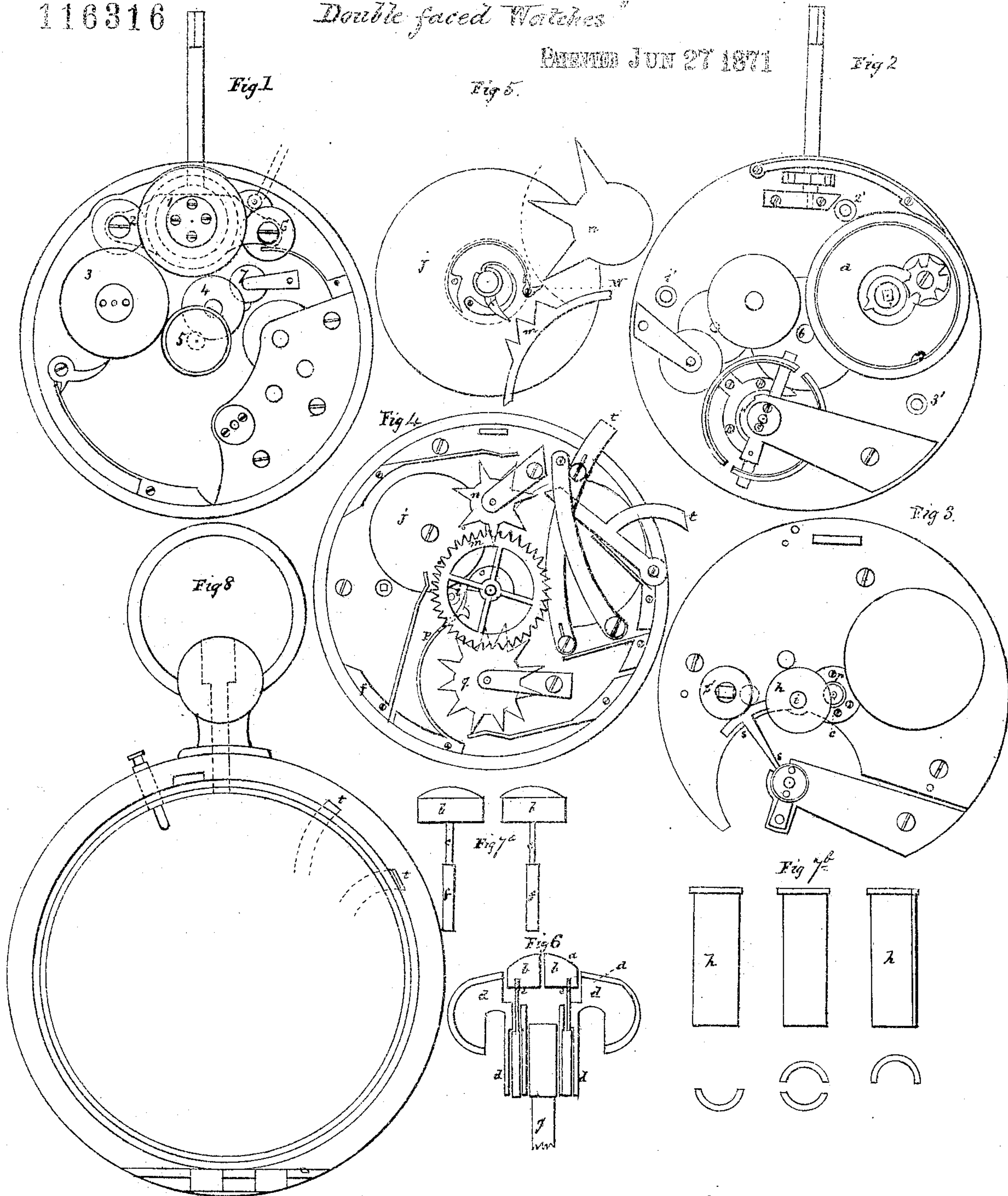


116316 *Alfred Courvoisier Jona's* Improvements in
 "Double faced Watches"

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Witnesses
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ALFRED COURVOISIER IONAIS, OF CHAUX-DE-FONDS, SWITZERLAND.

IMPROVEMENT IN CALENDAR-WATCHES.

Specification forming part of Letters Patent No. 116,316, dated June 27, 1871.

To all whom it may concern:

Be it known that I, ALFRED COURVOISIER IONAIS, of Chaux-de-Fonds, in the canton of Neuchâtel, Swiss Confederation, have invented certain Improvements in Double-Faced Watches, of which the following is a specification:

This invention relates, as will be shown by the following description and accompanying drawings, to watches having on one side a dial and hands indicating the hours and minutes, and on the other a dial showing the days, months, and dates, the arrangement being such as to permit of the isolation of the works of the hour-hands from those of the indicator. The two can be easily separated or worked conjointly by a simple chain, and the opening of either is effected without in any way interfering with the general working of the system; the advantage of which is that, in case of repairs, the mechanism is at once visible. The adoption of the chain before alluded to admitting of the opening of Figs. 3 and 4, the separating-barrel should be fixed in the center of Fig. 4, and the wheel *j*, instead of being borne as shown in the plan, Fig. 4, is placed as represented by Fig. 3.

Figures 1 and 2 represent the two sides of a single plate: Fig. 1 shows the external arrangement of the winding-up mechanism, marked 1, 2, and 3, accompanied by the minute-hand works, Nos. 4 and 5, and those for the hours, Nos. 6 and 7; Fig. 2 shows the disposition of the works placed between the first two pallet-plates. In these first two figures it will be remarked that the several wheel-works are so arranged that either an anchor-escapement with short or long fork, or spring-ratch escapement, or otherwise, may be employed. This arrangement also favors the employment of several systems of winding up. As to the number of simple wheels, they are the same as those ordinarily employed.

In order to arrive at a complete and clear understanding of the whole system it is, above all, necessary to take exact notice of the manner in which motion is transmitted from the wheel-work to the date-indicator. The motive-power originates in the wheel *a*, Fig. 2, which gears with the first pinion *b* of the center or minute-wheel. It would be, without doubt, unnecessary to develop the transmission of this power through the simple wheel-work to the escapement; but it is most essential to remark that, if the motive power were

communicated to this wheel-work by aid of the center or minute-wheel, it is also, by means of this latter, or, more exactly speaking, by its second eccentric pinion, (shown at *c*, Fig. 3,) that the motive power is transmitted to the date mechanism. This result is produced in the following manner: The pinion of the center or minute-wheel *b*, Fig. 2, is pierced to receive the shaft which receives the grooved pinion *c*, Fig. 3. It conducts a thirty-six-toothed wheel, *h*, shown in Fig. 3, which represents a second plate, supported by three pillars, 1' 2' 3'. (See Fig. 2.) The wheel *h* bears a pinion, *i*, having ten flies; this latter conducts in its turn an eighty-toothed wheel, *j*, borne by the third plate, shown by Fig. 4. This wheel completes a rotation in twenty-four hours, and bears two pins—one acting on a thirty-one-toothed wheel, *m*, and the other on a seven-toothed wheel, *n*, and thus causes these two wheels *m* and *n* to turn each day, so that the hands fixed on their sockets show, one the date and the other the day of the month. The wheel *m* bears a metal piece, *o*, against which a spring, *p*, presses, and at the end of every month it escapes and drops on one of the twelve teeth of the wheel *q*, the socket of which bears the month-hand.

Having thus far described the principal functions of the mechanism, I will now enter more minutely into the details of some of the principal features of the invention—for instance, First, the separating-barrel *r* is fixed in the middle of the second plate, Fig. 3. The center of this barrel is not shown in the figure; it has been omitted in order to show the pinion *c*. The object of this barrel is to completely isolate from the wheel-work the constant pressure of the springs *f* and *p*, Fig. 4. This suppression of constant pressure is essential, as it reduces friction and facilitates regulation. Second, the regulator and its accessories *s s*, Fig. 3. It may well be conceived that it would be a difficult matter to act on the regulator of a double-dialed watch without removing one of the faces; but in order to obviate this inconvenience it is furnished with a rack, *s s*, moved by a wheel, *s'*, the end of the steel socket of which is square, bearing a pin or hand suitably arranged on the date-dial, which can be directed in a latitude of thirty degrees, according to the indications marked on the dial. Third, the mechanism for setting the date-indicator, which is effected by two detents, *t t*, Fig. 4, the ends of which, when

the case has a spring-lid, project on the flat edge. (See Fig. 8.) They are perfectly independent, and serve to set the dates should the watch have been stopped for any length of time. This mechanism has no relation with the wheel-work, by which it is uninfluenced. Fourth, the ratchet-wheel mechanism, which may be used advantageously in place of the pins of the eighty-toothed wheel *j*, Fig. 4, which are replaced by the two ratchets *k* and *w*, Fig. 5, each furnished with a circular spring, and are retained by stops. This arrangement admits of setting the watch even while the teeth *m* and *n* are engaged with the ratchets *k* and *w*. Fifth, the six movements of the winder-up are, first, that of winding up; secondly, that of the Breguet key, in case of over-winding; thirdly and fourthly, the putting forward or backward of the hands; and fifthly and sixthly, the separate or simultaneous opening of the cases. In the first four movements there is nothing novel, with the exception of their remarkable union with the two latter, represented in Figs. 6, 7^a, and 7^b. At the head of the crown *a*, Fig. 6, is a passage receiving two pins, *b b*, having the appearance of a cylinder divided in the center in two equal parts. These pins *b b*, entering the gold of the crown, also enter a part of a steel socket, *d d d d*, soldered to the center of the crown *a*. They receive two shafts, *c c*, with slides *f f*, Fig. 7, screwed into their respective bases. These two shafts and slides glide in the steel socket *d d d d*, which latter bears in its center a square aperture for receiving the winding-up shaft *g*. When the slides *f f* receive impulsion from the pressure of the nail on the pins *b b*

they act on two half-tubes, *h h*, Fig. 7^b, inserted in the pendant, gliding on two slides soldered to the internal sides of the pendant and surrounding the winding-up shaft *g*. It is by the aid of these tubes that the opening of the case is effected.

My improved system is applicable to spring-cased or other watches.

In the drawings accompanying this description the plans shown by Figs. 1, 2, 3, 4, and 8 are double the actual size of the objects they represent, while the other figures, 5, 6, 7^a, and 7^b, are four times the natural size.

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

1. The wheel *h* provided with the pinion *i*, wheel *j*, bearing pins or an escapement, *k*, and wheels *m* and *n*, when combined, arranged, and operating together as described.

2. The combination and arrangement of the wheel *m*, metal piece *o*, springs *p*, and wheel *g*, when operating together as and for the purpose herein described.

3. The arrangement of a dial operated substantially by the mechanism described in the foregoing claims, and showing the days, months, and dates, with a dial indicating the hours and minutes, when so constructed as to permit of the isolation of the works of the one from the works of the other.

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