

(Model.)

3 Sheets—Sheet 1.

G. THOMMEN.

WATCH.

No. 347,139.

Patented Aug. 10, 1886.

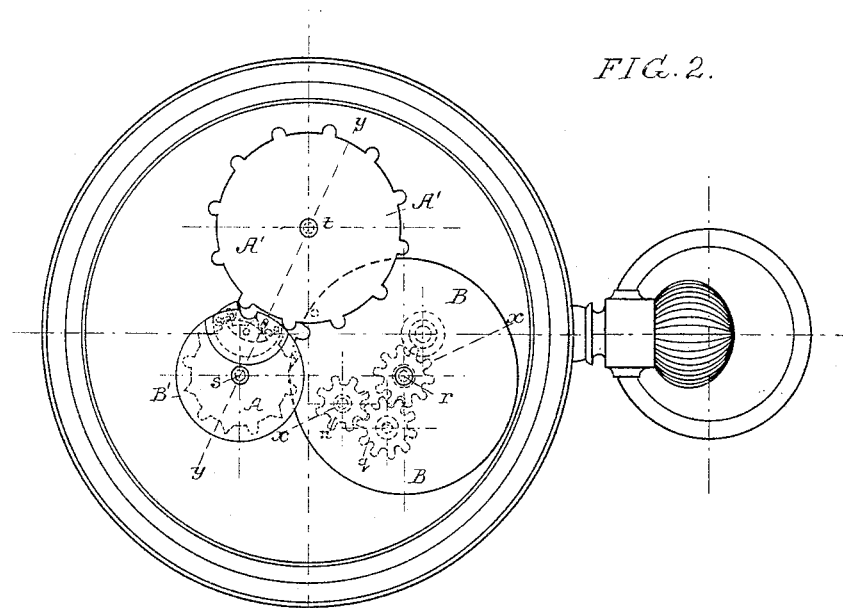


FIG. 2.

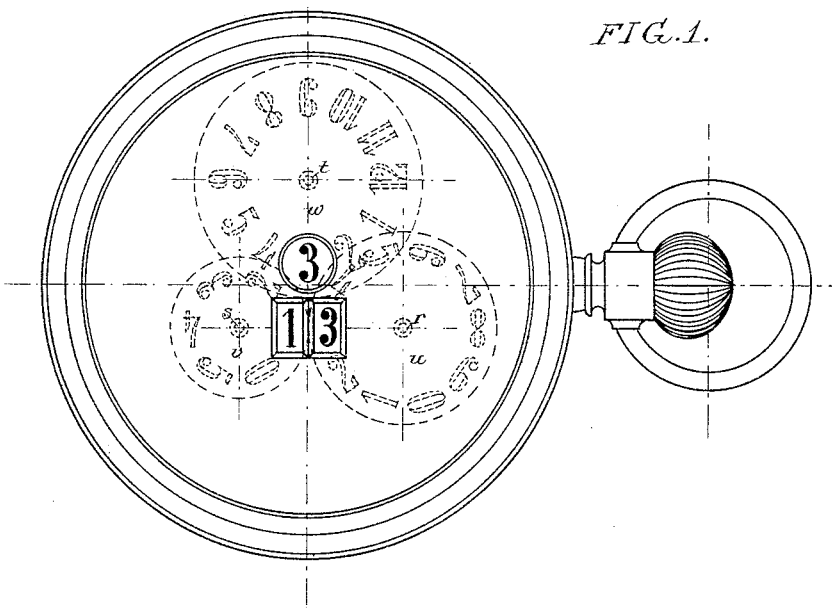


FIG. 1.

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Inventor:
Gedson Thommen
by his Attorneys
Howson and Sons

G. THOMMEN.

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FIG. 4^a

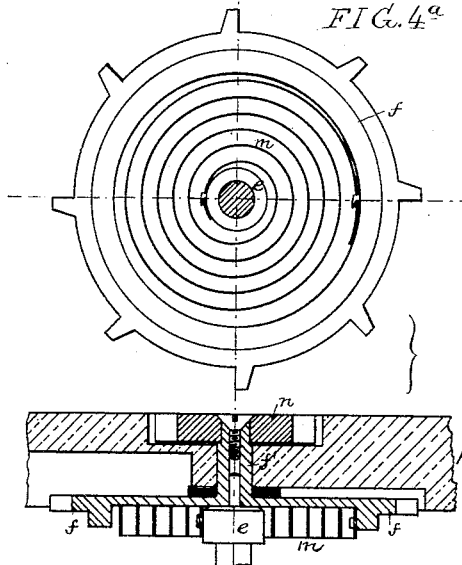


FIG. 4.

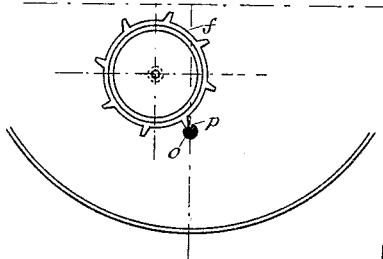


FIG. 7.

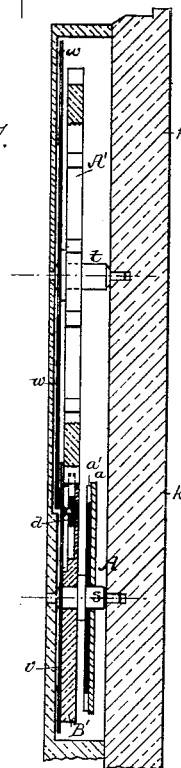


FIG.5.

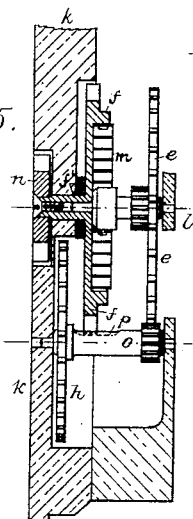
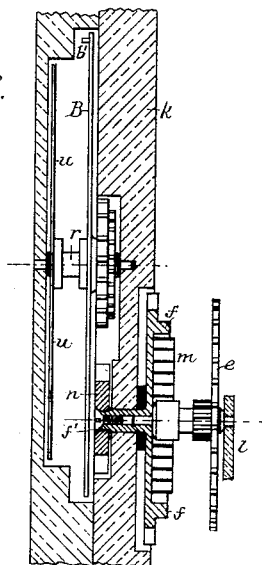


FIG. 6.



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(Model.)

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3 Sheets—Sheet 3.

WATCH.

No. 347,139.

Patented Aug. 10, 1886.

FIG. 8.

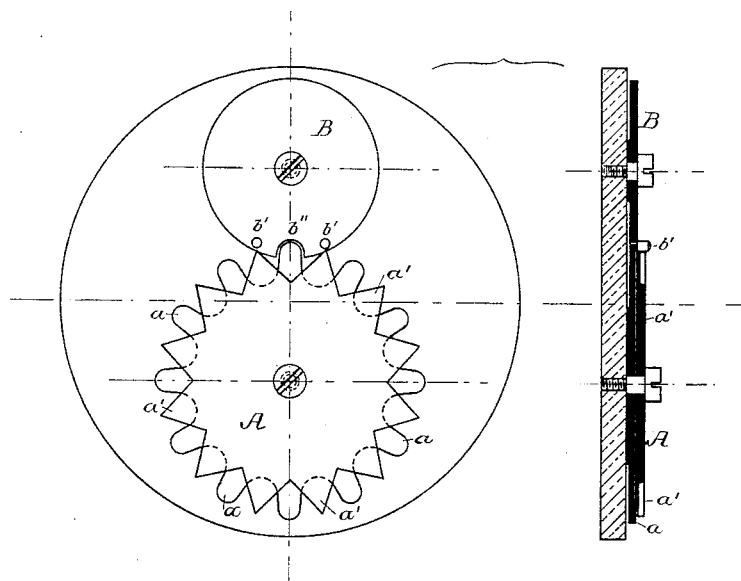
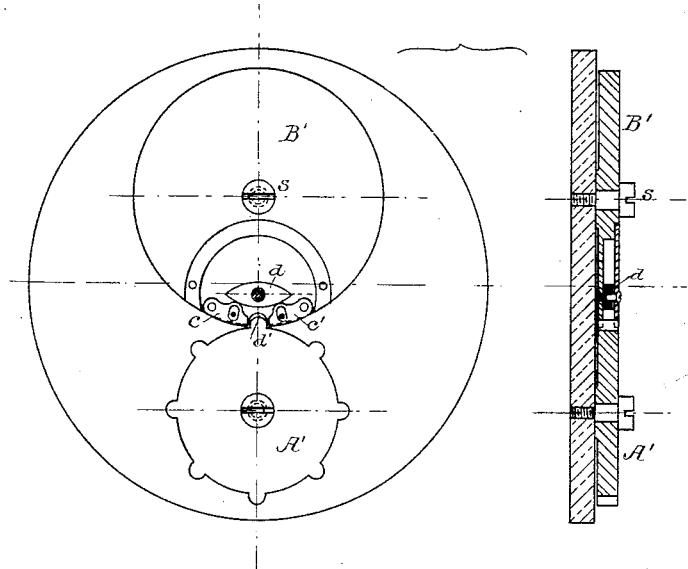


FIG. 9.



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UNITED STATES PATENT OFFICE.

GEDEON THOMMEN, OF WALDENBURG, NEAR BASLE, SWITZERLAND.

WATCH.

SPECIFICATION forming part of Letters Patent No. 347,139, dated August 10, 1886.

Application filed July 6, 1885. Serial No. 170,765. (Model.)

To all whom it may concern:

Be it known that I, GEDEON THOMMEN, a citizen of Switzerland, and a resident of Waldenburg, near Basle, Switzerland, have invented certain Improvements in Watches, of which the following is a specification.

My invention consists of certain improvements in the construction of watches, clocks, &c., more especially of that class in which the time is indicated by numbers on intermittently-rotated disks showing through openings in the face of the watch or other time-piece, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a face view of a watch embodying my improvements. Fig. 2 is a view of the watch with the face-plate and numbered disks removed to show the relative arrangement of the wheels. Fig. 3 is a view illustrating a portion of the mechanism of the watch. Fig. 4 is a view of the same operative parts shown in Fig. 3, but illustrated in different positions. Fig. 4^a shows in face view and transverse section (drawn to an enlarged scale) the spring ratchet-wheel hereinafter referred to. Fig. 5 is a sectional view illustrating the position of this wheel with reference to neighboring gears. Fig. 6 is an enlarged sectional view on the line *xx*, Fig. 2. Fig. 7 is a similar sectional view on the line *yy*, Fig. 2. Fig. 8 shows in face view and vertical section and detached from the rest of the mechanism a mechanical motion which I employ as part of my improvement, and Fig. 9 shows in face view and section another form of the mechanical motion which may be employed.

As will be seen on reference to Fig. 1, the watch shown in the drawings is of that class in which the time is indicated by numbers carried on rotating disks and showing through openings in the face-plate of the watch. There are three disks—one, *w*, mounted on an axis, *t*, and carrying the numbers 1 to 12, to indicate the hours, another disk, *u*, mounted on an axis, *r*, and carrying the figures 0 to 9, to indicate the minutes, while a third disk, *v*, mounted on an axis, *s*, carries the figures 0 to 5, to indicate the tens of the minutes. In a watch of this character it is important that the movements of the disks shall be very quick, or, rather, that they shall successively change from one posi-

tion to another very quickly and remain stationary between each of the movements.

To obtain the intermittent motion of the desired character, I make use of a spring ratchet-wheel to operate the dial-train of the watch, as illustrated in detail in Figs. 2 to 9.

On reference to Figs. 5 and 6, *e* is the center-wheel, whose axis is mounted in bearings in a bridge, *l*, and at the other end in the tubular stem *f'* of a spring ratchet-wheel, *f*, Fig. 4^a, the stem of this ratchet-wheel being mounted in bearings in the plate *k* of the watch. This center-wheel *e* may be driven by the usual mainspring and train of wheels, and gears into a pinion on the axis *o* of the wheel *h*, and in this axis *o* is cut a notch, *p*, Figs. 3, 4, and 5, of such a character and bearing such a relation to the spring ratchet-wheel *f* that when the said axis *o* is in the position illustrated in Figs. 4 and 5, with the notch adjacent to the said ratchet-wheel, the latter is free to turn; but when the axis *o* is turned partly around, as illustrated in Fig. 3, so that the notch *p* is away from the ratchet-wheel, the latter is prevented by the said axis from turning by one of the teeth of the ratchet-wheel bearing against said axis.

As illustrated in Figs. 4^a, 5, and 6, within the ratchet-wheel *f* is a spiral spring, *m*, one end of which is secured to said ratchet-wheel, while the inner end is secured to a hub on the axis of the center-wheel *e*. Owing to this construction, as the center-wheel *e* is rotated by the usual watch mechanism, the spring *m* will be wound up until the notch *p* in the axis *o* releases a tooth of the said ratchet-wheel, when the spring will cause the latter to jump forward until the next tooth of the wheel is caught by the rotating axis *o*. A quick intermittent rotary motion is thus imparted to the ratchet-wheel *f*, whose axis *f'* carries at its outer end a pinion, *n*, Figs. 4^a, 5, 6, and 2. This pinion *n* is geared, as shown in Fig. 2, through a wheel, *q*, with a pinion on the axis *r*, which carries the disk *u* of the minute-numbers. This axis *r* also carries a disk, *B*, Fig. 2, which at every complete revolution imparts a partial rotary movement to the axis *s*, carrying the disk *v*, through the medium of the wheel *A* on the axis *s*. This axis *s* also carries a wheel, *B'*, which in turn at each complete revolution imparts

a partial rotary movement to the disk A' on the shaft *t*, carrying the disk *w*, with the hour-numbers.

The construction and mode of operation of these disks and wheels B A and B' A' will be more fully understood on reference to Figs. 7, 8, and 9. As will be seen in Fig. 8, the disk B is provided on its periphery with a notch, *b''*, and on its edge, on each side of this notch, are two pins, *b'*. The wheel A, which receives a partial rotary motion at each complete revolution of the wheel B, is composed of two disks, *a* and *a'*, riveted or otherwise secured together, the disk *a* having teeth adapted to successively engage with the notch *b''* of the disk B, while the disk *a'* is provided with intermediate points adapted to successively engage with one or other of the pins *b'* of the disk B, according to the direction in which the mechanism may be moved. Thus, as the disk B rotates, one of the pins *b'* will come into contact with a point of the portion *a'* of the wheel A, to bring the next tooth of the portion *a* of the said wheel into position to engage with the notch *b''* of the disk B, as illustrated in Fig. 1. The same mechanism may be used to transmit a corresponding rotary movement from the axis *s*, Fig. 2, to the axis *t*; but I prefer to employ the movement illustrated in Fig. 9. In this movement it will be seen that the wheel B' has on its periphery two pivoted dogs, *c c'*, leaving between their noses a notch or recess, *d'*, while the lever *d*, centrally pivoted to the wheel B', bears on

or is so connected to the dogs *c c'* that when the nose of one dog is pushed inward the nose of the other dog will be thereby pushed outward—that is, as the wheel B' is rotated one of the dogs (*c*, for instance) will come into contact with the periphery of the disk A', and be thereby projected inward, and in consequence the other dog, *c'*, will be projected outward to catch or engage with the tooth of the said disk A', to which a partial rotary motion is thereby imparted, as will be readily understood.

I claim as my invention—

1. The combination of the indicating-disks of a time-piece and a spring ratchet-wheel geared thereto with a rotary wheel, *e*, connected to the spring of the ratchet-wheel, and a notched axis, *o*, all substantially as set forth.
2. The combination of the indicating-disks of a time-piece with a wheel, A, composed of two disks, *a a'*, and a disk, B, having pins and notches to engage with the teeth and points of the wheel A, substantially as described.
3. A watch having a train of gears and spring ratchet-wheel to impart an intermittent quick motion thereto, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEDEON THOMMEN.

Witnesses:

A. STOFER,
C. MORY.