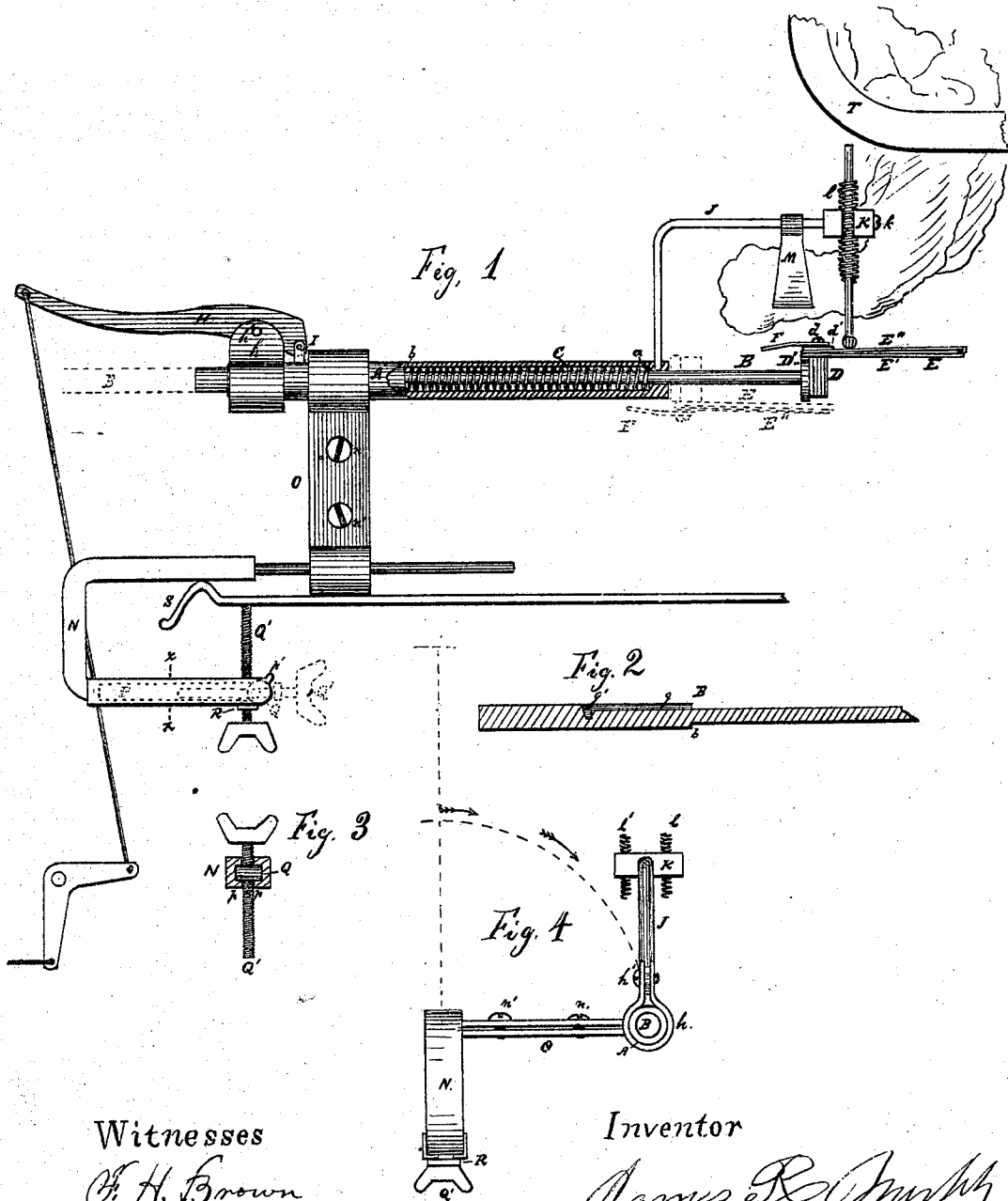


JAMES R. MURPHY.

Fire Lighter.

No. 124,505.

Patented March 12, 1872.



Witnesses
H. H. Brown
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UNITED STATES PATENT OFFICE.

JAMES R. MURPHY, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN FIRE-LIGHTERS.

Specification forming part of Letters Patent No. 124,505, dated March 12, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JAMES R. MURPHY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Automatic Fire-Lighters; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a side elevation of a fire-lighter provided with my improvements, the cylinder being broken away so as to show the mechanism within it. Fig. 2 represents a longitudinal vertical central sectional view through the sliding-rod. Fig. 3 represents a vertical transverse sectional view taken at the line $x x$ in Fig. 1, and shows the screw and rounded nut in the slot in that part of the clamp; and Fig. 4 represents a rear view of Fig. 1, showing the cylinder and its attachments turned downward and sideward, in the direction indicated by the arrows.

The object of my invention is to make an automatic fire-lighter, so that fires in stoves or other similar places may be thereby automatically lighted at any desired time; and my invention consists in a novel combination and arrangement of the mechanism employed for that purpose, which will be hereafter fully described.

A is a cylinder. B is a rod having free play within said cylinder. C is a spiral spring within the cylinder A and about the rod B, the forward end of said cylinder being provided with an annular head piece or interior collar, a , against which one end of the spiral spring C rests, and the rod B being provided with a shoulder, b , against which the other end of said spring rests, the pressure of this spring being toward the shoulder b . D is a metallic plate attached to the forward end of the rod B, and D' is a soft washer of leather or other suitable material on the rod B, behind the plate D. The plate D may be provided with a female screw to run upon a male screw-thread upon the forward end of the rod B, so that the said plate and washer may be removable and replaceable; the plate D may also be made heaviest on one side of its point of attachment

to the rod B. E E' are yielding or flexible metallic plates, and E'' is a piece of sand-paper lying on or attached to the plate E, and these plates and the sand-paper are attached at their rear ends to the upper edge of the plate D by means of the screw d and the presser d' . The plate E may be bent downward and backward at its forward end so as to form a fastening for the sand-paper at that point, as shown. The inclination of the plate E is slightly upward from the plate D. Either of the plates E or E' may be dispensed with, and instead of the sand-paper the plate retained may have its upper surface finely corrugated, so as to ignite the matches. F is a bent wire attached to the plate D by the screw d at a point opposite the center of the cylinder A, which wire extends horizontally backward and is bent laterally in the direction of the heaviest side of the plate D. The rear end of the rod B is provided with a longitudinal groove, g , terminating at its rear end in a notch, g' , sunken into said rod somewhat deeper than the said groove, with its vertical face toward the latter. H is a lever or trigger having a pivotal bearing in the standard or supporting-band h , which is rigidly attached to the cylinder A, but so as to be removable therefrom by loosening the screw h' , said supporting-band being somewhat flexible and drawn tightly upon said cylinder by means of said screw. I is a small post or peg hanging vertically from pivotal bearings upon the forward end of the trigger H and playing through a perforation in the cylinder A, so as to extend into the groove g and notch g' . J is a bent arm set into the forward end of the cylinder A so as to have a horizontally-turning movement in its seat. The free end of the arm J extends forward so as to reach over the rear end of the sand-paper E'' when the peg I rests in the notch g' . K is a spring-holder attached to the forward end of the arm J, and within this spring-holder are the springs or notch-holders $l l'$, having a yielding movement in all directions. The spring-holder K may be tightened upon the match-holders by means of the screw k . M is a clasp hanging on the arm J for the purpose of holding a wad of paper near the match-holders $l l'$. N is a screw-clamp, to which the cylinder A is attached by means of the clasp O, which is open at one end and somewhat flexible, or open at both

ends, and in either case it is drawn firmly about the cylinder A and clamp N by means of the screws *n n'*, so as to hold the said clamp and cylinder firmly in any position, said clamp and cylinder being capable of being turned or moved laterally in the jaws of the clasp O. The lower end of the clamp N is provided with a longitudinal slot, P, with guide-ways *o p*. *p'* is a stop-bar across the upper outer corner of the clamp N. Q is a rounded nut upon the screw Q', which nut rides in the slot P, being retained therein by the guides *p* and bar *p'*. The outer under corner of the clamp N may be rounded off so that the screw Q' may be set in the position shown by the dotted lines in Fig. 1. R is a nut on the screw Q' to keep the latter from tipping in the direction of its horizontal movement until it reaches the rounded end of the clamp N. S is a stove-hearth, and T is a stove-grate containing the material to be lighted.

My device is operated in the following manner: Most stove-hearths have a beveled or corniced edge similar to that represented in the drawing. The screw Q' is turned in the position shown by the dotted lines in Fig. 1. The clamp device N is then set over the edge of the hearth so that the match-holders *l l'* are brought near or beneath the grate. The screw Q' is then turned in a vertical position, and a few turns of the screw-head clamps the whole device to the hearth, matches having been placed in the match-holders *l l'* so that the prepared ends of the matches are in contact, or nearly in contact, with the rear end of the sand-paper, the rod B having been previously set by being drawn forward until the pin I sets in the notch *g'*. A wad of paper is placed in the clasp M so as to reach to or beneath the grate. The rear end of the trigger H is then pressed down until the pin I is released from the notch *g'*, when the force of the spring C throws the rod B back suddenly and the matches are ignited, the flame being communicated to the contents of the grate by means of the paper in the clasp M. The slot *g* and the shoulder of the rod B, in which it is cut, are of such a length that just before the plate D reaches the cylinder A the pin I drops out of the slot and over the edge of said shoulder; the weighted side of the plate D then turns over the rod C so that the sand-paper is turned downward and protected from the fire. The bent wire F is auxiliary to the weighted side of the plate D, and by striking the rod J assists to reverse

the sand-paper and throw the plates E E' into the position shown by the dotted lines in the forward part of Fig. 1. When no sand-paper is used these plates need not be thus turned. The matches are prevented from being broken by too great or uneven friction by means of the flexibility of the match-holders and the plates E E'. When the distance between the stove-hearth and the grate is not sufficient to admit of the lighter being placed upon the stove in a vertical position, as shown in Fig. 1, the cylinder A with its attachments may be placed in the position shown in Fig. 4.

In order to make my device automatic in its operation I attach a cord or wire having a downward tension to the outer end of the trigger H. This cord or wire may then be passed over a bell-crank or other similar device to change its direction, if necessary, and then attached to an alarm-clock or other operating power, so that the lighter may be thereby operated at any desired time.

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

1. The arm J provided with one or more yielding match-holders, *l*, in combination with the inclined flexible and sliding friction-plate E, substantially as and for the purposes specified.
2. The combination of the supporting or friction plate E, notched rod B, lever H, and spring C, substantially as and for the purpose specified.
3. In combination with the supporting or friction plate E, lever H, and spring C, the grooved and notched rod B, substantially as and for the purpose shown and described.
4. In combination with the sliding rod B, groove *g*, and pin I, the weighted plate D and the bent wire F, or either, substantially as and for the purpose set forth.
5. In an automatic fire-lighter, the combination of the cylinder A, clamp N, and clasp O, substantially as and for the purpose specified.
6. In combination with the slotted clamp N, the rounded nut O and screw Q', substantially as and for the purpose set forth.

The foregoing specification signed by me this 21st day of November, A. D. 1871.

JAMES R. MURPHY.

Witnesses:

F. H. BROWN,
FRANCIS F. WARNER.