I. NIDITCH.

TIME BURNING RAILWAY SIGNAL FUSEE.

APPLICATION FILED JULY 22, 1912.

1,068,267. Patented July 22, 1913.

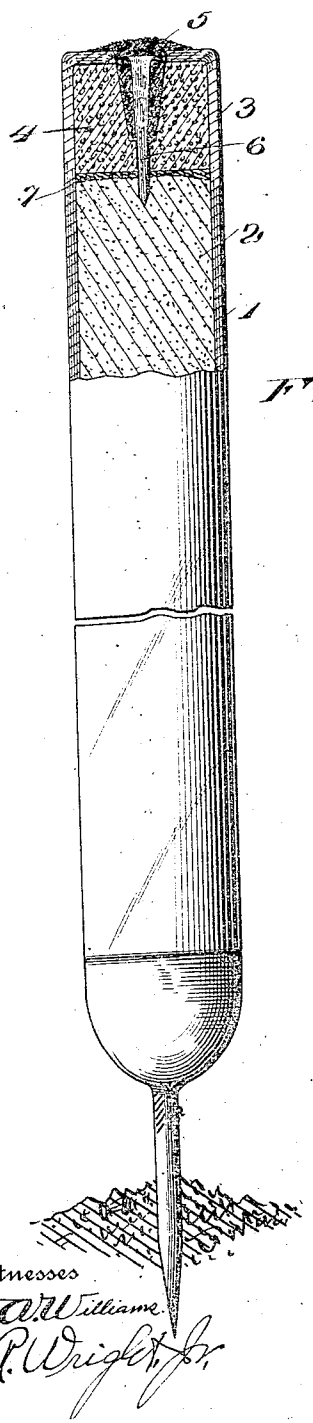


Fig. 1.

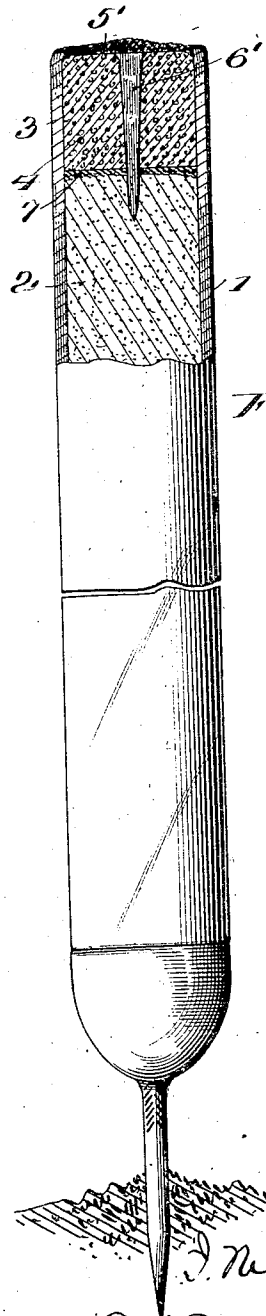


Fig. 2.

Witnesses

W. A. Williams

C. P. Wright, Jr.

Inventor

I. Niditch,

By A. Patton,

Attorney

UNITED STATES PATENT OFFICE.

ISADORE NIDITCH, OF DORCHESTER, MASSACHUSETTS, ASSIGNOR TO CENTRAL RAILWAY SIGNAL COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

TIME-BURNING RAILWAY SIGNAL-FUSEE.

1,068,267. Specification of Letters Patent. Patented July 22, 1913.

Application filed July 22, 1912. Serial No. 710,852.

To all whom it may concern:

Be it known that I, ISADORE NIDITCH, a citizen of the United States, residing at Dorchester, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Time-Burning Railway Signal-Fusees, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in time burning railway signal fusees, of that class which meets the requirements of the bureau for the safe transportation of explosives and other dangerous articles, which are well-known to those skilled in this art, among which are a composition having a high point of ignition and, consequently, a high burning point, and another being a composition free from spontaneous ignition under the conditions of usage, transportation and storage; the burning in all of the severe weather conditions; capable of burning under water; the tube must be of sufficiently tough fiber to withstand the severe usage, especially when thrown from a fast moving train; the fusee must burn with force and brilliancy of flame, and the tough fiber tube must be consumed substantially uniformly with the burning of the compound to prevent any appreciable chimneying.

By reason of the requirement for a composition of high ignition and high burning points, fusees containing such compositions have been difficult to light, and to maintain their burning after being lighted under all of the severe weather conditions to which fusees are at times subjected, as when being hurled from a fast moving train.

The object of this present improvement is to produce a fusee which will meet all of the above enumerated requirements by the bureau for the safe transportation of explosives and other dangerous articles, and which will at the same time light more easily, positively and effectively, and which will stand the severe usage to which the fusee is subjected.

The fusee composition generally used to meet the above enumerated requirements contains perchlorate of potassium and sulfur, and when used intelligently and according to directions is reliable under all the several usages to which the fusee is subjected. However, when in the hands of railway employees who do not follow instructions and especially that instruction which requires that the fusee be thrown immediately after being lighted (5–10 seconds after lighting), the failure to observe these instructions has been the cause of occasional extinguishment of the fusee.

Another object of my present invention is to so construct the fusee as to allow greater scope in time of throwing the fusee from a fast moving train after ignition and without liability of extinguishing it under all weather conditions to which it is liable to be subjected.

In the accompanying drawings—Figure 1 is a side elevation, partially in section, of a crimped end fusee with my improvement applied thereto. Fig. 2 is a similar view showing an open end fusee tube with my improvement applied thereto.

In carrying out my invention, 1 is the usual paper tube made of tough fiber, and 2 is the fusee composition which is of a potassium perchlorate mixture, such for instance, as that described and claimed in my Patent No. 954,330, dated April 5th 1910, which composition, as here shown, does not completely fill the lighting end 3, of the fusee tube.

My present improvement consists in filling the lighting end 3 of the fusee tube with a charge 4, which is of relatively lower ignition and burning points, whereby it is readily ignited, and this charge or composition 4 consists of chlorate of potassium, metallic nitrate, carbohydrates, and hydrocarbons, preferably greased sawdust, shellac or its substitutes, but does not contain any sulfur, thus constituting a sulfurless charge. The usual chlorate scratch or igniting composition 5 extends from outside the tube 1 and down into the igniting charge 4, and this scratch or chlorate charge 5 may be united to the other charges within the fusee in any suitable manner. As here shown, a chemically treated peg 6 is used for that purpose. The igniting charge 4 being of a sulfurless character, there is no generation of sulfuric or sulfurous acids to act upon the chlorate 5, and there is thus no tendency to spontaneous ignition between the chlorate scratch compound 5 and the sulfurless igniting compound 4.

The fusee compound proper 2, before re-

ferred to, contains sulfur and perchlorate; and in order to separate the chlorate composition 4, from the composition 2, a separating stratum 7 is provided, which is composed of any combustible medium, (preferably a composition containing metallic nitrate, potassium perchlorate, carbohydrate and shellac or its substitutes) upon which sulfuric or sulfurous acid that may be generated within the compound 2 will not act. The sulfurless lighting charge will occupy from one to two inches of the length of the fusee, one inch being found sufficient to prevent the extinguishment of the fusee when it is hurled from a fast moving train under the most severe weather conditions and is found to certainly and effectively ignite the fusee composition 2, which is of higher ignition and burning points than the igniting charge 4. Furthermore, the sulfurless charge 4, does not so quickly or readily consume the tough fiber tube as does the sulfur fusee composition 2, and by reason of this fact the compositions within the tube have the protection thereof for a longer period of time while being held in the hand of the user, or after it is thrown from the rapidly moving train which, as will be seen, allows a much greater scope of time on the part of the user to throw the fusee than is allowed when the fusee composition extends to the end of the fusee tube, and thus requires much less exactness in the use of the fusee, and yet obtain certainty and effectiveness of operation.

In Fig. 2 the scratch composition 5′ fills the end of the open tube 1 and covers the sulfurless igniting compound 4. In this instance a uniting peg 6′ is used to unite the compositions and to hold them together. The operation and function of the construction shown in Fig. 2 is the same as that shown in Fig. 1.

The sulfurless chlorate composition 4 ignites very readily and will maintain its burning under severe shock and severe weather conditions, and a fusee constructed as herein shown and described will have all of the advantages of the fusee which contains the well-known perchlorate composition, and yet have the advantageous features of being readily ignited and in requiring less skill and care in operation, and more certainty in operation under all of the severe conditions to which railway time burning signal fusees are known at times to be subjected to.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An improved time burning railway signal fusee, comprising an elongated combustible tube, a fusee composition therein including sulfur perchlorate and a coloring ingredient, and a chlorate sulfurless lighting charge containing a coloring ingredient corresponding with the coloring ingredient of the adjacent fusee composition combined for the purpose described.

2. An improved railway time burning signal fusee comprising a combustible tube, a time burning fusee composition within the tube and containing sulfur and perchlorate, a lighting charge within and at the lighting end of the tube comprising chlorate of potassium, metallic nitrate, carbohydrate or hydrocarbon, shellac or its substitutes, and an exposed scratch composition in contact with the said lighting composition.

3. An improved railway time burning signal fusee comprising a combustible tube, a time burning signal compound within the tube and containing sulfur and perchlorate, a lighting charge within and at the lighting end of the tube containing chlorate of potassium, hydrocarbon, carbohydrate, metallic nitrate, shellac or its substitutes, a separating medium undecomposable by acids located between the lighting charge and the fusee compound, and an exposed scratch composition in contact with the lighting charge.

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

ISADORE NIDITCH.

Witnesses:
LEANOR VON KLOCK,
CONRAD VON KLOCK.