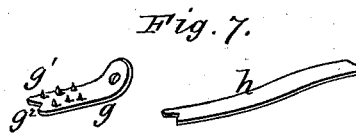
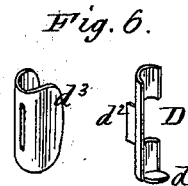
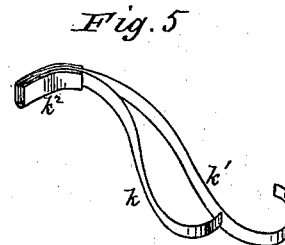
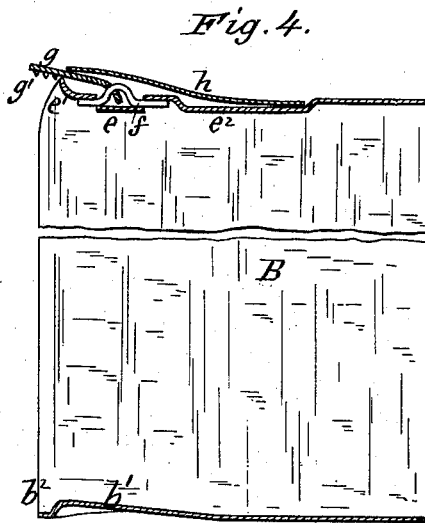
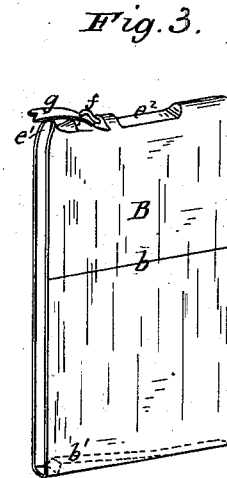
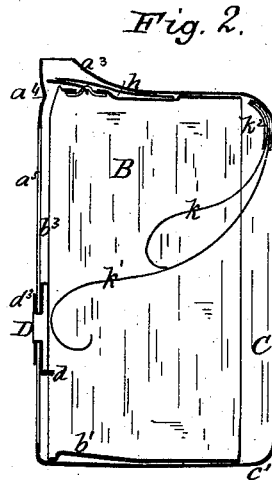
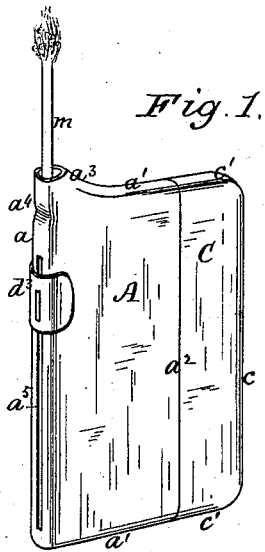


F. S. DANGERFIELD.
Match-Box.

No. 217,345.

Patented July 8, 1879.



Witnesses

W. B. Masson

W. E. Brown

Inventor:

Francis S. Dangerfield

by E. E. Masson
atty.

UNITED STATES PATENT OFFICE.

FRANCIS S. DANGERFIELD, OF AUBURN, NEW YORK.

IMPROVEMENT IN MATCH-BOXES.

Specification forming part of Letters Patent No. **217,345**, dated July 8, 1879; application filed May 20, 1879.

To all whom it may concern:

Be it known that I, FRANCIS S. DANGERFIELD, of Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Pocket Match-Safes; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the match-safe. Fig. 2 represents a vertical section of the same. Fig. 3 represents a perspective view of the internal or middle piece of the safe and its igniter. Fig. 4 represents in section an enlarged view of the middle piece. Fig. 5 represents a detached view of the match-advancing double spring. Fig. 6 represents detached views of the match-elevating slide and arm. Fig. 7 represents detached views of the frictional igniter and spring.

My invention relates to that class of match-safes designed more especially for carrying in the pocket.

Hertofore match-safes of this class have generally been made cylindrical or oval in form, or, if made rectangular, they were too wide to properly retain a single row of matches in line with the match-expelling arm.

My invention consists in a match-safe made so thin or narrow as to accommodate only one row of matches at a time. It is closed on one side with a cover, having a double spring to advance the matches, and is provided with a roughened and serrated igniter connected to the box by a double-swivel joint, the inner casing of the safe being suitably bent, depressed, or stamped to accommodate the match-expelling arm, the igniter-hinge, and its spring without interfering with the smooth appearance of the outer case.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

In the drawings, A represents the front or outer casing of the match-safe; B, the middle or internal portion of the box, and C the cover. The part B is made of a strip of thin metal bent and folded over, with its ends brought together and soldered, as at *b* in Fig. 3. The casing A is bent in the middle, as at *a*, and its

edges *a'* brought together in position to be soldered. The cover C is also bent in the middle at *c*, and has its ends soldered together at *c'*. The parts A and C are made of such size as to receive and embrace the middle part B, forming a smooth joint at *a*².

To simplify the construction and reduce the cost of manufacture, the various parts are bent on previously-formed mandrels to give them the required form at one operation. The bottom of the piece B is swaged in to form an inclined way, *b'*, to gradually elevate the matches above the forward end, *b*², of said bottom, the depression *b*² being kept to receive the lower end or finger, *d*, of the arm D, used to elevate and expel the matches. The rounded top of the piece B is depressed at *e*, and perforated at each end of the depression to receive the ends of a bent wire, *f*, passing through the perforated end of the igniter *g*, and secures the latter, so that its roughened under surface *g*¹ projects over the flaring end *e'* of the piece B, through which a match, *m*, is forced and ignited. The igniter *g* is made of a flat piece of steel roughened and serrated at the end *g*². It can be moved up and down upon its pivot-wire *f*, and the latter can rock sideways in its bearings, thus providing for the igniter a double-swivel joint, and adapting it to scratch off the phosphorated end of every match in succession without a miss, and whatever may be the shape of the end. The top of the piece B is also depressed at *e*² to receive a flat spring, *h*, to bear upon the top of the igniter *g*.

The upper part of the casing A is bent upward at *a*³ to allow for the free action of the igniter and its spring. The front portion *a* is bent in at *a*⁴ to direct the ascending match toward the igniter. This portion *a* is slotted at *a*⁵ to admit the stump *d*² of the arm D; and this stump is riveted on the outside of the saddle or cap *d*³, that can be readily grasped between a finger and thumb.

k and *k*¹ represent two flat springs of unequal length. They are clamped together at one end with a piece of sheet metal, as tin or brass, having a short bend, *k*², to retain the springs securely united and be soldered in the interior of the cover C, as shown in Fig. 2, the object of the springs being to advance the row of matches and bring the first one over the

sliding arm D, the smallest spring, k , pressing on the middle of the length of the matches while the box is nearly full, and the spring k^1 upon the matches remaining after the spring k has ceased to act. Thus, one spring relieving the other, they can be made of very light and flexible spring metal.

To unite the parts of which the box is composed after the parts A, B, and C have been stamped and the parts shown in Figs. 6 and 7 formed, the arm D is secured loosely in the interior of the casing A by riveting it to its cap d^3 , and the middle part, B, carrying the igniter g , as shown in Fig. 3, is introduced within the casing A until its forward end rests against the edges of the arm D, and forms, besides the groove a^5 , additional guideways b^3 for the same. The spring h is then slipped in position above the igniter, and a drop of solder placed between the top and bottom edges a^1 of the casing A, uniting the latter to the casing B, as well as to the spring h .

The cover C is completed by inserting within the springs, Fig. 5, and securing them, as shown in Fig. 2, with a drop of solder. The safe is then nickel-plated, ready for filling with matches. It is intended to hold about fifteen matches. They are inserted through the side after removing the cover C, the latter being afterward replaced, with the spring k pressing against the matches. The arm D being at the lower end of its course, with the finger d in its recess b^2 , the first match will advance until it rests upon said finger in position to be elevated under the igniter, and passing against its roughened bottom and edge with sufficient

friction to ignite or light the match, the latter being retained in convenient position for use between the spring-igniter and the side a of the outer casing.

Having now fully described my invention, I claim—

1. A match-safe casing formed of the combination of an outer casing, A, bent upward at a^3 , an inner casing, B, provided with an igniter-plate, g , and an internal inclined way, b^1 , as described, and a cover, C, substantially as and for the purpose set forth.

2. The igniter g , connected to the casing B by a double-swivel joint, in combination with spring h , casing B, and casing A, inclosing the spring and igniter, substantially as shown and described.

3. The combination of casing A, bent at a^4 , casing B, having inclined way b^1 , guideways b^3 , and arm D, to elevate and direct matches to the igniter, substantially as described.

4. The combination of casings A and B with cover C and double springs k k^1 secured to said cover, substantially as and for the purpose described.

5. The combination of casing A, bent upward at a^3 and inward at a^4 , with inner casing, B, having flaring opening e^1 , and carrying by a double-swivel joint the igniter g above said opening, substantially as and for the purpose described.

FRANCIS S. DANGERFIELD.

Witnesses:

E. E. MASSON,
W. B. MASSON.