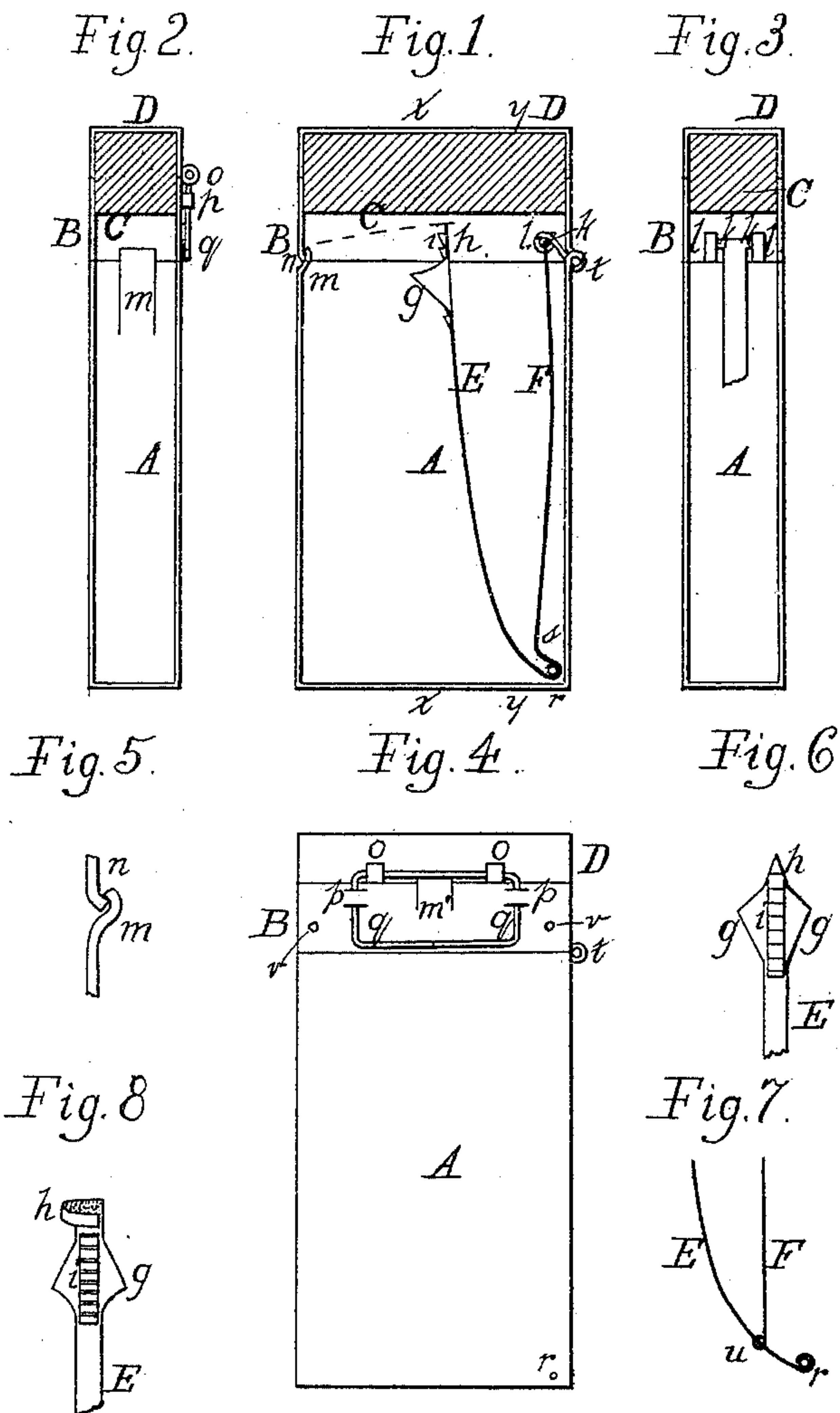


(No Model.)

H. K. WHITE.
MATCH SAFE.

No. 467,869.

Patented Jan. 26, 1892.



Witnesses
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MATCH-SAFE.

SPECIFICATION forming part of Letters Patent No. 467,869, dated January 26, 1892.

Application filed February 4, 1891. Serial No. 380,245. (No model.)

To all whom it may concern:

Be it known that I, HARRY KIDDER WHITE, a citizen of the United States, residing at Annapolis, Anne Arundel county, Maryland, have invented a new and useful Match-Safe, of which the following is a specification.

The object of my invention is to provide a neat and convenient match-box, in which, first, the top or bottom has a soft and yielding surface formed by a piece of rubber for the match-heads to rest upon, so as to remove danger of accidental ignition by their coming in contact with a hard or metallic surface; second, the matches are held by a spring, so that they cannot move about when the box is closed, and when the box is opened the uppermost matches are pushed out slightly, convenient to be taken by the fingers, and, third, the projecting rubber end has a removable cover hinged to and forming part of the case.

Figure 1 is a sectional view through center of match-box, showing the details of construction. Fig. 2 is a cross-section on the line $x x$, Fig. 1, looking toward the lid-catch. Fig. 3 is a cross-section on the line $y y$, Fig. 1, looking toward the lid-hinge. Fig. 4 is a view of one side of the box. Fig. 5 shows a section of the lid-catch. Fig. 6 is a view of the head g of the spring E F. Fig. 7 shows a modified form of spring E F. Fig. 8 is a perspective of the head g , showing the construction of the tip h I use when the bottom of the box is of rubber.

Similar letters refer to similar parts throughout the several views.

The box is made, preferably, of metal and consists of the main body A, the lid B, hinged at t , and the end C of rubber. The metal part of the case may be made open in the top, as represented, or open in the bottom, according as it is intended that the matches shall be placed in the box with their heads up or with their heads down. The opening is filled and the top or bottom of the box, as the case may be, is formed by a piece of rubber C. On the surface of this rubber C the match-heads rest, finding a soft yielding contact.

In the drawings, the top is represented as made of rubber, and therefore I will hereinafter refer to the rubber piece as the top. The

construction, if I place it in the bottom, is similar to that represented.

I prefer to secure the rubber top C in the metal part of the case by cement, but may secure it by pressure of the rubber or by rivets r , passed through the case and rubber. I make the rubber top C of such dimensions as to extend beyond the edge of the metal part of the case, as shown in the figures, and thus form a top by which I not only avoid having the heads of the matches in contact with a hard or metallic surface, but also have a projecting rubber end which I may use as an eraser. For the top C, projecting in this way, I provide a cover D, hinged to the case and protecting the rubber and keeping it from being soiled when closed over the rubber.

The hinge t , joining the lid and case, is formed by a strip extending from the case A, bent into a circular form, and two strips $l l$, Fig. 1, extending from the lid B, similarly bent to fit on each side of the former strip. A pin passing through these secures together the case A and lid B and forms the hinge-pivot. The strips $l l$ are further bent up, as shown, Fig. 1, and the ends are turned over circularly to hold the lugs $k k$, extending from the spring E F, and take the tension of and work the spring.

The spring E F consists of two branches E and F, the position shown in Fig. 1 being that taken when the box is somewhat more than half-filled with matches. The branch E is very elastic, being very flexible near the point s' , but stiffer toward the head g , and the branch F is rigid from the lugs k to the point s , where it is made elastic and flexible to bend with the branch F. The object in making the branch F stiff is that, the spring being constantly under tension, this tension may act through branch F on the lugs $l l$ to open the box, the act of opening also moving up the head g , and that when the lid B is closed and the bearings $l l$ on the lugs $k k$ force the branch F down the lower part of the spring is caused to turn about the rivet r , passed through the case A, as an axis. By this means the curvature of the branch E is increased, especially in the neighborhood of s' , as the head g , pressing against the matches, cannot turn about the point r and the pressure of the head g upon the matches is in-

creased. The increase of curvature of the branch E, as described, when the box is closed, causes the head *g* to be drawn down, slipping down along the matches. When the catch *n* 5 *m*, holding the lid closed, is released, the tension of the spring, acting through its rigid arm F on the lugs *l l*, as described above, will throw the lid back. The branch E will at the same time straighten to some extent in 10 the region near *s'*, the branch F in moving up allowing it to do so. In straightening, the lower end turns about *r* and the head *g* moves up. The object of this operation of the head when the box is opened is to carry 15 a match beyond the other, so that it may be taken by the fingers. This is accomplished by causing friction between the middle match and the serrated surface on the head *g* of the form shown at *i*. This surface is preferably 20 furnished by a piece of rubber, as causing the most friction, attached to the head *g*, as shown at *i*, Fig. 6. The head *g* has the sides bent forward to inclose all the matches presented toward it. It thus gathers 25 all the matches together and brings them successively in contact with the grasping-surface *i* to be raised and removed. The head is extended at *h*, in order that it may be forced back toward the hinge by the finger when 30 filling the box. When the rubber C forms the bottom of the box and the matches are placed with their heads down, I form the tip *h*, as shown in Fig. 8, by bending it around and making it elastic, with the inside surface 35 roughened and swelling out slightly below to easily slip over a match. On drawing a match up through it the head, being pressed by the rough interior surface, is ignited.

I may form the spring in the way shown in 40 Fig. 7, the rigid arm F having two forked extensions curved around and engaging lugs at *w* on the edges of the arm E, the lower part of the arm E passing around the rivet *r*. The lid is held closed by the catch *n m*, formed by 45 slitting the case A a short distance on each side of *m* and bending the strip to the form shown at *m*, Fig. 5.

The cover D for the rubber end has two extending strips *o o*, turned over circularly to 50 form a hinge with the wire *q*, Fig. 4. This wire *q* passes through the loops *p p*, formed by stamping and forcing out the material of the case, the ends of the wire being turned in, as shown, to prevent the wire coming out. 55 The cover D is held down by a catch *m'* on each side of similar construction to the catch *n m* of the box-lid. To expose the rubber, the catches *m'* being released the cover D is moved up, the wire *q* sliding through the 60 loops *p p* until its curved ends come in contact with the loops. The cover D is then turned back on the hinge *o o* about the wire *q*, and is then pushed down until the wire *q* is in its former position and the cover is out 65 of the way. I may bevel the projecting edges and corners of the rubber end, and in this case unite the cover D to the case by an ordi-

nary hinge on one side similar to that at *t*, having a single catch on the opposite side to hold it closed. 70

I am aware that match-boxes have been constructed having springs to hold the matches in a solid mass, and also with springs to open the lid in various ways. I therefore do not claim these features broadly. Incidentally the head *g* of the spring presses and 75 holds the matches together; but its primary object is to gather the matches to its center, where they are engaged by the serrated surface *i* and raised one by one, the side pressure being necessary for said engagement. I 80 provide the soft-rubber bearing C to avoid danger of ignition of the match-heads.

I claim, therefore, simply—

1. The combination, with the case of a 85 match-box, of a piece of rubber secured in one end to form a soft and yielding bearing for the heads of the matches.

2. The combination, with the case of a match-box open at one end, of a piece of rubber to close the end secured to the case, substantially as described. 90

3. The combination, with the case of a match-box, of a piece of rubber secured in one end of the case of the box to form the top or 95 bottom thereof, substantially as described, and form a soft and yielding bearing for the heads of the matches.

4. The combination, with the case of a match-box, of a piece of rubber secured in one 100 end of the case of the box to form the top or bottom thereof and present a soft and yielding bearing for the heads of the matches and extending beyond the edge of the metallic part of the case, substantially as described, so 105 that it may be used as an eraser.

5. The combination, in a match-box, of a case, a lid hinged thereto, a rubber end projecting beyond the edge of the metallic part of the case, and a cover for said rubber end, 110 substantially as described.

6. The combination, in a match-box, of a case consisting of a main part A, a lid B, hinged thereto, and a rubber end C, a cover D for the rubber C, said cover D completing 115 the homogeneity and symmetry of the external visible part of the box, the case being provided with loops *p p* and the cover D having looped extensions *o o*, and the wire *q*, engaging said loops *p p* and extensions *o o*, substantially as described. 120

7. The combination, in a match-box, of the case A, a lid hinged thereto and having extensions or bearings *l l*, the spring E F, having lugs *k k* in said bearings *l l*, and the rivet 125 *r*, around which said spring passes, substantially as described, for the purposes specified.

8. In a match-box, the combination of the case A, provided with a rivet *r* near the bottom, a lid hinged to the case and having ex- 130 tensions *l l*, and a single continuous spring having one end engaged by said extensions *l l* and passing around said rivet *r*, the other end of said spring being provided with the

head *g*, whereby the matches are held in place when the lid is closed and a single match is elevated when the lid is opened, substantially as described.

5 9. In a match-box having a lid hinged thereto, one leaf of said hinge being extended to form bearings *ll*, a spring having one end secured to said bearings *ll* and extended and curved to normally hold the matches in the
10 box when the lid is closed and provided with a head to grasp a single match and raise it when the lid is opened.

10. In a match-box, the combination of the case having a rivet *r* near the bottom thereof
15 and a lid hinged thereto, and a spring bearing on said lid to open the same and formed of a single piece bent to engage said rivet and extend upward to engage and hold the matches in place and raise one on opening
20 the box, said spring having a strong resiliency on the lid-bearing end and a less resiliency in the match-bearing end, substantially as described.

11. In a match-box, the combination of the case, a lid hinged thereto, and a curved V-shaped spring turning about a pivot in the bottom of said box and bearing at one end against the lid to open the same and provided at its other end with a rubber-lined
30 head adapted to engage the matches, the distance between the points of said spring where it is attached to the lid and case being normally greater than the distance between the bearings *ll* and rivet *r*, the points of attachment to said lid and case of the spring.
35

12. In a match-box, the combination of the case, a lid hinged thereto, and a V-shaped spring formed with one rigid leg *F* bearing on the lid and one elastic leg *E* of great curvature in its lower part bearing on the matches and passing about the rivet *r*, said spring being under constant tension in order to throw the lid open by its pressure on the bearings
40 *ll* when the catch is released and to keep the matches to one side and grasp one match by its pressure and raise it through a decrease in curvature of said leg *E* when the lid is opened, substantially as described.
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13. In a match-box, the combination of the case, a lid hinged thereto, and a V-shaped
50 spring formed with one rigid leg *F* and one elastic leg *E*, passing about the rivet *r*, said rigid leg *F* having lugs *k k* to engage bearings *ll* on the lid and cause a constant upward pressure on said bearings *ll*, and said elastic leg
55 *E* having a head *g* adapted to gather the matches to the grasping-surface *i* and by constant side pressure enable said surface *i* to carry up a match when the head *g* moves up through the action of the rigid leg *F* and bear-
60 ings *ll* on opening the lid.

14. In a match-box, the combination of the case, the lid, and a spring engaging each of said parts and extended to bear against the matches and provided with a head having a
65 rubber cushion therein, substantially as described.

15. In a match-box having a hinged cover or lid, a spring of variable resiliency from end to end, one end being secured to the lid and
70 the other end being provided with a head lined with rubber to bear against and grasp a match, substantially as described.

16. In a match-box, the combination of a case and a V-shaped spring attached thereto
75 and provided with a rubber-lined head having wings on either side, whereby it is adapted to press against the matches to keep them in the position to grasp a single one thereof and raise it when the box is opened, substantially
80 as described.

17. In a match-box, the combination, with the case, of a V-shaped spring having a head
85 *g*, adapted to raise a single match when the box is opened, and a tip *h*, whereby the spring may be pressed back to fill the box, said tip *h* being curved around and elastic and having its inside surface roughened, whereby the match may be ignited by drawing the match-
90 head through between the rough parts, substantially as described.

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Witnesses:

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