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F. C. A. BLANC.

WINDING AND SETTING MECHANISM FOR WATCHES.

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NO MODEL.

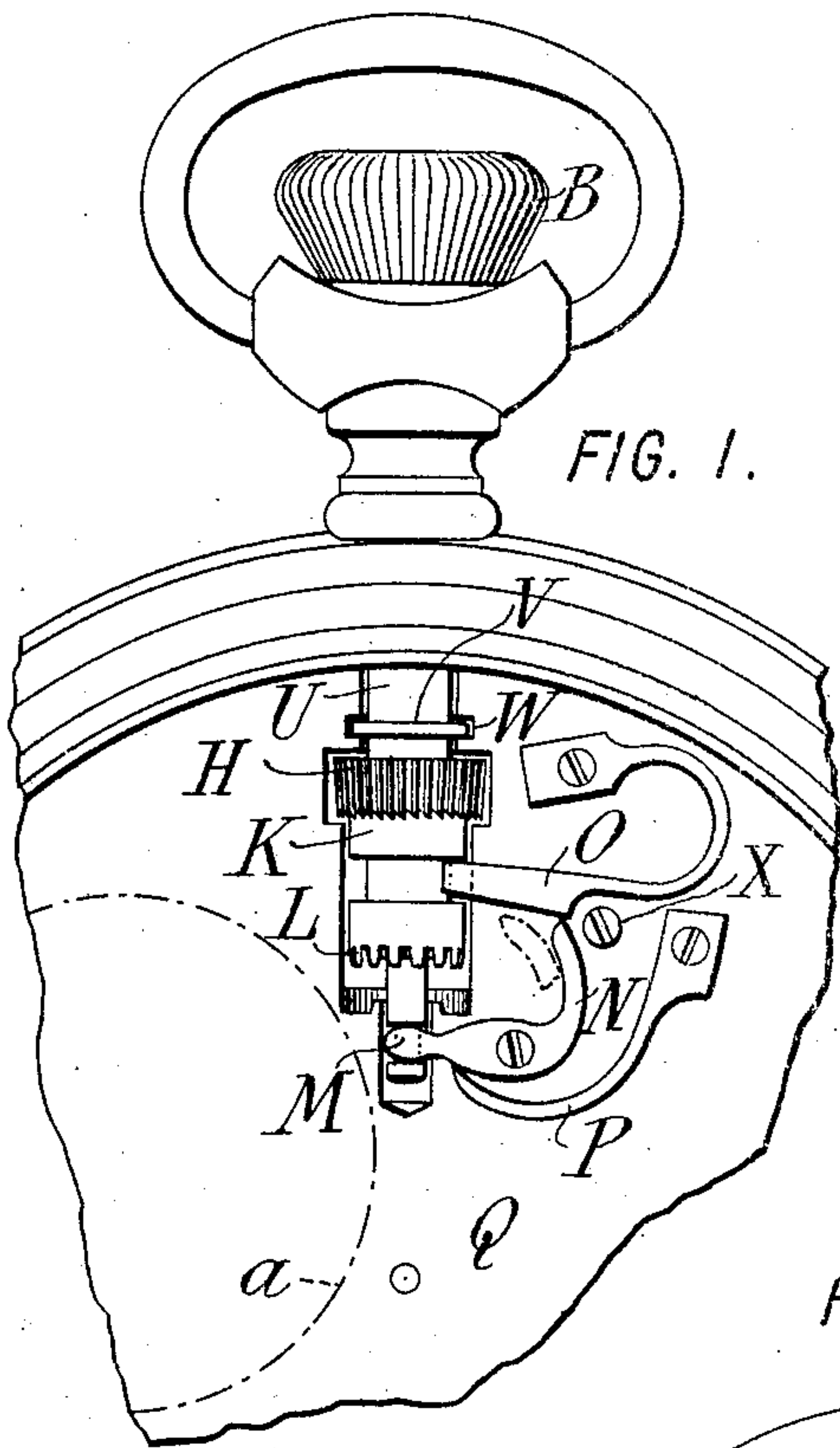


FIG. 1.

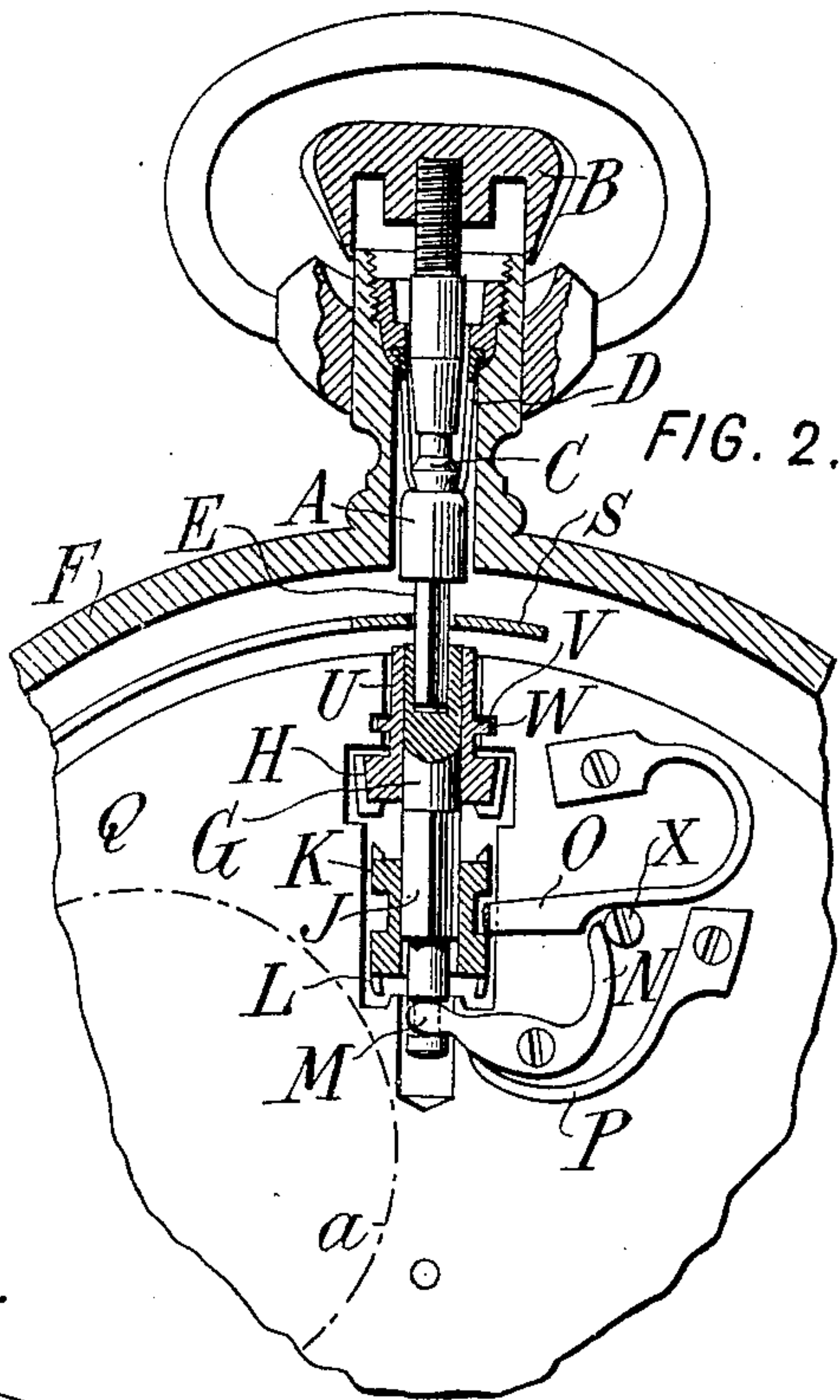


FIG. 2.

FIG. 3.

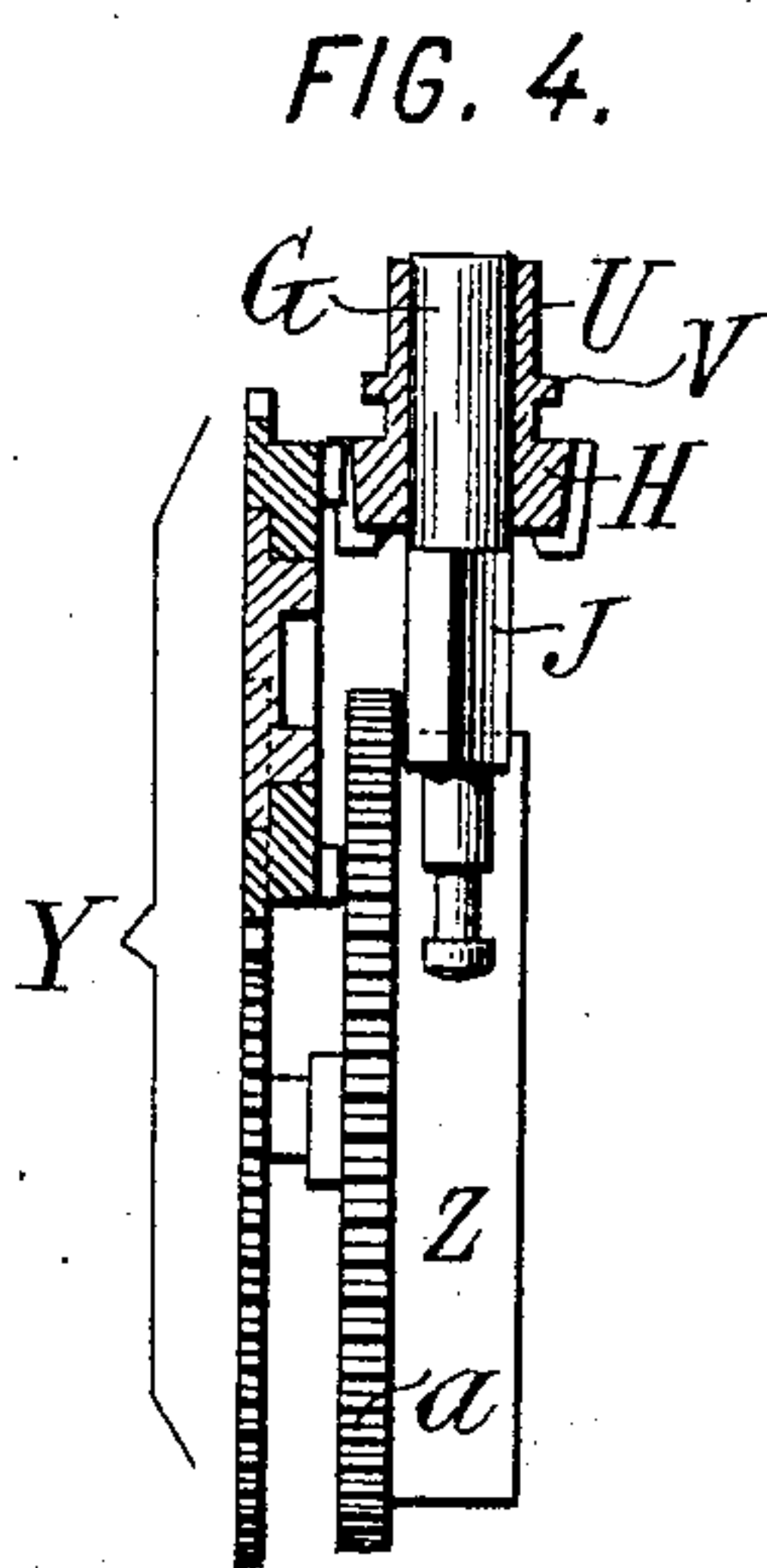


FIG. 4.

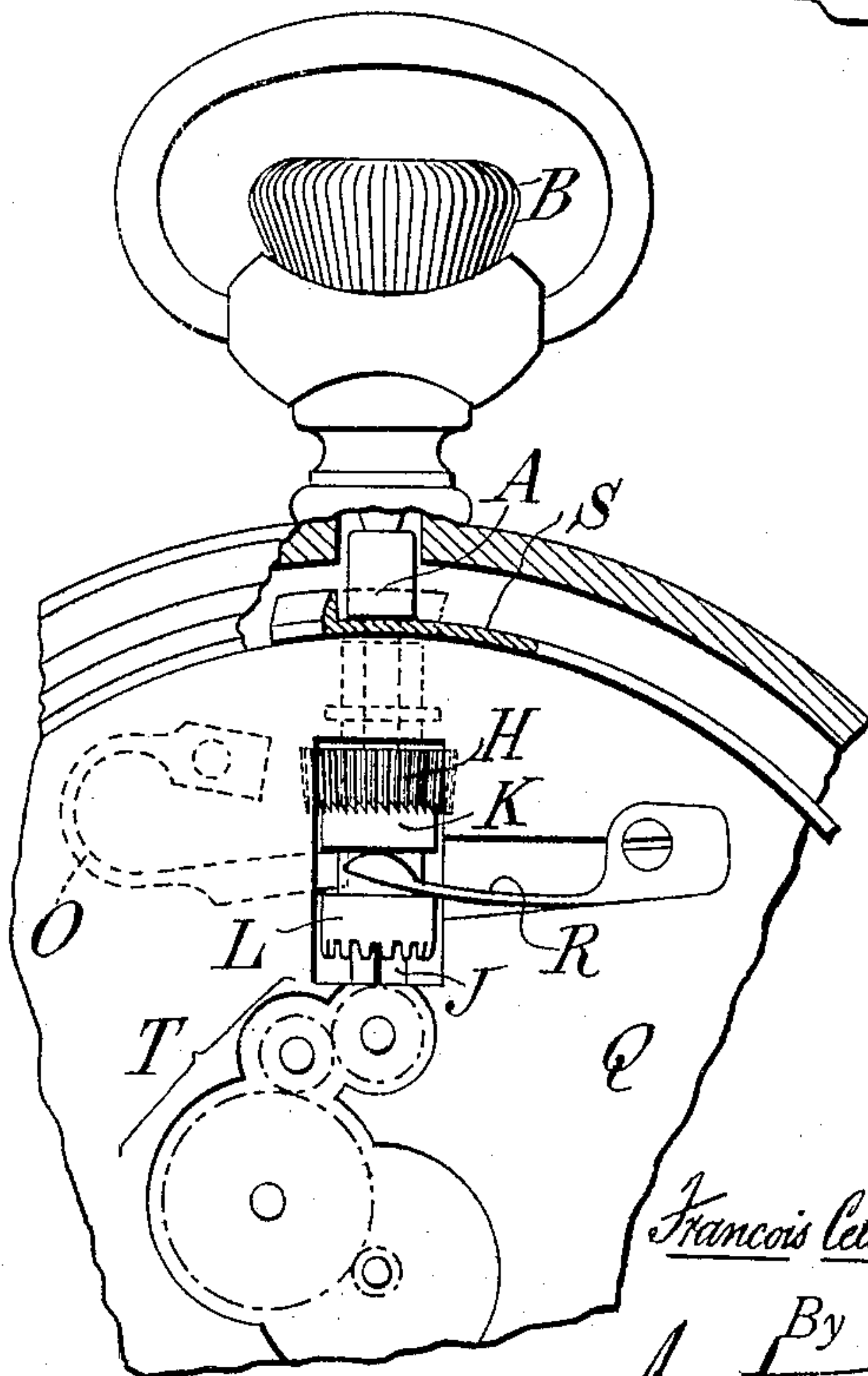


FIG. 5.

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# UNITED STATES PATENT OFFICE.

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## WINDING AND SETTING MECHANISM FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 771,227, dated October 4, 1904.

Application filed April 19, 1904. Serial No. 203,883. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCOIS CELESTIN ALFRED BLANC, a citizen of the United States, residing at West Brighton Beach, Coney Island, borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Winding and Setting Mechanisms for Watches, of which the following is a specification.

My invention aims to provide a mechanism of the kind stated which shall be very simple, durable, and compact and which will not be likely to get out of order.

The particular features of novelty are recited in the claims hereinafter.

The accompanying drawings illustrate an embodiment of the invention.

Figure 1 shows the novel part of the mechanism in elevation and in the normal position ready for winding. Fig. 2 shows the entire mechanism in cross-section and in position for setting the watch. Fig. 3 shows the opposite side of the mechanism from that shown in Figs. 1 and 2, the parts being in the position of Fig. 1. Figs. 4 and 5 are details.

The mechanism includes a winding-pinion and a setting-pinion and a sliding clutch on an arbor, which clutch in one position renders the winding-pinion operative and in the other position renders the setting-pinion operative. Preferably the winding-pinion is loose on the same arbor, while the clutch and setting-pinion rotate with the arbor, the movement of the clutch in one direction bringing it in engagement with the winding-pinion to rotate the latter and its movement in the opposite direction moving the setting-pinion into engagement with the usual train of gears connecting with the minute-hand.

Referring to the embodiment of the invention illustrated, a movable pin or arbor A passes through the stem of the watch and carries a knurled head or crown B. A knob C is provided, and the arbor is surrounded by a series of flat springs D. The lower end E of the arbor is squared. This construction for transmitting the desired movements through

the case F is well known and commonly used. The arbor may be turned by the knurled head and may be pushed in and out, the knob C passing to one side or the other of the ends of the springs D, which thus hold it positively in position. The lower squared end of the arbor A enters a squared socket in a clutch-arbor G. The upper portion of the arbor G is cylindrical, and the winding-pinion H revolves freely around the same. The arbor G is provided with a squared (or other non-circular) portion J, which carries a clutch K and at the lower end of which is formed the setting-pinion L. The clutch may slide relatively to the arbor, but rotates therewith. The lower end of the arbor is preferably of reduced diameter and is provided with a circumferential groove in which rests one end, M, of a bent lever, the other end, N, of which bears against a spring O, engaging a circumferential groove of the clutch K and tending to move the clutch downward. The lower end, M, of the lever is pressed upward by a second spring P. On the lower face of the winding-pinion H are clutch-teeth, Figs. 1 and 3, for engaging the teeth on the upper face of the clutch K. Ratchet-teeth are used to insure rotation in a right-hand direction, but to permit the passage of the clutch over the pinion when the clutch is rotated in the left-hand direction. Figs. 3 shows on the opposite side of the plate Q a safety-spring R, which acts in the upward direction for a purpose hereinafter referred to. The plate Q is cut through to accommodate the pinions and clutch, as indicated in Fig. 3, and is grooved to accommodate the upper and lower end portions of the mechanism, all in the manner clearly indicated. The usual case-spring S is provided with its free end engaged by a shoulder on the outer arbor A. A train of gears for communicating the movement of the pinion L to the minute-hand is indicated at T in Fig. 3. The winding-pinion H carries an extension or sleeve U, provided with a circumferential rib V, fitting in a groove W of the plate Q. The rib V holds the pinion free from the plate



Q, and thereby saves wear upon the clutch-teeth on the lower face of the pinion and saves also the cutting of the plate by these teeth.

The parts are shown in Fig. 1 in the position in which they are ordinarily carried ready for winding. In order to set the watch, the head B is pulled, and with it the arbor A, until the knob C springs past the ends of the springs D and is held by them in the position of Fig. 2. The inner arbor G at the same time moves upward under the pressure of the spring P, which lifts the end M and lowers the end N of the lever. The spring O, which is stronger than the spring R, then moves the clutch K downward, withdrawing it from the winding-pinion H and bringing the setting-pinion L into engagement with the train of gears T. It is understood that in the normal position, Fig. 1, the lower end E of the outer arbor is pressing against the bottom of its socket in the lower arbor, so as to press the latter down against the resistance of the spring P, being held in this position by the springs D, engaging the upper face of the knob C. Even in this position the arbors are capable of a further downward movement, the plate Q being grooved to permit this, as shown in Fig. 1, and which further movement presses down the spring S to open the case. The under face of the spring O is so shaped and positioned that the movement (shown in dotted lines in Fig. 1) of the end N of the lever consequent upon the further downward movement of the arbor allows a slight play of the spring O, the clutch being then held up by the safety-spring R.

It will be seen that the invention provides a mechanism which is extremely simple and compact. The parts are so arranged as to eliminate wear as far as possible and to give strength and durability. The entire mechanism can also be very cheaply constructed and, which is practically of great importance, it is adapted to operate with the style of outer arbor now commonly used. Of course, however, it can be operated with a great variety of outer arbors.

Preferably a stop X is screwed into the plate in position to limit the downward movement of the spring O and to limit also the rearward movement of the arm N.

The means for transmitting movement from the setting and winding pinions form no part of my present invention. I have illustrated in Fig. 4, however, a common arrangement for transmitting movement from the winding-pinion H. A train of gears Y operates the shaft of the spring, the box of which is shown at Z. The pinion *a* transmits the movement of the spring to the hands.

A simpler style of clutch-arbor G is shown in Fig. 5, where instead of a squared portion

for the clutch to slide on a groove *b* is provided in which slides a pin *c*, connected to the clutch K. In this case the lower portion J of the arbor is equivalent to the corresponding portion of the arbor shown in Fig. 2 in being of non-circular cross-section. The portion of the pin *c* which enters the groove *b* is made as long in the vertical direction as possible, so as to give an even and lasting bearing. The groove *b* is open at the lower end, so that the clutch may be applied to the shaft after the pin *c* has been placed on the clutch. This style of arbor has a decided advantage in the present mechanism in that it avoids the shoulder at the upper end of the squared portion of the shaft of Fig. 2. In order to avoid the engagement of the top of the clutch K by said shoulder when the clutch-arbor is pressed down, the axial length of the clutch is limited; but with the construction of Fig. 5 the length of the clutch is immaterial.

Therefore, though I have described with great particularity of detail a complete mechanism embodying the invention, it is not to be understood that the invention is limited to the specific embodiment disclosed. Various modifications thereof in detail and in the arrangement and combination of the parts may be made by those skilled in the art without departure from the invention.

What I claim is—

1. In a winding and setting mechanism, the combination of an arbor G, a winding-pinion H loose thereon, a clutch K sliding thereon and rotating therewith, a setting-pinion L carried by said clutch, the movement of said clutch downward carrying the setting-pinion to its operative position and the movement of the clutch upward serving to clutch the winding-pinion with the arbor, a spring O for moving the clutch downward, a lever having an arm N engaging the spring O to move the clutch upward and having also an arm M engaged by the arbor, a spring P pressing upward the arm M, a stop X for limiting the movements of the arm N and the spring O, an outer arbor A entering the upper end of the arbor G and adapted to be moved upward or downward, said arbor A having a knob C, and a series of flat springs D surrounding the arbor and adapted to engage the same at one side or the other of said knob and hold the same impositively locked in its upward or downward position.

2. In a winding and setting mechanism, the combination of an arbor G, a winding-pinion H loose thereon, a clutch K sliding thereon and rotating therewith, a setting-pinion L carried by said clutch, the movement of said clutch downward carrying the setting-pinion to its operative position and the movement of the clutch upward serving to clutch the wind-

ing-pinion with the arbor, a spring O for moving the clutch downward, a weaker spring R for holding the clutch upward, a lever having an arm N engaging the spring O to move the  
5 clutch upward and having also an arm M engaged by the arbor, a spring P pressing upward the arm M, a stop X for limiting the movements of the arm N and the spring O, and an outer arbor A entering the upper end  
10 of the arbor G and adapted to be moved up-

ward or downward and to be impositively locked in position.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FRANCOIS CELESTIN ALFRED BLANC.

Witnesses:

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THEODORE T. SNELL.