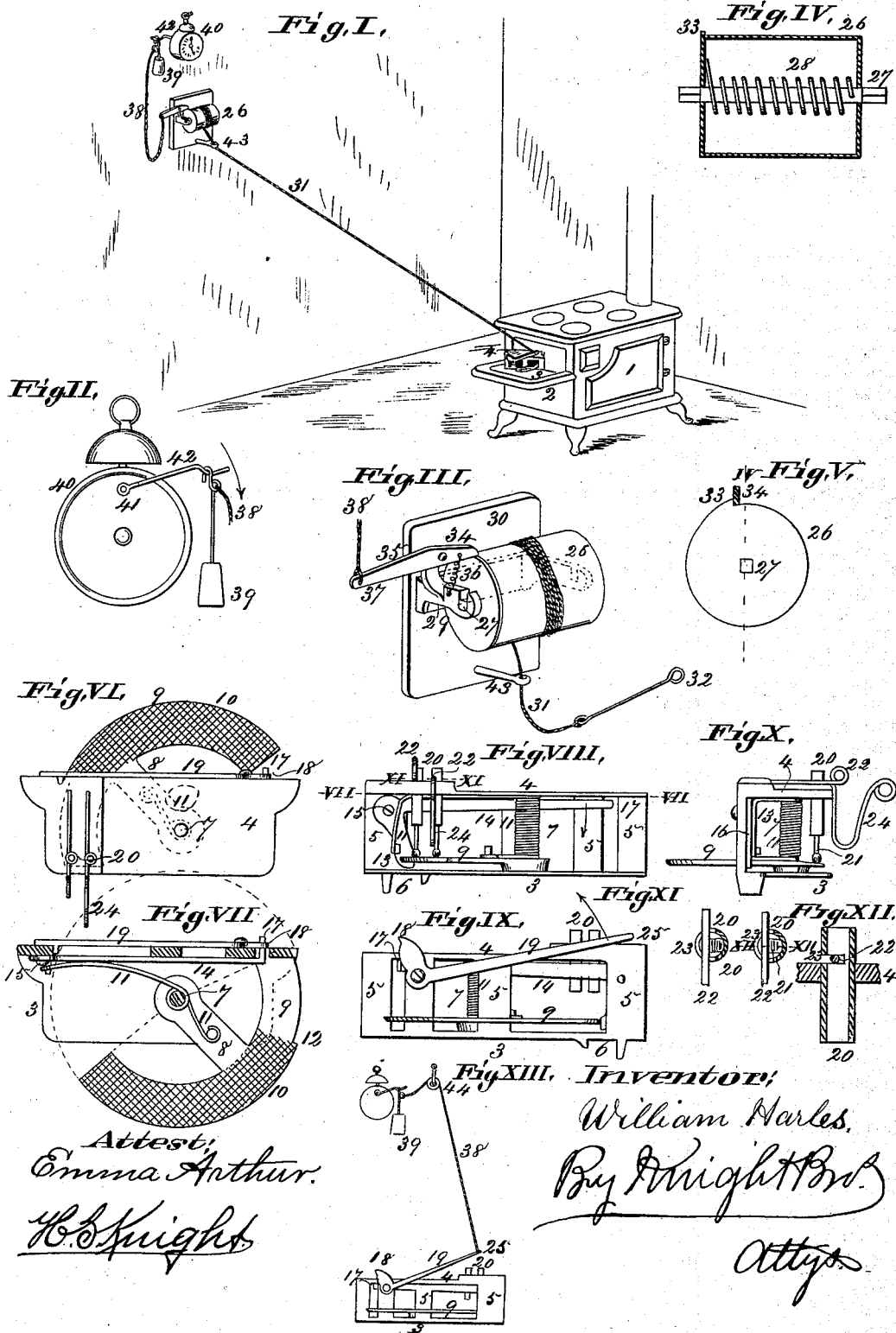


(No Model.)

W. HARLES.
FIRE LIGHTER.

No. 384,842.

Patented June 19, 1888.



UNITED STATES PATENT OFFICE.

WILLIAM HARLES, OF ST. LOUIS, MISSOURI.

FIRE-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 384,842, dated June 19, 1888.

Application filed July 15, 1887. Serial No. 244,415. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HARLES, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Fire-Lighters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This is a device for lighting the fire automatically at any hour that may be before determined on.

Figure I is a perspective view of the whole device. Fig. II is a rear view of an alarm-clock, forming part of the apparatus. Fig. III is a perspective view of the spring-drum for winding the cord. Fig. IV is a longitudinal section of the spring-drum at IV IV, Fig. V. Fig. V is an end view of the spring-drum. Fig. VI is a top view of the match-lighter, set ready for action. Fig. VII is a horizontal section at VII VII, Fig. VIII, except that the parts are shown in position after action. Fig. VIII is a side view of the match-lighter set for action. Fig. IX is a view of the opposite side, and Fig. X is an end view of the same. Fig. XI is a horizontal section of the match-holders at XI XI, Fig. XII. Fig. XII is a vertical section at XII XII, Fig. XI. Fig. XIII is a view, in elevation, of a modification.

1 is a stove in which fuel is laid ready for lighting. Upon the hearth 2 of the stove is placed the match-lighter having a bottom plate, 3, and top plate, 4, connected by bars 5.

6 are snugs to engage the edge of the stove-hearth.

7 is an upright bar forming the bearing of an oscillating arm, 8, which carries a segment, 9, roughened at the top, as seen at 10.

11 is a spring throwing the segment from the position shown in Fig. VI to that shown in Fig. VII.

12 is an offset on the segment which engages against a detent-arm, 13, of the L-lever 14, which is fulcrumed to the frame at 15.

16 is a spring bearing against the arm 13 and forcing it against the segment and holding it in engagement with the offset 12. The end of the bar has a side projection, 17, against which acts the end 18 of the lever 19 to force down that end of the lever 14 and throw the detent-

arm 13 out of engagement with the offset 12. On such disengagement the segment is swung around by the spring 11 and lights a match or matches in contact with the roughened part 10 of the segment.

At 20 are shown vertical tubes passing through the top plate, 4, of the frame. In the tubes are placed matches 21, whose lighting-ends are in contact with the segment and are held in this position by springs 22, which enter transverse slots 23 in the tubes and bear against the matches. There may, if desired, be only one of these match-tubes; but to insure the lighting of a match I prefer to have two, as shown. The tube may, of course, be made large enough to take in more than a single match. One of the springs 22 may be bent into a hook, 24, to hold a bunch of paper or other inflammable substance to be lighted by the matches and carry the flame to the kindling in the stove.

To free the detent 13 from the offset 12, the end 25 of the lever 19 must be moved upward. The apparatus for giving this upward movement to the end 25 will now be described.

26 is a hollow drum rotated upon its fixed arbor 27 by a spiral spring, 28, coiled around the arbor. The angular ends of the arbor rest in notches of brackets 29 upon a board, 30, which may be hung to the wall.

31 is a cord which is coiled upon the drum by the action of the spring 28, and which has at the end an eye, 32, or other device to engage the end 25 of the lever. One end of the drum has an offset, 33, which is engaged by the arm 34 of a lever, 35.

36 is a spring holding the arm 34 down in engagement. The other arm, 37, of the lever has a cord, 38, to which is attached a weight, 39, which is heavy enough to overcome the spring 36 and disengage the arm 34 from the offset 33.

40 is an ordinary alarm-clock to whose alarm-winding shaft 41 is firmly attached an arm or wire, 42, upon which the weight 39 is suspended when the alarm is set.

43 is an eye or pulley through which the cord 31 passes.

In the modification shown in Fig. XIII the winding-drum 26 and its appendages are dis-

pensed with and the cord 38 connected to the end 25 of the lever 19, said cord passing over a pulley, 44, so that when the weight 39 slips off the wire or arm 42 the fall of the weight will cause the upward movement of the end 25 of lever 19, and the segment 9 will be released from hold of the detent.

It is plain that a lighter weight, 39, may be used when the spring-drum forms part of the combination than when it is absent, because the weight in the former case has merely to disengage the detent 34 and the spring-drum winds up the cord 31 and releases the detent 13.

The operation of the devices is as follows: The segment 9 is turned into the position shown in Fig. VI and the offset 12 engaged on the arm 13. A match is put into each of the tubes 20, with the head of the match resting on the segment. The eye 32 is engaged on the end 25 of the lever 19. The cord 31 is drawn out so as to uncoil a sufficient quantity of it from the drum, thus winding up the spring within the drum. The weight 39 having been hung on the wire 42, the arm 34 engages the offset 33 and prevents the rotation of the drum. Now, when the hour arrives to which the alarm is set, the wire 42 is turned down and the weight 39 falls and disengages the detent-arm 34 from the offset 33. This allows the drum to rotate and coil up the cord 38, which draws up the end 25 of the lever 19 and disengages the detent-arm 13 from the offset 12 by the means before described. This allows the segment 9 to be swung around by the spring 11, which ignites the matches and lights the paper wad in the hook 24 and the flame spreads to the kindling in the stove. In place of the segment 9 with its arm 8 a sector or a circular disk may be used, as indicated by dotted lines in Fig. VII.

I claim as my invention—

1. In a fire-lighter, substantially as described, the combination, with the lighting mechanism having a detent-lever, of means for operating the detent to release said mechanism, which consists of a cord, 31, a spring winding-drum, 26, on which said cord is wound, a lever engaging a notch in said drum, and a weight attached to the end of said detent-lever and held normally in suspension by an arm on the winding-arbor of a clock, to be operated substantially as described.

2. The combination of the segment 9, the match-holder 20, a detent, 14, a detent-releasing cord, 31, a winding-drum rotated by a spring, a detent, 35, engaging said drum, a cord connecting the detent to a weight, and an arm on the winding-shaft of an alarm mechanism adapted to support the weight and to release it on the rotation of the alarm-shaft, substantially as set forth.

3. In a fire-lighter, the combination of the frame carrying a revolving segment having a spring and detent lever, means, substantially as described, for operating the detent-lever, and a match-holding device consisting of the tubes 20, fixed in the top plate, 4, of the frame, and springs 22, entering the transverse slots 23 and holding the matches in contact with the rough face of the segment, the said springs having their outer ends formed into the hooks 24, for holding inflammable material, substantially as set forth.

WILLIAM HARLES.

In presence of—

SAML. KNIGHT,
BENJN. A. KNIGHT.