

(No Model.)

C. V. WOERD.
STEM WINDING WATCH.

No. 354,002.

Patented Dec. 7, 1886.

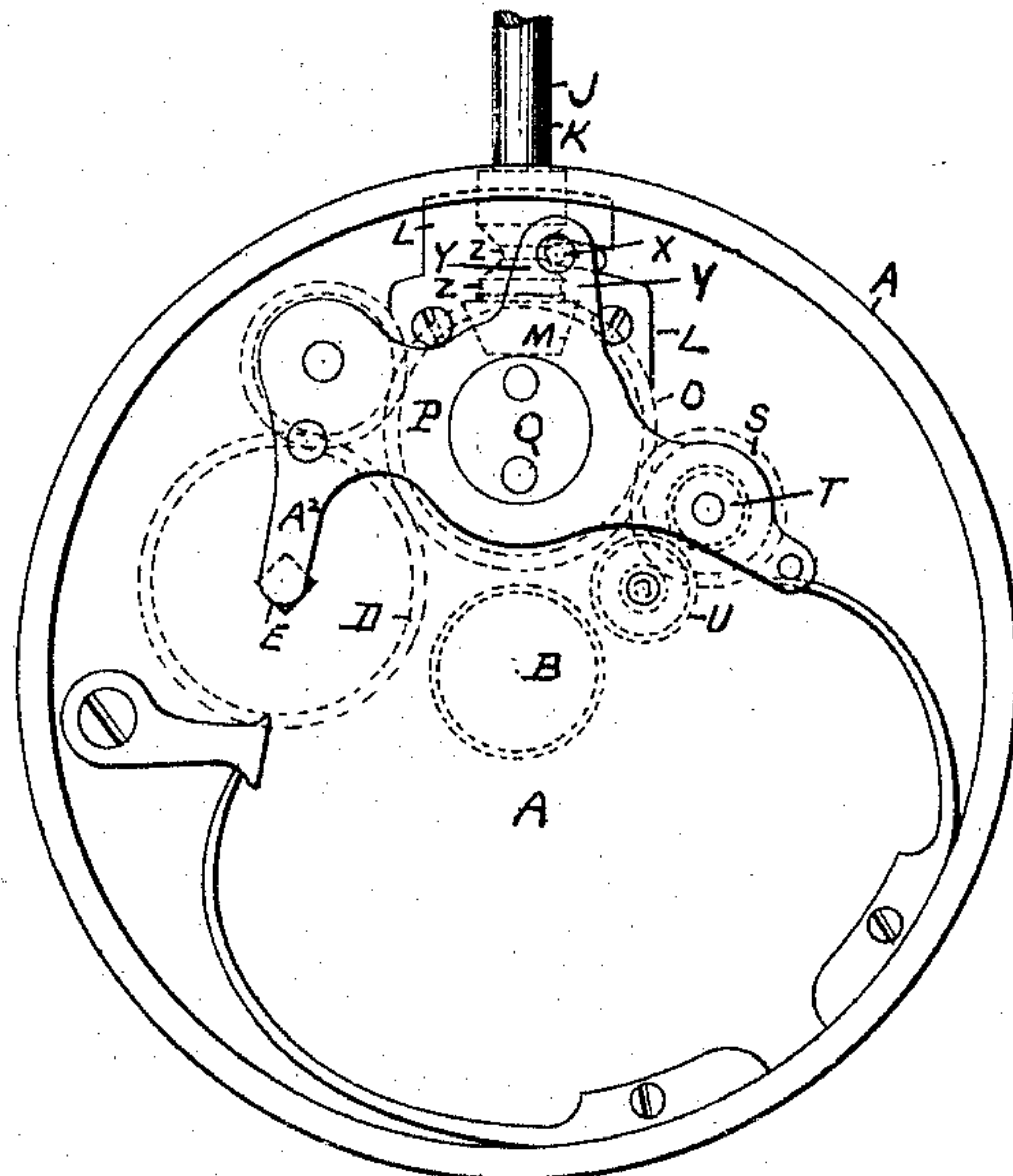


Fig. 1.

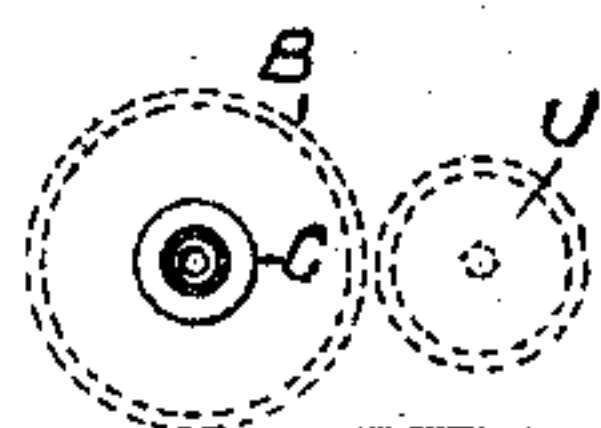


Fig. 4.

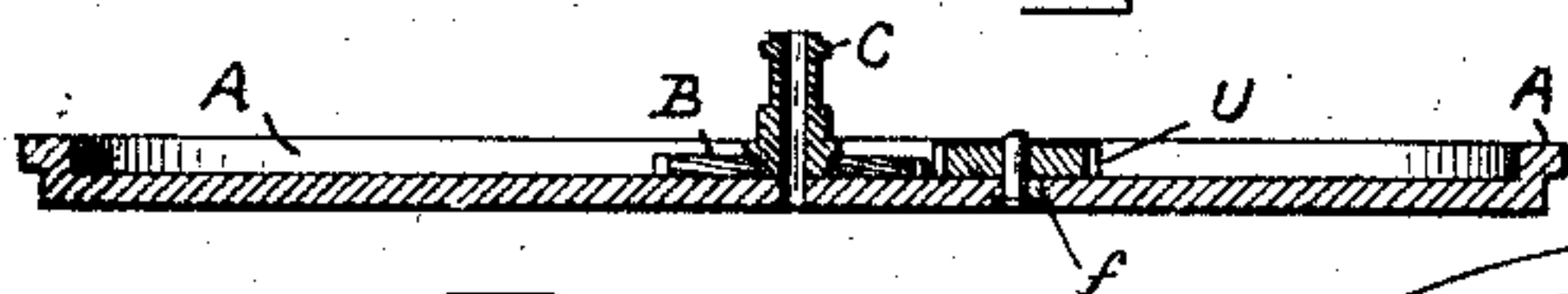


Fig. 3.

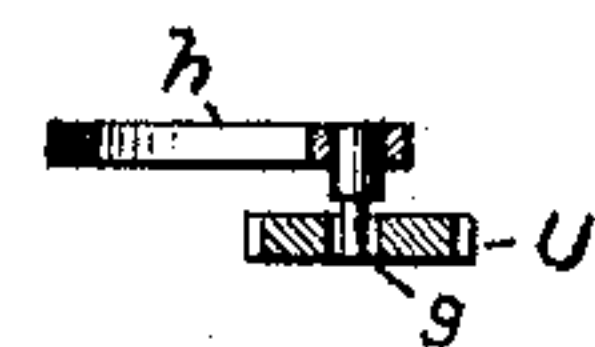


Fig. 6.



Fig. 5.

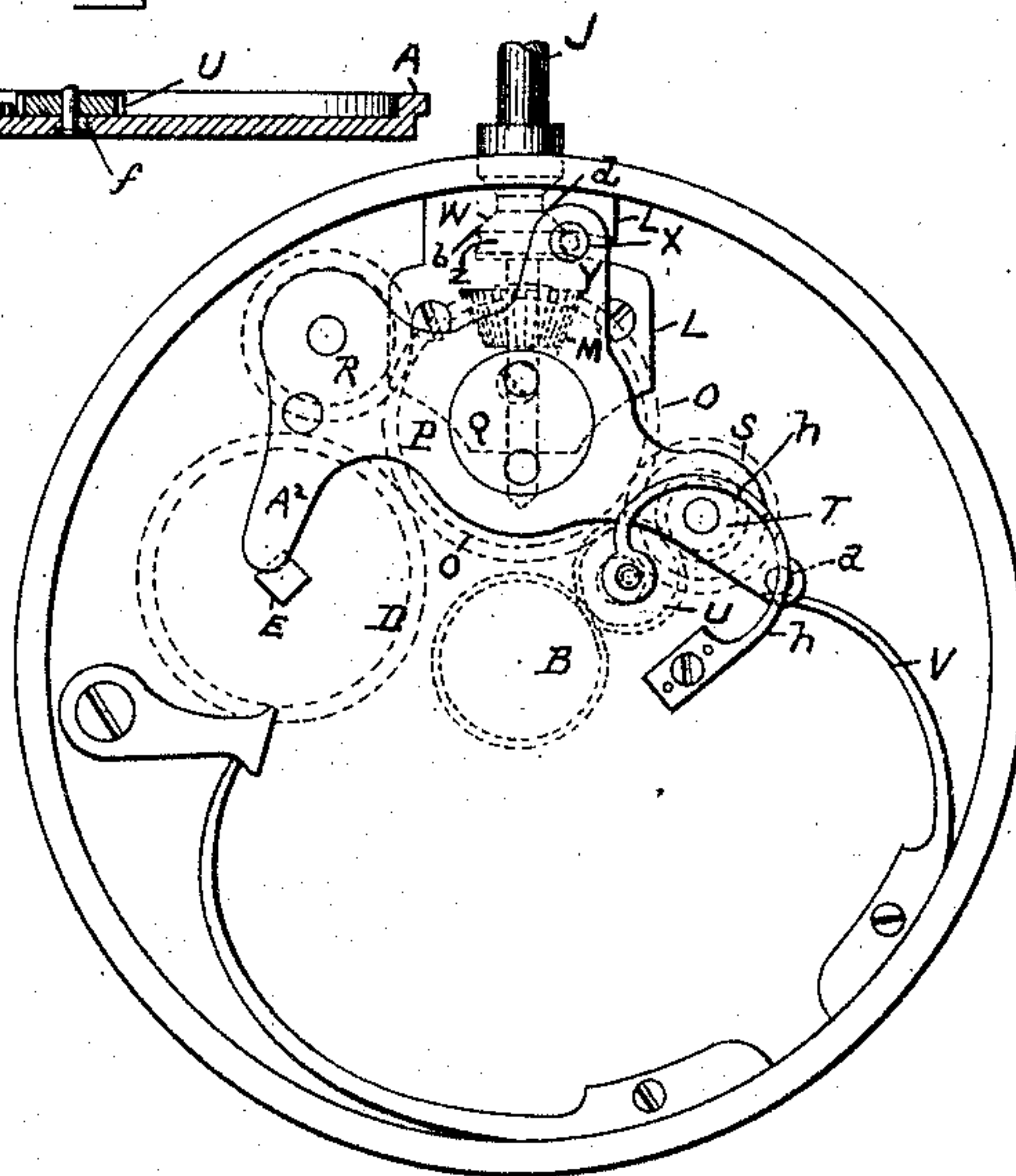


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES V. WOERD, OF WALTHAM, MASSACHUSETTS.

STEM-WINDING WATCH.

SPECIFICATION forming part of Letters Patent No. 354,002, dated December 7, 1886.

Application filed June 30, 1886. Serial No. 206,727. (No model.)

To all whom it may concern:

Be it known that I, CHARLES V. WOERD, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Stem-Winding Watches, of which the following is a full, clear, and exact description.

This invention relates to that class of stem winding and setting mechanisms of watch-movements in which, in combination with a rotating arbor or stem, preferably located in the pendant-knob of the watch-case, is employed a train of gearing which is in constant connection with said rotating arbor, and is arranged by and arranged in a swinging or otherwise movable or shifting yoke, and all in such relation to the winding and hand arbors or wheels of the watch-movement that the swing or movement of said yoke in one direction places said train of gearing into connection with the winding arbor or wheel and out of connection with the hand arbor or wheel, and its swing in the other direction places said train of gearing into connection with the hand arbor or wheel and out of connection with the winding arbor or wheel of the movement, maintaining at all times its connection with the rotating arbor of the pendant, and all otherwise substantially as well known.

This invention in stem winding and setting mechanisms for watch-movements of substantially the character above described consists, in substance, in the combination therewith of a wheel through which to make connection between the hand-arbor and the train of gearing carried by the swinging or otherwise movable or shifting yoke, and which is separate and distinct from the hand-arbor and said gear-train, and in its normal position is out of connection with either the hand-arbor or the gear-train, or both, and otherwise is arranged to be connected with and disconnected from said hand-arbor and gear-train, and in making and breaking contact for such connection and disconnection to be free to roll, all substantially as hereinafter described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan or face view at the outer side of the pillar-plate of a watch-movement, and of the stem winding and setting mechanism and bridge-

piece of the yoke for the mainspring-barrel of this invention. In this view the stem winding and setting mechanism is shown as in connection with the winding-train and out of connection with the hand setting train of the watch-movement. Fig. 2 is a view substantially similar to Fig. 1, but with the yoke broken away and the stem winding and setting mechanism in connection with the hand-setting train and out of connection with the winding train of the watch-movement and the addition of mechanism, as hereinafter described. Figs. 3, 4, 5, and 6 are views in detail, as will hereinafter appear.

In the drawings, A is the pillar-plate, B is a gear-wheel on hand-arbor C, and D is a gear-wheel on winding arbor or barrel E, all as usual in watch-movements, and therefore needing no particular description herein.

J is a rotating and sliding stem or arbor, preferably located in the pendant-knob (not shown) of the watch-case, (not shown,) and capable of turning in and sliding lengthwise through it, all as well known. This arbor J is made in two parts or sections, screwing the one into the other, and so that they can be separated, leaving one in its bearings of stationary parallel blocks L of the pillar-plate A, and said part is made square-sided, and thereon it carries a bevel pinion gear-wheel, M, which can turn with the arbor when it is rotated, while at the same time the arbor can be moved lengthwise through it, the bevel-gear being confined against movement lengthwise of the arbor by and between the bearing-blocks L. Bevel-gear M meshes with a crown gear-wheel concentric with, and either in one piece with or rigidly attached to, a gear-wheel, O, and the two as one turn on and are carried by a yoke or plate, P, centrally pivoted, as at Q, to the pillar-plate A. The gear-wheel O meshes with gear-wheels R S on opposite sides thereof, and the gear R is in position to be meshed with the gear-wheel D of the winding barrel or arbor when said yoke is swung in one and the proper direction therefor, and the gear S is in position for a concentric pinion gear-wheel T thereof to mesh with a gear-wheel, U, located between it and the gear-wheel B on hand-arbor C, and arranged, as hereinafter described, to mesh with said gear-wheel B. The yoke P

in its normal position has its gear-wheel R in engagement with the gear-wheel D of winding arbor or barrel E, and the pinion-wheel T of its gear-wheel S out of connection with the intermediate gear-wheel, U, with the gear-wheel B on hand-arbor C, and the yoke is held in the position stated by the action of a bent spring, V, at one end rigidly secured to the pillar-plate A, and at the other end bearing against a pin, *a*, at one end of the yoke P, and the end opposite to that at which the gear-wheel R is located. The swinging of the yoke P to connect the train of gearing which it carries, as described, with the gear-wheel B on hand-arbor C is against the action of the spring V. In all positions of the yoke its train of gearing is always in connection with the bevel gear-wheel M of the pendant arbor or stem J, but in one position thereof, preferably its normal position, Fig. 1, only in connection with the winding-wheel D, and in the other position, Fig. 2, only in connection, as described, with the gear-wheel B on hand-arbor.

W is a beveling or inclining face surrounding pendant-arbor J, and having its greater diameter or end, *b*, toward the bevel-wheel M of arbor and its smaller diameter or end, *d*, toward the outer edge or periphery of the pillar-plate. X is a pin or abutment carried by a side projection or arm, Y, of the yoke P, and with the yoke in its normal position, Fig. 1, said abutment is at rest upon the arbor at the smaller end, *d*, of the beveling face W of the arbor. This abutment X of the yoke is held to its bearing on the beveling face W of pendant-arbor by the tension of spring V of the yoke, and in pulling the stem or arbor outward said beveling face of the arbor, riding upon the abutment X of the yoke, causes the yoke to be swung upon its center at Q, and thus the connection of its train of gearing with the gear-wheel D of winding arbor or barrel to be broken, and a connection made between said train and the gear-wheel B on the hand-arbor by and through the intermediate gear-wheel, U, as will hereinafter more fully appear.

In the swing of the yoke P to make connection between the train of gearing carried by it and the gear-wheel of the hand-arbor the abutment-pin X finally comes to a seat or rest in peripheral groove Z of the arbor at and inside of the larger end, *b*, of the bevel-face W, and which groove is of suitable shape therefor and of sufficient depth to secure a hold of the abutment pin X of the yoke therein against accidental escape as the pendant-arbor is turned to set the hands, while at the same time, with a slight inward push on the pendant-arbor, it can escape therefrom and set the yoke free to the action of its spring, and to be returned thereby, as also the pendant-arbor, to their normal position, and to place the train of gearing carried by the yoke out of connection by and through the intermediate gear-wheel, U, as before referred to, with the gear-

wheel B of the hand-arbor C, and into connection with the gear-wheel D of the winding arbor or barrel E.

So far, but with the exception of the intermediate gear-wheel, U, which has been referred to, and its arrangement, as hereinafter described, the mechanism described differs in no substantial or material respect from the mechanism shown and described in the Letters Patent of the United States issued to me dated November 17, 1885, No. 330,537, and in my application for Letters Patent of the United States, Serial No. 186,900.

The intermediate gear-wheel, U, through which connection is established between the gear-wheel B of hand-arbor C and gear-wheel S of train of gearing on the swinging yoke P, is free not only to rotate, but also to roll, and for the latter movement to occur, if it is fixed to its arbor, then the hole *f*, making the bearing for the arbor—as, for instance, in the pillar-plate A—is made of a greater diameter than the diameter of the arbor, and of a sufficiently-increased diameter for the play of the arbor necessary for its wheel U to pass into and out of mesh with the wheel B or other equivalent wheel of the hand-arbor under the swing of the yoke, as described, and at the same time be free to roll, thus insuring its making connection with said wheel of said arbor without affecting the position of the hands or “jumping” them, as it is called. If the intermediate wheel, U, is loose on its arbor, then its arbor is fixed in either the pillar-plate or other suitable support, and the hole *g* in the wheel, making its bearing on the arbor, is enlarged the same as described for the hole *f*, making the bearing of the arbor in the pillar-plate, and with the same action and operation under the swing of the yoke.

The intermediate wheel, U, may be hung in either of the ways described, and in either case a spring-arm, *h*, may be applied to the intermediate wheel, U, to force it out of mesh with the gear-wheel B of hand-arbor when the yoke is released to return to its normal position. Such an application of a spring-arm, *h*, is shown in Figs. 2, 5, 6, and in such cases the enlarged bearing for the arbor of the intermediate gear-wheel may be either in the pillar-plate or in the gear-wheel, and the spring-arm carries the arbor.

A² is an arm of the yoke P, extending over the winding-barrel, and serving as a substitute for the bridge-piece usually employed in watch-movements and carried by the pillar-plate to hold the winding-barrel in position. This arm preferably is made in one piece with the yoke P, but may be made separate and attached to it, in either case serving a useful purpose, and simplifying and reducing the number of pieces of the watch-movement.

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

1. In combination with a watch-movement and a stem-setting mechanism of otherwise

suitable construction, a gear-wheel to make connection between the hand-arbor and the stem hand-setting mechanism, arranged both to rotate and to roll, substantially as described, 5 for the purpose specified.

2. In combination with a watch-movement and a stem-setting mechanism of otherwise suitable construction, a gear-wheel suspended from a spring-arm and otherwise arranged to 10 make connection between the hand-arbor and

the stem hand-setting mechanism, and both to rotate and to roll, substantially as described, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses. 15

CHAS. V. WOERD.

Witnesses:

ALBERT W. BROWN,

FRANCES M. BROWN.