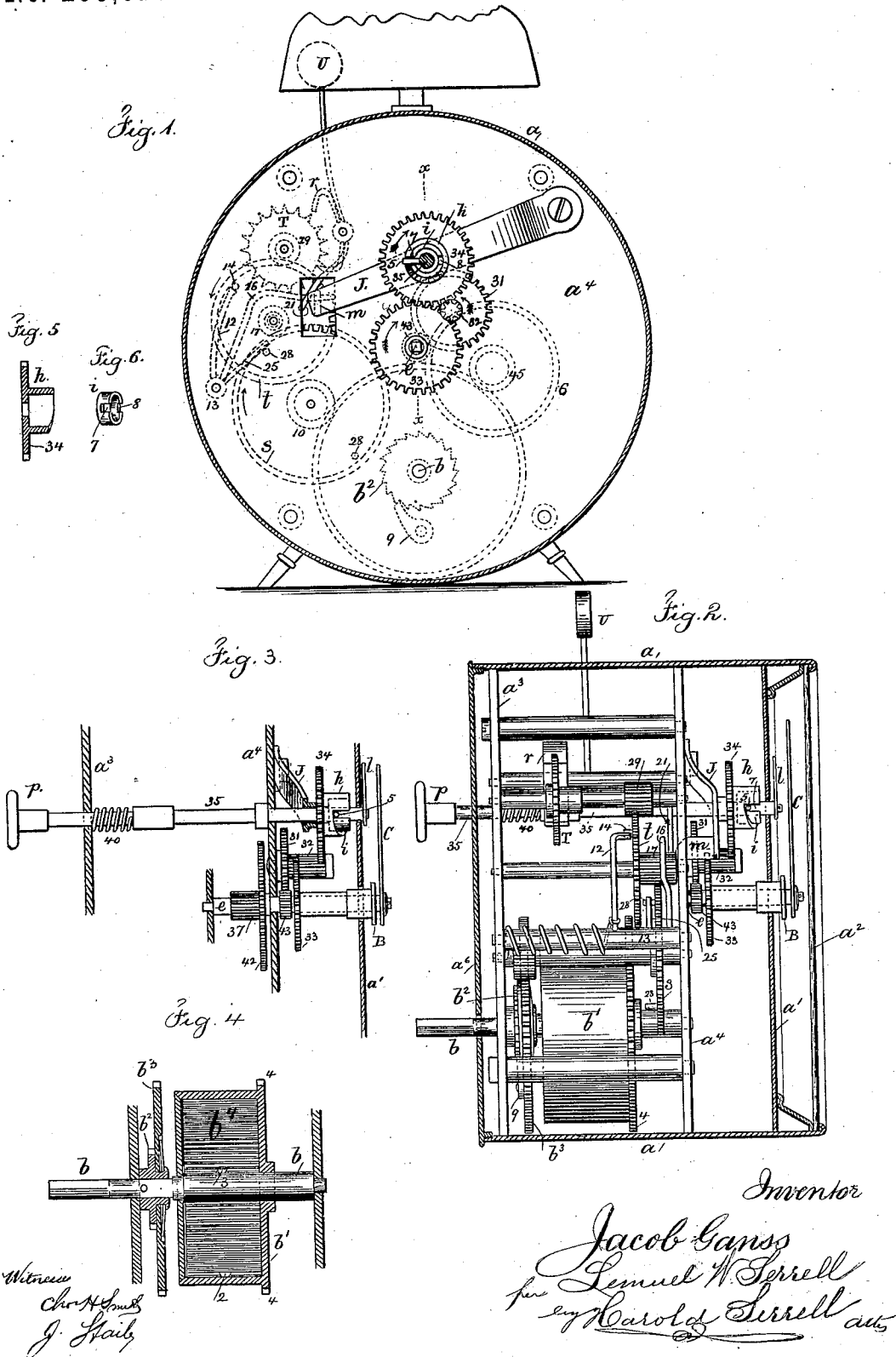


J. GANSS.
ALARM CLOCK.

No. 295,627.

Patented Mar. 25, 1884.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

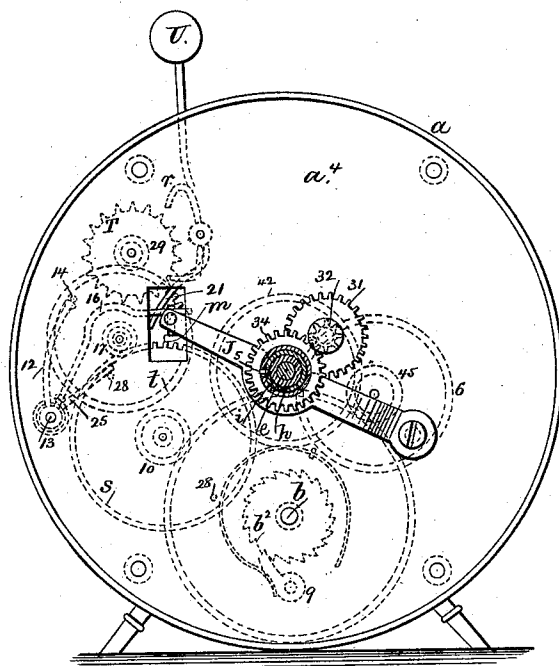


Fig. 8.

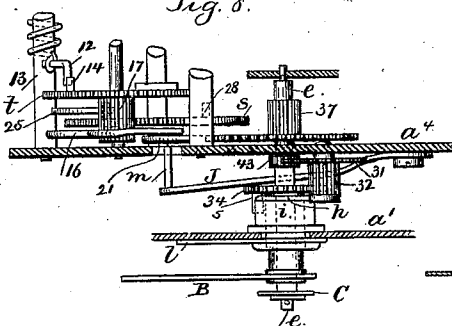
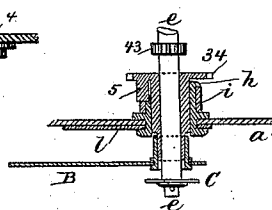


Fig. 9.



Witness

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J. Haib

Inventor

Jacob Ganss.
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by W. Gold Serrell atty

UNITED STATES PATENT OFFICE.

JACOB GANSS, OF BROOKLYN, ASSIGNOR TO HIMSELF AND JOHN BLACKWOOD, OF NEW YORK, N. Y.

ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 295,627, dated March 25, 1884.

Application filed July 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, JACOB GANSS, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Time Alarm-Clocks, of which the following is a specification.

In Letters Patent No. 277,702, granted to me May 15, 1883, there is described and shown automatic mechanism for actuating the alarm once in every twenty-four hours. In my present invention I have modified the alarm mechanism so that the lever that is operated by the notched cylinder and ring acts directly to hold or release said alarm mechanism instead of acting through the medium of a shaft and arms, as in said patent. I have also arranged the parts so that the alarm can be set from the back of the clock, and I operate both the time and the alarm mechanism by one main-spring.

In the drawings, Figure 1 is an elevation of the clock with the dial and hands removed, the parts being in the position they assume after the alarm has finished striking. Fig. 2 is a side view of the alarm mechanism with the case in section. Fig. 3 is a section at the line *x x*, Fig. 1. Fig. 4 is a section of the spring-barrel. Fig. 5 is a section of the notched cylinder and wheel. Fig. 6 is a perspective view of the notched ring. Fig. 7 is an elevation showing my improved form of alarm mechanism adapted to a clock in which the alarm is set from the front of the clock. Fig. 8 is a sectional plan of the same. Fig. 9 is a section of the notched cylinder and ring shown in Figs. 7 and 8.

The case *a*, face *a'*, and glass *a''* are of usual character. The works of the time and alarm mechanism are supported by the plates *a'''* *a''''*. I have represented these plates as of circular form, to fit within the correspondingly-shaped case, *a*. The rear of the case is closed by a screw-cap, *a''''*.

b is the winding-arbor, and *b'* the main-spring. One end of the mainspring is connected to the barrel *b'* at 2, and the other end is connected to the arbor *b* at 3. The barrel *b'* is loose upon its arbor, and it has teeth at 4 that gear with the pinion 45 of the train of

gearing of the time mechanism. This time-gearing being of usual character, I have only shown the pinion 45, wheel 6, pinion 37, and wheel 42, the two latter being on the arbor of the minute-hand.

b'' is a ratchet-wheel upon a squared part of the arbor, and held in place by a pin.

b''' is a gear-wheel loose upon the hub of the ratchet-wheel, and retained in place by a shoulder upon the hub, and between said shoulder and wheel there is a spring-washer, to keep the gear-wheel against the ratchet.

9 is a pawl on the wheel *b'''*, that is kept to the teeth of *b''* by a spring. When the arbor is revolved and the spring is being wound up, the ratchet-wheel turns with said arbor, its teeth running under and lifting the pawl; but the wheel *b'''* does not turn. As soon as the winding is stopped, the spring turns the barrel in one direction and revolves the time mechanism, and said spring also tends to turn the arbor, ratchet, and wheel *b'''* in the other direction; hence when the alarm mechanism is released, as hereinafter explained, the alarm-gearing will be put in motion.

The wheel *s*, having pins 28, the wheel *t*, with the detent 14, the shaft 13, arms 12, 16, and 25, and escapement-wheel *T* are the same as similarly lettered parts in my said patent, and operate in the same manner, the alarm striking during the half-revolution of the wheel *s*, at the completion of which one of its pins, 28, lifts the arm 25, and thereby turns the shaft 13 and brings the arm 12 in the path of the detent 14, stopping the alarm-gearing. 10, 17, and 29 are pinions upon the shafts of the wheels *s*, *t*, and *T*, respectively. I dispense, however, with the shaft 19 and arms 20 and 18 of said patent and arrange the parts as shown, so that the lever *J* acts directly upon the arms 16 and 21 to hold or release the alarm-gearing, as next explained.

e is the arbor of the minute-hand *C*, carrying a pinion, 43, that gears with a wheel, 31, on a stud secured to the plate *a''*, and this wheel 31 carries a pinion, 32, that gives motion to a wheel, 33, upon a sleeve surrounding the arbor of the minute-hand, and also to a wheel, 34, upon the spindle 35. The gearing

just named are so proportioned that the wheels 33 and 34 each revolve once in every twelve hours. The tubular arbor of the wheel 33 carries the hour-hand B, and the wheel 34 has secured to it the notched cylinder *h*. Within the latter is the notched ring *i*. The cylinder and ring are similar to those in my said patent, excepting that the ring *i* has but two notches in it, instead of four, one, 7, being deep, and the other, 8, a shallow notch. The wheel 34 is loose upon the spindle 35, and the latter has around it a helical spring, 40, between the plate *a'* and a collar on said spindle, to produce the necessary friction and prevent the spindle turning, except when moved by hand. There is a pin, 5, upon the spindle, and the spring-lever J bears against the wheel 34 and presses the wheel, cylinder, and ring toward the pin 5. At the outer or free end of this lever there is an incline, *m*, which passes through an opening in the plate *a'*, and is adjacent to the arm 21 of the escapement-lever, and also to the arm 16 on the shaft 13.

The operation of the parts is as follows: Supposing the alarm to have finished striking, the parts are in the position shown in Figs. 1, 2, and 3, the pin 5 being in the deep notch 7 of the ring *i* and at the bottom of the inclined notch in *h*, and the detent 14 is held by the arm 12. The wheel 34 and cylinder *h* revolving in the direction indicated by the arrow, said wheel is gradually moved back by the incline of the notch traveling under the pin 5. During this movement the lever J has been pressed back and the incline has lifted the arm 16, and thereby turned the shaft 13 and moved the arm 12 away from the detent 14; but the hammer U of the alarm was not allowed to strike, because the incline *m* at the same time that it lifted the arm 16 also came at the side of the arm 21 of the escapement, and hence prevented the escapement-wheel turning. During this half-revolution of the wheel 34 the ring *i* has been kept from turning by the pin 5 being in the deep notch 7; but when the wheel and notched cylinder have completed half a revolution the pin is off the incline of *h* and out of the notch 7. The ring *i* now turns with the notched cylinder *h* and wheel 34 until they have completed their second half-revolution, which brings the notch in the cylinder and the shallow notch 8 of the ring *i* in line with the pin 5. The spring-lever J now presses forward the wheel, cylinder, and ring; but the movement of the lever J is not sufficient to release the arm 21, on account of the slight depth of the notch 8. The ring *i* is now held by the pin 5, while the wheel and cylinder make their third half-revolution, at the completion of which the deepest part of the notch of *h* is in line with the deep notch 7 of *i*. The pin 5 now not being in the notch 8, the ring *i* turns with the wheel and notched cylinder, and as they complete their fourth half-revolution the deepest part of the notch of *h* and the deep notch 7 of *i* are in line with

the pin 5. The spring J immediately presses forward the wheel, cylinder, and ring, and the incline *m* leaves the arm 21 and allows the alarm-gearing to rotate and the hammer to strike the alarm until one of the pins 28 has lifted the arm 25, and thereby turned the shaft 13 and brought the arm 12 into the path of the detent 14 and stopped the rotation of the alarm-gearing.

The spindle 35 carries a hand, *l*, in front of the dial-plate *a'*, and on this plate there is a small dial, of which the spindle is the center, and this small dial has the same numbers and divisions as the large dial on said plate for the hour and minute hands. At the rear end of the spindle 35 there is a button, *p*, outside of the cap-plate *a'*, by which the spindle can be turned in setting the alarm. In setting the alarm, the spindle is turned until the hand *l* comes opposite the hour at which it is desired to have the alarm ring, and if the alarm should ring at the wrong period—that is, twelve hours in advance—the spindle and hand must be given a complete revolution, which will rectify it.

In order to have the lever J act directly upon the arms 16 and 21 when the alarm is set from the front of the clock, I arrange the automatic mechanism that acts upon the lever J, as in Figs. 7, 8, and 9. In this arrangement the wheel 34 is upon a tubular arbor around the arbor of the minute-hand, and said wheel is revolved once in every twelve hours by the gearing 43 31 32, as before. The pin 5 is upon said wheel 34, and the hour-hand is carried by the tubular arbor of 34. The notched cylinder *h* and notched ring *i* surround the tubular arbor of the wheel 34; but the cylinder is stationary and supported by the dial-plate *a'*, and carries the hand *l*.

The operation of the parts is the same as that described with reference to Figs. 1, 2, 3, the wheel 34 being revolved once in every twelve hours, and at the end of its second revolution (twenty-four hours) the pin 5 comes opposite to and is pressed into the notch in the cylinder *h* and into the deep notch 7 in the ring *i* by the spring-lever J, acting upon the wheel 34, which lever then releases the arm 21 of the escapement, and the alarm rings until stopped, as before explained.

The ring *i* (shown in Figs. 1 and 2) might be outside of the cylinder *h*, instead of inside said cylinder.

I claim as my invention—

1. The combination, with the time-gearing and the wheels *s t*, their pins 28 and 14, and the pivoted arms 25 and 12, of the arbor *b*, barrel *b'*, loose on said arbor, the spring *b'*, with its ends connected to the arbor and barrel, teeth upon the barrel *b'* for driving the time-gearing, the ratchet-wheel *b''*, secured to the arbor, and the loose wheel *b'''* and pawl, substantially as and for the purposes set forth.

2. The combination, with the time and alarm mechanism, of the wheel 34, notched cylinder

h, notched ring i, spindle 35 and hand, pin 5 on said spindle, the gearing 43, 31, 32, and 33, and spring-lever J, substantially as and for the purposes set forth.

5 3. In an alarm mechanism, the combination of the mainspring, wheels s t, their pins 28 and 14, pinions 10, 17, and 29, escapement-wheel T and escapement, pivoted arms 12, 16, 21, and 25, spring-lever J, acting directly upon
10 the arms 16 and 21, and automatic mechanism operating once in every twenty-four hours to allow the lever J to release the alarm mechanism, substantially as set forth.

4. The combination, with the time and alarm

mechanism, of a revolving and sliding toothed 15 wheel, 34, a notched cylinder secured to the same, a notched ring, i, within the cylinder h, a spindle upon which the wheel, cylinder, and ring turn, and a pin and hand upon said spindle, substantially as and for the purposes 20 set forth.

Signed by me this 3d day of July, A. D. 1883.

JACOB GANSS.

Witnesses:

CHAS. H. SMITH,
GEO. T. PINCKNEY.