

E. KUHN.

WATCH.

No. 330,905.

Patented Nov. 24, 1885.

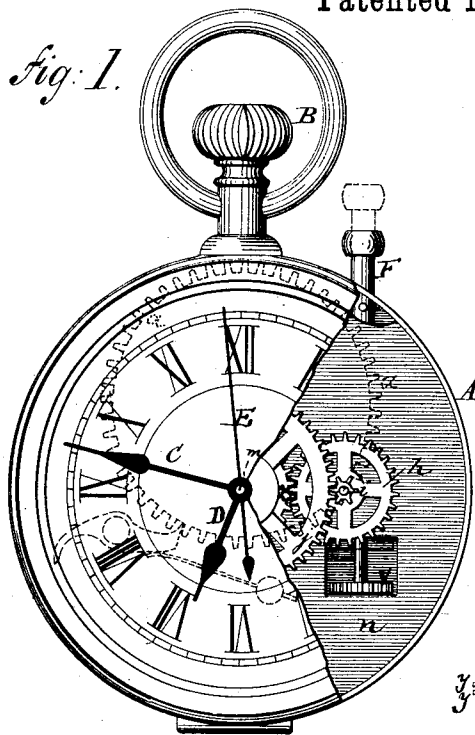


Fig. 1.

Fig. 6.

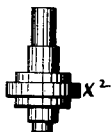


Fig. 7.

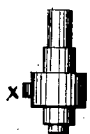


Fig. 8.



Fig. 9.

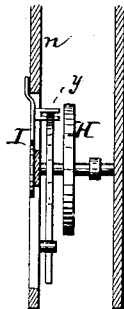


Fig. 10. Fig. 11. Fig. 12.

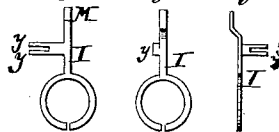


Fig. 3.

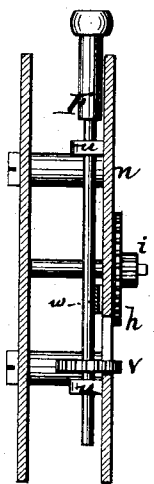


Fig. 2.

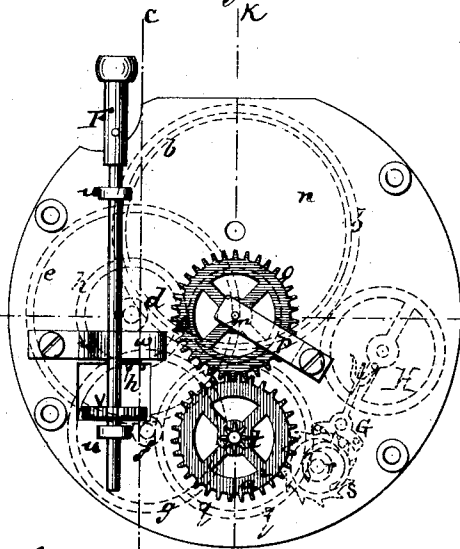
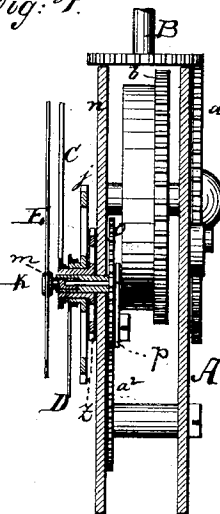


Fig. 4.

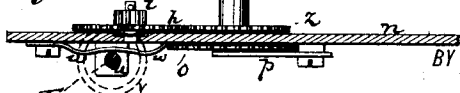


WITNESSES:

A. Schehl.

John M. Speer.

Fig. 5.



INVENTOR.

Edmund Kuhn

By Brien & Steel

ATTORNEYS.

(Model.)

2 Sheets—Sheet 2.

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Fig. 13

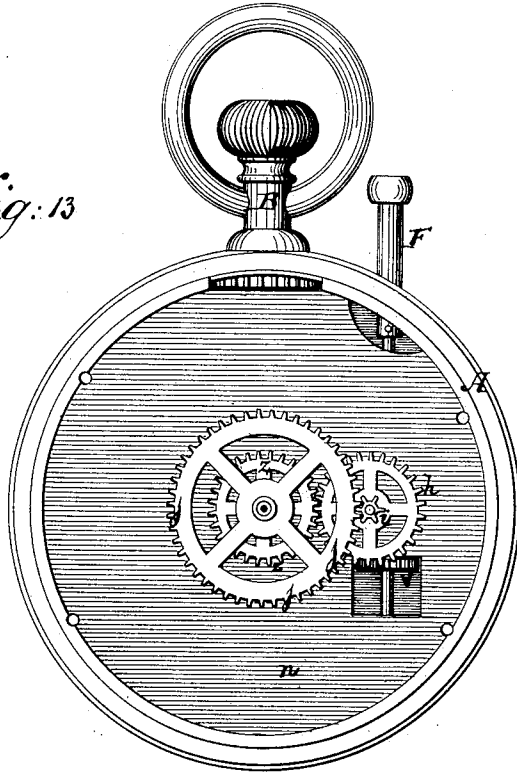
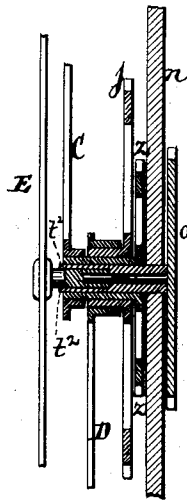


Fig. 14



WITNESSES:

A. Schehl.
Gustav Schneppe

INVENTOR

Edmond Kuhn

BY *Rosen & Steele*

his ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDMOND KUHN, OF BROOKLYN, ASSIGNOR TO THE MANHATTAN WATCH COMPANY, OF NEW YORK, N. Y.

WATCH.

SPECIFICATION forming part of Letters Patent No. 330,905, dated November 24, 1885.

Application filed June 9, 1885. Serial No. 163,102. (Model.)

To all whom it may concern:

Be it known that I, EDMOND KUHN, a resident of Brooklyn, in the county of Kings and State of New York, have invented an Improved Watch, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, in which—

Figure 1 is a face view, partly in section, of my improved watch. Fig. 2 is a bottom view of the top plate of the watch-case. Fig. 3 is a cross-section on the line *c c*, Fig. 2. Fig. 4 is a cross section of certain parts of the watch, the line *k k*, Fig. 2, indicating the plane of section. Fig. 5 is a section on the line *c k*, Fig. 2. Fig. 6 is a side view, on an enlarged scale, of the mainspring-arbor before the hook is formed thereon. Fig. 7 is a side view of the mainspring-arbor when completed. Fig. 8 is a top view of the same. Fig. 9 is a detail cross-section of so much of the escapement as shows the construction of the regulator. Fig. 10 is a face view of the regulator before the pins thereon are turned down. Fig. 11 is a face view of the completed regulator, and Fig. 12 a side view of the same. Fig. 13 is a face view of the watch without dial, showing it in position for setting the hands. Fig. 14 is an enlarged section through the arbors of the hands of the watch.

This invention relates to sundry improvements in watches, whereby the arrangement of the wheels therein is greatly simplified, the winding of the works and the setting of the hands accomplished with a less number of wheels than was heretofore necessary, and other important advantages attained.

The invention consists, first, in providing a stem-winding watch with a separate hand-setting slide which, when used or not used, will in no wise interfere with the connection between the stem and the winding-drum.

The invention also consists in the employment of a frictional spring for holding said hand-setting slide in any desired position; also, in a new arrangement of wheels for revolving the sweep second-hand without the employment of what is known as a "cannon-pinion" on the minute-arbor, and in other details of improvement that are hereinafter more fully specified.

In the drawings, the letter A represents the watch-case. B is the winding-stem, which in this improvement is arranged to gear directly into the toothed wheel *a*, that is on the barrel-arbor. In the arrangement of this watch the stem is used simply for winding the mainspring, and not in any wise for setting the hands. The driving-wheel *b* on the main drum gears into a pinion, *d*, the arbor of which carries a toothed wheel, *e*, that meshes into a pinion, *f*, the arbor of which carries a toothed wheel, *g*. The arbor of the pinion *d* and wheel *e* also carries, frictionally, the toothed wheel *h* and pinion *i*, which are clearly shown in Figs. 1 and 13. The pinion *i* gears into a toothed wheel, *j*, that carries the hour-hand D, while the toothed wheel *h* meshes into a toothed wheel, *z*, that carries the minute-hand C. The sleeves on the wheels *j* and *z*, that carry the hands C and D, are both tubular and embrace a fixed tube, *t*, through which passes the stem or arbor *m* of the second sweep hand E, which arbor *m*, below the outer plate, *n*, of the case A, carries a toothed wheel, *o*. The arbor *m* is, in Fig. 14, shown as made in two pieces, one piece carrying the wheel *o*, the other the hand E, both pieces being frictionally connected within the fixed tube *t*. A spring, *p*, crowds this wheel *o* against the inner face of the plate *n*, as is shown in Figs. 2 and 4, and serves thus to hold the stem or arbor *m* in position, and, bearing frictionally against the wheel *o*, prevents the sweep second-hand from making irregular motions, which otherwise it might make, under the influence of the escapement, with which it is geared together, as will hereinafter more fully appear. The wheel *o* gears into a toothed wheel, *a*, the arbor of which carries another toothed wheel, *q*, that gears into a pinion, *r*, which is mounted upon the arbor of the escapement-wheel *s*. The wheel *q* gears into a pinion, *t*, that is mounted upon the arbor of the wheels *a* and *q*. Thus whenever the escapement-wheel moves, it serves to regulate the motion of the second-hand by its connection *r q a*, and also that of the minute-hand by its connection *r q t g f e h z*, and that of the hour-hand by its connection *r q t g f e h i j*, while, meanwhile, the mainspring, by its connection *b, d, e, f, g, t, q*, and *r*, exerts its proper influ-

ence upon the escapement and upon the hands of the watch.

For setting the hands I have placed under the plate *n* a sliding rod, *F*, which hangs in bearings *u u*, that are attached to the plate *n*, and which carries a toothed wheel, *v*, that projects through a slot in the plate *n*, as is more clearly shown in Fig. 3. A spring, *w*, which is fastened to the inner side of the plate *n*, bears against the rod *F*, and serves to hold it in any desired position. Normally the slide *F*, with its wheel *v*, will be in the position shown in Figs. 2 and 3, and by full lines in Fig. 1—that is to say, with the wheel *v* at quite a distance from the toothed wheel *h*; but when it is desired to set the hands of the watch the rod *F* is drawn outwardly, as shown in Fig. 13, and by dotted lines in Fig. 1, until the toothed wheel *v* meshes into the teeth of the wheel *h*, whereupon the rod *F* is revolved by hand, and the wheel *h* thereby turned until the hands have been set in the desired position. After this the rod *F* is pushed in again to assume once more the position represented by full lines in Fig. 1, thus allowing the springs of the watch-movement to automatically move the hands in the proper manner.

It will be seen that by means of this arrangement the connection between the stem and main drum can be left permanent, as the stem will only serve to wind the mainspring, while in all other stem winding contrivances heretofore used in watches which also had a stem-setting attachment a separate toothed wheel was interposed between the stem and the drum, which toothed wheel had to be shifted out of gear when the hands were to be set.

A further special advantage that flows from the arrangement of the train of wheels as constructed by me is that by the use of the wheel and pinion *h i* out of the center of the movement, as it is in all other watches, I drive the minute-hand wheel and the hour-hand wheel directly from the arbor of the pinion *d*, which enables me to set the hands by means of the wheel *v* directly whenever that gears with the wheel *h*. This does away with the cannon-pinion on the minute-arbor, which is a difficult and expensive arrangement of ordinary watches, and enables me to use the simple sliding attachment *F v* for setting the hands; and I save one arbor by driving the minute hand from the same shaft that drives the hour-hand.

I employ, as will be seen, the same barrel, center-wheel, third and fourth escapement-wheel, pallet *G*, and balance *H* as in other watches; but my train is so arranged as to admit of attaching and using the winding, the hand-setting, and the sweep second-hand with a less number of parts than is at present employed, thereby saving considerable expense.

My mainspring-arbor, which is shown enlarged in Figs. 6, 7, and 8, is so constructed that the hook *x*, to which the spring is fast-

ened, is a projection integral with the body of the arbor, and is produced by first forming a shoulder, *x'*, on said arbor, as in Fig. 6, and then cutting away so much of the shoulder as is necessary to leave the projecting hook *x*. This leaves the hook much stronger than when produced by driving a pin into the arbor, and much simpler than the notched rim or collar which is frequently employed in watches.

The regulator *I* of the balance *H* (see Fig. 9) is also of an improved construction. Its two projecting pins *y y*, which at present are secured as separate pins to the body of the regulator, are, according to my invention, obtained as follows: I first strike the regulator out from a plate of sheet metal, so that it has the form shown in Fig. 10—that is, with the two pins *y y* projecting from the side of the stem *M*. I then bend the pins *y y* at right angles, as in Figs. 11 and 12, thereby bringing them into the proper position for use in the watch. By this construction considerable expense in making the regulator is avoided.

I claim—

1. In a watch-movement, the hand-setting slide *F*, carrying the hand-setting wheel *v*, and combined with the perforated plate *n*, with which the slide *F* is parallel, and with the frictional spring *w*, substantially as described.

2. In a stem-winding watch, the stem *B*, gearing directly into the wheel *a* on the barrel-arbor, in combination with the train of wheels from said winding-drum to the wheels *j z*, that carry the hands, and to the escapement, and with the perforated plate *n*, lugs *u u*, slide *F*, having the toothed hand-setting wheel *v*, and frictional spring *w*, the wheel *v* being adapted to turn said wheels *j z*, substantially as described.

3. The combination of the winding-drum and its wheel *b* with the train of wheels *d e f g h i j z t q r* and escapement-wheel *s*, as specified.

4. The combination of the winding-drum and its wheel *b* with the train of wheels *d e f g h i j z t q r* and escapement-wheel *s*, and with the slide *F*, having toothed wheel *v*, substantially as described.

5. The sweep second-hand *E*, combined by its arbor with the toothed wheel *o*, plate *n*, and spring-support *p*, the spring crowding said wheel *o* against the plate *n*, substantially as specified.

6. The combination of the winding-drum and its wheel *b* with the train of wheels *d e f g h i j z t q r* and escapement-wheel *s*, and with the toothed wheels *o a'* and sweep second-hand *E*, as described.

7. The regulator *I*, constructed out of one piece with the projecting pins *y y*, as and for the purpose specified.

EDMOND KUHN.

Witnesses:

CHARLES G. M. THOMAS,
HARRY M. TURK.