No. 675,879. Patented June 11, 1901.

F. W. CAMPBELL.

MATCH BOX.

(No Model.) (Application filed May 29, 1899. Renewed Oct. 19, 1900.)

Fig. 1.

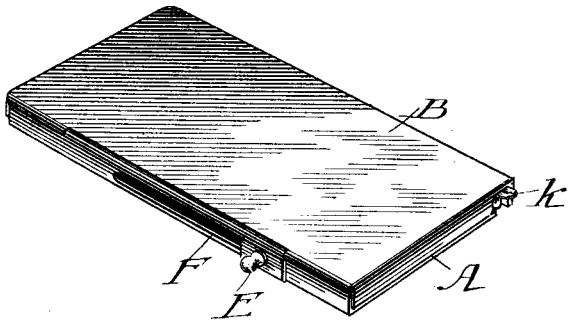


Fig. 2.

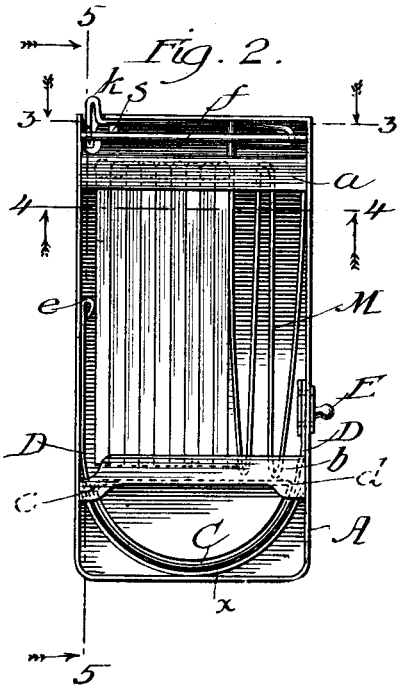


Fig. 3.

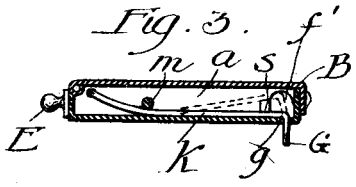


Fig. 7.

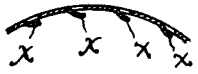


Fig. 5

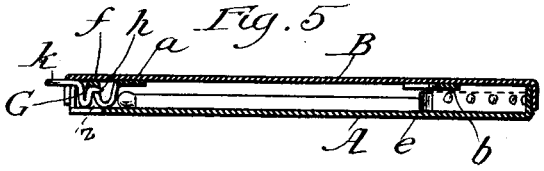


Fig. 6.

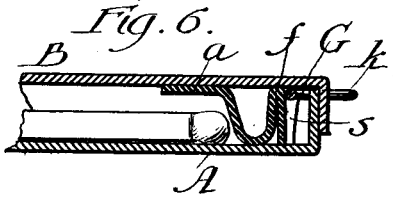
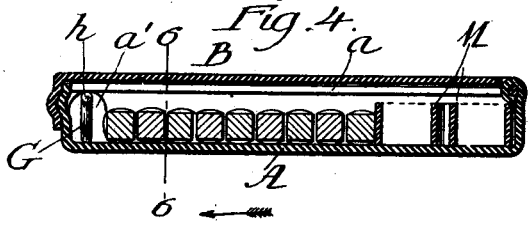


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANK W. CAMPBELL, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JUSTUS CHANCELLOR, OF SAME PLACE.

MATCH-BOX.

SPECIFICATION forming part of Letters Patent No. 675,879, dated June 11, 1901.

Application filed May 29, 1899. Renewed October 19, 1900. Serial No. 33,607. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. CAMPBELL, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Match-Boxes, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings.

The object of my invention is to provide a simply-constructed cheap match-box which when suitably charged can be manipulated so that the matches contained therein can one at a time be moved out of the box and at the same time ignited without releasing a hold thereon. This I accomplish in such manner as to prevent premature ignition of the fulminate of the discharged match or the imparting of the flame thereof to the matches remaining in the box, substantially as hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of my invention. Fig. 2 is a plan view of the same with the cover removed. Fig. 3 is a cross-section of the box, taken on dotted line 3 3, Fig. 2, looking in the direction indicated by the arrows. Fig. 4 is a similar section taken on dotted line 4 4, Fig. 2, looking in the direction indicated by the arrows and drawn to a scale about twice the practical size of the box. Fig. 5 is a longitudinal section taken on dotted line 5 5, Fig. 2, looking in the direction indicated by the arrows. Fig. 6 is a longitudinal section taken on dotted line 6 6, Fig. 4, looking in the direction indicated by the arrows. Fig. 7 is a sectional view of a fragment of the outer segmental wall of the runway.

In the drawings, A represents a shallow sheet-metal oblong box of suitable exterior design, which is closed by a suitable cover B, hinged to one of the longitudinal sides thereof in suitable manner, which is fastened when closed over the box by any of the usual simple means employed in boxes of a similar character.

Near each end of the box it is provided with the transverse cleats *a b* of a guideway for the matches, which are L shape in cross-section and face each other in such manner that the overhanging portions lap over the ends of and retain the stack of matches placed under the same. The cleat *a* of this guideway has an opening *a'* at one end thereof in the part of its web at right angles to the flat side of the box, through which the matches are discharged, and the cleat *b* of the same is provided with openings *c* and *d* at each end thereof in the part of the same at right angles to the flat side of the box, which are connected by a segmental runway C. The extent of this runway corresponds almost to a semicircle and is adapted to receive and direct the course of a spring-steel pusher D. The end of this pusher D alining with the opening *a'* in the cleat *a* of said guideway is doubled back upon itself to form a rounded pushing-head *e* therefor, and the length of this pusher is such that when its head *e* is about at the point where it enters the opening *c* of cleat *b* the remainder thereof traverses said runway and extends through the opening *d* parallel along the inner surface of the side of the box to which the cover is hinged to a point near the guideway *a*, where its end is preferably reinforced in a suitable manner and has attached thereto a stud E, which projects out through a longitudinal slot F in the side of the box. This slot extends from a point about a quarter of an inch from cleat *a* of the guideway to within about the same distance of the cleat *b*, and when it is desired to push a match out of the box the stud E is grasped and moved longitudinally in said slot to or toward the end thereof near said cleat *b*, thereby moving the pusher so that its head moves along the opposite side of the box and pushing against the butt of the alining match moves it out through opening *a'*, through an opening *f'* and an opening Z in the end edge of the box, as will hereinafter more fully appear. The matches are kept pushing laterally against the side of the box opposite that in which slot F is located by an M-shaped spring M, so that the moment the forwardmost match is removed from the case and the pusher is moved back to its normal position its head will be in opening *c* and the next match will take the place of the discharged match.

Between the side *a* of the guideway and the end of the box from which the matches are

ejected there is preferably a transverse partition *f*, which, if desired, may be made of the same strip of sheet metal forming the said side *a*, substantially as shown. In one end of this partition, alining with opening *a'*, is an opening *f'*, and in the portion of the broad side of the box just back of said opening *f'* is a longitudinal slot *g*, extending from about a point intersected by a transverse plane striking midway between the guideway and partition *f* to and up into the contiguous end of the box to form the exit-opening Z of the match-box. This slot *g* is provided to afford sufficient play for the scratcher G. This scratcher consists of a suitable piece of spring-wire, the engaging point *h* of which is bent toward the match in the case alining with opening *a'* and preferably sharpened. From this point *h* the wire is bent laterally and extends at right angles to the broad side of the box through slot *g*, then doubles upon itself, and then is bent in a plane alining with the match next to be ejected, and again doubled upon itself to form a hand-grasp *k*, which projects beyond the end of the box through an opening in the flange of the cover. The wire then extends transversely to form, as it were, a spring-stem K, which has its end secured in the partition near the side to which the cover is hinged. Near its secured end this stem bears against a pin *m*, projecting at right angles from said partition in such manner that the opposite engaging end of the igniter is normally kept in the position shown in Fig. 5. The position, however, of the igniter which it is necessary for it to be in in order to light the matches as they are expelled from the box is shown in full lines in the last three figures of the drawings. In order to move said igniter into this position, the hand-grasp portion *k* thereof, which projects out of the case, is caught hold of, and it is moved into the position shown in dotted line in Fig. 3 and caught over the slightly-undercut end of a block *s*, as shown.

The operation of my invention is as follows: When the box has been loaded with a sufficient number of matches, the operator makes sure that the head of the pusher is in proper position by seeing to it that the stud E is at the end of slot F nearest cleat *a* of the guideway and moves the igniter so that it catches over block *s* and its sharpened engaging point is in the position shown in Fig. 5. The stud E is then grasped and moved to or toward the end of the slot F nearest cleat *b*, thus pushing the match in front of and in longitudinal alinement with the head of the pusher out through opening *a'* into contact with the engaging end of the igniter. This the match pushes back of the block *s*, whereupon the igniter snaps or moves rapidly laterally and the point thereof scratches and ignites the match, which by reason of the greater force exerted by the operator to move it forward when it met the igniter is shot forward out of the box usually about half its length to a position where the flame thereof cannot affect the matches remaining in the box. The ignited match may be easily removed from the box by the finger or can be held with its butt-end in the box until used and then blown out and removed in the same way.

The walls of the runway for the pusher may be perfectly smooth; but I prefer to reduce the friction on the pusher by punching the metal of the outer segmental wall thereof so as to create inwardly-projecting protuberances *x*, as shown in Fig. 2. This as well as other slight changes in the structure of my invention and its parts I desire to be considered as contemplating within the spirit of my invention, so long as such change does not effect a departure from the principles of construction and operation embodied therein.

What I claim as new is—

1. The combination with a suitable match-box having a lateral match-retaining guideway which has an opening at both ends of one side and an opening at one end at the other side thereof, and a cover for said box, of devices for moving the matches toward the side of the box in alinement with the alining openings in the sides of the guideway, and a spring-pusher extending in segmental course through both end openings in one side of said guideway, the engaging end of which moves reciprocally in alinement with the longitudinal alining openings of the guideway next the side of the box opposite that where it is manipulated.

2. The combination with a suitable match-box having a lateral match-retaining guideway which has an opening at both ends of one side and an opening at one end at the other side thereof, and a cover for said box, of devices for automatically moving the matches toward the side of the box in alinement with the alining openings in the sides of the guideway, and a spring-pusher extending in segmental course through both end openings in one side of said guideway, the engaging end of which moves reciprocally in alinement with the longitudinal alining openings of the guideway next the side of the box opposite that where it is manipulated.

3. The combination with a rectangular match-box having a lateral match-retaining guideway therein from one end of which the forwardmost match can be removed in the direction of its length and having a longitudinal slot in the side thereof opposite that nearest said forwardmost match, and a cover for said box, of devices for moving said matches laterally toward the exit end of said guideway, and a spring-pusher extending in segmental course and from one side of said guideway to the other, one end of which is adapted to extend through said slot and the other end of which pusher is adapted to push the forwardmost match longitudinally out of said guideway.

4. The combination with a match-box hav-

ing a lateral match-retaining guideway means for moving the said matches toward one side of said box in said guideway and an elastic mobile spring adapted to push the forwardmost match longitudinally out of said case, of a match-igniting device with which the match being expelled comes in contact and is ignited as it is moved out of the box.

5. The combination with a suitable match-box having a lateral match-retaining guideway means for moving said matches toward one side of said box in said guideway and devices for pushing the forwardmost match longitudinally out of the box, of a spring-controlled igniter the point of which when held in position in front of the match being expelled is released thereby and scratches laterally over the fulminate of the same.

6. The combination with a match-box A having a longitudinal slot F in one side thereof transverse cleats *a*, *b*, therein the former of which is provided with an opening *a'* at one end and the latter with openings *c* and *d* at each end, and a segmental runway C connecting said openings *c* and *d*, of a spring-steel pusher D having a stud on one end extending through said slot and movable in said runway, and a spring M adapted to move the matches laterally in said guideways toward and successively into alinement with openings *c* and *a'* through the latter of which they are successively expelled by said pusher.

7. The combination with a match-box and devices for successively expelling the matches longitudinally therefrom, of an igniter G consisting of spring-wire the stem of which is secured in such manner that the point *h* thereof when retained in abnormal position is in the path of the match being expelled and when released thereby from such abnormal position automatically scratches transversely over the fulminate of the match, as and for the purpose set forth.

8. The combination with a match-box having a retaining-block *s* near the match-exit opening therein and devices for successively expelling the matches therefrom of the igniter G consisting of spring-wire one end of which is, secured to said box near the side opposite said exit-opening and the engaging end of which is turned toward the match to be expelled so that when the stem thereof is caught over said block *s* it is in the path of the said match and is released thereby to laterally scratch the fulminate thereof.

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