



# UNITED STATES PATENT OFFICE.

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## REPEATING ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 608,424, dated August 2, 1898.

Application filed May 10, 1898. Serial No. 680,246. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER D. DAVIES, a citizen of the United States, and a resident of the borough of Brooklyn, in the city of New York and State of New York, have invented a new and useful Improvement in Alarm-Clocks, of which the following is a specification.

This invention relates to what are known as "repeating alarm-clocks"—that is to say, alarm-clocks in which the alarm mechanism when tripped or sprung operates during a series of recurring interrupted periods.

This invention consists in the novel and simple combinations hereinafter described and claimed, whereby the interruptions in the operation of the alarm are produced.

Figure 1 is a vertical sectional view of all such parts of an alarm-clock as are necessary to illustrate the invention, the section being taken just inside of the back plate of the movement. Fig. 2 is a plan view of the clock-movement frame and the devices constituting and involved in my invention. Fig. 3 is a perspective view of the parts which are added to an ordinary alarm-clock to carry out my invention.

Similar letters of reference designate corresponding parts in all the figures.

A and B designate, respectively, the front and back plates of the clock-movement; C, the mainspring of the time-train; D, the winding-arbor of said spring, carrying the main wheel E, which gears with the center pinion *a* on the minute-hand arbor *b*; and *c* the arbor carrying the first time-pinion *d* and time-wheel *e*, the said pinion gearing with and receiving motion from the center wheel *x* on the arbor *b*.

F is the spring, and G the winding-arbor, of the alarm-train, the said arbor carrying the driving-wheel G', which operates through pinions *f g* and a wheel *h* to drive the arbor *i* of the escape-wheel *i'*, which actuates the alarm-hammer H, through the verge *j* to the spindle *k* of which the said hammer is attached. The said spindle is provided with an arm *l*, which engages with the turned-in end *l'* of the trip-lever K for the purpose of locking the alarm until said lever is liberated by the tripping-cam *m*.

The parts thus far referred to are similar to the corresponding parts of well-known alarm-clocks with uninterrupted alarms, and are only herein so particularly described to facilitate the explanation of the present invention, the principal parts of which consist of a longitudinally-moving sliding bolt I on the inner face of the back plate B of the movement, an arm or tailpiece *n* projecting from the alarm-verge spindle *k*, a toothed tripping-wheel *o* on the arbor *c*, and a spring *p* applied to the said bolt.

The sliding bolt I has in it two slots *s s* to receive two studs *r r*, which are riveted to the back plate B and which serve as guides upon which the said bolt is capable of sliding freely toward and from the verge-spindle *k*. The said bolt has upon it two lateral projections *t* and *u*, the one, *t*, for engaging with the arm or tailpiece *n* of the hammer-verge to stop the alarm, and the other, *u*, for engaging with the teeth of the wheel *o* for drawing back the bolt clear of said arm or tailpiece to leave the alarm free to operate. The spring *p*, which needs be but very light, is attached to the plate A at *p'* and engages with the projection *t* of the bolt to press the bolt toward the verge for interrupting the alarm.

The operation is as follows: While the arm *l* of the hammer-verge is stopped against the turned-in end *l'* of the trip-lever K, the arm or tailpiece *n* is above or below the projection *t* of the bolt, according as the said arm *l* may happen to have stopped against the inner or outer face of said turned-in end, and the projection *t* of the bolt I, which is moved back and forth periodically by the wheel *o* and spring *p*, works over or under the end of the arm or tailpiece *n* without touching it; but when and so long as the arm *l* is liberated by the trip-lever to permit the action of the alarm the said action is, by the movement of the bolt I, caused to be periodically interrupted, the said action being permitted only while the bolt is drawn clear of the tailpiece *n* by a tooth of the wheel *o* and being interrupted by the springing back of the bolt after the tooth passes the projection *u* and the interruption continuing until the next tooth of the wheel draws the bolt back again clear of the tailpiece.



What I claim as my invention is—

1. In an alarm-clock, the combination with a time-train and an alarm-train, of a striking-escapement in the alarm-train, a longitudi-  
5 nally-moving bolt for engaging with the verge of said escapement, and a toothed wheel in the time-train engaging with said bolt for withdrawing it from the verge, substantially as and for the purpose herein described.
- 10 2. In an alarm-clock, the combination with a time-train and an alarm-train, of a striking-escapement in the alarm-train, a toothed wheel in the time-train, a sliding bolt having lateral projections one of which is capable of  
15 engagement with the verge of said escape-

ment and another of which engages with said toothed wheel for withdrawing the bolt from engagement with the verge and a spring applied to said bolt for replacing it in engagement with the verge, substantially as herein 20 described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 5th day of May, 1898.

WALTER D. DAVIES.

Witnesses:

HERBERT C. SMITH,  
DAVID H. M. WEYNBERG.