(No Model.) 2 Sheets—Sheet 1.

L. WINTERHALDER.

ELECTRIC ALARM CLOCK.

No. 458,206. Patented Aug. 25, 1891.

Fig. 1.

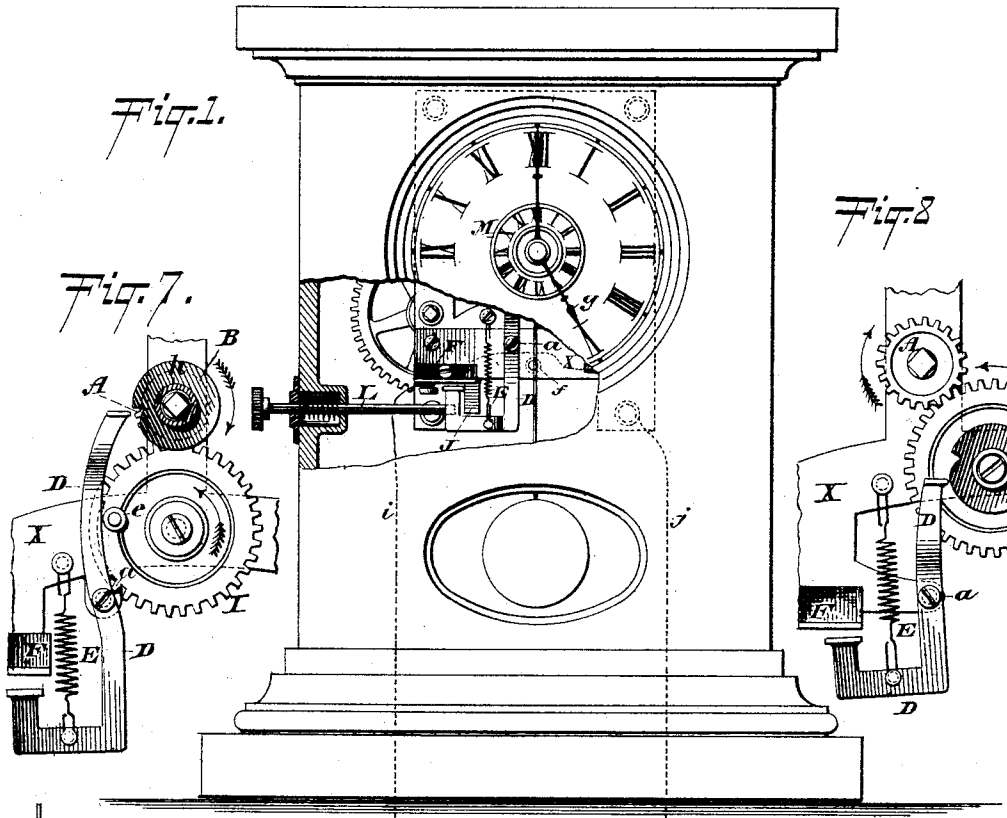


Fig. 8

Fig. 7.

Fig. 5.

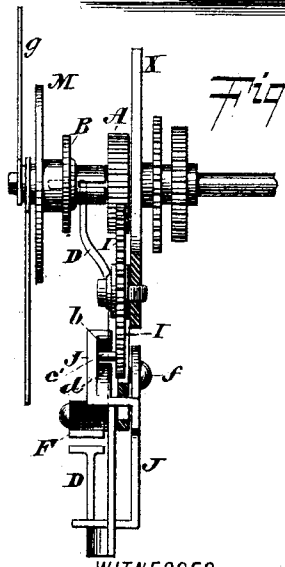
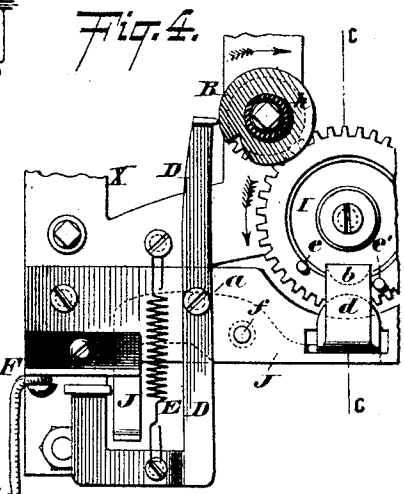


Fig. 4.



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Otto G. Dieterich.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

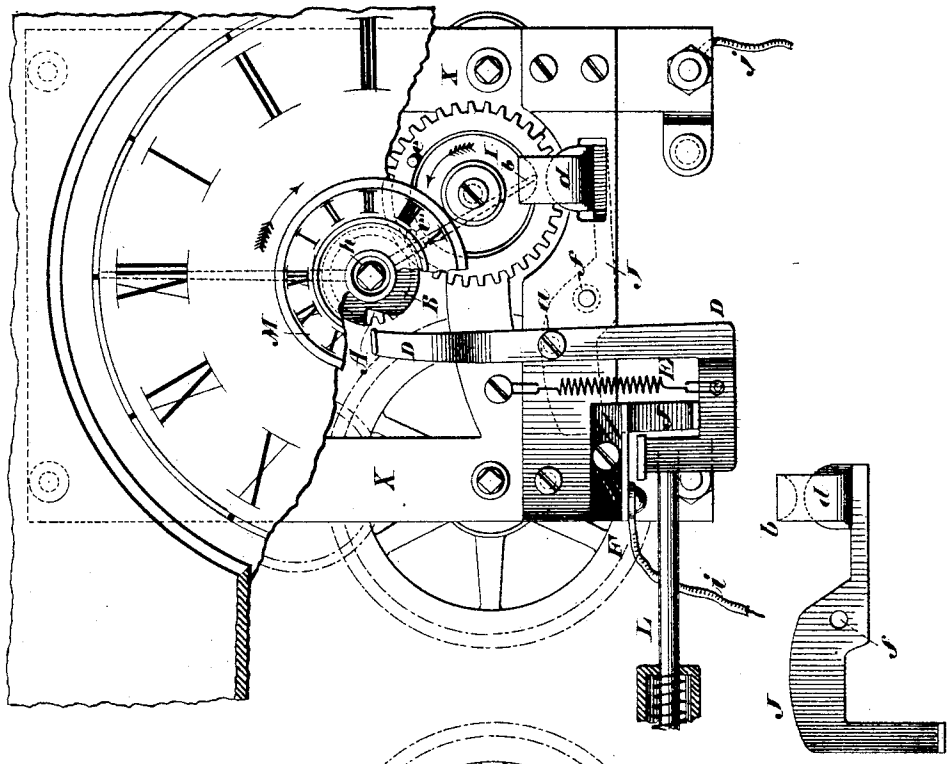


Fig. 2.

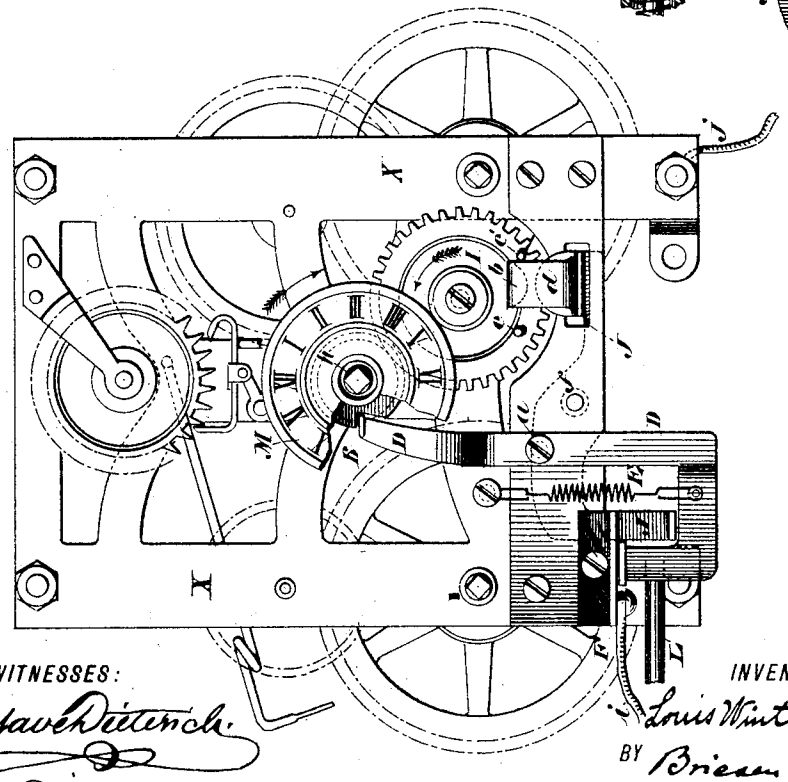


Fig. 1.

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UNITED STATES PATENT OFFICE.

LOUIS WINTERHALDER, OF BROOKLYN, NEW YORK.

ELECTRIC ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 458,206, dated August 25, 1891.

Application filed December 4, 1890. Serial No. 373,519. (No model.)

To all whom it may concern:

Be it known that I, LOUIS WINTERHALDER, a resident of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in an Electrical Alarm-Clock, of which the following is a complete and clear description.

My invention relates to an electrical alarm-clock which shall sound an alarm at a stated time once every twenty-four hours; and it consists in combining with a clock of ordinary construction the mechanism for alternately bringing into circuit and out of circuit at any desired hour an electrical alarm, as hereinafter more fully described.

The main object of my invention is to construct an alarm-clock which shall sound an alarm day after day at the desired hour, once it has been set, and without requiring further attention, except the necessary winding of the mainspring; also to provide in such a clock a device that shall allow the striking of the alarm only every twenty-four hours and not every twelve hours.

My invention is illustrated by the accompanying drawings, in which—

Figure 1 is a front view of the clock partially broken away to show my device as contained therein, said clock being in connection with a battery and an electrical alarm. Fig. 2 is a front view of the works of a clock supplied with my device, showing the circuit closed. Fig. 3 is the same view with the circuit open, showing also a broken section of the clock-face. Fig. 4 is a front view of my circuit-closing device with the circuit open. Fig. 5 is a side view of the same. Fig. 6 is a detail face view of one of the levers of my device. Figs. 7 and 8 are diagrams of modifications of the invention.

Similar letters refer to similar parts.

A is a gear-wheel carried on the sleeve *h*, on which the hour-hand *g* of a clock is frictionally held.

B is a disk having a recess in its periphery, said disk being frictionally carried on said sleeve *h*, the adjustment of this disk regulating the time of the alarm.

D is a lever pivoted to the clock-frame X at *a*.

E is a spring fastened at one end to the frame X and at the other end to the lever D and having the tendency to hold one end of lever D against the periphery of the disk B.

F is a piece of metal insulated from the frame X, and to which one of the conductors *i* of an electrical circuit is fastened, the other conductor *j* connecting to the frame X or to the lever D. In this circuit is inserted a battery G and an alarm H, Fig. 1. The lever D is so formed and placed that one arm (in this example its lower arm) will, if the other end of the lever is released or drops into the notch in the disk B, contact with the plate F, being drawn to it by the spring E, thereby closing the circuit, as in Fig. 2; but when the lever D bears against the unnotched part of the disk B the circuit will be open, as in Fig. 4.

It will be seen that unless some device is introduced to prevent the circuit will be completed every twelve hours by the lever D dropping into the recess in disk B, which, being carried by the hour-hand sleeve, revolves every twelve hours. Therefore, as it is desirous that the alarm should only sound every twenty-four hours I have introduced the following mechanism: A gear-wheel I, having twice as many teeth as the gear-wheel A and gearing with the wheel A, is hung to the frame X. Projecting from the face of this wheel I are two pins *e e'*.

J is a lever pivoted to the frame X at *f*, one end of said lever being supplied with an upper cam *b* and a lower cam *d*, which engage with the pins *e e'* at every revolution of the wheel I, as hereinafter described, and whereby the other end of said lever J is alternately raised and lowered, so that it will be pressed against the lever D, as in Fig. 3, to hold it away from the plate F or allow it to contact said plate, as in Fig. 2.

In explaining the operation I will refer to Figs. 2 and 3. In Fig. 2 the clock is shown as set for five a. m. by means of a dial M, which is carried by the disk B, and with the circuit closed. The alarm is now ringing. The pins *e e'*, as shown, are on either side of the lever J, the pin *e'* having passed the cam *d* on said lever and having consequently raised the other end of the lever J away from the lever D, thereby permitting the upper end of lever D, which bears against the disk B, to drop into the notch in the disk B, all as in Fig. 2. As the disk B gradually

advances, the lever D is lifted out of the notch, whereby the circuit is again broken. The pin *e* soon afterward contacts with the other cam *b* on lever J, thereby throwing said lever against D, where it remains until nearly twenty-four hours later, when the pin *e'* forces J away from D and leaves the lever D free to again drop into the notch in disk B. This is done by reason of the fact that the wheel I revolves only once in twenty-hours, the wheel A revolving once in twelve hours. Fig. 3 represents the clock as it appears at five p. m., the pins *e e'* at this time being quite far away from the lever J, for it will be seen that the revolution of the wheel A, which occurred after the position in Fig. 2 was left, causes only a semi-revolution of the wheel I.

I do not limit myself to all the details of parts described, as it will be easy to substitute equivalent mechanical devices for holding the lever D away from the plate F except once in twenty-four hours. Thus, for example, one pin on the wheel I alone may be adapted to bear against the lever D at the time the notch in B is to be ineffective, in which case the lever J and the additional pin *e'* may be dispensed with. Such a modification is indicated in Fig. 7; or the disk B may be mounted, as in Fig. 8, upon the arbor of the wheel I or otherwise turned once every twenty-four hours, in which case it will render the lever J and pins *e e'* needless.

Instead of securing the insulated plate F to the stationary frame, it may be applied with equal effect to the edge of the disk B, in which case the metallic body of the disk B would connect with one of the poles and the lever D with the other.

Should it be desirous to check the alarm at any time while it is ringing, a push-button on a rod L may be introduced from the outside to bear against the lever J or D and break the circuit.

The clock shown may be an eight-day clock, to be wound but once a week or even after longer intervals; but my alarm, when once set for any particular time, will ring automatically every day at that hour and will be silent during the corresponding hour of the same day. If the notch in the disk B is of such size as to cause each alarm to sound for too great a length of time, the push-button can be used to arrest the noise whenever desired.

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

1. The combination, in an electrical alarm-clock, of the ordinary clock-works having the notched disk B, with the lever D, bearing against the circumferential edge of said disk, and insulated plate F, and with conductors and an electric alarm, substantially as described.

2. The combination, in an electrical alarm-clock, of the ordinary clock-works, the notched disk B, the lever D, bearing against the circumferential edge of said disk, the spring E, and the insulated plate F, with the conductors and an electric alarm, substantially as described.

3. The combination, in an electrical alarm-clock, of the ordinary clock-works, the notched disk B and its toothed wheel A, the lever D, the spring E, and the insulated plate F, with the lever J, the gear-wheel I, gearing in the wheel A, and means, substantially as described, for transmitting oscillating motion to the lever J from the wheel I, substantially as herein shown and described.

4. The combination, in an electrical alarm-clock, of the ordinary clock-works having on the hour-hand sleeve the notched disk B, and the toothed wheel A, with the lever D, the spring E, the insulated plate F, the lever J, having the double cam *b d*, and the wheel I, having the pins *e e'* thereon, said wheel I having twice the number of teeth of and gearing with the wheel A, substantially as herein shown and described.

5. The combination, in an electrical alarm-clock, of the ordinary clock-works carrying on the hour-hand sleeve the notched disk B, and the lever D, with the lever J, means, substantially as described, for automatically moving the same, and the push-button L, substantially as specified.

6. The combination, in a clock, of the circuit-closing lever D, and insulated plate F, and the conductors *j i*, leading, respectively, thereto, and the electric alarm H, with the notched disk B, mechanism, substantially as described, for revolving the disk B once in twelve hours, and mechanism, substantially as described, for holding the lever D away from the plate F during every alternate rotation of the disk B, substantially as specified.

LOUIS WINTERHALDER.

Witnesses:
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MAURICE BLOCK.