

F. DUTCHER.
RAILWAY SIGNAL FUSEE.
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1,009,136.

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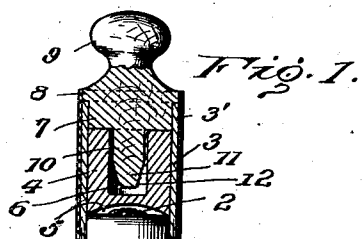


Fig. 2.

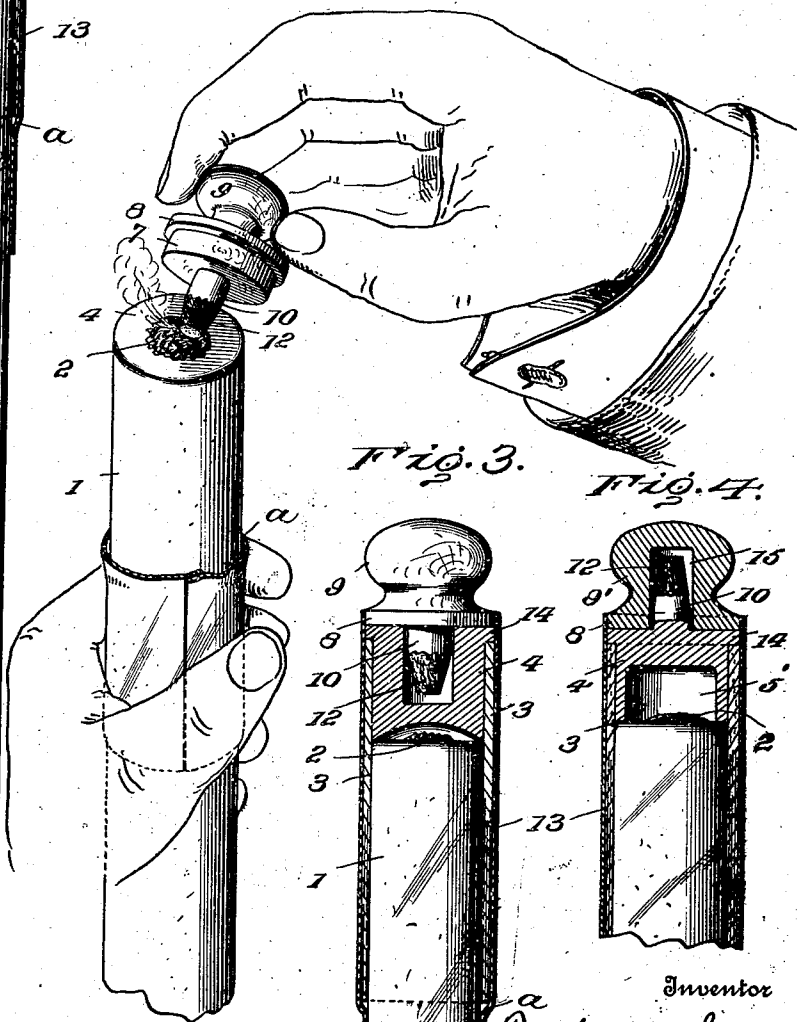
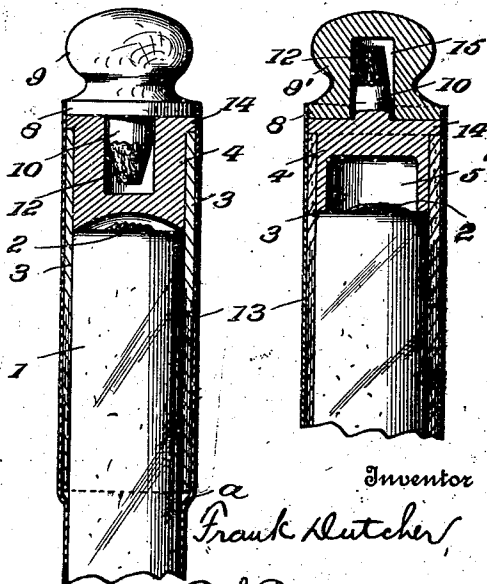


Fig. 3.

Fig. 4.



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RAILWAY SIGNAL-FUSEE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK DUTCHER, a citizen of the United States, residing at Versailles, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Railway Signal-Fusees, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in railway signal fusees, and the object of which is to provide an improved construction for the lighting of the fusee by the trainman, whereby the burning of the hand of the trainman is prevented, and whereby accidental ignition of the fusee in transit is also prevented, both of which will be fully explained hereinafter.

In the accompanying drawings—Figure 1 is a side elevation of a fusee with my improved lighting cap applied thereto and shown in longitudinal section. Fig. 2 is a perspective view showing the manner of using my improved construction for lighting the fusee. Figs. 3 and 4 are longitudinal sectional views of fusee caps showing slightly modified forms of my present improvement.

Referring now to the drawings, 1 is a fusee of the ordinary construction, to the outer end of which is applied a complementary igniting substance 2, which is usually composed of chlorate.

My improvement comprises a section of a paper tube 3, the lower end of which is of a size adapted to receive the lighting end of a fusee. Secured within the outer end of the tube 3, is a wood plug 4. The inner end of this wood plug 4 is recessed as shown at 5, to prevent the end of the plug engaging the igniting material 2. This plug 4 is secured in the end of the tube 3 in any suitable manner, such as cement or by means of tacks (not shown).

The outer end of the plug 4 is provided with an elongated inwardly projecting recess or opening 6, having an open outer end. The tube 3 extends slightly beyond the plug 4, as shown at 3', and loosely placed within this extension is an igniting plug 7, and this plug 7 has a flange 8 resting against the end of the extension 3', as shown, and a suitable handle 9.

The plug or igniting member 7 is provided with a small elongated projection 10,

of a diameter smaller than the recess 6, and of a length shorter than the depth of the recess, as shown in Fig. 1, and the extremity 11, of this projection 10 is tapered and is coated with an igniting material 12, preferably by dipping it, and this igniting material is usually phosphorus and by frictional engagement with the chlorate complementary material 2 will cause ignition.

The tube 3 and the plug 4 cemented therein form what is usually referred to in this art as a fusee cap. This cap and the igniting member 7 are secured to the fusee by means of a wrapping of paper 13, which is cemented to the fusee, the tube and the lighting member of the button 7.

In operation the cap or tube 3 is removed from the fusee by breaking away the paper at *a* (a twisting movement is all that is necessary) after which the lighting member or button 7 is removed from the tube 3 by breaking the paper wrapper 13 in the same manner. These parts being removed the trainman lights the fusee in the manner clearly illustrated in Fig. 2, by a frictional movement of the tapered end of the lighting member 7, in frictional contact with the igniting material or chlorate material 2 on the end of the fusee 1.

The advantages of this construction are that with the parts held by the wrapper 13 in the positions shown in Fig. 3, it is impossible either in transportation or the handling of the fusee to expose the igniting materials, and as a consequence, particles of the igniting material cannot be rubbed off and come in contact to cause fires, which has been known to occur with the old type of signal fusee. Another advantage is that, as shown in Fig. 2, ignition is effected by frictional engagement with only a small portion of the igniting material 2, owing to the small projection 10. This avoids a sudden flash of the whole of the igniting material 2, which occurs when it is ignited by frictional engagement with practically all of its outer surface as in the old form of button igniter and as in the old form in which the phosphorus is placed across the outer closed end of the fusee cap. These latter constructions required that the igniting member be held vertical in respect to or in a line with the fusee, and by a quick movement thereof across the igniting material ignition was effected. But in this case practically the

whole of the igniting material is engaged with a consequent sudden flash which, in some instances, has burned the hand of the operator and seriously.

5 By the elongated projection 10, which is relatively small compared to the igniting material, it is impossible for the operator to frictionally engage the whole of the surface of the igniting material. Furthermore, this
10 elongated projection enables the operator to hold the igniter 7 at an angle, as shown in Fig. 2, so that his hand is at one side of and out of the line with the flash caused by ignition, and to one side of the burning of the
15 fusee, which absolutely prevents the possibility of burning the hands of the person lighting the fusee.

Fig. 3 is a slight modification of that shown in Fig. 1, in that the plug 4 has a
20 flange 14 beyond the tube 3, and which rests upon the end of the tube.

Fig. 4 is a modification as compared with Fig. 1, in that the plug 7 also has the flange 14 of Fig. 3, and a deeper recess 5' than is
25 shown in either Figs. 1 or 3. Furthermore, in Fig. 4, the projection 10 is carried by the plug 4 of the cap or tube 3, instead of by the handle 9. In this instance the handle or plug 9' has a recess 15 to receive the elongated igniting projection 10. In operation
30 of this construction the tube 3 is broken away from the fusee as in Figs. 1 and 3, and the handle 9 is broken away from the tube or cap 3, leaving the igniting projection 10
35 and in this instance the operator has the tube 3 as a handle, and in which instance the hand will be farther away from the ignition end of the fusee than shown in Fig. 2.

In all of these constructions the primary
40 invention of having an elongated lighting projection relatively small in respect to the fusee and igniting material is embodied, which has the advantages pointed out in respect to the structure and mode of operation
45 of Figs. 1 and 2.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is—

1. A railway signal fusee cap, comprising a tube having a closing plug member at-
50 tached in its outer end, a removable member located at the outer end of the closing plug, one of said members having an elongated reduced projection provided with igniting
55 material on its outer end, and the other member having an elongated recess receiving and protecting said projection.

2. A railway signal fusee cap, comprising a tube, a plug closing one end of the tube, the inner end of the plug having a recess
60 and the outer end of the plug having a longitudinally extending elongated recess, a removable member located at the outer end of the plug, the removable member having a reduced elongated projection extending into
65 said recess and provided with ignition material at its free end.

3. A railway signal fusee cap, comprising a tube, a plug closing one end of the tube, the outer end of the plug having a longi-
70 tudinally extending recess, and a removable member at the outer end of the plug, said removable member having a reduced elongated projection extending into said recess and provided with igniting material at its
75 free end.

4. A railway signal fusee cap, comprising a tube, a plug closing one end of the tube, the outer end of the plug having a longitudinally extending elongated recess, a remov-
80 able member at the outer end of the plug having a reduced elongated projection extending into said recess and provided with igniting material on its free end, and breakable means temporarily attaching the re-
85 movable members in said position.

In testimony whereof I hereunto affix my signature in the presence of two witnesses:

FRANK DUTCHER.

Witnesses:

C. R. WRIGHT, Jr.,

H. A. PATTISON.