

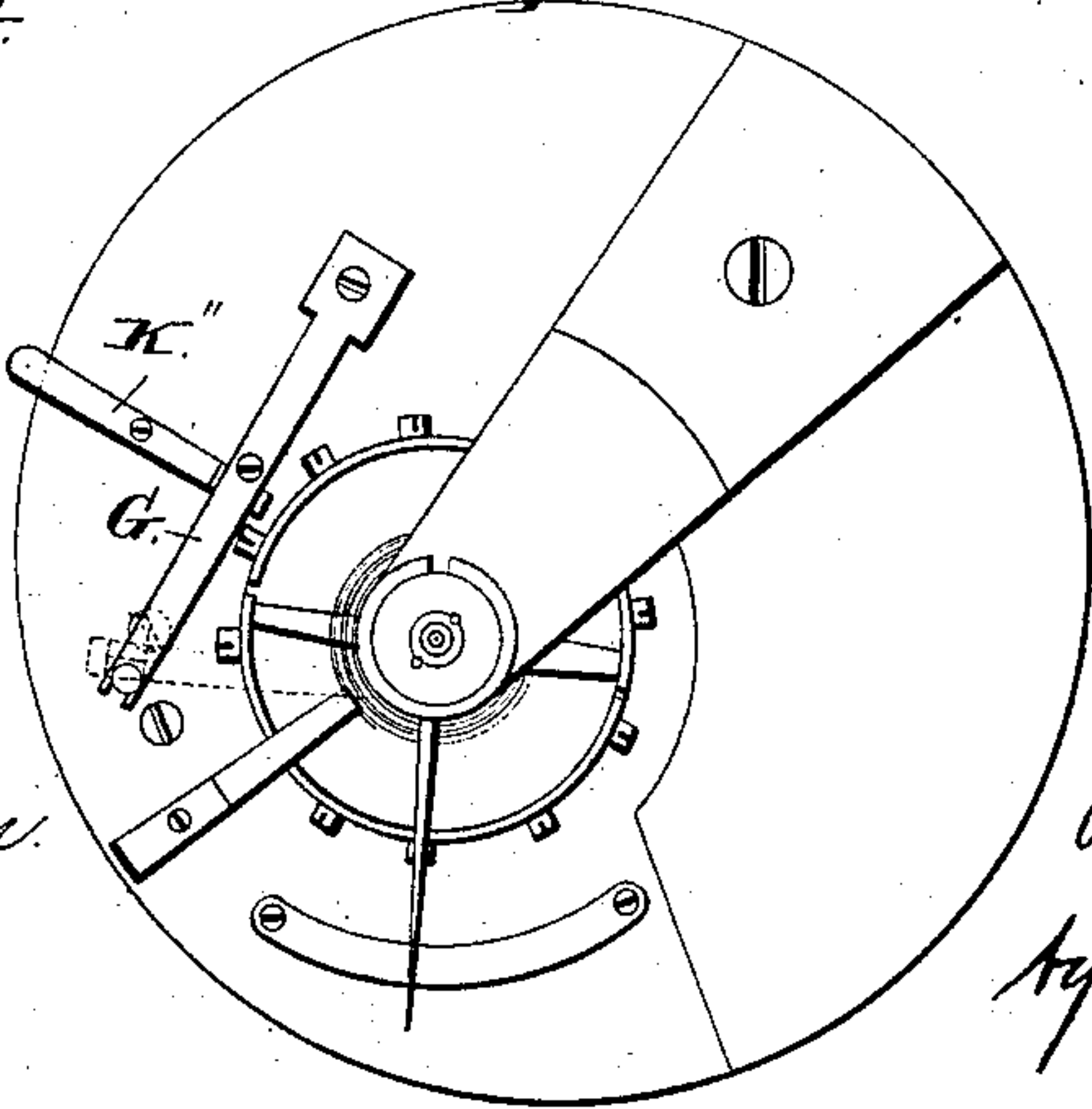
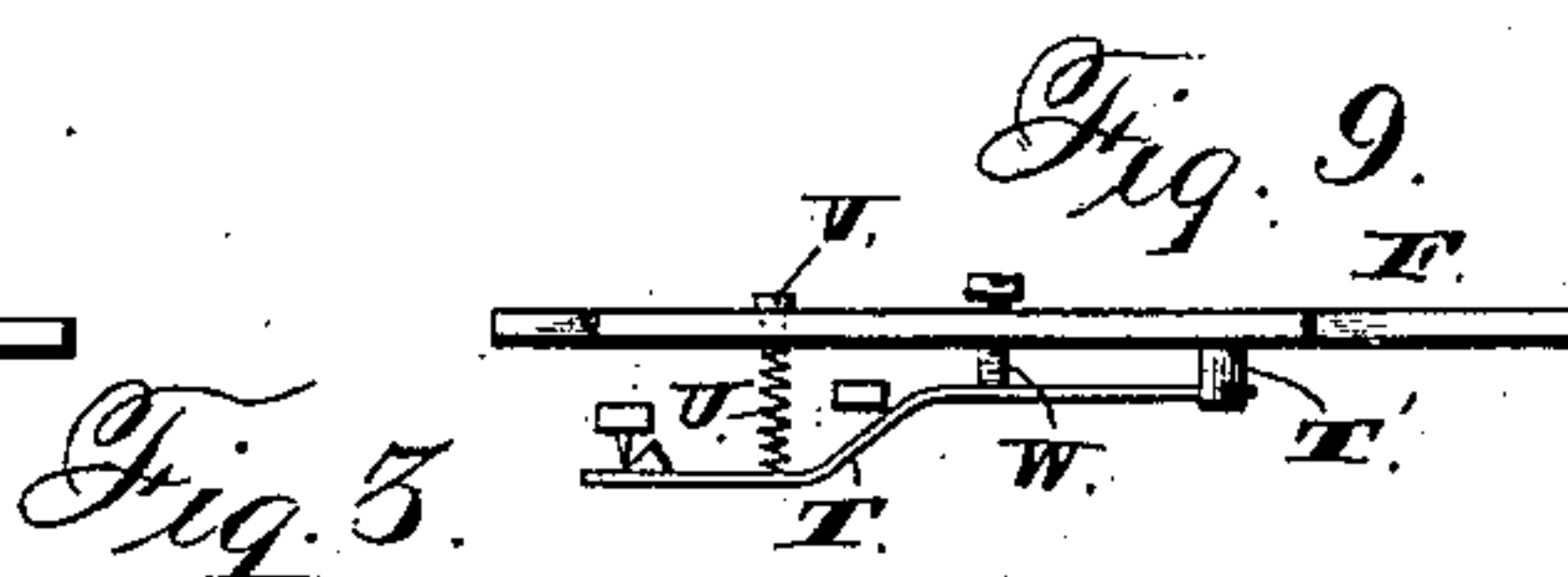
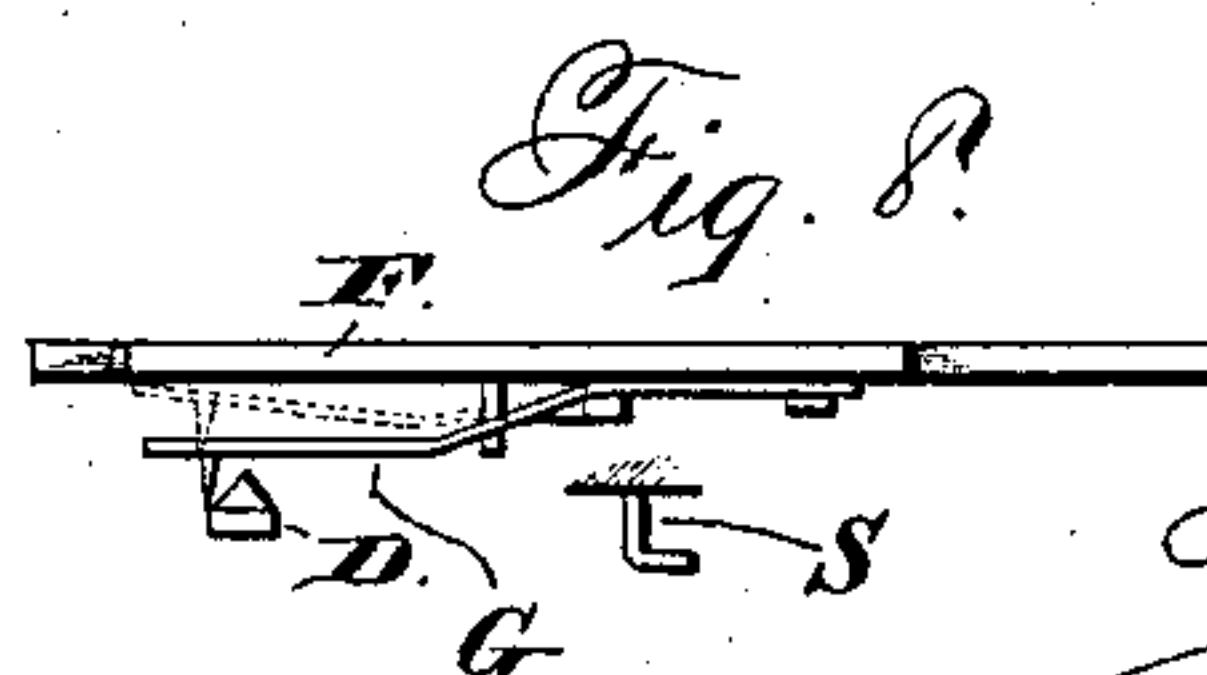
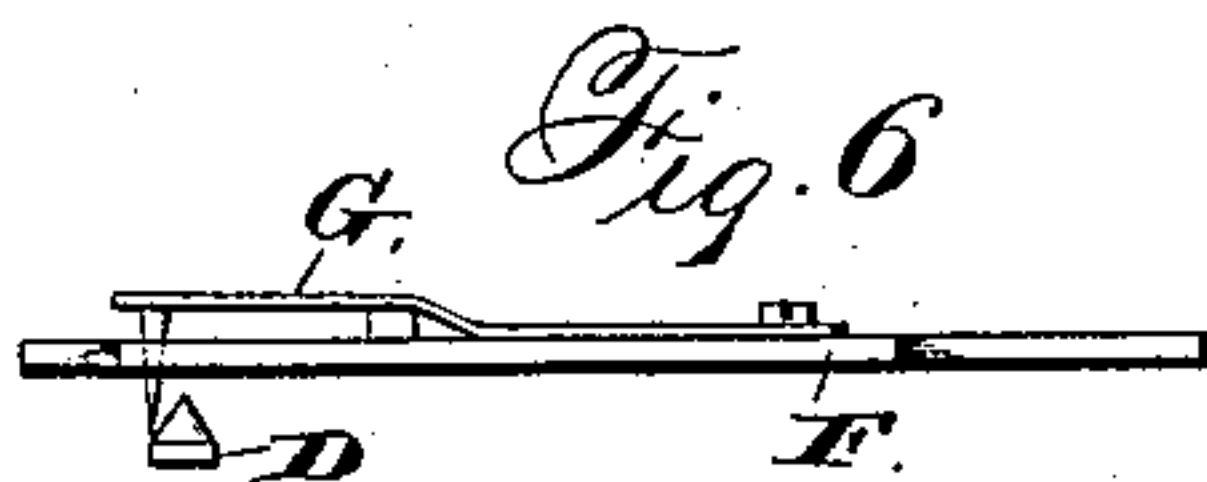
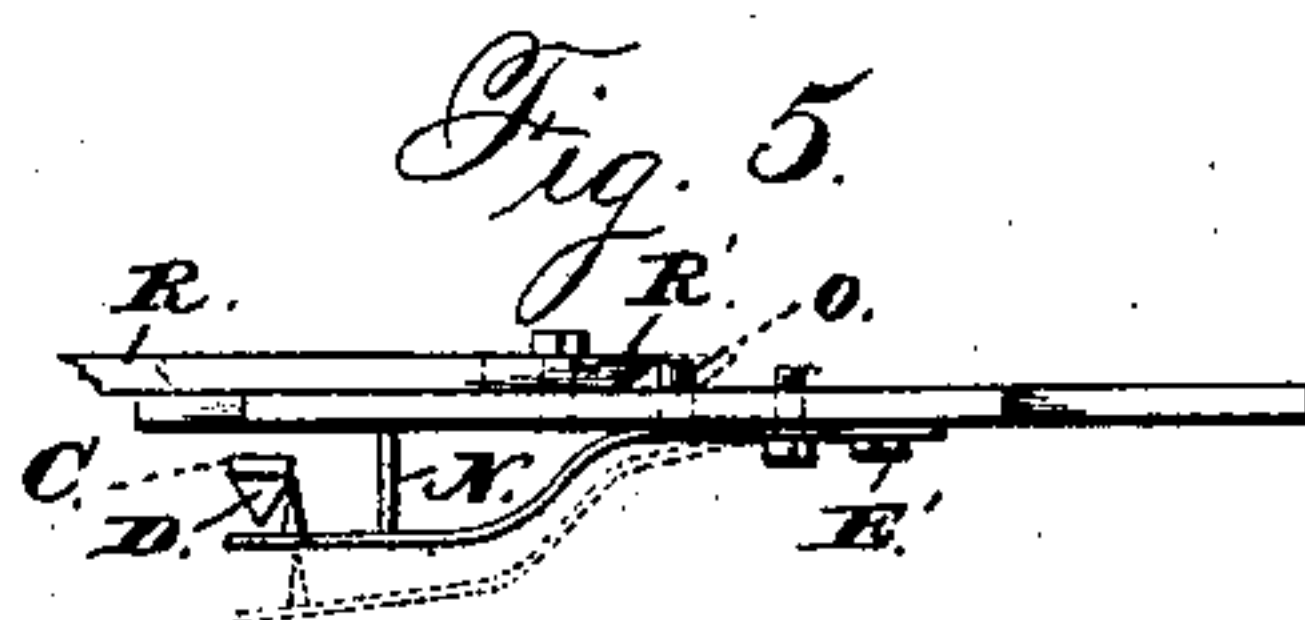
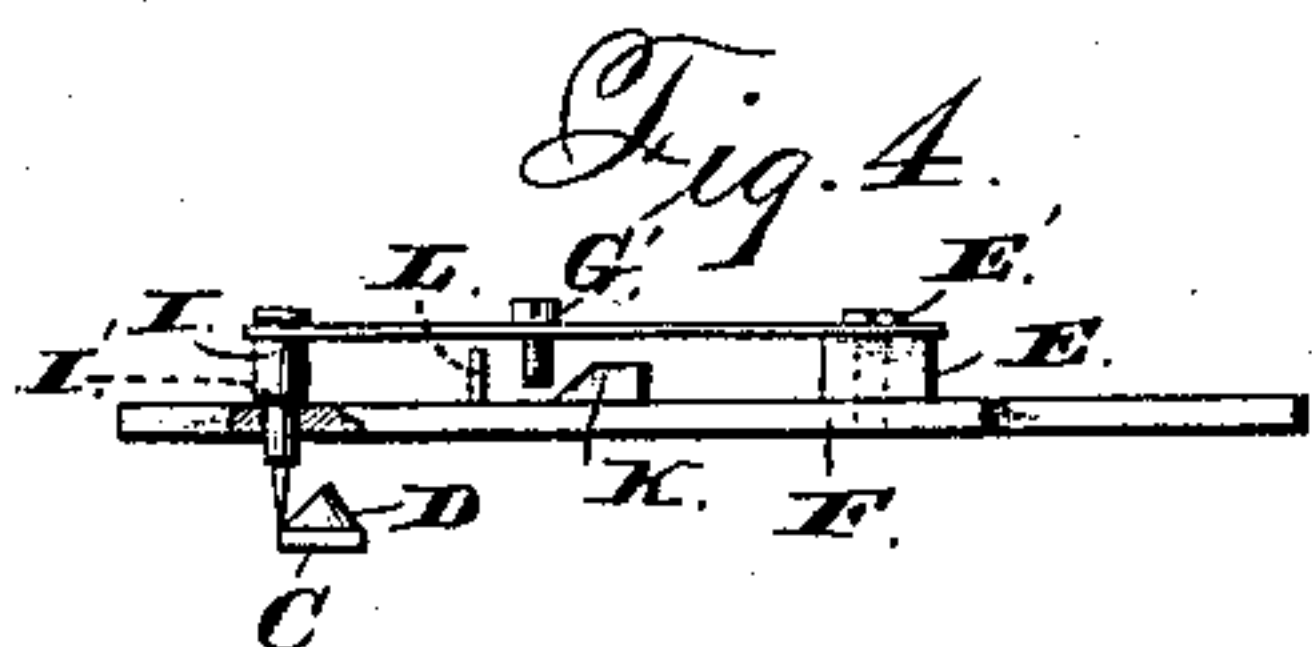
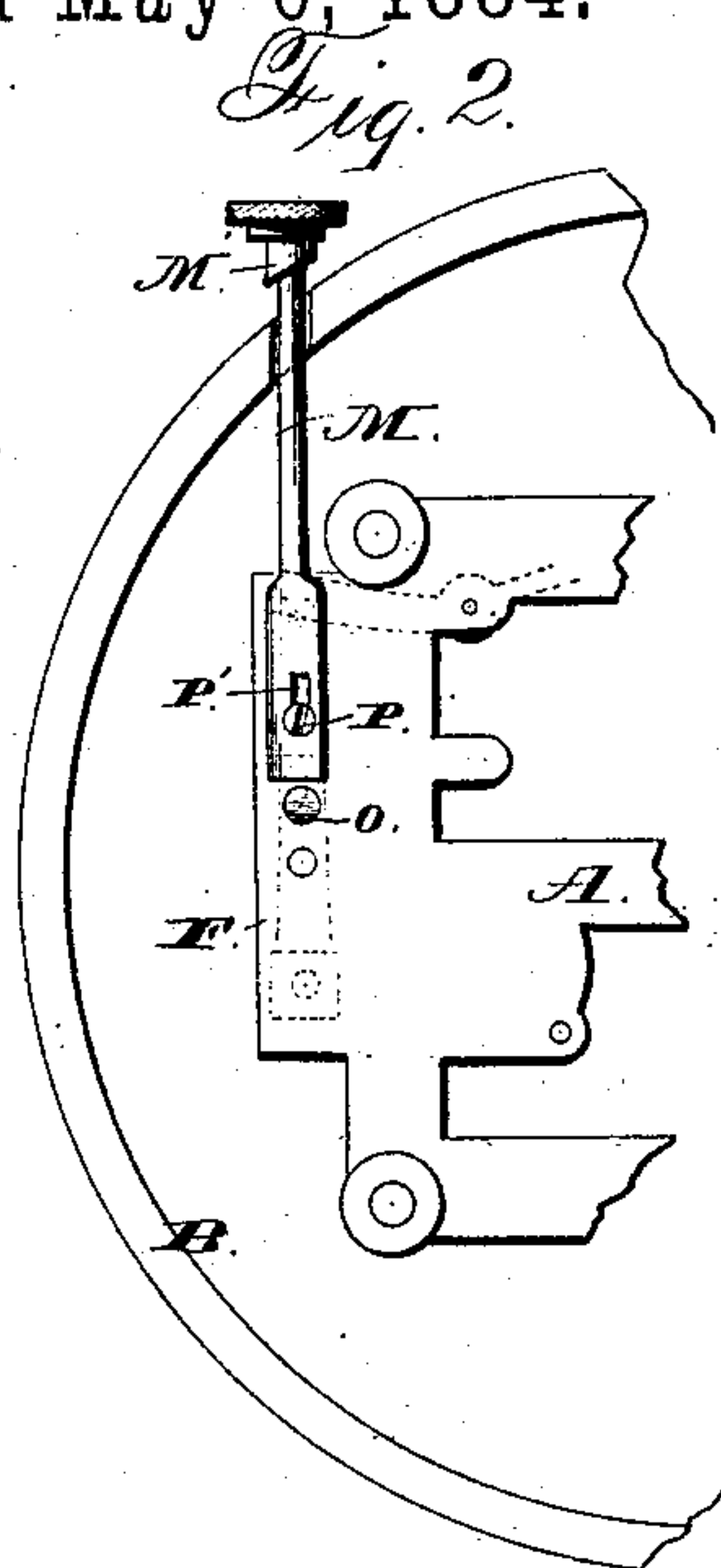
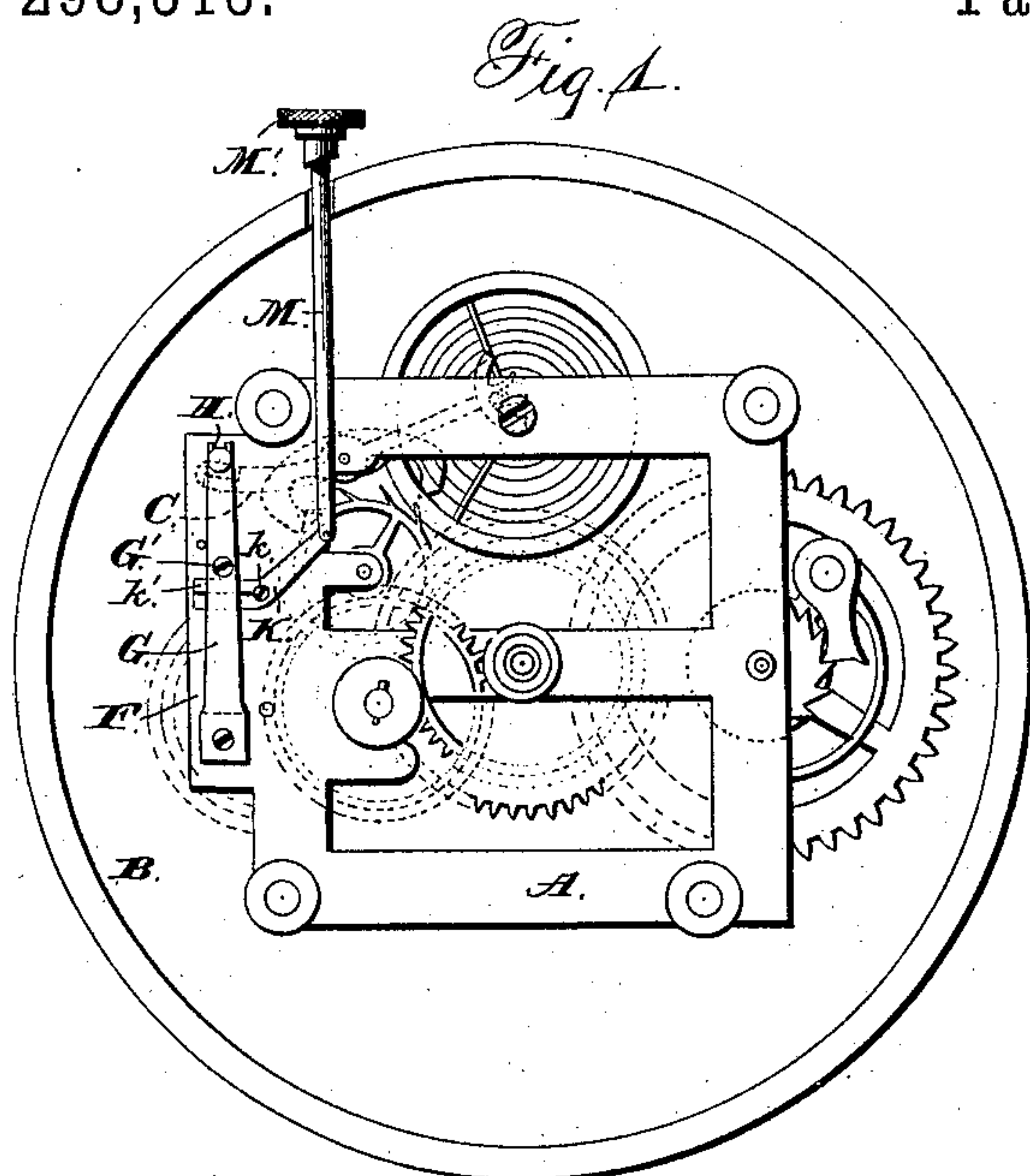
(No Model.)

P. G. RUSSELL.

STOP MECHANISM FOR CLOCKS AND WATCHES.

No. 298,313.

Patented May 6, 1884.



Witnesses:
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UNITED STATES PATENT OFFICE.

PHILIP G. RUSSELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

STOP MECHANISM FOR CLOCKS AND WATCHES.

SPECIFICATION forming part of Letters Patent No. 298,313, dated May 6, 1884.

Application filed December 31, 1883. (No model.)

To all whom it may concern:

Be it known that I, PHILIP G. RUSSELL, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Stop Mechanism for Watches and Clocks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

10 Figure 1 shows a plan view of a clock-movement with my stop device applied thereto; Fig. 2, a similar view of a portion of a movement with a modified form of stop mechanism; Fig. 3, a plan view of a watch-movement with the stop mechanism like that shown in Fig. 1; Fig. 4, a detail view, in side elevation, of the stop mechanism shown in Fig. 1; Fig. 5, a similar view of that shown in Fig. 2, and Figs. 6, 7, 8, and 9 similar views of modified forms of my invention.

The object of my invention is to provide an improved stop mechanism for clocks and watches, and to this end it consists in the construction, arrangement, and combination of parts, as hereinafter set forth, and more specifically pointed out in the claims.

In the drawings, A designates the clock-movement of the ordinary lever-escapement form, and B its inclosing case, which can be of any desired shape, size, and material. The movement need not be described herein, as the only change made in any of its parts is in the form of the outer end of the escape or balance lever C. As shown in Figs. 1 and 4, this lever is formed at or near its outer end with a wedge-shaped piece, D, on its upper face, the sharp edge of the wedge being uppermost. The line of this edge is parallel with the face of the lever and is substantially parallel with the central longitudinal line of that portion of the lever upon which the wedge is formed or placed.

Upon the upper face of the distance piece or block E, upon the plate F of the movement-frame, is fastened one end of the light flat spring G, by means of the screw E', passing down through the spring and block and into the plate F. The spring is by this means supported above the plate, and is held so as to extend over said plate in a direction substantially parallel thereto. At about the middle point of the spring the screw G' is tapped therethrough, extending down nearly to the plate. The free end of the spring is forked at

H to engage the circumferentially-grooved upper end of the pin I, which, as shown best in Fig. 4, passes down through a hole in plate F, and at its lower is end sharp-pointed. This pin is situated directly over the middle point of the arc of movement of the wedge-piece on the balance-lever.

Pivoted upon the plate F, at k, is the elbow-lever K, one arm, K', of which extends under the spring G between the screw G' and the supporting-block E. The side of this arm toward the screw is beveled, as shown at k', so that when the arm is moved toward the screw its edge will pass under the end thereof, and the screw will be forced upward by the inclined side of the arm. By this action the spring will be raised at its free end, so as to pull the pin I upward. The downward movement of the spring and pin, when the lever-arm K' is removed from under the screw G', is limited by the shoulder I', coming in contact, with the upper face of the plate F. When the pin is at the limit of its downward movement, its point is intended to be just above the plane of the upper face of the main portion of the lever-arm.

It will be observed in the drawings that the wedge-piece at its base is of the same width as the lever, so that the pin in its downward stroke cannot strike directly against the lever, but only against the inclined sides of the wedge. Undue shock and strain upon the balance-lever are therefore prevented. A stop pin, L, is fastened in plate F to limit the movement of lever-arm K'. To the other arm of lever K is pivotally attached the end of the push-piece M, which can be of any shape or length to suit any particular form or size of movement and case. It is provided with a head, M', for convenience in pushing the piece in and pulling it out, to operate the elbow-lever K.

In Figs. 2 and 5 a modified form of my stop mechanism is shown. In this case the wedge-piece D is on the lower side or face of the escape-lever C. The spring G, carrying the pin I on the upper portion of its free end, is attached to the under side of plate F by means of a screw, preferably as shown at E', and extends down under the escape-lever. A pin, N, extending downward from the plate, serves to limit the upward stroke of the spring end, so that it shall come into contact with the es-

cape-lever. The pin I on said spring, when the lever is not forced downward by the means to be described, engages the wedge-piece D, as shown in Fig. 1, and already described. A short lug or pin, O, on the spring extends up through and above the plate F. Sliding upon the latter and guided and limited in its movement by the screw P and slot P' is the push-piece R, at its end beveled underneath, as shown at R'. This push-piece is of such thickness that the edge of its beveled end is in a plane above that of the end of pin O, so that when the sliding piece is pushed in the end thereof will ride over and force down said pin, so as to press the spring downward, as shown in dotted lines in the figure.

In Fig. 3 I show my stop mechanism as applied to a watch-movement. The mechanism is all substantially like that shown in Fig. 1, except that a simple straight lever, K'', is used for raising the spring. Obviously, the same form of lever and push-piece, as shown in said figure, or the straight push-piece, as shown in Fig. 2, can be used instead of the straight lever.

In Fig. 6 the spring is shown as attached to the upper face of plate F. The lever-arm for forcing the spring up is shown as extending under the raised portion of the spring and adapted to be brought against the under side of the inclined middle portion thereof.

In Fig. 7 the spring is shown as in Fig. 5, except that it has no lug or pin extending up through the plate. The beveled lever-arm K', as shown in Figs. 1 and 4, is here arranged to come in contact with the upper inclined face of the middle part of the spring. As in the form shown in Fig. 5, a stop-pin is used to protect the escape-lever from the direct contact of the spring itself.

In Fig. 8 the spring is shown as attached to the under surface of the plate, but extending over the balance-lever, which has the wedge-piece on its upper face. The device for limiting the downward throw of the free end of the spring is in this case a hooked pin, S, with its horizontal part extending under the spring.

In Fig. 9 I show instead of a spring a pivoted spring-pressed lever, T, and instead of having the wedge-piece on the balance or escape lever, I show it as on the stop-lever, while the pin is on the escape-lever. The stop-lever is pivoted at T', and is drawn upward by the spring U, attached to it, and at its upper end to the screw V, tapped through plate F, by which its stress upon the lever can be regulated at will. The device for limiting the upward throw of the lever is in this case a screw, W, by which the limit can be adjusted. The springs which I use in the forms shown in the other figures are all intended to be quite thin and light, and, if desired, means can be provided for regulating their power or stress. For instance, as in Fig. 5, a second screw can be used for such purpose.

The operation of my stop mechanism is as follows: When the spring or lever is left free to bring the pin or wedge which it carries into engagement with the wedge or pin on the escape-lever, said lever will be stopped in its vibrations, and by the action of the pin upon either inclined side of the wedge-piece will be forced or carried to one side or the other of its center of motion, so that the balance-spring will be put and kept under sufficient stress as long as the pin and wedge-piece are in engagement with each other, to make certain that the movement will start into full operation immediately upon their disengagement.

In Fig. 1 the balance-lever is shown as carried to one side of its center of motion by the engagement of the pin on the stop-lever with the wedge-piece on the escape-lever, and in Fig. 3 as similarly carried to and held on the other side of such center of motion.

This application is a division of the application filed by me July 3, 1883, No. 99,891, and now pending.

My stop mechanism is obviously adapted for all kinds of movements where an escape-lever is used, whether such movements form or are parts of time-indicators, or are for other purposes, as ringing alarms, giving signals, &c.

Having thus fully described my invention, what I claim is--

1. In combination with a clock or watch movement, the stop device adapted to engage the end of the escape-lever and force the same to either side of its dead-center, so as to stop the movement and put the balance-spring under sufficient stress to make certain the starting of the movement when the stop device is disengaged from the escape-lever, substantially as shown and described.

2. The combination of the escape-lever, having a portion made V-shaped in cross-section, with the stop-lever, provided with a stop-pin adapted to engage said V-shaped portion of the escape-lever, substantially as and for the purpose described.

3. An escape-lever and stop device whose engaging portions are adapted to cause the lever to be carried to either side of the middle point of its arc of motion when the stop device engages said lever, substantially as shown and described.

4. An escape-lever, in combination with a stop device adapted to engage and stop the lever in its vibrations and force it to or toward its limit of motion on either side, and means for causing said stop device to engage and disengage the lever, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of December, A. D. 1883.

PHILIP G. RUSSELL.

Witnesses:

PHILIP F. LARNER,
HENRY C. HAZARD.