

(No Model.)

F. LENZ.

STEM SETTING ATTACHMENT FOR WATCHES.

No. 288,075.

Patented Nov. 6, 1883.

Fig. 1.

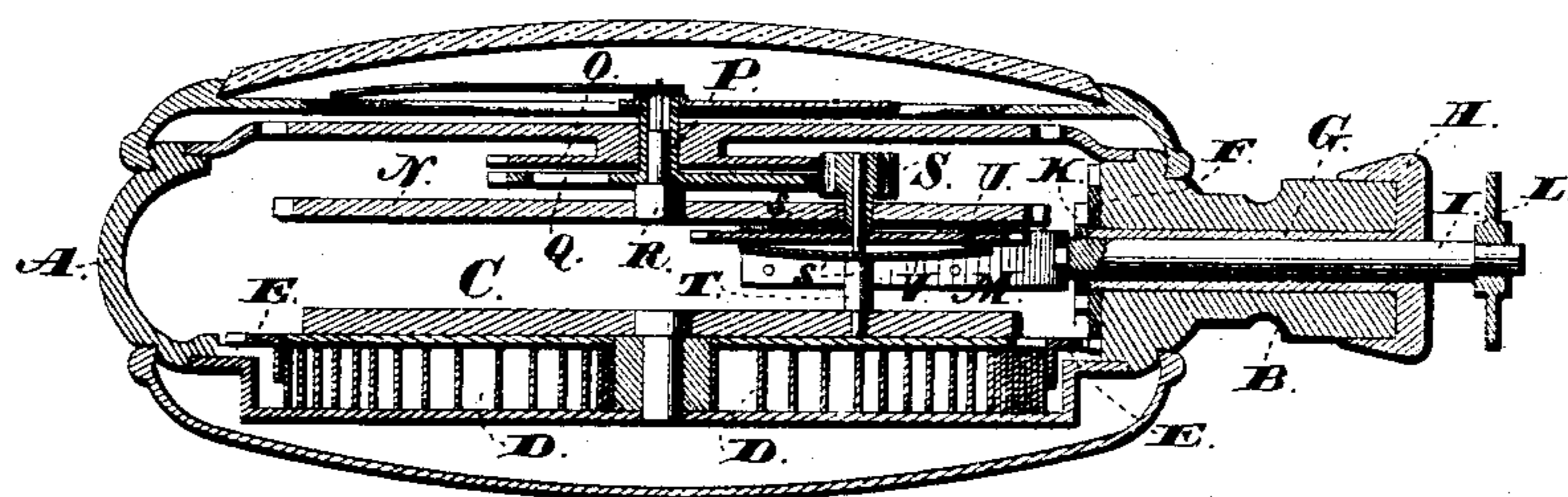


Fig. 2.

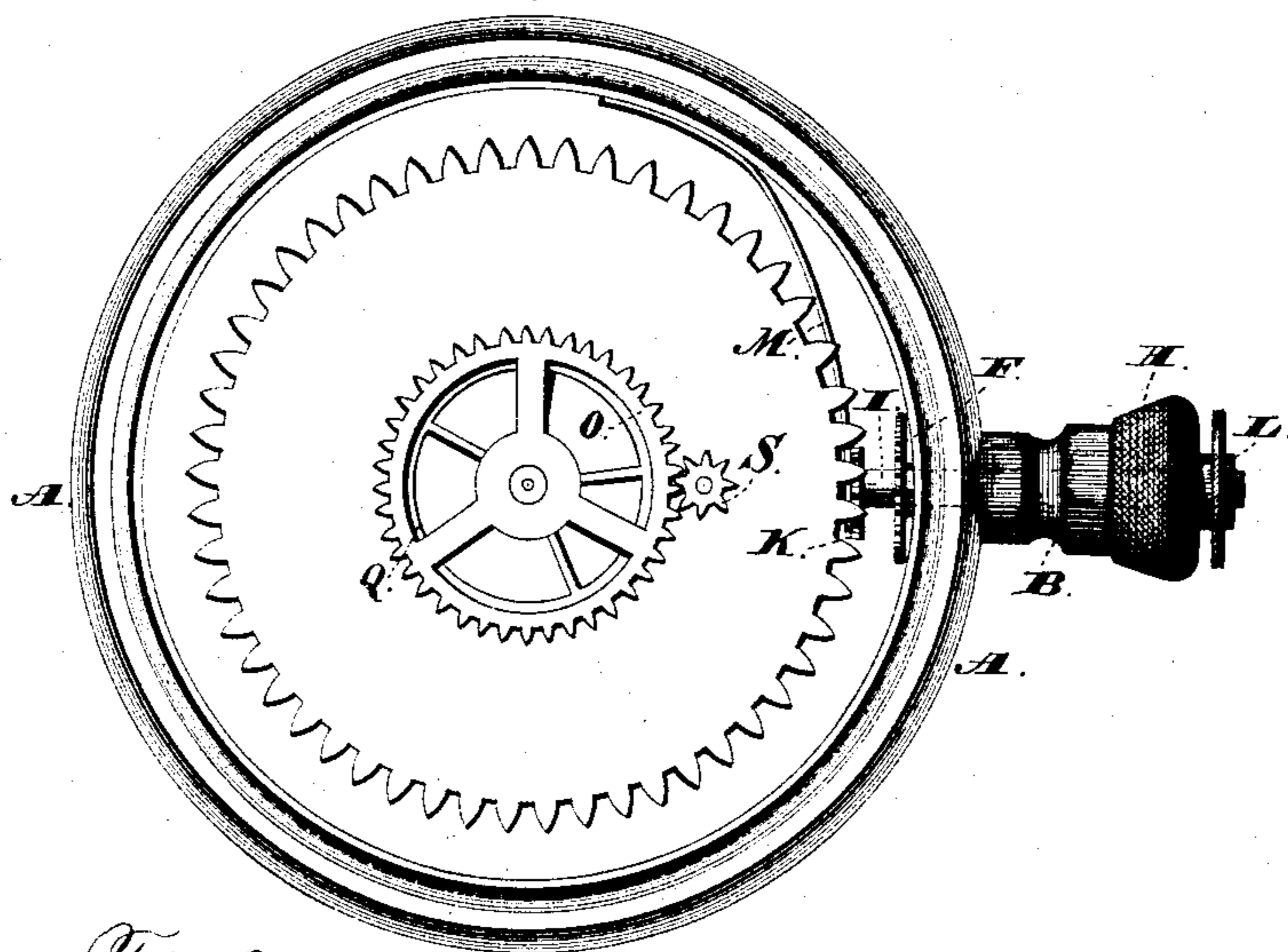


Fig. 3.

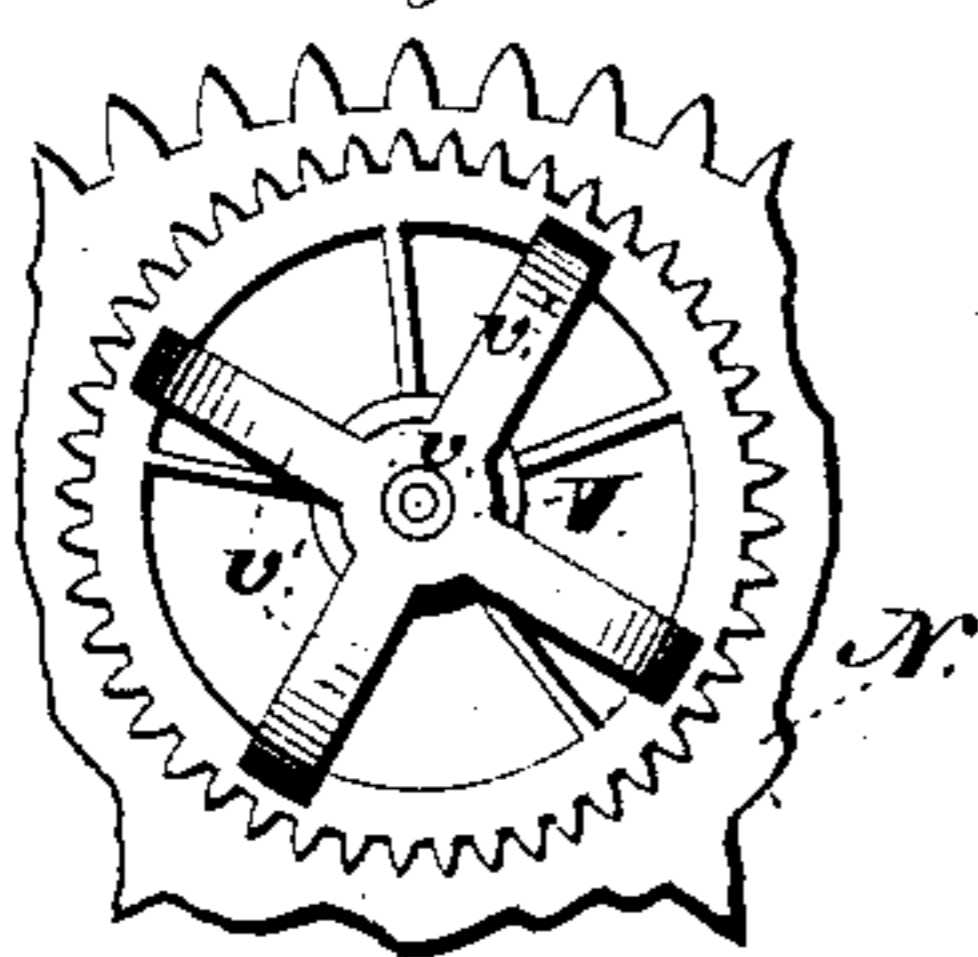
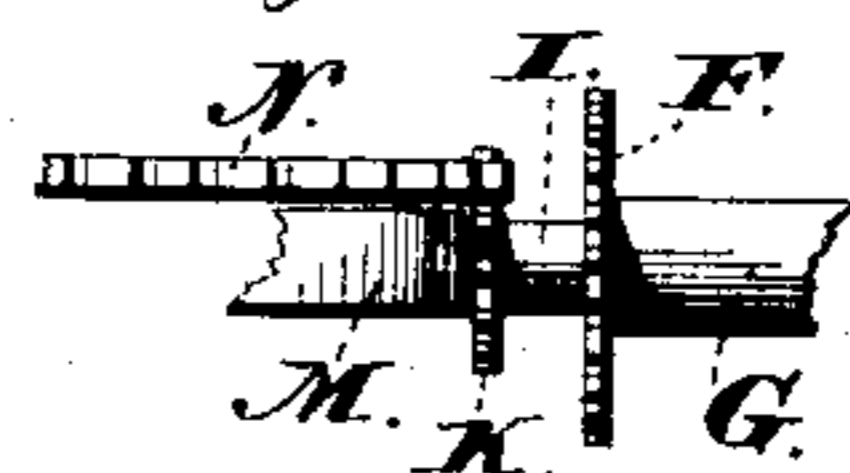


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANK LENZ, OF BROOKLYN, N. Y.

STEM-SETTING ATTACHMENT FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 288,075, dated November 6, 1883.

Application filed June 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK LENZ, of Brooklyn, in the county of Kings, and in the State of New York, have invented certain new and useful Improvements in Stem Winding and Setting Attachments for Watches; 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—

Figure 1 shows a central vertical section through pendant and case; Fig. 2, a plan view of the movement with dial-plate and hands removed; Fig. 3, a bottom plan view of a portion of the upper movement-plate, showing the spring-connection of shaft and pinion; and Fig. 4, a detail view, showing the setting-pin in operative position.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide a hand-setting mechanism for use in watches where the movement revolves within the case, as in the well-known Waterbury watch, manufactured under the patent of Buck, No. 204,000, May 21, 1878; and to this end it consists in the means for setting the hands, as hereinafter described, and more specifically set forth in the claims.

In the drawings, A designates the case, B the pendant, and C the movement. This movement is in general construction substantially like that shown and described in the patent referred to above. D designates the spring, and E the large winding-wheel, with which meshes the winding-pinion F, fixed on the inner end of the arbor G. This arbor is, as usual, journaled in the pendant, and is provided at its outer end with the milled crown H, overlapping the end of the pendant. The arbor G is made hollow, and within it is journaled the short shaft or stem I, having fixed upon its inner end the pinion K and upon its outer end the milled disk or head L. The stem I is longer than the hollow arbor G, so as to be capable of longitudinal play therein. A flat or leaf spring, M, is attached at one end to the inside of the watch center. Its outer or free end bears against the end of the shaft or stem

I, so as normally to keep it forced outward through the arbor G, with its pinion K held against the face of pinion F, and with its outer end carrying the milled head projected beyond the crown H on arbor G. The front movement-plate, N, is provided with gear-teeth adapted to be engaged by the teeth on pinion K when the hand-setting stem I is pushed in against the stress of spring M. As described in the patent referred to, to the back of the dial-plate is rigidly attached the toothed wheel O, concentric with the dial. In the center of the dial and this wheel O is journaled the hollow arbor P, bearing on its inner end the gear-wheel Q, fixed thereto, and upon its outer end the hour-hand. A short shaft, R, is fixed to the center of plate N, is journaled in the hollow arbor P, and carries upon its outer end the minute-hand. These wheels differ in the number of their teeth, and act, in connection with the pinion S as it is carried around by the rotation of the movement, to drive the hands, as in the well-known form of Waterbury watch. The spring-washer for holding the minute-hand arbor frictionally in the front movement-plate, so as to normally turn therewith, is, however, omitted, and said shaft can be fixed in the plate, as it is not intended with my hand-setting device that the minute-hand arbor shall be turned independently of the rotating movement. This change is not necessary; but, if desired, the arbor could still be mounted in the plate, as before. When the hands are to be set, the stem I is forced in until its toothed wheel meshes with the teeth on plate N, and then is turned by means of its milled head, so that the plate is rotated backward or forward a sufficient distance to properly set the hands. In order to allow for this rotation of the movement-frame independently of the escapement-train, and without affecting the same, I make the arbor or shaft T, upon which the gear-wheel U (being the second-wheel of the movement) is mounted, capable of rotation in said wheel, but frictionally connected therewith, so that normally the wheel and shaft rotate together. The pinion S is fixed upon the upper or front end of the shaft T, and has an extended hub, s, which is jour-

naled in and extends through the upper or front plate, N. The wheel U is mounted on this shaft, so as to bear against the squared lower end of this hub. An enlargement, s' , of the shaft extends from the bearing in the lower plate nearly to the wheel U. Between the end of this enlarged portion and the wheel is mounted a spring, V, which consists of the central disk-like portion, v , which surrounds the shaft and bears upon the upper end of the enlarged portion s' , and the arms $v'v'$, radiating therefrom and curved upward, with their outer ends bearing on the lower face of wheel U, as shown in Fig. 3. The action of this spring is that of the ordinary form of concave spring-washer. It forces the wheel U up against the end of hub s of pinion S, which, as set forth above, is fast on the shaft and turns with it. By reason of the friction produced by the action of the spring between the hub and wheel, between the central portion of the spring and the end of the enlargement of the shaft, and between the ends of the spring-arms and the face of the wheel, said wheel will be caused to normally turn with the pinion and shaft during the running of the movement; but by the exercise of a little force the shaft can be turned independently of the wheel. This spring-connection between the second-wheel and its shaft will then evidently allow the plate N to be turned in either direction by means of the setting-arbor and wheel K thereon, for it allows of the necessary rotation of the pinion S and shaft T, consequent upon such turning of the plate, without affecting the movement-train. The movement-frame is then, with my arrangement of devices, capable of rotation in either direction, to turn the hands backward or forward, without opening the case.

Having thus fully set forth the nature of my invention, what I claim as new is—

1. In a rotary watch, the combination of the rotary movement with stem-setting means, substantially as shown and described, adapted to rotate the movement-frame to set the hands without necessitating opening the case or removing the bezel.

2. In combination with the rotary-movement frame, the movement mounted therein, and provided with a yielding connection in its train of gearing adapted to allow the frame to be rotated independently of the motion of the escapement to set the hands, in combination with means for so rotating it, substantially as and for the purpose set forth.

3. In combination with the rotary-movement frame, the second-wheel mounted on its arbor frictionally, so as to normally turn with the arbor during the running of the movement, but to allow the arbor to be turned independent of it when desired, substantially as and for the purpose set forth.

4. In combination with the rotary-movement frame, the second-wheel arbor, the second-wheel mounted rotatively thereon, and

a friction-spring on the arbor and bearing on the wheel, so as to cause wheel and arbor to normally rotate together, but to allow of their independent movement upon the application of force, substantially as and for the purpose set forth.

5. The combination of the rotary-movement frame, the second-wheel arbor, the second-wheel pinion fast thereon, and provided with an extended hub journaled in and extending through the top plate, the second-wheel mounted rotatively on the arbor, and a friction-spring adapted to force the wheel up against the end of the hub, so that it shall turn with the hub and arbor, substantially as and for the purpose set forth.

6. In a rotary watch, in combination with the rotary-movement frame, the second-arbor having an enlarged portion at or near its lower end, the pinion fast on the arbor, and having an extended hub journaled in the top plate, the second-wheel mounted loosely on the arbor, and the friction-spring on the arbor, between the enlarged portion thereof and the wheel, and adapted to bear upon the lower face of the wheel and force it up against the pinion-hub, substantially as shown and described.

7. In combination with the rotary-movement frame and means for positively rotating it in either direction, the pinion fixed on the second-wheel arbor, and the second-wheel connected with its arbor by means of a yielding connection, substantially as shown and described.

8. The toothed plate of the rotary-movement frame, the pinion adapted to be moved into mesh with the plate and rotated, the second-wheel arbor, the pinion fast thereon, and the second-wheel connected with its arbor by means of a yielding connection, all in combination, substantially as and for the purpose set forth.

9. In a rotary watch, the toothed wheel fixed on the end of the setting-shaft journaled and capable of longitudinal movement within the hollow winding stem or shaft, the movement-plate provided with teeth adapted to be engaged by the wheel on the end of the setting-shaft when the latter is pushed inward, and the spring adapted to keep the shaft normally pushed outward, substantially as and for the purpose set forth.

10. The stem-setting shaft journaled and sliding within the hollow winding-shaft, the milled head, the pinion on the inner end of the setting-shaft, the spring adapted to keep said shaft normally pushed outward, and the toothed plate of the rotary-movement frame, all in combination, substantially as and for the purpose set forth.

11. The stem-setting shaft journaled and sliding within the hollow winding stem or shaft, the milled head, and the pinion on the ends of the setting-shaft, the spring adapted to keep said shaft normally pushed outward,

the toothed plate of the rotary-movement
frame, adapted to be engaged by the wheel on
the setting-shaft when it is pushed inward,
and the second-wheel connected by a yield-
5 ing connection with its arbor, all in combina-
tion, substantially as and for the purpose set
forth.

In testimony that I claim the foregoing I
have hereunto set my hand this 1st day of
June, 1883.

FRANK LENZ.

Witnesses:

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H. M. B. VRIELAND.