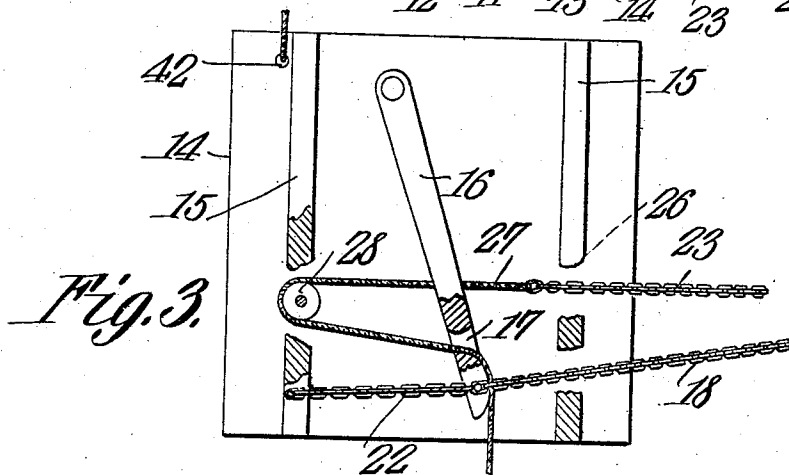
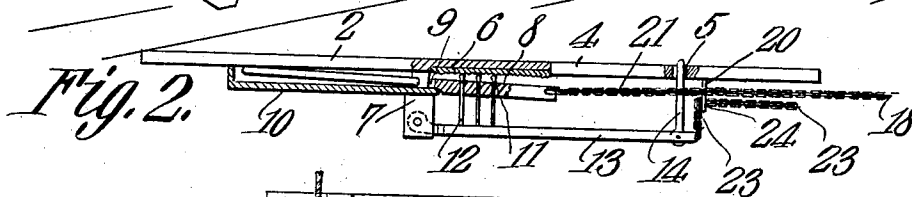


903,828.

Fig. 1.



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UNITED STATES PATENT OFFICE.

SAMUEL F. BATES, OF EDDY, TEXAS.

AUTOMATIC FIRE-KINDLER.

No. 903,828.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed January 11, 1908. Serial No. 410,454.

To all whom it may concern:

Be it known that I, SAMUEL F. BATES, a citizen of the United States, residing at Eddy, in the county of McLennan and State of Texas, have invented a new and useful Automatic Fire-Kindler, of which the following is a specification.

This invention has reference to improvements in automatic fire kindlers, and is designed to provide a means whereby a fire may be kindled in a stove at some predetermined time by means set at a prior time and released to action by a time piece suitably connected for the purpose.

The invention comprises essentially an attachment to a stove whereby a number of matches of the friction type may be drawn across an abrading surface and then be projected into the fire space of the stove to carry the flame to the materials already placed therein, so that the fire may be started by the aid of the matches so lighted, and the operation be entirely automatic.

The invention comprises also a trip mechanism adapted to hold a weight out of action and to be itself released by a clock or other suitable time instrument so that at a predetermined time a comparatively delicate trip mechanism will be actuated by the clock, and this trip mechanism will then release a more powerful actuating means, which in turn will draw the match-holding devices in a direction to cause the matches to move over the abrading surface and then be projected into the fire space of the stove and by their burning start the fire.

The invention will be best understood by a consideration of the following detail description taken in connection with the accompanying drawings forming a part of this specification, and in which drawings—

Figure 1 is a perspective view of a stove with the attachment applied. Fig. 2 is a longitudinal section of the match-carrying structures, and Fig. 3 is a detail view partially in section of a part of the means for connecting the weight to the match-carrying mechanism.

Referring to the drawings there is shown a stove 1 which may be of any type and, therefore, is not shown in any special detail in the drawing. Attached to the stove is a plate 2 by means of bolts 3 or other devices so that when desired this plate may be readily removed. The plate 3 is provided at one point with a slot 4 and a perforation 5 to

which reference will presently be made. Pivoted in the plate 2 is another plate 6 in line with the slot 4, and this plate may have a suitable abrading surface, as indicated. This abrading surface may be in the form of sand paper or emery paper, or the plate 6 may have a file cut produced thereon or be otherwise roughened to act as an abrading surface. One end of the plate 6 terminates at the slot 4, with which the plate is in line, and adjacent to the other end of the plate 6 there is a post 7 forming a guide for a bar 8, which bar is provided with a longitudinal slot 9 for the passage of the post 7. The post may also carry a hollow block 10 housing the slotted end of the bar 8. This bar 8 has a number of perforations 11 for the passage of matches 12, and the bar 8 is so located with reference to the abrading plate 6 that when the matches are seated in the perforations 11 their heads may be brought into contact with the abrading surface of the plate 6.

Hinged to the outer end of the post 7 is an arm 13 so located as to engage the ends of the matches 12 remote from the heads thereof, and this arm 13 has pivoted thereto a pin 14 projecting through the perforation 5 and operating as a guide pin for the arm 13. Suppose, now, that the bar 8 is in the retracted position shown in Fig. 2 and a number of matches 12 are seated in the perforations 11 with the heads of the matches in engagement with the abrading surface of the plate 6. Assume also that the arm 13 is caused to bear with some pressure on the ends of the matches. If, now, the bar 8 be drawn longitudinally to carry the matches over the abrading surface of the plate 6 toward the slot 4 and the pressure of the arm 13 be maintained, then the friction thus engendered will cause the match heads to catch afire and as soon as these matches are brought opposite the slot 4 the continued pressure of the arm 13 will project the burning matches through the slot 14 into the fire space of the stove, and if suitable inflammable material has been prepared beforehand and introduced into the stove, then these matches will cause such material to catch afire and so the stove will be lighted and the fire will progress in the usual manner.

In order to cause the match-holding parts to operate in the manner set forth certain devices may be provided and may be located at any point remote from the stove or close

to it, as the case may be. As shown in the drawings there is provided a board or support 14 spaced away from the wall of the room in which the stove is located by means of spacing strips 15. On the rear of the board, that is between the board and the wall of the room, there is pivoted an arm 16, the free end of which is provided with a perforation 17 and is suitably rounded, as shown. Fast to the free end of the arm 16 is a chain 18 leading over a pulley 19, which may be mounted on the wall of the room, and the direction of this chain is thereby changed so that it ultimately reaches a plate 20, which latter may be connected by other chains 21 to the bar 8. This plate 20 is used to provide a single chain 18 for the arm 16, and two chains 21 to straddle the pin 14. A short chain length 22 connects the end of the arm 16 to one of the spacing strips 15, and this limits the swing of the arm 16 in one direction, and this direction is such as to permit the arm 8 to be drawn away from the slot 4 to a position such as shown in Fig. 2. The arm 13 projects beyond the pin 14 and is there connected to a chain 23 which is carried around an eye 24 fast on the plate 2, and ultimately around a pulley 25 on the same pintle as the pulley 19. This chain is carried through a suitable perforation 26 in one of the spacing strips 15, and its free end may be connected to a flexible strand 27 extending around another pulley 28 journaled in one of the strips 15 and returning is passed through the perforation 17. The end of this strand 27 carries a weight 29 provided with a large eye support 30. The chains 18 and 23 may be replaced by other flexible strands or even by cords, although in case of cords there may be some danger of their being destroyed by fire. The flexible strand 27 may be a chain or cord, as may be desired.

Pivotally secured to the face of the board 14 is a pivoted arm 31 provided between the free end and the pivot with a notch 32, and also pivoted on the face of the board is another arm 33 provided with a finger 34 adapted to engage the notch 32.

Pivoted to the face of the board 14 is a spring-actuated frame 35 which may be locked in place by a pivoted finger 36 arranged to engage over the frame 35 and have its free end caught in a notch 37 formed in the short end of a small bell-crank lever 38, which latter has its long arm connected by a cord 39 to the alarm mechanism of a suitable alarm clock 40.

The eye 30 of the weight 29 is passed over the arm 33 and the nose 34 of the latter is caught in the notch 32 of the arm 31 so that the weight is supported in an elevated position. Fast to the frame 35 is a loop 41 engaging around the arm 31. When the weight 29 is thus supported the strand 27 is loose and the bar 8 may be moved to the position

shown in Fig. 2 with matches in place and the arm 13 brought into engagement with the butt ends of the matches. Now, the alarm clock 40 may be wound and the alarm set to be released at the desired time. The frame 35 is moved against the action of its spring and is caught by the finger 36, which latter is locked in position by the bell-crank lever 38 and the strand 39 is attached to the alarm mechanism of the clock. Now, when the alarm mechanism is released the strand 39 is pulled and its direction of movement being changed by passing through a perforation 42 in the board 14 will pull the bell-crank lever in a direction to move the notch 37 out of the path of the finger 36 and the spring frame 35 is thus released and becomes active. The sudden movement of the frame 35 under the action of its spring will cause the loop 41 to exert a sudden pull upon the latch-arm 31 and so pull it away from the finger 34 on the arm or lever 33, thus releasing the latter. Now, the weight 29 will pull the arm or lever 33 about its pivot until the link 30 can slide over the said arm and the weight will fall by gravity. This will cause the strand 27 to be straightened out and ultimately a sudden pull is exerted upon both this strand and the arm 16 with which it engages. By this means the chains 18 and 23 are both put under longitudinal strain but the chain 18 is unable to respond because of the matches 12 which prevent the pivoted arm 13 from moving under the pull of the chain 18. The bar 8, however, is free to move longitudinally and so the chain 23 is moved under the action of the weight 29 and the matches are pulled over the abrading surface and set on fire, as before explained. As soon, however, as the matches come into coincidence with the slot 4 the arm 13 is freed from restraint and the chain 18 becomes active under the pull of the weight 29 to suddenly project the matches through the slot 4, and this movement may be violent enough to throw the matches entirely free from the bar 8 and through the slot 4 into the fire chamber of the stove, where burning of the matches will set fire to the combustible material already located in the stove.

All those parts liable to come under the influence of the fire or of the burning matches are made of metal. Other parts away from the influence of the fire may be made of wood, except the strands, which may be made of chain or cord.

In the foregoing description the fire kindler has been described as applied to a stove. It can of course with equal facility be applied to a furnace or other structure wherein it is desired to build a fire. Nor is it necessary that the device be applied crosswise of the stove as shown, as it may be applied in a vertical direction in which case the plate 2 may be very much smaller in dimensions

than shown so that the slot 4 is brought co-incident with one of the slots in the draft door of the stove, and in this manner the ordinary draft slide may be left open so that the draft of the stove is not interfered with. In fact, various changes may be made in the structure and location of the parts so long as the salient parts of the invention are retained.

What is claimed is:—

1. A fire kindler comprising a plate having a slot therein and an abrading surface in line with said slot, a match holder comprising a plate with perforations for holding matches and movable over the said first named plate to carry the match head over the abrading surface and then into coincidence with the slots in the said first named plate, the second plate being substantially parallel with the first named plate and the match holding perforations traversing said second named plate, and means for holding the matches carried by the second plate in frictional engagement with the abrading surface and for projecting the matches through the slot into the fire chamber of a stove when the matches are carried into coincidence with the slot.

2. A fire kindler comprising a plate provided with a slot and an abrading surface in line with said slot, a longitudinally-movable match holder arranged to carry a plurality of matches across the abrading surface and into coincidence with the slot, means for causing the movement of the match holder to carry the matches across the abrading material and into coincidence with the slot, a pivoted arm for engaging the butt ends of all the matches, and means for bringing

pressure to bear upon the arm as the match holder is moved to maintain the match heads in engagement with the abrading surface and to project the matches through the slot into the fire chamber when the said matches are brought into coincidence with the said slot by movement of the holder.

3. A fire kindler comprising a slotted plate, an abrading surface in line with the slot in the plate, a match holder movable to carry the match heads across the abrading surface and into coincidence with the slot, an arm arranged to exert longitudinal pressure upon the matches, a weight, connections between the weight and both the match holder and pressure arm, and means for locking the weight in inoperative position and for releasing it to act upon both the match holder and the pressure arm simultaneously.

4. A fire kindler provided with a longitudinally movable match holder, and a pressure arm acting on the matches in the direction of their length, and means for imparting longitudinal movement to the match holder and applying pressure to the pressure-arm, comprising flexible strands, a weight connected to one of the strands, and a pivoted arm connected directly to one of the strands and through which the strand carrying the lever is passed.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

SAMUEL F. BATES.

Witnesses:

WILLIAM T. TUNSTALL,
T. W. McNAIR.