(No Model.)

H. A. LUGRIN.
STOP WATCH.

No. 505,052. Patented Sept. 12, 1893.

Fig: 1.

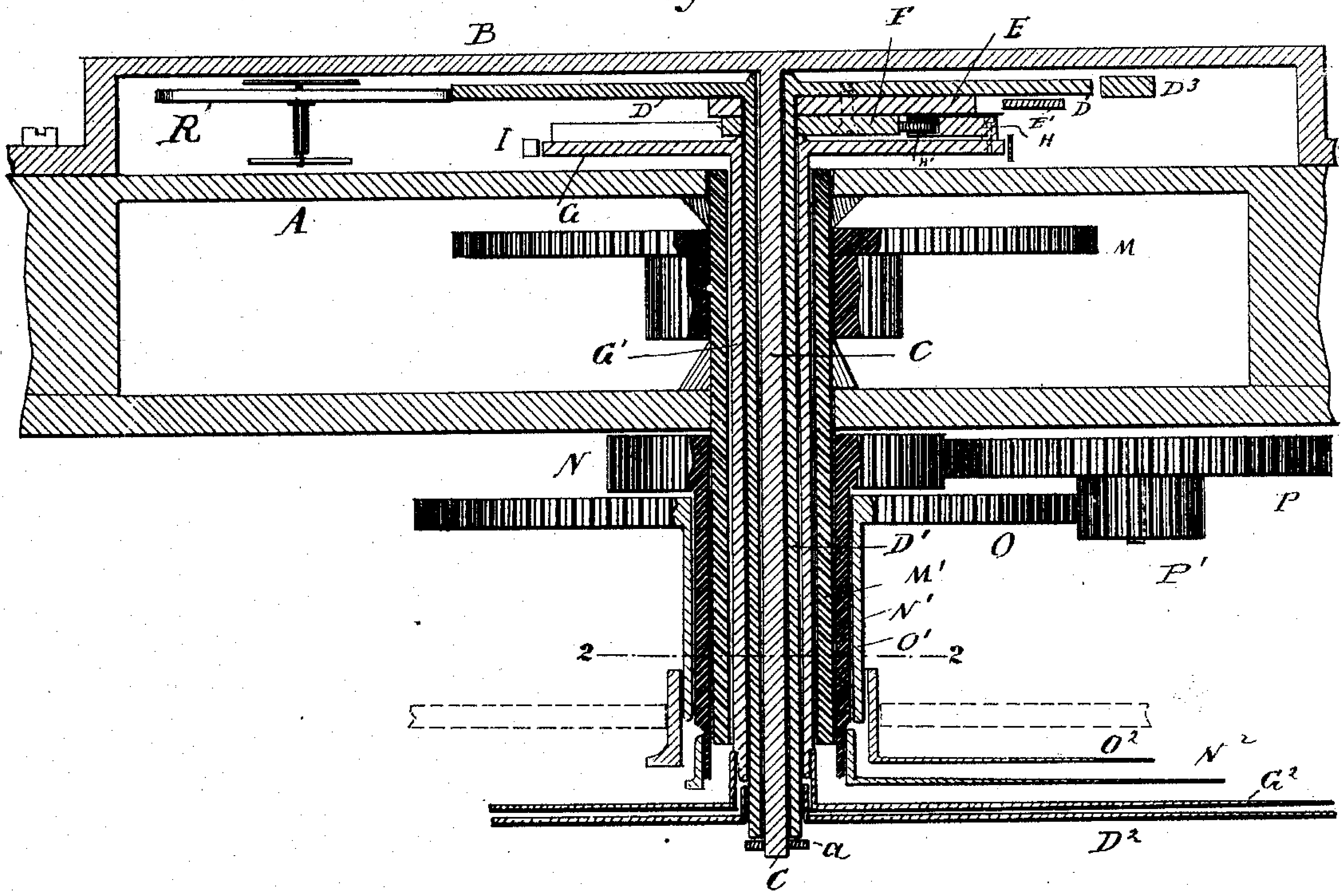


Fig: 2.

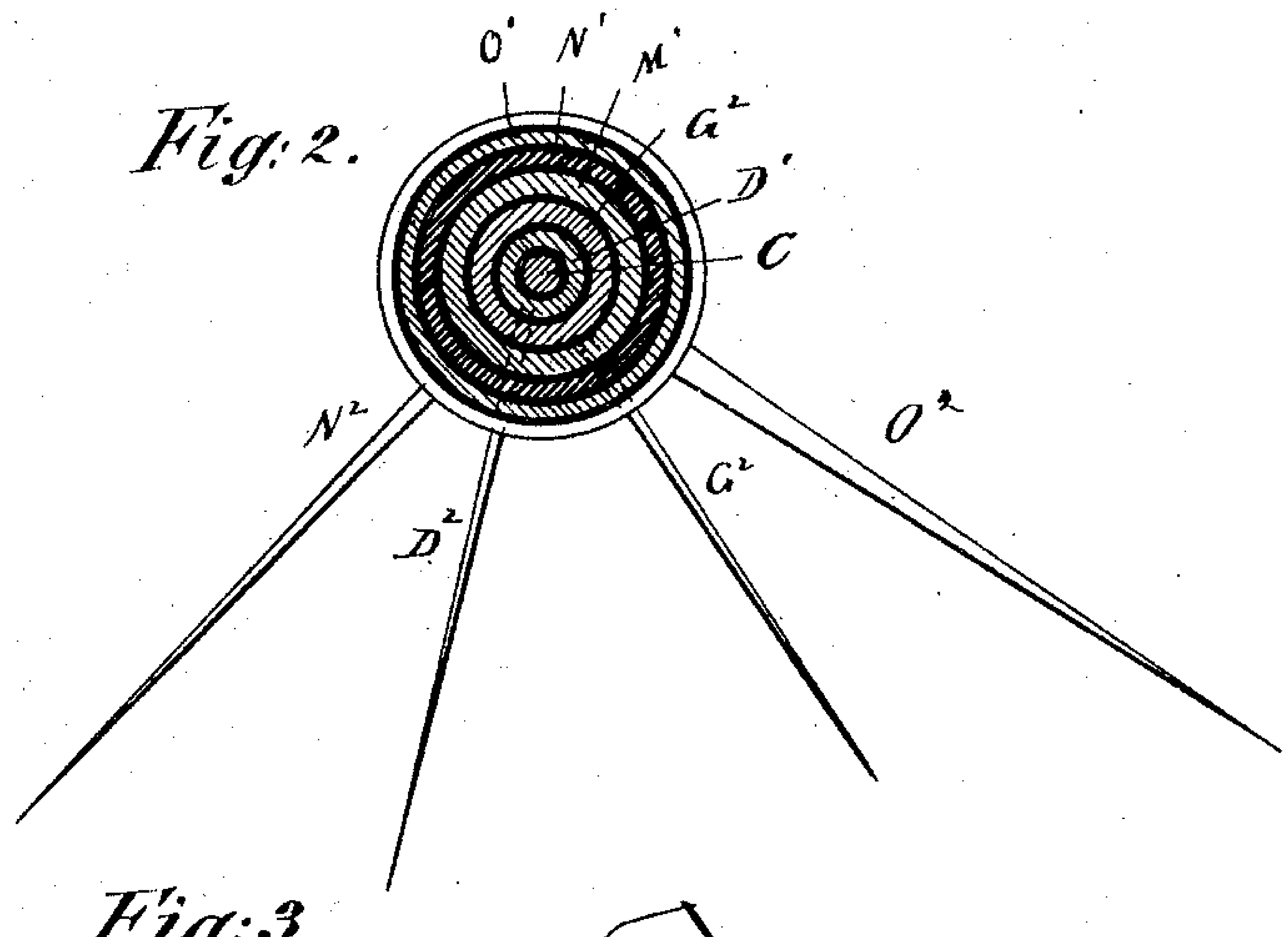
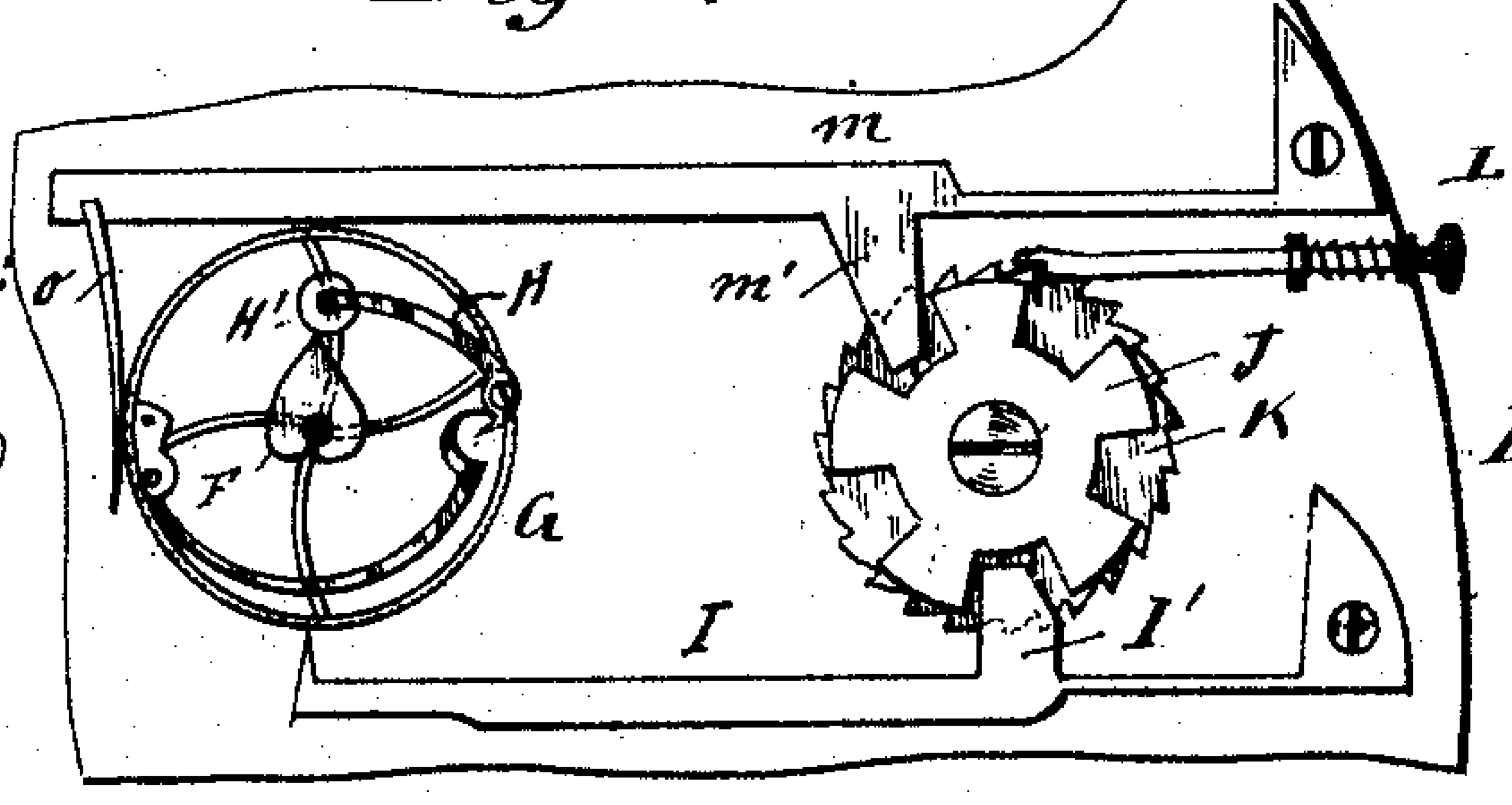


Fig: 3.



WITNESSES:
H. Obermayer
Marion Hall

INVENTOR
H. A. Lugrin

BY Goepel & Raegener

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY A. LUGRIN, OF BROOKLYN, ASSIGNOR TO ALBERT WITTNAUER, OF NEW YORK, N. Y.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 505,052, dated September 12, 1893.

Application filed April 11, 1893. Serial No. 469,866. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. LUGRIN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Stop-Watches, of which the following is a specification.

This invention relates to improvements in stop watches, and especially to that class of stop watches that are known as split seconds watches. Heretofore considerable difficulty has been experienced in constructing watches of this kind in such a manner that the center wheel of the watch remains at the center without interfering with a split or timing mechanism, and various contrivances have been made to construct watches of this kind with the center wheel at the center of the movement and thus avoid the complicated gearing that would otherwise be required.

The object of my invention is to provide a stop watch of this kind which is simple in construction and which permits of readily taking the timing and split seconds mechanism out of the watch movement without disturbing the other parts.

A further object of my invention is to provide means for preventing the roller on the end of the arm acting on the heart cam of the split seconds mechanism from binding and catching.

The invention consists in the construction and combination of parts and details, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a transverse sectional view of that part of a watch movement provided with my improved split seconds mechanism. Fig. 2 is a sectional plan view, on the line 2 2, of Fig. 1, and Fig. 3 is a detail plan view on a smaller scale, of the split wheel and the cam for operating the split mechanism.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a top plate or top bridge of a watch movement, and on the same an additional bridge B is fastened, from which a center post C projects in the direction toward the dial and through the same, said dial being shown in dotted lines in Fig. 1. The timing wheel D of the usual construction is provided with the tubular arbor D′, which surrounds the center post C, and on the front of said arbor the timing hand D^2 is fixed. The usual brake D^3 for the timing wheel is provided for the purpose of holding the same when the timing is not to operate. The heart cam E of the timing mechanism wheel is fixed on the same in the usual manner, and can be acted upon by the usual fly back lever E′, which serves for throwing the timing hand back to 12. The heart cam F for the split seconds wheel is fastened to the timing wheel and to the heart cam E of the timing wheel in the well known manner. The split seconds wheel G is provided with the tubular arbor G′ which surrounds the tubular arbor D′ of the timing wheel and at the front end, said tubular arbor G′ carries the split seconds hand G^2. On said split seconds wheel the lever H is pivoted, said lever carrying a roller H′ that runs on the edge of the split seconds heart cam F, as shown in Figs. 1 and 3.

The usual brake I is provided for locking the split seconds wheel, which brake is provided with a spur I′, on which the teeth of a cam wheel J act in the usual manner, said cam-wheel I being connected with a ratchet wheel K, which in turn is rotated by a push-button L, so as to stop and start the split seconds wheel. The center wheel M of the watch is provided with a tubular arbor M′, which surrounds the tubular arbor G′, and on said arbor M′ the arbor N′ of the wheel N is held friction tight, said arbor N′ carrying the minute hand N^2. The arbor O′ of the wheel O carries the hour hand O^2, said wheel O being driven from the wheel N by means of the cog-wheel P and pinion P′ in the usual manner. R is the usual intermediate wheel that is adapted to engage the timing wheel D. As appears clearly from Fig. 1, the arbors of the timing and split seconds wheel pass freely through the center wheel of the watch and its arbor, without having any connection whatever with the same, and the entire chronograph mechanism is supported entirely on the central stem C and bridge B, a collar *a* on the front end of the stem post C serving to hold the sleeve of the timing wheel in

place. The entire timing mechanism can thus be readily removed by detaching the bridge B and withdrawing the same and its post C with the timing and split seconds wheel and their arbors. The split seconds wheel is located between the bridge B and the top plate or bridge A of the watch movement, in contradistinction to watches which have the split wheel under the dial at the extreme top—that is, the uppermost wheel on the back.

It frequently happens in split seconds watches that the small roller H on the end of the lever H is on the point of the heart cam when the timing hand is stopped, thus preventing the operation of the split seconds device when released. To prevent this, the additional lever *m* is provided, which is provided with a spur *m'* upon which the cams of the wheel J can act, and said lever *m* carries on its free end a spring *o*, which bears against the rim of the split seconds wheel. At the same time that the brake lever I is operated to release the split seconds wheel—that is, moved out of contact with the same—the lever *m* is moved by the action of the wheel J in the direction from the split seconds wheel, and by frictional contact the spring arm *o* on the end of the arm *m* rotates the split seconds wheel slightly—that is, sufficient to bring the roller H' off the end of the cam F and permit said roller by its action on the heart cam, to turn the split wheel in the proper manner.

The above described timing and split seconds mechanism can be applied on any construction of watch, providing that the bore and tubular arbor of the center wheel and the arbors for the minute and hour hands are made of proper size. The timing mechanism does not interfere in any way whatever with the parts of the watch movement.

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

1. In a stop watch, the combination, with a bridge, of a stem or post projecting from the same through the center wheel of the watch, a hollow arbor surrounding said post loosely, a timing wheel on one end, and a hand on the other end of said arbor, substantially as set forth.

2. In a stop watch, the combination, with a bridge and a post projecting from the same, of a hollow arbor surrounding said post, a timing wheel on one end of said arbor, a hand on the other end of said arbor, a second hollow arbor surrounding the first hollow arbor, a split seconds hand wheel on one end of said second arbor and a split seconds hand on the other end of said second hollow arbor, substantially as set forth.

3. In a stop watch, the combination, with a bridge, of a post projecting from the same, two concentric tubular arbors for the timing and split seconds hands and for the timing and split seconds wheels, which arbors pass through a tubular arbor of the center wheel of the watch, and tubular arbors for the hour and minute hands surrounding the tubular arbor of the center wheel of the watch, substantially as set forth.

4. In a stop watch, the combination, with a top bridge or plate, of an additional bridge on the same, a post projecting from said additional bridge, two concentric tubular arbors on said post, a timing and split seconds wheels, and timing and split seconds hands on said arbors, the timing wheel and split seconds wheel being arranged between the top bridge or plate and the said additional bridge of the movement, substantially as set forth.

5. In a stop watch, the combination, with the split seconds wheel, of a heart cam and a spring arm on the split seconds wheel, and an arm provided with a spring extension resting against the rim of the split seconds wheel, substantially as set forth.

6. In a stop watch, the combination, with a timing wheel, and a split seconds wheel, of a heart cam on the arbor of the timing wheel, a spring lever on the split seconds wheel, the end of which rests on the rim of the heart cam, a brake-arm for the split seconds wheel, a cam wheel acting on the brake-arm, an additional arm also acted upon by the cam wheel, and a spring-extension on said additional arm, which spring-extension bears on the rim of the split seconds wheel, substantially as set forth.

7. A split seconds watch having a special lever for turning the split seconds wheel when released, substantially as set forth.

8. A split seconds watch having a special lever in contact with the rim of the split seconds wheel for the purpose of turning said wheel when released, substantially as set forth.

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

HENRY A. LUGRIN.

Witnesses:
OSCAR F. GUNZ,
CHARLES SCHROEDER.