

No. 754,798.

PATENTED MAR. 15, 1904.

E. PHILIPPE.
STOP WATCH.

APPLICATION FILED DEC. 16, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

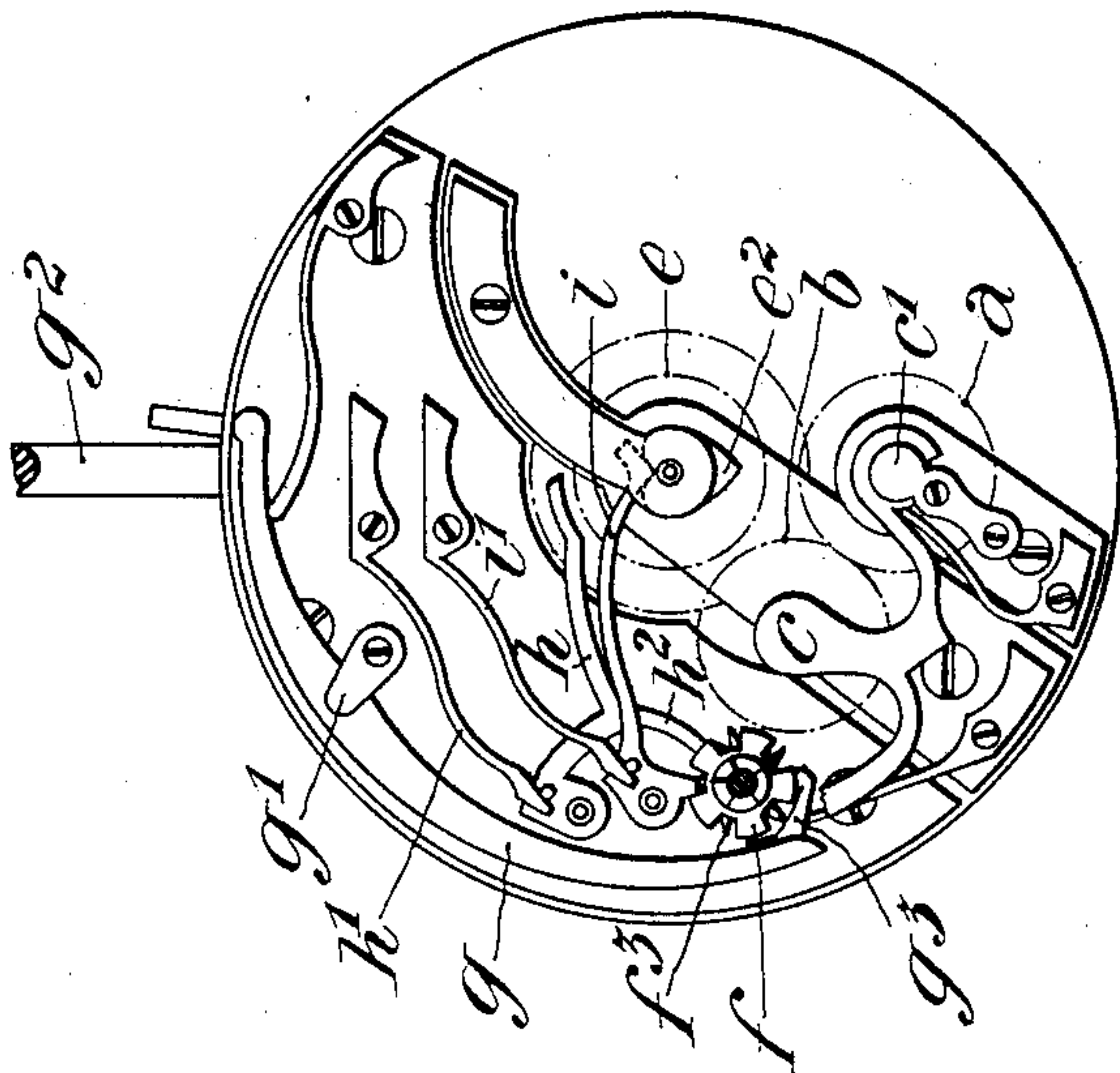


Fig. 2.

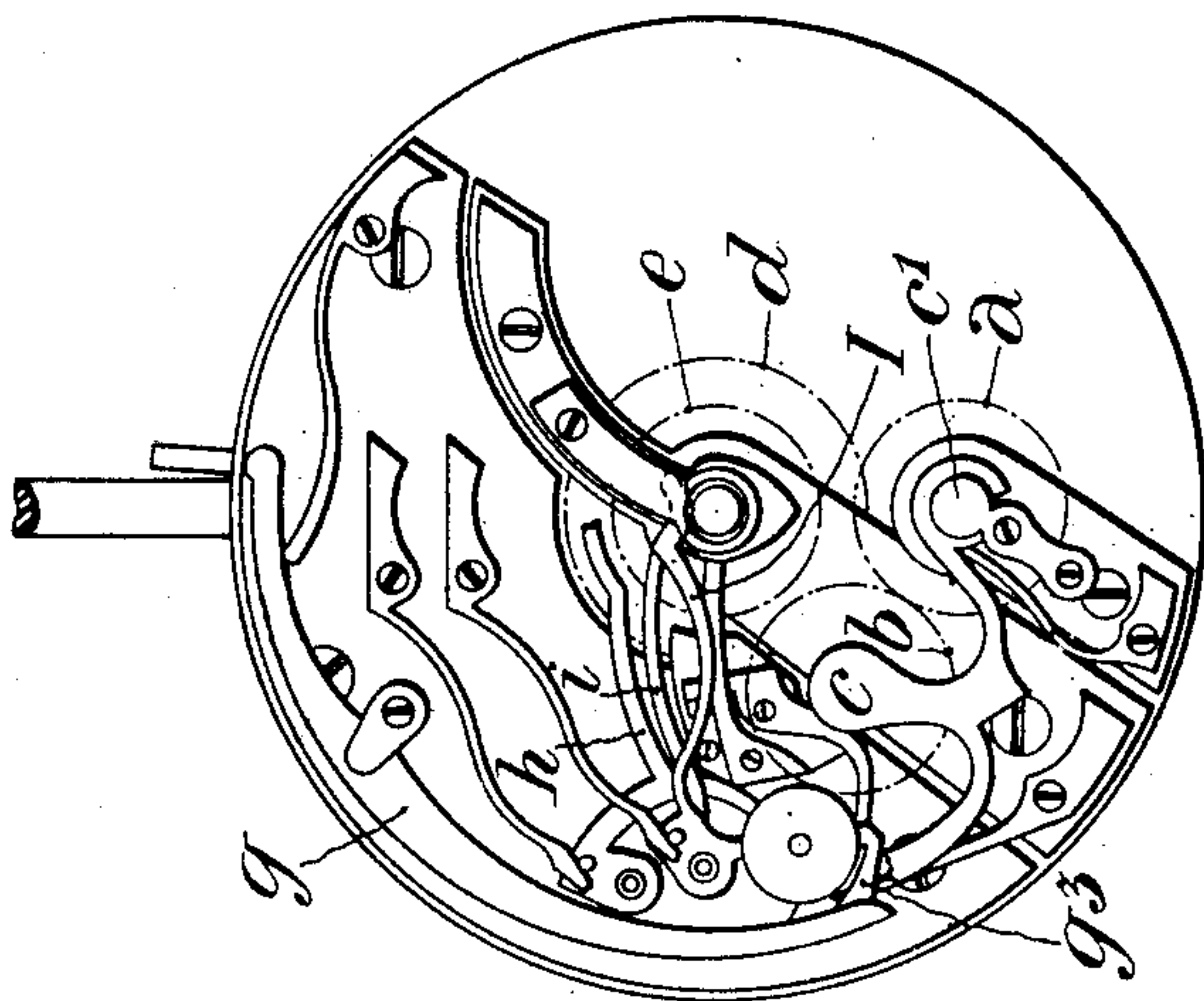


Fig. 1.

Witnesses
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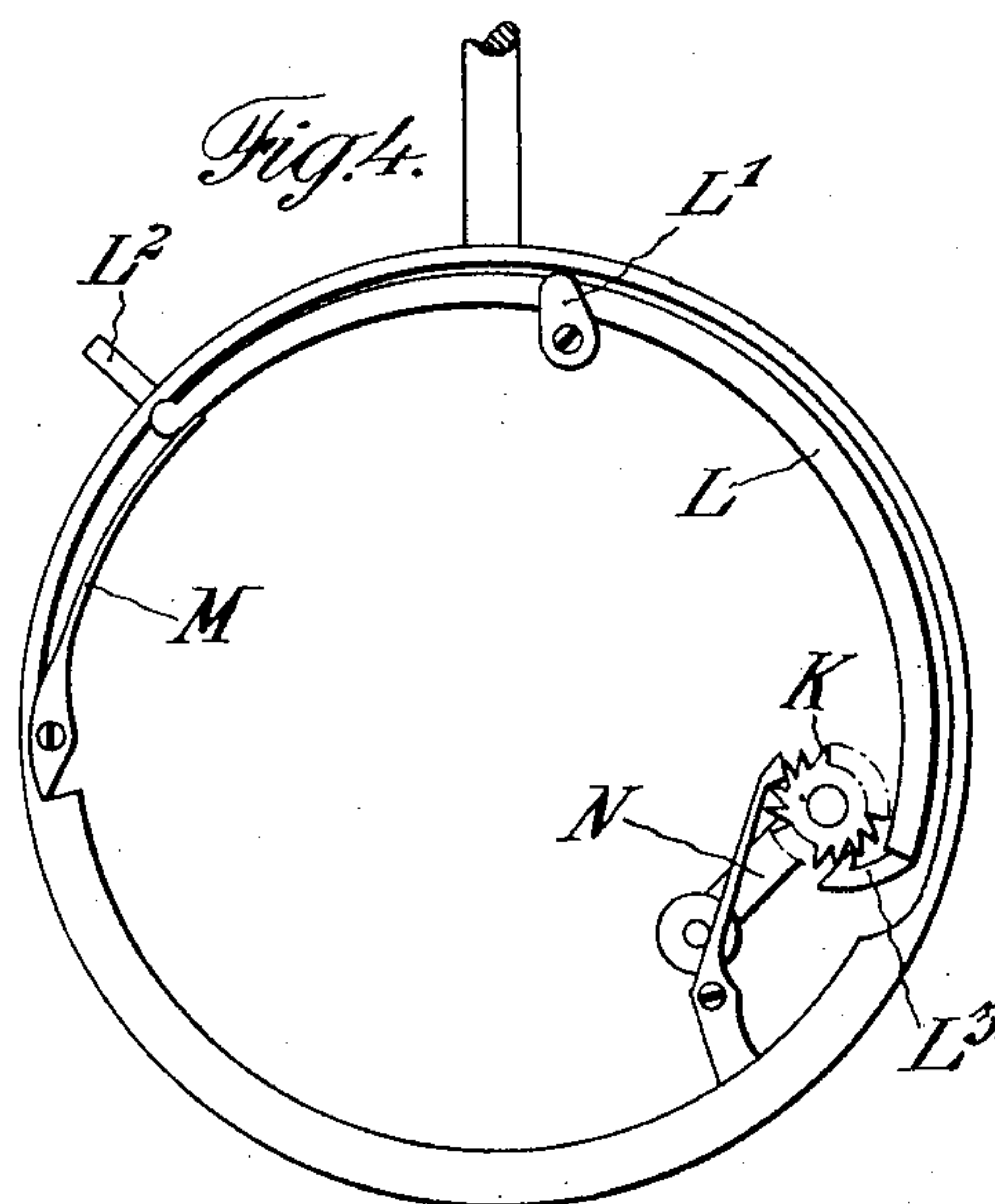
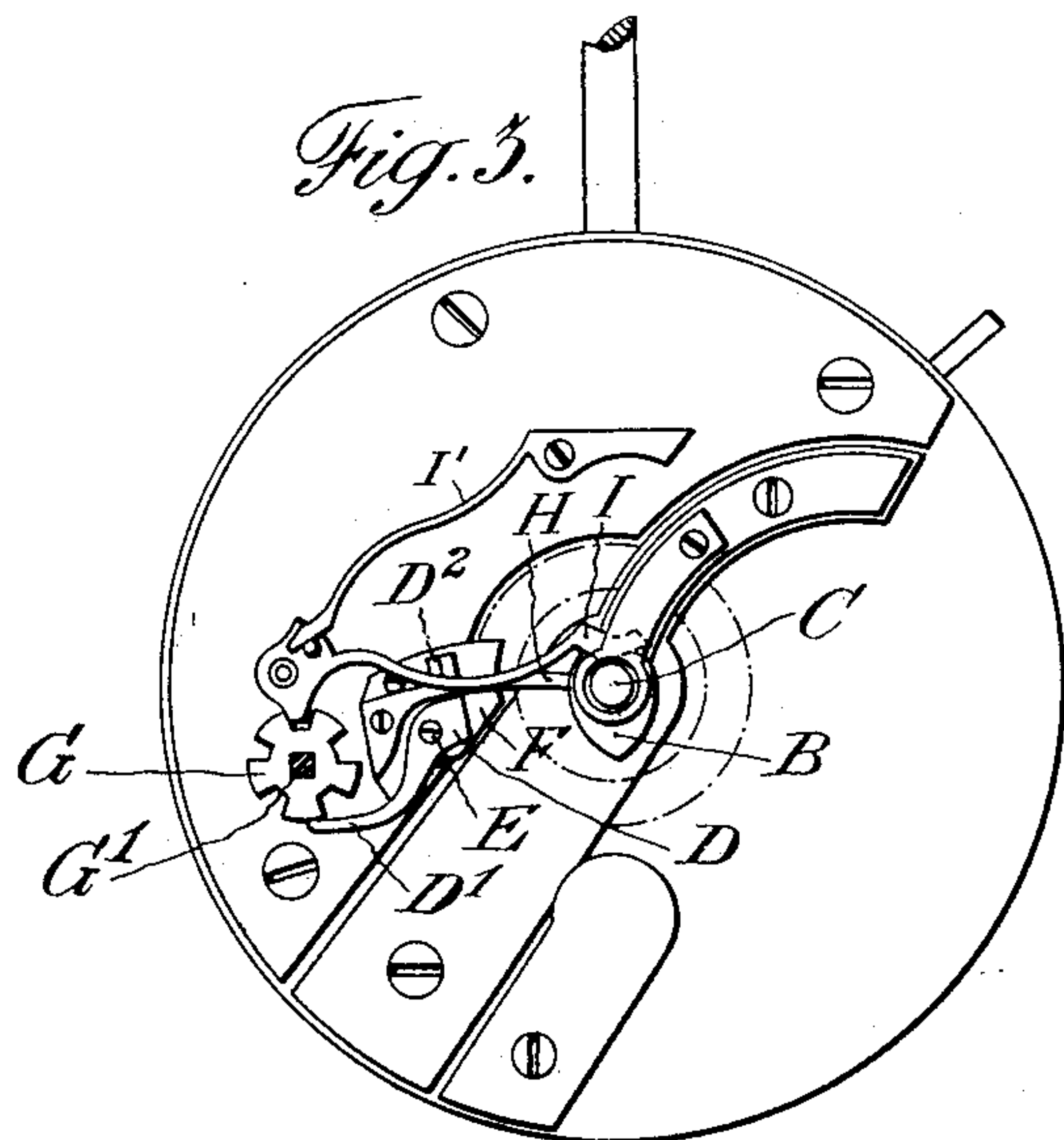
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4 SHEETS—SHEET 2.



Witness

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4 SHEETS—SHEET 4.

Fig. 11.^a

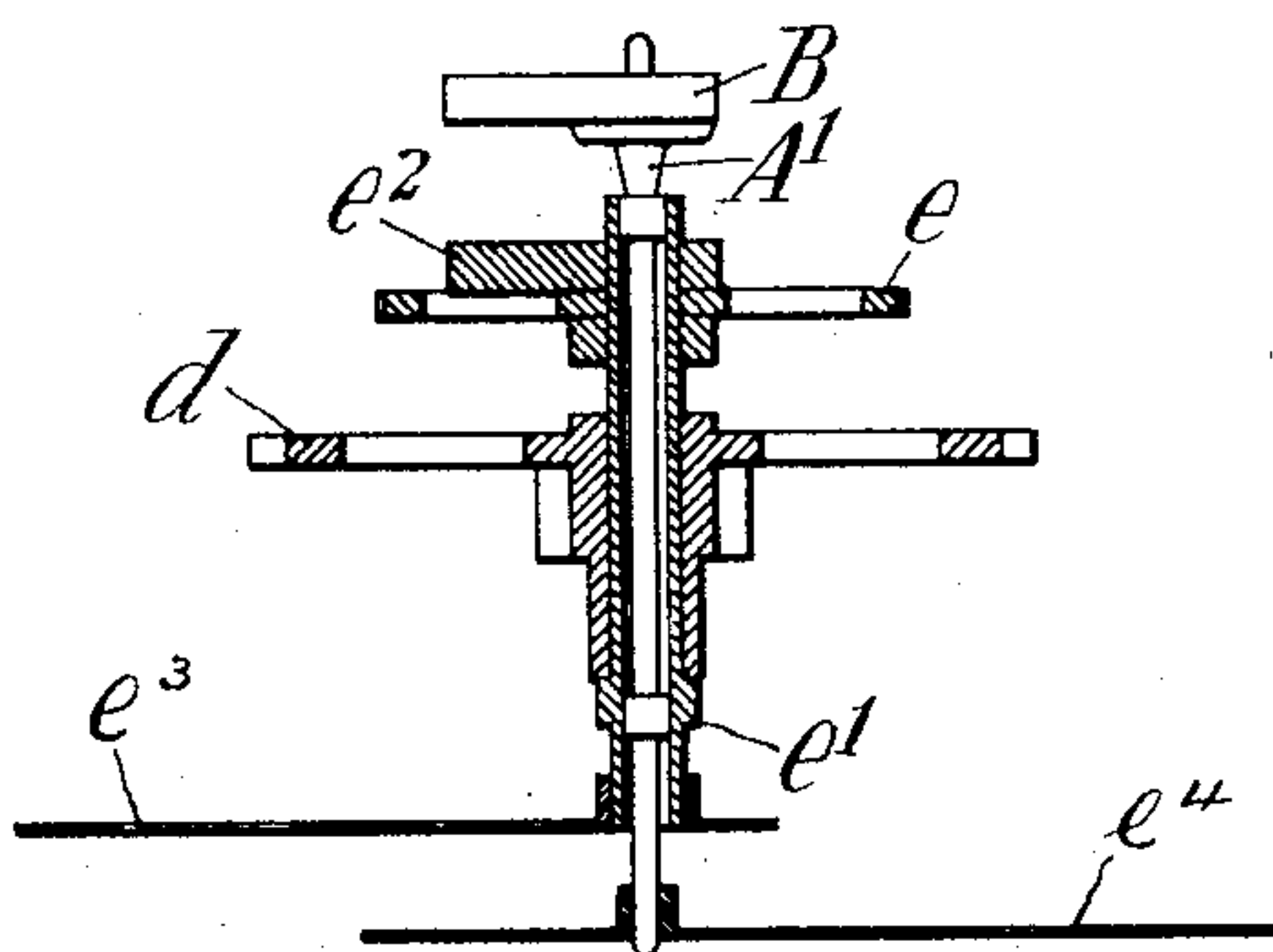
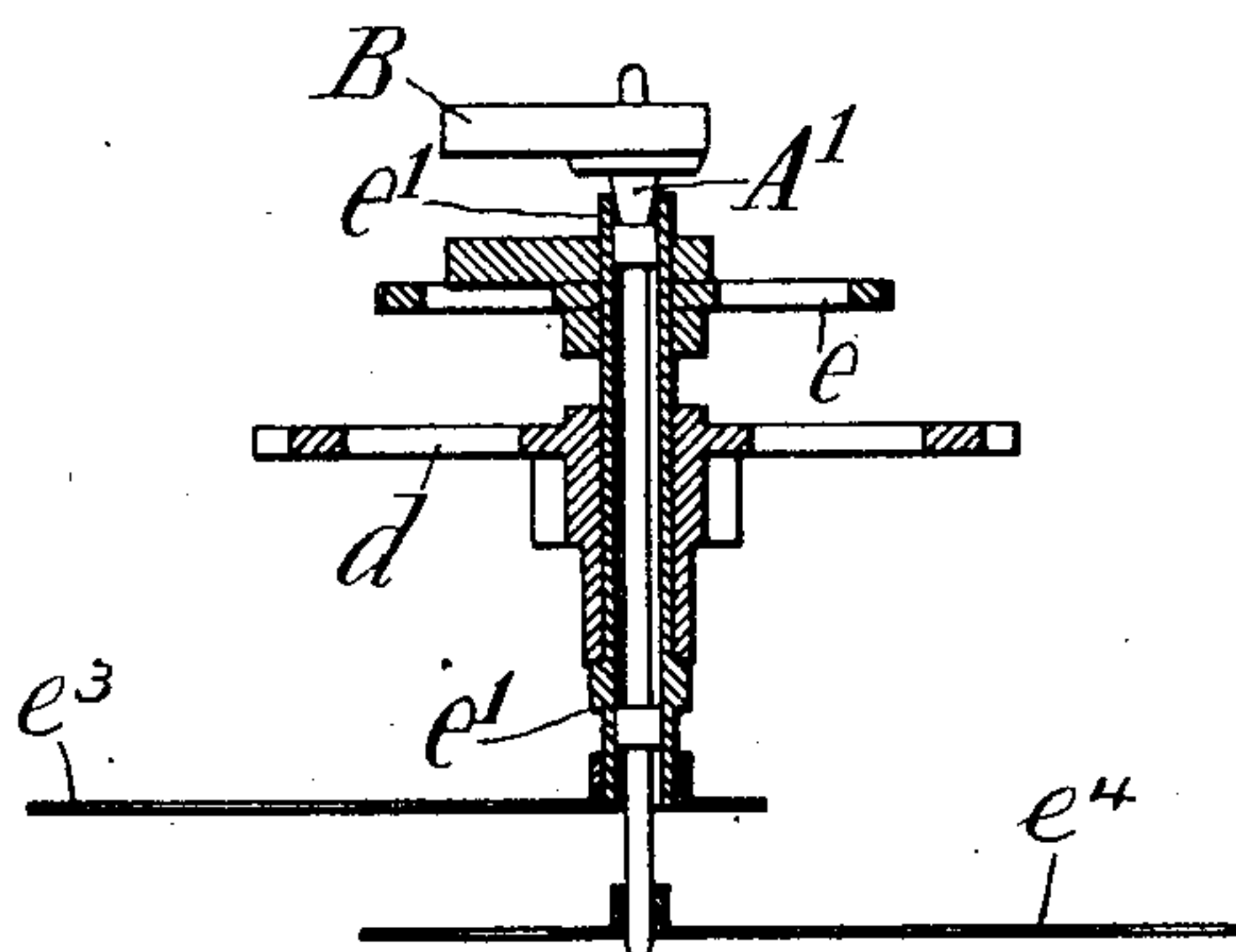


Fig. 12.^a



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UNITED STATES PATENT OFFICE.

EMILE PHILIPPE, OF GENEVA, SWITZERLAND.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 754,798, dated March 15, 1904.

Application filed December 16, 1902. Serial No. 135,371. (No model.)

To all whom it may concern:

Be it known that I, EMILE PHILIPPE, a citizen of the Republic of Switzerland, residing at Geneva, Switzerland, have invented an Improvement in Stop-Watches, of which the following is a specification.

My invention relates to the class of stop-watches by which a series of time periods may be indicated.

In carrying out my invention I employ two time-period-indicating mechanisms which are started simultaneously by the pushing of an auxiliary stem, and the construction is such that by the pushing of a second auxiliary stem one of said time-period-indicating mechanisms may be stopped. By a second push on the first-moved auxiliary stem the hand of the first mechanism may then also be stopped, and by a third push on said stem the hands of both mechanisms are returned to the zero position. If desirable, by the successive pushing of the second auxiliary stem the hand of the second mechanism may be returned to the zero position and started again and these operations repeated indefinitely at the pleasure of the user, while the first time-period-indicating mechanism is continued in operation and before the same is finally stopped to indicate a time period, all of which will be hereinafter more particularly described.

In the drawings, Figure 1 is a plan of the combined time-period-indicating mechanisms. Fig. 2 is a plan of the first time-period-indicating mechanism, and Fig. 3 a plan of the second mechanism on the side of the bridge. Fig. 4 is a plan of the second mechanism on the side of the dial. Figs. 5 and 6 are elevations, and Fig. 7 a vertical section of the stop device in its different positions. Figs. 8 and 9 are plans of the cam-wheels by which, respectively, the first and second time-period-indicating mechanisms are operated. Fig. 10 is a plan of a ratchet-wheel. Fig. 11 is an elevation and partial section, on an enlarged scale, of the center arbors and heart-cams of the two mechanisms, the arbor and cam of the second mechanism being disengaged; and Fig. 12 is

a similar view of the same parts, showing the separated parts of the preceding figure engaged so as to turn in unison. Figs. 11^a and 12^a are views similar to Figs. 11 and 12, respectively, showing the wheel *d* on its tubular arbor. Fig. 13 is a sectional elevation showing the relation of the parts shown in Figs. 11 and 12 on the watch-plate. Fig. 14 is a plan of the parts employed to disengage the heart-cam and shaft of the second time-period-indicating mechanism; and Fig. 15 is an elevation and partial section on line *x x*, Fig. 14.

The first time-period-indicating mechanism (shown in plan in Fig. 2) is constructed in a manner well known in the art and comprises a drive-wheel *a*, meshing with the wheel *d* of the train and with an intermediate wheel *b*. The wheel *b* is carried upon a rocking lever *c*, pivoted in a head *c'* concentrically with the arbor of the drive-wheel *a*. *e* is a gear-wheel fixed on the tubular arbor *e'*, which passes through the tubular arbor of the wheel *d* of the train and carries a hand *e''* of the first time-period-indicating mechanism, and at the other end of the arbor *e'* is a heart-cam *e''*. *f* is a cam-wheel, and *f''* a ratchet-wheel, which are secured together and are both loosely mounted on a shaft *G'*. A lever *g*, pivoted at *g'* and actuated by a stem *g''*, carries a pawl *g'''*, adapted to engage the ratchet-wheel *f''* to turn the cam-wheel *f*. The rocking lever *c* has an arm adapted to bear on the cam-wheel *f* and engage the notches thereof and is shown in Figs. 1 and 2 with its end broken away in order that the pawl *g'''* may be seen. The intermediate wheel *b* will mesh with the gear-wheel *e* when the end of said arm *c* engages a notch of the cam-wheel *f* and will not mesh with the wheel *e* when the end of the arm bears on the periphery of said cam-wheel *f*. A stop-brake *h* for the gear-wheel *e* has an arm *h''*, the end of which is kept in contact with the cam-wheel *f* by a spring *h'*. *i* is a lever adapted at one end to engage the heart-cam *e''* and at the other end to bear upon the cam-wheel *f* and engage the notches thereof and is actuated by a spring *i'*.

The above-described mechanism works as usual in stop-watches—that is, the mechanism is started by pushing the stem g^2 and is stopped and the hand returned to the zero position, respectively, by other successive pushes on the stem g^2 .

The second time-period-indicating mechanism, upon which the first is superimposed, comprises an arbor A, which passes through the tubular arbor e' and carries a hand e^4 at one end and a heart-cam B at the other. Immediately beneath the heart-cam B the arbor A is provided with a conical shoulder A' and the end of the tubular arbor e' is recessed conically to receive the said shoulder A'. C is a spring which bears upon the heart-cam B and tends to keep the shoulder A' down within the recess in the end of the arbor e' , in which position the hand e^4 of the second mechanism will be turned by the tubular arbor e' of the first time-period-indicating mechanism. A rocking lever D is pivoted at E in the bridge F, and G is a cam-wheel fixed on the end of the shaft G' and is similar to the cam-wheel f . At one end the lever D is provided with an arm D', adapted to bear against the cam-wheel G and to engage the notches thereof, and at the other end with an arm D², having one side tapered to an edge. A spring H is also secured to the bridge F, and this spring H passes over the arm D² and extends underneath the heart-cam B. (See Figs. 3, 14, and 15.) On the under side of the spring H there is an inclined projection H', so placed as to be engaged by the arm D² when the end of the arm D' bears on the periphery of the cam-wheel G and to be disengaged when the end of the arm D' is in a notch of the cam-wheel G. In the former position—that is, when the arm D² engages the projection H'—the spring H causes the arbor A and heart-cam B to take the position shown in full lines, Fig. 15; but when the projection is not engaged by the arm D² the spring C maintains the arbor A and heart-cam B in the position, with the conical shoulder A' in contact with the recessed portion of the tubular arbor e' .

I is a lever controlled by a spring I' and adapted at one end to bear upon the heart-cam B and at the other to contact with the cam-wheel G and to engage the notches thereof.

K is a ratchet-wheel secured on the end of the shaft G' opposite to the end on which the cam-wheel G' is fixed and on the other side of the works.

L is a lever pivoted at L' and actuated against a spring M by means of a second auxiliary stem L², and the lever L carries a pawl L³, which engages the teeth of the ratchet-wheel K, normally held from rotation by a spring-pawl. (Shown in Fig. 4.)

N is a spring fixed to the watch-plate and extending under the ratchet-wheel K. On the

adjacent sides of the cam-wheels f and G there is a series of teeth forming a clutch, and the function of the spring N is to normally keep the cam-wheels f and G together, so that the clutch is operative. It will be apparent that the cam-wheel G may be turned independently of the cam-wheel f ; but on no occasion can the cam-wheel f be turned without carrying with it the cam-wheel G.

From the drawings and the above description it will be understood that the hands of both mechanisms will be started simultaneously by depressing the auxiliary stem g^2 , that the hand of the second mechanism will be stopped by a push on the second auxiliary stem L², that the hand of the first mechanism will be stopped by a second depression of the stem g^2 , and that both hands will be returned to the zero position by a third depression of the stem g^2 , acting on the heart-cams B e^2 by the levers I i , or after both hands have been started by depressing the stem g^2 the hand of the second mechanism may be stopped, returned to the zero position, and started again, and again stopped by successive pushes on the second auxiliary stem L², and these operations may be repeated at the pleasure of the timer so long as the first mechanism continues in operation.

I claim as my invention—

1. In a stop-watch having two time-period-indicating mechanisms, a shaft, a cam-wheel and a ratchet-wheel secured together and loose on said shaft, a cam-wheel secured to one end of said shaft, a ratchet-wheel secured to the other end of said shaft, a clutch between and the parts of which are connected to the adjacent faces of said cam-wheels, means for keeping said clutch normally in engagement, means for actuating the cam-wheel which is loose on said shaft to start, stop and return both hands of the mechanisms to the zero position, and means for actuating the said cam-wheel fixed on the shaft to stop the second mechanism and to return the same to zero and repeat the movement again while the first mechanism is in operation.

2. In a stop-watch having two time-period-indicating mechanisms, a tubular arbor, one end of which is recessed conically, a hand of the first mechanism on the other end of said tubular arbor, an arbor passing through said tubular arbor and having a conical shoulder at one end adapted to fit into and engage the conical recess in the end of the said tubular arbor, a hand of the second mechanism secured to the other end of said arbor, a spring tending to keep the conical shoulder of said arbor in engagement with the recessed portion of said tubular arbor, a spring-lever, having a projection on one side thereof, a rocking lever having a wedge-edge arm adapted to engage the said projection of the spring-lever, and

means for actuating the said rocking lever to cause the said arm thereof to engage the said projection of the spring-lever and raise the said spring-lever to cause the disengagement of the said conical shoulder of the said arbor from the said recessed portion of the said tubular arbor.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

EMILE PHILIPPE.

Witnesses:

L. H. MUNIER,
ELMER SCHNEIN.