H. J. & W. D. DAVIES.

LIGHTING ATTACHMENTS FOR ALARM CLOCKS.

No. 186,317. Patented Jan. 16, 1877.

Fig. 1.

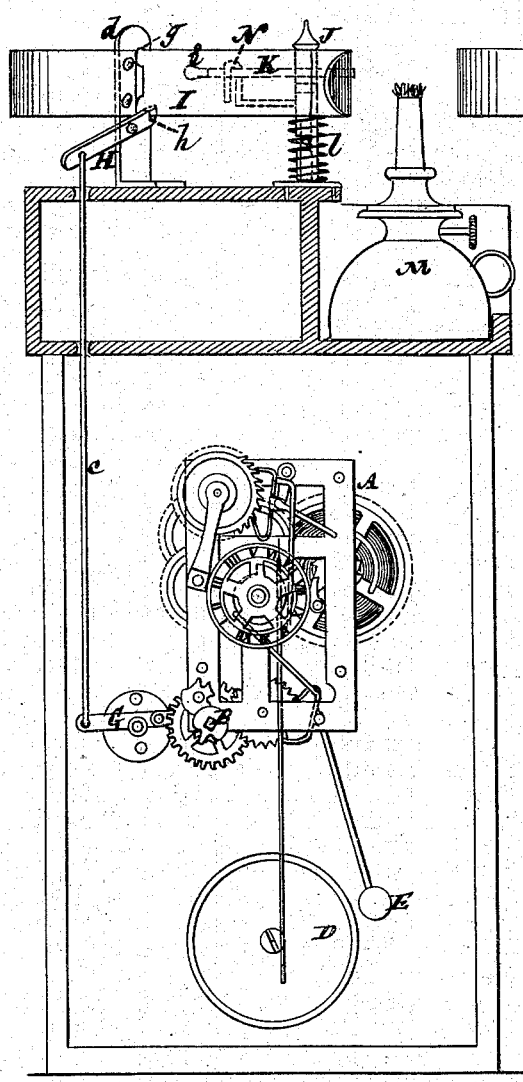


Fig. 2.

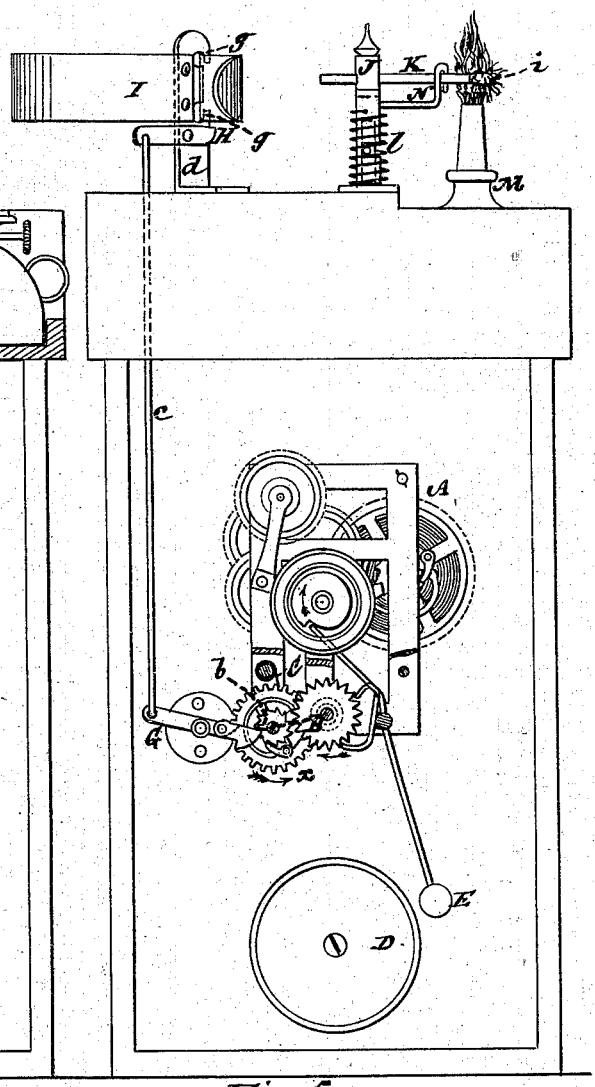


Fig. 3.

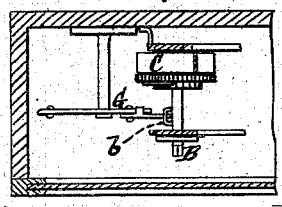


Fig. 4.

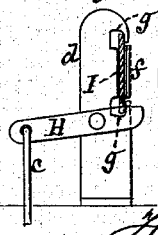
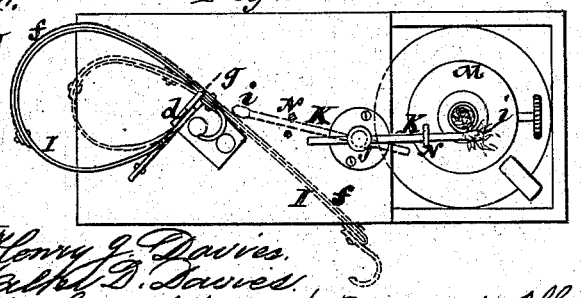


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY J. DAVIES AND WALTER D. DAVIES, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN LIGHTING ATTACHMENTS FOR ALARM-CLOCKS.

Specification forming part of Letters Patent No. **186,317**, dated January 16, 1877; application filed August 25, 1876.

To all whom it may concern:

Be it known that we, HENRY J. DAVIES and WALTER D. DAVIES, both of the city of Brooklyn, in the county of Kings and State of New York, have jointly invented certain Improvements in Lighting Attachments for Alarm-Clocks; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

The invention consists in a spring friction-lighter composed of a looped spring, suitably faced with sand-paper or other friction material, the one end of which is permanently secured, while the other end of said spring is free to be drawn out to give it the necessary tension and to effect its engagement with a retaining-catch till liberated by the alarm.

The invention also consists in a combination, with the spring-friction lighter, of a rotating match-holder which is controlled by a spring to hold the match in contact with the spring friction-lighter till the latter completes its action, and afterward to adjust the lighted match into a lighting position with the wick of the lamp to be lit.

The invention likewise consists in a combination, with the rotating match-holder, of a guard applied to said holder, and serving to support the match near its lighting end, and thereby to prevent the match from being broken by the rubbing action of the lighter. These several improvements not only have their own separate or special advantages, but, when combined, make a lighting attachment for alarm-clocks, which is cheap, durable, and efficient.

Figures 1 and 2 represent partially sectional front elevations of an alarm-clock with our invention applied, and showing the lighting devices in reverse positions—that is, before the spring friction-lighter is liberated, and after it has been liberated, and the lit match brought in lighting position with the wick of the lamp. Fig. 3 is a horizontal section, in detail, showing the winding-arbor of the alarm and its spring, together with the means by which said arbor, as controlled by its spring, operates directly to liberate the lighter. Fig. 4 is a side elevation, in detail, of the catch which holds the lighter-spring under tension, and showing said spring as held by the catch. Fig. 5 is a plan, showing, by full and dotted lines, the spring-lighter before and after it has been released, and the match-holder and match in corresponding positions.

A is an ordinary clock-movement with alarm combined, B being the winding-arbor of the alarm, and C its spring, applied to said arbor. D is the bell of the alarm, and E its hammer.

Fast to the spring-arbor B of the alarm is a pin or projection, *b*, which, when the spring C is released to rotate the arbor B in direction of the arrow *x* in Fig. 2, acts upon a trip-lever, G, to liberate the lighter. When the arbor B is rotated in the opposite direction, as in winding up the alarm-spring C, then the pin *b* passes the lever G without operating it, by reason of the end of the lever on which the pin acts being jointed to work free or loose in such direction of the travel of the pin, but not in the opposite direction of its travel.

The lever G is connected by a rod, *c*, with a lever-catch, H, which holds the spring-lighter under tension. The pin *b*, when traveling, as indicated by the arrow *x*, (which is when the spring C is released to work the alarm,) strikes on the back of the jointed end of the lever G to depress the latter on its jointed end side of the fulcrum, and, through the rod *c*, to liberate the catch H from its hold on the spring-lighter.

The lighter consists of a looped spring, I, fastened at its one end to a post, *d*, and faced, for a portion of its length, with sand-paper or other suitable friction material *f*, including a tape or web of cloth having emery or sand on its outer surface. The other end of said spring, or free portion thereof, which has the friction material on its face, is passed through a slotted or notched guide, *g g*, in the post *d*, to form the loop in the spring, and such free portion of the loop made capable of being extended outwardly through the guide *g g*, to give the required tension to the spring, as represented by dotted lines in Fig. 5 of the drawing, and so that when the spring is released said extended and friction-faced por-

tion of the spring is at liberty to fly back through the guide *g g*, and in so doing to ignite the match.

The spring friction-lighter, when thus released, assumes the position represented for it by full lines in Fig. 5. A hook or projection on the free end of the spring serves as a handle by which to draw out the spring-lighter, and as a stop to it when released. Said spring-lighter is retained in its drawn-out position at the tension thereby given it, by the engagement of the lever-catch H with a notch, *h*, in it, and the disengagement of said catch therewith by the action of the alarm-spring, as hereinbefore described, releases the lighter.

J is the rotating match-holder, erected on top of the clock-case on the friction side of the spring-lighter, and at a proper distance therefrom, and in such relation therewith as to cause the lighting end *i* of the match K, when the holder J has been suitably rotated or turned about its vertical axis for the purpose, to come in contact with the friction-surface *f* of the extended spring-lighter in proximity to the guide *g g*, as shown by dotted lines in Fig. 5. The match K is thus held in contact with the friction-surface of the spring-lighter by a spring, *l*, applied to the rotating match-holder, which spring serves to rotate the holder after the match has been lit and is liberated from contact with the spring-lighter, to bring the lit end of the match in contact with the wick of a lamp, M, as shown in Fig. 2, and by full lines in Fig. 5.

To prevent the match slipping from its contact with the extended spring friction-lighter by the action of the spring *l* before said lighter has been released, and to effect an extended and firm yet elastic rubbing action of said lighter on the match against the resistance of the spring *l*, the guide *g g*, through which the free end of the spring-lighter slides *g* is arranged so that the portion of the spring lighter passing outwardly therethrough forms an acute angle with a line drawn from said guide to intersect the axis of the match-holder J, thus causing the match to rest at its lighting end with a spring-pressure on the extended lighter, as shown by dotted lines in Fig. 5. So soon, however, as the spring friction-lighter has been relaxed, as shown by full lines in Fig. 5, then the match K, which has been lit, is free to clear the lighter, and is adjusted by the rotation of the match-holder J through the action of the spring *l*, into a position to light the lamp M, as shown by full lines in Figs. 2 and 5, the holder J being arrested by a suitable stop when the match has been thus adjusted.

To set the lighting devices, it is only necessary to turn back the match-holder, so as to bring the match into a position approximating that shown by dotted lines in Fig. 5, and to draw out the free end of the spring-lighter till the notch *h* in it engages with the lever-catch H.

The match K is projected radially through a perforation in the holder J, or two or more matches may be similarly projected through the holder to provide against failing to obtain a light by reason of a defective match.

To prevent breaking of the match by the action of the lighter, as liable to occur owing to the distance which the forward portion of the match projects beyond the rotating holder J, we support the match near its forward or lighting end by a guard, N, arranged to project from the rotating holder, and constructed to receive the match freely through or across it, and to support the match on its back as it is pressed by the spring *l* against the spring friction-lighter when the latter is extended and under tension.

We claim—

1. The looped spring friction-lighter I *f*, constructed for operation in connection with the guide *g g*, and with a catch for holding said lighter when extended, essentially as specified.

2. The combination, with the spring friction-lighter I *f*, of the rotating match-holder J and its spring *l*, substantially as described.

3. The combination, with the rotating spring match-holder J, of the guard N, arranged to support the match on its back near its forward end when said match is in contact with the friction-lighter, essentially as specified.

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W. D. DAVIES.

Witnesses:
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