



(No Model.)

2 Sheets—Sheet 2.

A. J. KREHBIEL & G. A. HEGE.  
AUTOMATIC FIRE LIGHTER.

No. 527,698.

Patented Oct. 16, 1894.

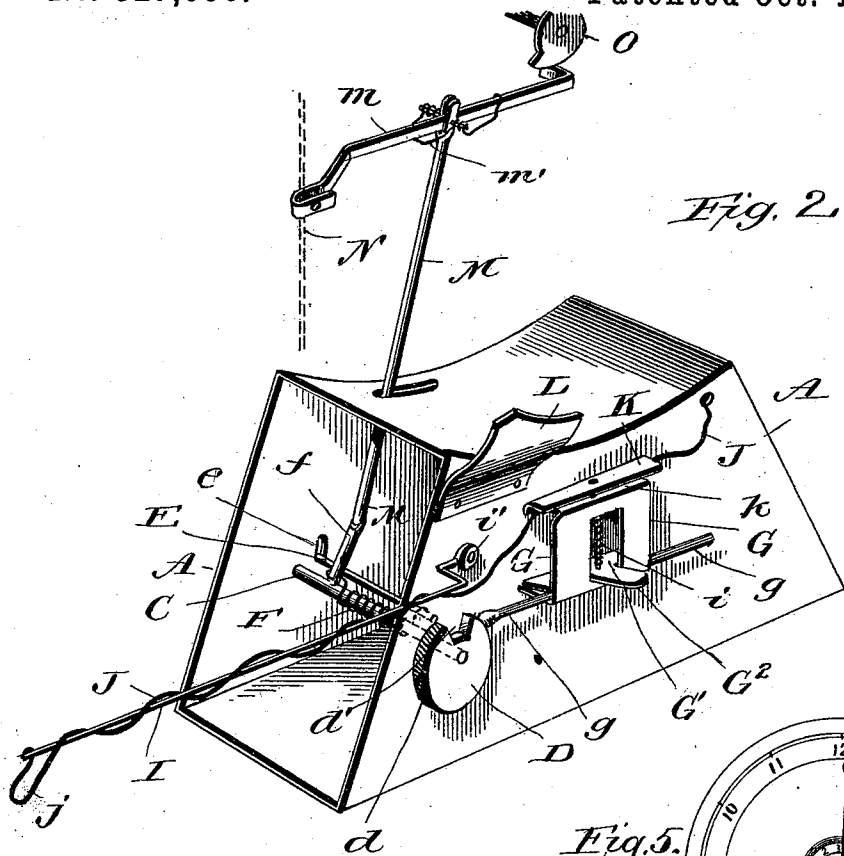


Fig. 2.

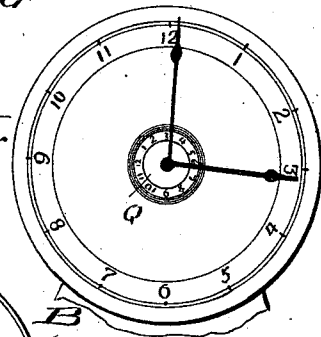
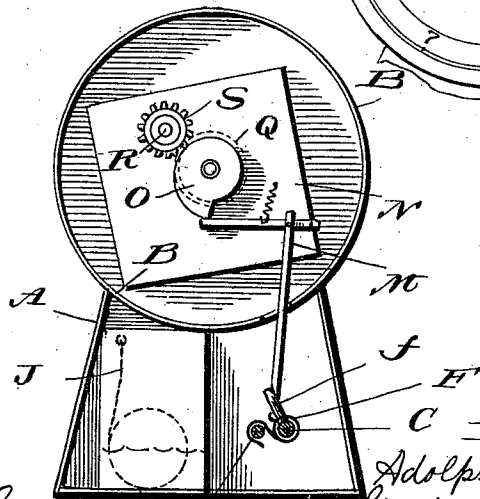


Fig. 5.

Fig. 4.



Witnesses:  
*L. C. Hills*  
*A. L. Hough*

Inventors  
*Adolph J. Krehbiel*  
*& Gustav A. Hege,*  
 E by *Franklin A. Hough*  
 Atty.

# UNITED STATES PATENT OFFICE.

ADOLPH J. KREHBIEL AND GUSTAVUS A. HEGE, OF HALSTEAD, KANSAS.

## AUTOMATIC FIRE-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 527,698, dated October 16, 1894.

Application filed June 23, 1894. Serial No. 515,533. (No model.)

To all whom it may concern:

Be it known that we, ADOLPH J. KREHBIEL and GUSTAVUS A. HEGE, citizens of the United States, residing at Halstead, in the county of Harvey and State of Kansas, have invented certain new and useful Improvements in Automatic Fire-Lighters; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in automatic fire lighters, designed to be operated by clock work at any desired hour, whereby a match held in contact with a rasp wheel is ignited by friction against the edge of the said wheel as it revolves by mechanism connected with the works of an ordinary clock.

A further object of the invention resides in the construction of means for holding the match so as to adjust itself to the rotary movement of the friction wheel, and the provision of a fuse holder for carrying the lighted fuse to the kindling to be started.

The invention consists further in the novel construction, combination and adaptation of the parts as will be hereinafter more fully described and then specifically defined in the appended claims.

We clearly illustrate our invention in the accompanying drawings, which with the letters of reference marked thereon, form a part of this specification and in which drawings similar letters of reference indicate like parts throughout the several views, in which—

Figure 1, is a rear elevation of an ordinary nickel clock supported on a base carrying our friction wheel, match holder and fuse carrier. Fig. 2, is a perspective view of the base portion carrying the match holding clamp and friction wheel, with parts broken away showing the interior shafts and mechanism. Fig. 3 is a section on the line  $x, x$  of Fig. 1. Fig. 4, is an elevation of the clock with front removed. Fig. 5 is a face view of the clock.

Reference now being had to the details of the drawings by letter, A, represents the base upon which an ordinary clock B is designed

to be seated. Secured to a shaft C, mounted in the walls of the base portion at  $c, c$ , is the friction wheel D cam shaped and having a rasp like or milled edge  $d$ , and a notch  $d'$ . The notch  $d'$  is designed to be brought into the proper position to receive or come opposite the head of the burning match, as the latter is ignited.

E is a stop shaft carried in suitable bearings in the walls of the base portion, one end resting in an elongated aperture  $e$ .

F is a coiled spring carried on the shaft C, one end of which spring is made fast to the stop shaft E, the other end secured to the catch pin  $f$  mounted on the shaft C. This shaft E serves as a yielding cushion to cushion the shaft C as the mechanism is released.

G is a match holder which is secured to the rear side of the base portion and is provided with the spring actuated clamp plate  $G'$ , under which the match  $g$  is placed and under pressure of the spring  $i$ , is firmly held against the rasp like edge of the cam wheel D when the said wheel is made to rotate.

I is a fuse holder, consisting of a piece of wire secured at  $i'$  to the base of the clock and is adapted to carry the fuse J along its length and resting in a loop  $j$  at its end.

K is a curved plate covering the groove  $k$  in the top of the match holder, which groove is designed to carry the fuse, and its front end projects beyond the upper edge of the holder G, so as to act as an extinguisher of the fuse, which passes through the grooved portion and thence into the interior of the base portion where it is stored by being wound into a ball.

The match holding clamp plate is provided with the integral projection  $G^2$ , as a thumb piece for raising the said plate when it is desired to insert the match.

L is a guard plate secured to the base portion at  $l$  and directly above the location of the head of the match while it is being ignited by the friction wheel, and the same is provided to protect the clock from the heat generated by the burning match.

The connection of the mechanism described, to the works of the clock is as follows:

M is a lever which catches the pin  $f$  of the shaft C, and holds the same when set ready for use. The upper end of this lever is at-

tached to the dropper *m*, and is thrown into connection with the catch pin *f* by means of the double acting spring *m'*, acting also on the dropper *m*. One end of the dropper *m* is fastened to the front plate of the movement frame *N*, the other end being loose and resting on the edge of the drop wheel *O*. The drop wheel *O* and the dial wheel *P*, are firmly fixed on the collar *Q*, which is slipped over the hour hand post of the clock between the hands, and the hour wheel in such a manner and with sufficient friction, that the dial wheel *P* and the drop wheel *O*, can be set to touch off the mechanism carried on the base portion, at any time. In front of the dial wheel *P* is the friction plate *P'*, a curved washer pressing against the dial wheel in such a way as to give all necessary friction to dial and drop wheel, this friction wheel or plate being securely held in position by means of a collar *p* keyed the hour hand post, the exact time of touching off the match being shown by turning the dial wheel so that the desired hour is just under the hour hand of clock, the manner of turning this dial wheel being by means of the cog wheel *S*, keyed to the shaft *R* passing through the clock and having on its rear end a turning knob *T*, designated as "lighter."

The mechanism is set for any desired time by means of the thumb-nut or wheel *T*, which turns the piston *S*, which through the medium of the dial wheel and friction and curved washer sets the parts for operation, as above set forth.

The fuse box for holding the ball of fuse, which may be candle wicking saturated in oil, may be readily inserted into the base portion by letting down the ends of the said base, which will allow of ready access to the parts within.

The dial *Q* and the part *O* are firmly fixed onto the collar which slips over the hour hand of the post of the clock and when the clock is in motion, they revolve with the hour hand, thus bringing the "drop" or notch in part *O* in such a position, that the "drop lever" *M* will drop into the notch and set off the lighter attachment, the dial *Q* being used as an indicator and cog wheel by which the drop wheel *O* is set in proper position relative to the time when the lighter is to go off.

To set the clock so as to touch off the lighter at any desired time, turn the knob *T*, which, by means of the shaft *R*, and cog wheel *S*, will turn the dial *Q* and part *O*. Turn the same until the desired hour, as indicated on the dial *Q*, shall be directly under the hour hand of clock. In this manner the part *O* is shifted into such position relative to the lever *M*, that when the hour hand reaches the desired hour of lighting the fire, the part *O* will have revolved with it so that the lever *M* will drop into the notch on part *O*, thus setting off the lighter. The lighter will continue to go off at this particular hour as long as desired, unless the dial *Q* shall have been shifted

by turning the hands of the clock backward too far, in which case it must be set as before.

The operation is as follows: First, take hold of the pin on the friction wheel *C* and by a downward movement revolve the same until the click of the catch pin indicates it is set; second, slip match through the holder *G* under plate *G'*, raising the latter by small thumb projection and have the match firmly against the friction wheel *C*; third, pull fuse carrier *I* down so that it stands out from the clock; fourth, draw fuse *J* out passing it through slot *k*, and wind it around carrier *I* letting the end of the fuse *J* hang loosely over the end of carrier *I*. The clock is now ready to be placed on the hearth before the stove in which fire is to be lighted.

If a quick hot fire is desired, open the front door of stove and place carrier *I* in connection with material to be lighted, adjusting rear drafts of stove as necessary, considering the drawing qualities of the chimney. Ordinarily the carrier *I*, can be slipped through slide in front door of stove, and brought into contact with the kindling, the closed door tending to protect the clock from heat (which in either case would not injure the clock). At the desired hour, the lighter will go off and light the fire by striking the match resting against the friction wheel, which in turn ignites the fuse, following the same to the kindling.

Having thus described our invention, what we claim to be new, and desire to secure by Letters Patent, is—

1. In a fire lighter the combination of a clock mounted upon a base portion which carries a clamp for holding a match and a friction wheel adapted to rasp against the head of the match when the said wheel is revolved, a fuse and an extinguisher over the same, substantially as shown and described.

2. In a match lighter, the combination of the clock mounted on a base portion carrying a plate provided with a spring actuated clamp for holding a match, which is adapted to be held in contact with an eccentric friction wheel having a milled edge, and means for automatically rotating the said wheel, a fuse and an extinguisher over the same, substantially as shown and described.

3. In a fire lighter, the combination of the clock and base portion carrying the plate *G*, having a groove in its upper edge for the reception of a fuse, an extinguisher projecting over the said fuse, and the automatically operated friction wheel for igniting, in its rotary movement a match carried on the said plate *G*, substantially as shown and described.

4. In a fire lighter the combination of the clock seated on the base *A*, the shaft *C* mounted in said base having a notched friction wheel keyed to an outer end, a catch pin *f* seated in the said shaft, a stop shaft *E*, mounted for vertical play, and a coiled spring carried on the shaft *C*, one end being secured to said stop shaft, its other end secured to the said catch pin which is held in a "set" posi-

tion by means of a lever connected to the clock work mechanism, substantially as shown and described.

5 5. A firelighter, comprising in combination the shaft C, coiled spring thereon, the stop shaft E to which is secured one end of the said coiled spring, one end of the said shaft E seated in an elongated slot whereby when the catch pin *f* is released, and under the tension of the said spring, is caused to rotate with the shaft C, it strikes the under side of the stop shaft, which is allowed to yield slightly, all substantially as shown and described.

15 6. In combination with a base portion, the lever M adapted to catch the pin *f*, and hold the same "set," the upper end of the said lever M attached to a dropper *m*, a stop shaft E, mounted for vertical play, the double acting spring *m'* secured thereto, one end of the said dropper secured to the edge of the frame N, its other end designed to rest on the edge of

a drop wheel O, and means for operating the same substantially as shown and described.

7. In combination with the fire lighting apparatus as described, the lever M, catch pin *f*, dropper *m*, one end secured to the edge of the frame N, its free end resting on the drop wheel O, the said drop wheel, and the dial wheel P secured to a collar Q carried on the hour post of the clock between the hands and the hour wheel, in such a manner and with sufficient friction that the dial plate and drop wheel may be set to touch off the mechanism for lighting the match, which is carried on the base portion, all substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

ADOLPH J. KREHBIEL.  
GUSTAVUS A. HEGE.

Witnesses:

C. G. HUTCHESON,  
JOHN H. LINN.