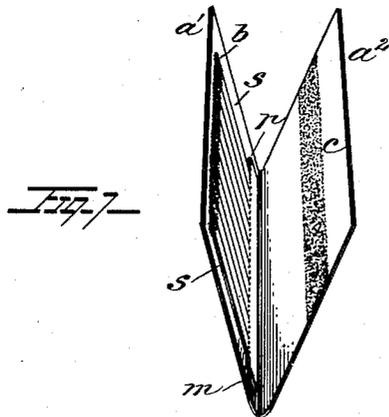
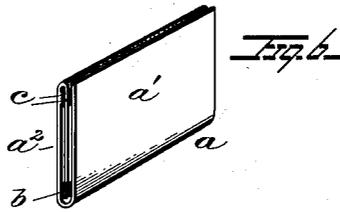
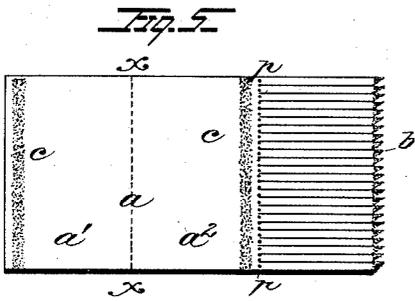
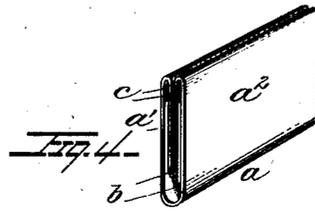
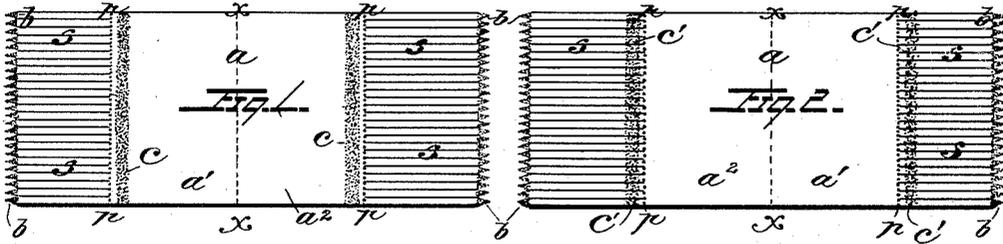


(Model.)

J. PUSEY.  
FLEXIBLE MATCH.

No. 483,166.

Patented Sept. 27, 1892.



Witnesses:

*John Talan*  
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# UNITED STATES PATENT OFFICE.

JOSHUA PUSEY, OF LIMA, PENNSYLVANIA.

## FLEXIBLE MATCH.

SPECIFICATION forming part of Letters Patent No. 483,166, dated September 27, 1892.

Application filed August 6, 1888. Renewed March 17, 1892. Serial No. 425,274. (Model.)

*To all whom it may concern:*

Be it known that I, JOSHUA PUSEY, a citizen of the United States, residing at Lima, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Friction-Matches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

10 The object of this invention is to provide a friction-match device which shall be cheap, readily made, convenient in use, and efficient, and which may be handily and safely carried in the pocket.

15 The invention consists, first, in a friction-match device consisting of a series of splints or strips of thick inflammable paper, wood, or like material tipped with an ignitable composition and attached to and inclosed

20 by a suitable cover folded and adapted to be opened and closed as the covers of a book, said cover being preferably provided with an igniting surface or composition, whereby the "match-book" may be conveniently

25 carried in the pocket, and when it is desired to light any one of the splints the same is torn or broken off, and the ignitable composition may then be brought into frictional contact with the igniting-surface; secondly, in

30 the particular construction of the friction-match book, consisting of a sheet of thick paper, wood veneer, or other suitable pliable and inflammable material of suitable dimensions, the end portions of which are divided

35 into a series of splint-strips, the same being tipped or provided with an ignitable composition, while the other part of the sheet is left plain or undivided and provided with a suitable igniting surface or composition, and

40 the splint-strips are folded over upon the said plain portion, toward the middle thereof, and the latter is then folded so as to inclose the series of splints as between the covers of a book, and when a splint is to be lighted it is

45 broken or torn off from the cover and its tipped end brought into frictional contact with the igniting-surface; thirdly, in a particular construction or arrangement whereby the portion of the splints provided with the

50 ignitable composition of the one series is kept normally out of contact with the like portion of the opposite series, as arranged

in the book form hereinbefore mentioned; fourthly, in certain details of construction hereinafter pointed out.

Although not limited thereto, my invention is especially useful in what are known as "safety-matches," wherein the splints are provided with a chemical composition which is readily ignitable by friction only when brought into contact with another suitable chemical composition. These different compositions are well known to those skilled in match manufacture.

Referring to the drawings, in which Figs. 1, 2, 3, and 4 represent the preferred form of the invention, *a* is a sheet of strong thick paper or the like, preferably charged with an inflammable material, so as to burn readily, and which sheet is also preferably made practically waterproof. A convenient pocket size for the sheet, before folding, is about eight inches long and, say, three inches wide. The ends of the sheet are provided or tipped with a suitable ignitable composition *b*, well known in match manufacture, and are divided into strips *s*, which constitute splints, say, about two inches in length. The free ends I usually make pointed, as shown. Near the line of connection of the splints I provide a line *c* of igniting surface or composition. The connected ends of the splints may also be perforated, as on the line *p*, so that they may be readily detached. The sheet is now ready for folding. The divided or splint portions are folded over, as seen in Fig. 2, and then the sheet is folded inwardly at the middle, as seen in Fig. 3, thus forming a "book," with the splints and compositions protected by the uncut portion, which constitutes a cover or back *a'* *a*<sup>2</sup>.

The device is now ready for use in the following manner: When a light is desired, the book is opened, one of the splints torn or broken off, and the end provided with the ignitable composition is placed between the folds, with the line of igniting-surface back of the latter. The book is held between the thumb and finger with pressure to cause sufficient friction and the splint is sharply withdrawn. The friction causes the ignition of the match or splint as the ignitable composition comes into contact with the igniting-surface; or, the book being opened out, the tipped end of the splint may be struck against

the igniting-surface, as is done with ordinary matches. If to be used in this manner, the material of which the splints are made should be comparatively stiffer than when they are to be drawn out.

I sometimes provide in addition to the lines of igniting composition lines *c'*, Fig. 2, of the same material near their junction with the cover portion, whereby in the "double-end" form the same will be presented to both sides of the splint when the latter is drawn out.

Although I prefer, on account of the greater safety, to provide the splints with one of the well-known compositions used on the heads of safety-matches and lines of the igniting composition such as used on the boxes of such matches, I do not limit myself thereto, as the splints may be tipped with any of the well-known compositions used for ordinary parlor or other friction matches and the lines of igniting-surface may be frictional material—such as sand glued to the paper—or, in fact, the paper itself may, if not too smooth, furnish a sufficient frictional surface to ignite the match on withdrawal.

It will be observed that in the drawings (see Figs. 1, 2, and 3) the series of splints on one end of the sheet are somewhat longer than those of the other end. This difference in length, although not necessary, is desirable for two reasons: first, because the ignitable composition forms some bulk—that is, projects beyond the surface to which it is applied—and if the two lines come opposite each other when folded the parts will not lie so closely together as if they were out of contact, as shown; secondly, in case the composition is such that there is liability to ignition by friction of that of one or more of the splints against the composition on the opposite ones this liability is practically obviated by having the line of composition of the one series out of line with that of the other.

The modification illustrated in Figs. 4, 5, and 6 differs from Figs. 1, 2, and 3 only in that but one end of the sheet is divided into splints, the other being left plain.

The advantage of the first-described construction is that double the number of splints are provided with little additional bulk as compared with the latter construction.

With a sheet of the dimensions mentioned, which, folded in book form, will be about three inches by two, and the strips cut to about one-eighth of an inch in width, say, fifty splints or matches are provided. These are in convenient form and may be conveniently carried in the vest-pocket and are obviously quite inexpensive to make. The splints, being securely attached to the cover, are retained in place both when the cover is opened out and when closed.

The composition may be applied in the usual liquid or pasty form to continuous strips of the paper of the proper width, and after the compositions are dry the cutting into strips may be done, provided, of course,

that the composition on the splint ends is such as will not be apt to become ignited by the friction of the cutting-knives. In the latter case the division must be made prior to the application of the composition, in which case it is preferable to bend or press the ends of alternate splints out of line with the others previous to or immediately after the application of the composition, so that the ends of all the splints will be out of contact. When, however, the ends of the splints are pointed, as described, the cutting-knife need not pass through the composition. The folding may be done, also, as a part of the continuous operation and the sheets be then (or previously) divided transversely into the books.

I prefer to make the free or tipped ends of the splints pointed, as shown, although not essential.

My invention, broadly considered, may be made in various forms without departing from the essential principles of construction thereof—as, for instance, also as illustrated in Fig. 7, wherein the series of splints *s* are connected to a common margin-strip *m*, which latter is secured to one side of the cover by glue, wire staples, or otherwise, the free ends of the splints being provided with the ignitable composition *b* and the inside of the cover with the igniting surface or composition *c*, which should be out of line with the other composition. I may add that in this form a number of superposed layers of these splint-strips may be secured to and within the cover.

I am aware that match boxes and safes have been used or described wherein match-splints were held or clamped therein, the inner sides of the boxes being provided with a frictional surface or composition, whereby the match was ignited by drawing the same out of the box; also, that a device has been described wherein a number of ordinary matches were laid each in a groove on the inner sides of a metallic hinged box or case, which retained the matches when the case was held closed, and a match was lighted by withdrawing it from the containing-groove, thereby bringing the tipped end of the match against a frictional surface near the inner edge of the case, the ends of the matches projecting from the case, so that they could be grasped in order to withdraw the same.

Having thus described my invention, I claim, all substantially as and for the purposes set forth—

1. The improvement in friction-matches, consisting of the series of splints placed edge to edge and their sides respectively in the same planes and provided with an ignitable composition at their free ends and at their opposite ends frangibly attached to, so as to be inclosed by and between, the sides of the cover and so as to be practically integral with said cover, whereby the latter may be opened out like a book and any one of said splints be torn or broken off, substantially as described.

2. The improvement in friction-matches being a new and complete article of manufacture, consisting of the series of splints placed edge to edge and their sides respectively in the same plane and provided with an ignitable composition at their free ends and at their opposite ends frangibly attached to, so as to be inclosed by and between, the sides of the cover and so as to be practically integral with said cover, and which cover is provided with an igniting surface or composition, whereby said cover may be opened out like a book and any one of said splints be torn or broken off and struck against the said igniting-surface, substantially as described.

3. A friction-match device consisting of a series of splints provided with an ignitable composition, placed edge to edge and their sides respectively in the same plane, and frangibly secured to and within a flexible waterproof cover of paper or the like, which cover is adapted to be opened like a book, whereby when said cover is opened out any one of said splints may be broken or torn off from its attachment to the cover.

4. The improvement in friction-matches, consisting of a sheet of inflammable paper or other like pliable material having its end or ends divided into a series of splints having their ends provided with an ignitable composition, the remainder of the sheet being left plain and the said splints folded over

upon the plain portion, which latter is again folded over so as to inclose the series of splints, and is adapted to be opened out as a book in order to detach said splints.

5. The improvement in friction-matches, consisting of a sheet of inflammable paper or other like pliable material having its end or ends divided into a series of splints having their ends provided with an ignitable composition, the remainder of the sheet being left plain and provided with an igniting surface or composition and the said splints folded over upon the plain portion, which latter is folded over so as to inclose the series of splints, and is adapted to be opened out as a book in order to detach said splints.

6. In a friction-match device consisting of two opposite series of splint-strips provided with an ignitable composition and inclosed and secured to and between the sides of a common cover, the said composition of the one series of splints out of line or contact with that of the other series, substantially as and for the purposes specified.

In testimony whereof I have hereunto affixed my signature this 1st day of August, A. D. 1889.

JOSHUA PUSEY.

Witnesses:

JOHN NOLAN, }  
FRANCIS S. BROWN.