centrally in the machine and carry the two hands 1 and 2, by which the counting is done. The hand 1 is on the spindle D, and the hand 2 is on the hollow spindle E. The spindle D is inside the spindle E, and is driven therefrom by means of the two small spur gear-wheels *d* and *e* and the long pinion G, as shown most plainly in Figs. 5 and 4. To the lower end of the spindle D is attached a coiled spring D', located within a casing D², and an arm *d'* extends out from said spindle across said spring. A pin or projection *c* extends down from the plate C on that side of the spindle D which is toward the 0 in the large dial and in the path of the arm *d'*. This prevents said spindle D from traveling far enough to permit the counting-hand 1 carried thereby to pass the 0 in either direction, so

that its maximum travel is from 0 to 99. The operation is, when the two spindles are turned together by means of the stem F, the connected gearing, and the long pinion G, (which pinion, together with the two small spur gear-wheels *d* and *e*, causes the two spindles to move in unison,) that both the counting-hands 1 and 2 will advance uniformly and indicate the number it is desired to count, and then when the long spindle is removed from engagement with said two spur gear-wheels that the spring D' will operate to return the hand 1, carried by the spindle D, to 0 again, ready to count the succeeding number, it being always stopped exactly at 0 by the contact of the arm *d'* and the pin or stop *c*.

The stem F extends from near the center of the machine out through its outer casing, where it is provided with a finger-knob *f*. On its inner end it carries a miter gear-wheel *f'*, which engages with a corresponding miter gear-wheel *e'*, and thus drives the hollow spindle E, and through it, as elsewhere described, the other mechanism. Upon this shaft is a ratchet-wheel *f''*, with which a spring-pawl F², mounted on a standard F⁴, engages, as shown in Figs. 3 and 8, and this prevents any accidental reverse movement of the stem and the gearing connected thereto. When it is desired to reverse the movement, however, it can be done by means of a pin F³, extending in from the outside and engaging with the lower end of the spring-pawl F², and which, under such circumstances, acts as a lever to throw said pawl around on its pivot, while under ordinary circumstances it acts as a locking-pin to hold it in position. The pin F³ is enabled to act as a lever to throw the pawl F² around, by using the casing as a fulcrum therefor, at the point where it passes through, and it is enabled to act as a locking-pin by being pushed in a little farther, so that its inner end will enter a hole in the bracket on which the spring-pawl is mounted. (See Fig. 10.) The necessary spring to enable the pawl to pass over the teeth of the ratchet-wheel is provided for by making the point of the pawl itself of flat spring metal, as shown most plainly in Fig. 8.

The long pinion G is mounted in a yoke or housing G', which is movably secured to the plate C. It is held in engagement with the spur gear-wheels *d* and *e* when not forcibly disengaged therefrom by a spring G², which operates to push said housing toward said spur gear-wheels. In order to carry out my invention, however, it is necessary that it should be disengaged each time a "count" is made to allow the initial counting-hand 1 to return to its primary position. To effect this I provide a push-pin G³, which is connected to one end of a centrally-pivoted lever *g'* at the inner end, the other end of which lever is connected to the housing G', while its central pivot is mounted in a fixed bearing on the plate C. By this arrangement by simply pushing on said push-pin G³ the housing G'

will be pulled outwardly, and the long pinion G carried thereby will be withdrawn from engagement with the spur gear-wheels *d* and *e*, which permits the spring D' to freely act on the spindle D, returning said spindle and its hand 1 to its primary position, as before described. Releasing the push-pin enables the spring G² to throw the housing forward and the long pinion G into engagement ready for a succeeding operation. A small pull might be substituted for the push-pin G³, if desired, in which case of course the pivoted lever *g'* would be wholly dispensed with; but I prefer the present arrangement because it is more convenient in using the machine to push on the slightly-projecting head or button than to pull, as the former operation can be performed with the thumb of the hand holding the instrument, while the latter operation would require the use of both hands. As will be readily understood, the construction of this device may be varied in many ways without departing from my invention.

The shaft H is mounted in the yoke or housing L and carries the wheel H', which is the connecting-wheel between the spindle E and the train of gearing which operates the hundreds and the thousands counting-hands. A small spur-pinion *e''* is mounted upon said spindle E for the purpose of driving this wheel H', as shown most plainly in Figs. 2 and 4.

The shafts I and K are the shafts of the hands 3 and 4 to the hundreds and the thousands counting-dials, respectively, the hand 3 being on the shaft I and the hand 4 on the shaft K, and the shaft J is an intermediate shaft. These shafts carry a series of wheels, as shown most plainly in Fig. 2, by which the movement of said counting-hands is effected, and are arranged in an ordinary and well-known manner. This part of the mechanism of my machine being old and well-known will not be further described herein.

It is desirable after a series of numbers have been counted and the result ascertained that a means should be provided for returning the mechanism to position for a new use without the long and tedious turning of the wheels by means of the operating-stem which would be necessary if no part of the mechanism could be disconnected. I have therefore provided a means for withdrawing the wheel H' from engagement with the other wheels, so that the hundreds and the thousands counting wheels and hands can be returned to their primary position independently of the units counting mechanism. As before stated, said wheel H' is mounted in a yoke or housing L, which runs in grooves or ways in the plates A and B. As shown most plainly in Fig. 6, I have provided a short screw-shaft L', which engages with said yoke or housing at its inner end and which rests in a bearing *b* upon the plate B near its outer end, which bearing holds it from longitudinal movement. The shaft is squared at its extreme outer end, and

a hole is provided in the casing opposite said outer end, and when it is desired a key can be inserted through said hole and placed upon said shaft, which may be thus revolved, withdrawing the housing and the wheel carried thereby toward the periphery of the instrument, disengaging said wheel from the other wheels of the train of gearing and leaving them free to revolve independently, as before stated. When the counting-hands have all been adjusted to their primary positions, the key is again inserted and the housing driven back, so that the wheel occupies its ordinary position in the train. As shown in Figs. 4 and 5, there is a squared portion on the lower extremity, of the shaft I, similar to the squared end of the screw-shaft L', and a hole is made in the plate C (see Fig. 3) below said squared extremity, through which the same key can be inserted as is used in operating the screw-shaft L' and said shaft I, and through it the remainder of the hundreds and the thousands counting-gearing may be revolved.

The outer casing of my machine is similar in its general characteristics to an ordinary watch-case, and one or both sides may be hinged, as shown in Fig. 4, or otherwise constructed to open, and thus secure access to the interior.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a counting-machine, of a dial bearing a counting-scale, a central spindle, a hollow spindle surrounding said central spindle, a counting-hand on each of said two spindles, a spur gear-wheel also on each of said two spindles, a long pinion adapted to engage with both of said spur gear-wheels, whereby said two spindles and their counting-hands may be driven together one from the other, and a movable housing carrying said long pinion, whereby it may be removed from engagement with said spur gear-wheels and the driven spindle and its hand thus permitted to return to initial position, substantially as set forth.

2. The combination, in a counting-machine, of two spindles, one of which is hollow and surrounds the other, counting-hands on said spindles, spur gear-wheels also on said spindles, a long pinion engaging with said two spur gear-wheels, said pinion being mounted in a movable yoke or housing, whereby it may upon occasion be withdrawn from engage-

ment and the two spindles thus rendered temporarily independent of each other, and a spring whereby said yoke or housing is forced forward and thus holds said long pinion in engagement with said spur gear-wheels.

3. The combination, in a counting-machine, of a central spindle having a coiled spring and a stop-arm upon its lower end, whereby when released it will be automatically returned to primary position, a hollow spindle surrounding said central spindle, gearing by which said hollow spindle is driven, a pawl by which it is held to the driven position, and gearing connecting the two spindles by which they are both adapted to be driven together, but which is capable of being disconnected, permitting the central spindle to return to said primary position, substantially as set forth.

4. The combination, in a counting-machine, with the driving-stem by which motion is imparted to the mechanism, of a ratchet-wheel mounted on said stem, a pivoted spring-pawl engaging with said ratchet-wheel, by which a reverse movement is prevented, and a combined lever and locking-pin whereby said pawl is normally held in engagement with said ratchet-wheel, but by which it may upon occasion be forced out of such engagement, substantially as set forth.

5. The combination, in a counting-machine, with the spindle which is originally driven and the train of gearing which drives the succeeding counting-hands, of a gear-wheel connecting them, a housing carrying said gear-wheel and mounted in ways in or upon its frame, and mechanism whereby said housing may be moved in its ways and the gearing thus connected or disconnected, substantially as set forth.

6. The combination, in a counting-machine, with the remainder of the train of gearing, of a wheel H', a yoke or housing L, in which said wheel is mounted, and a screw-shaft by which said yoke or housing carrying said wheel may be moved, whereby said train of gearing may be connected or disconnected, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 12th day of August, A. D. 1890.

CHARLES F. WEBSTER. [L. S.]

Witnesses:

CHESTER BRADFORD,
GEORGE W. WEBSTER.