

F. DUTCHER.  
RAILWAY SIGNAL FUSEE.  
APPLICATION FILED FEB. 1, 1911.

999,102.

Patented July 25, 1911.

Fig. 1.

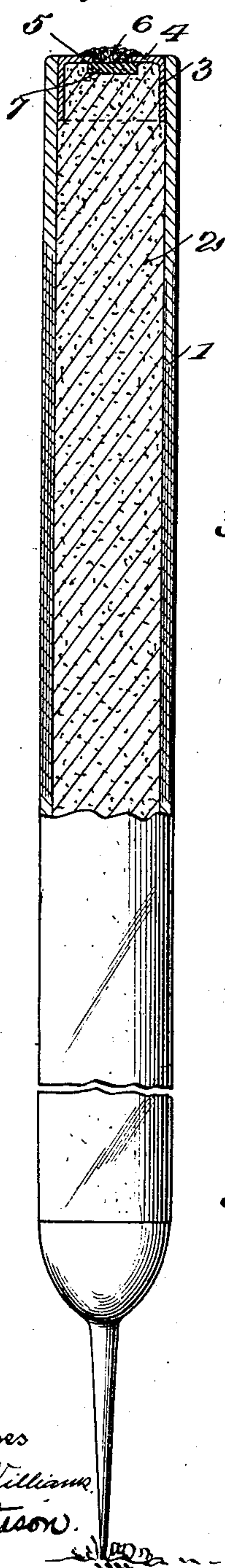


Fig. 2.

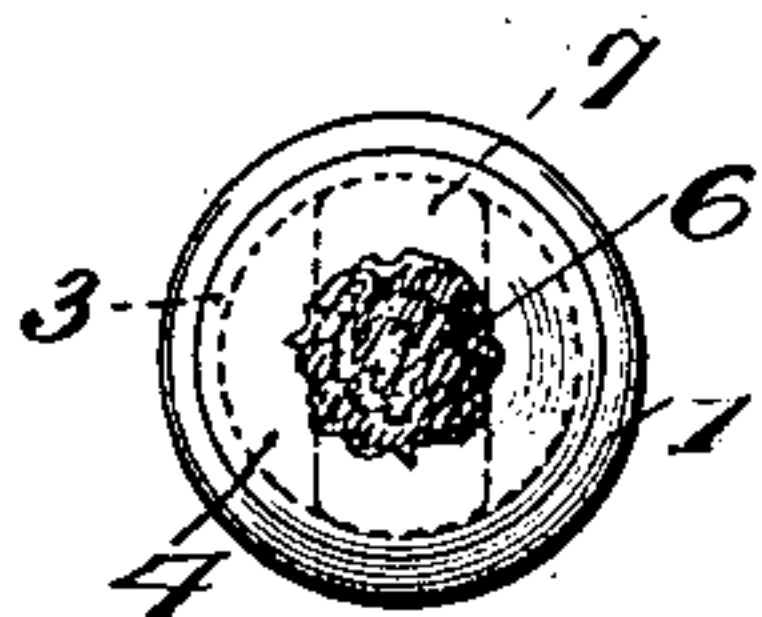


Fig. 3.

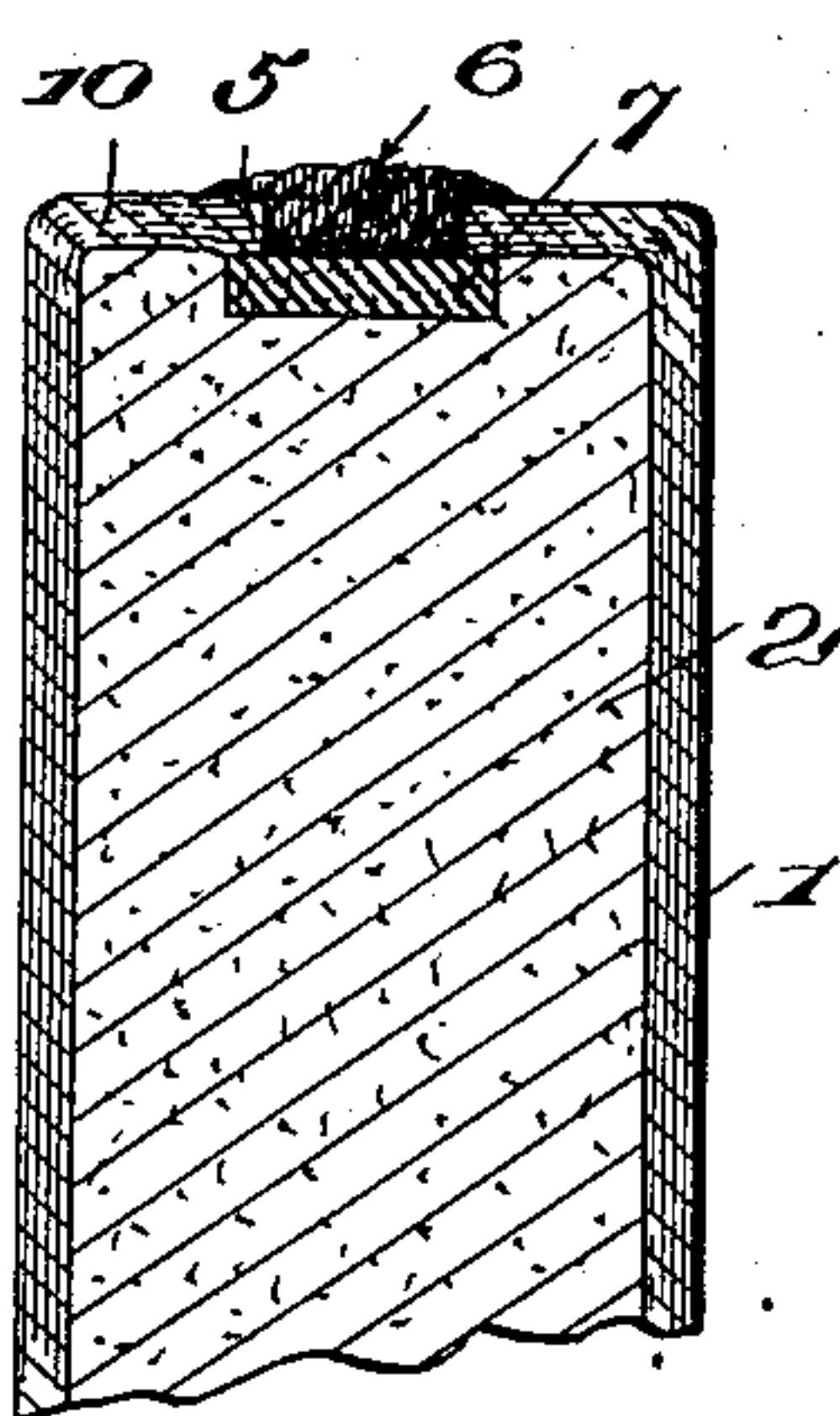


Fig. 4.

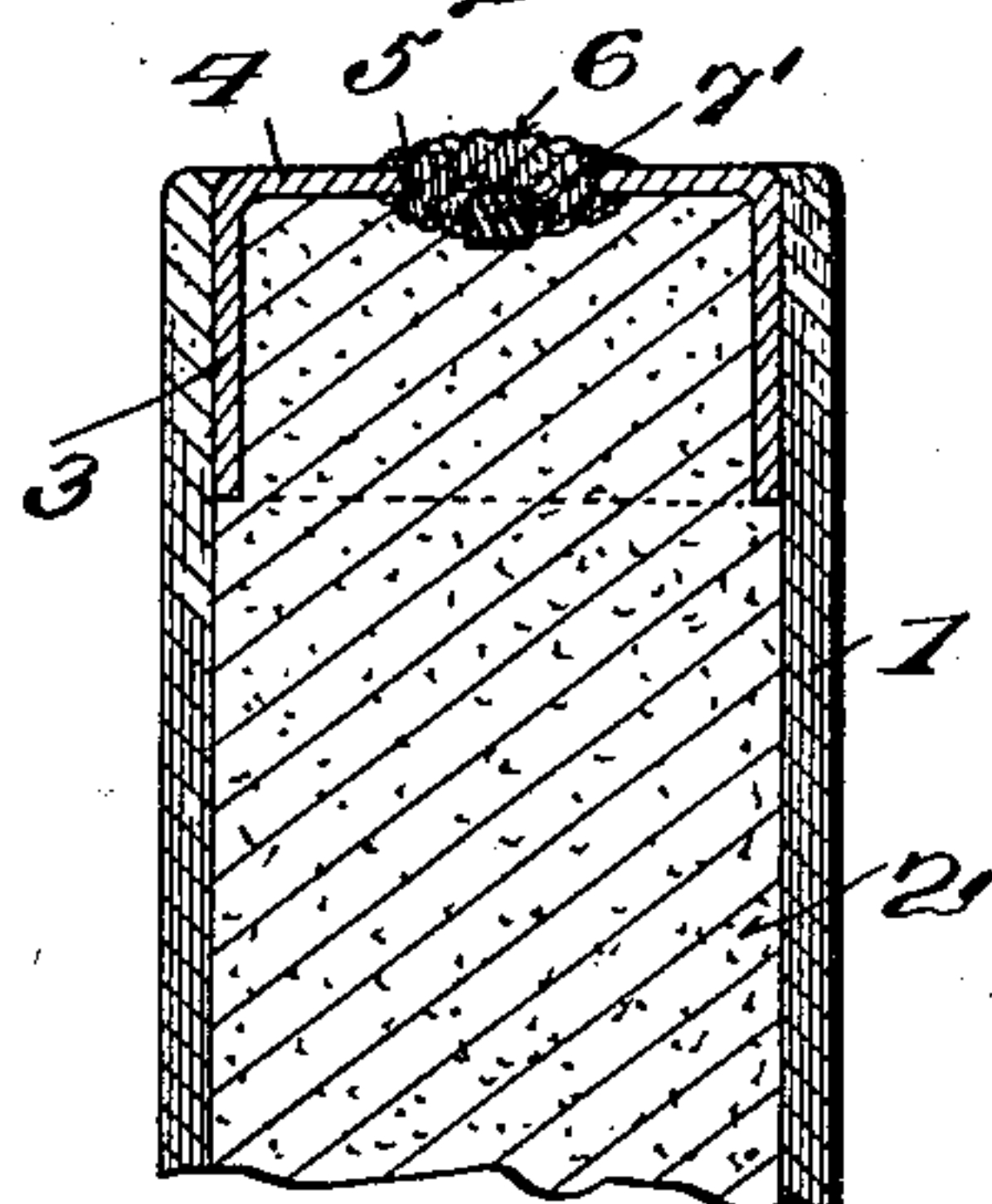


Fig. 5.

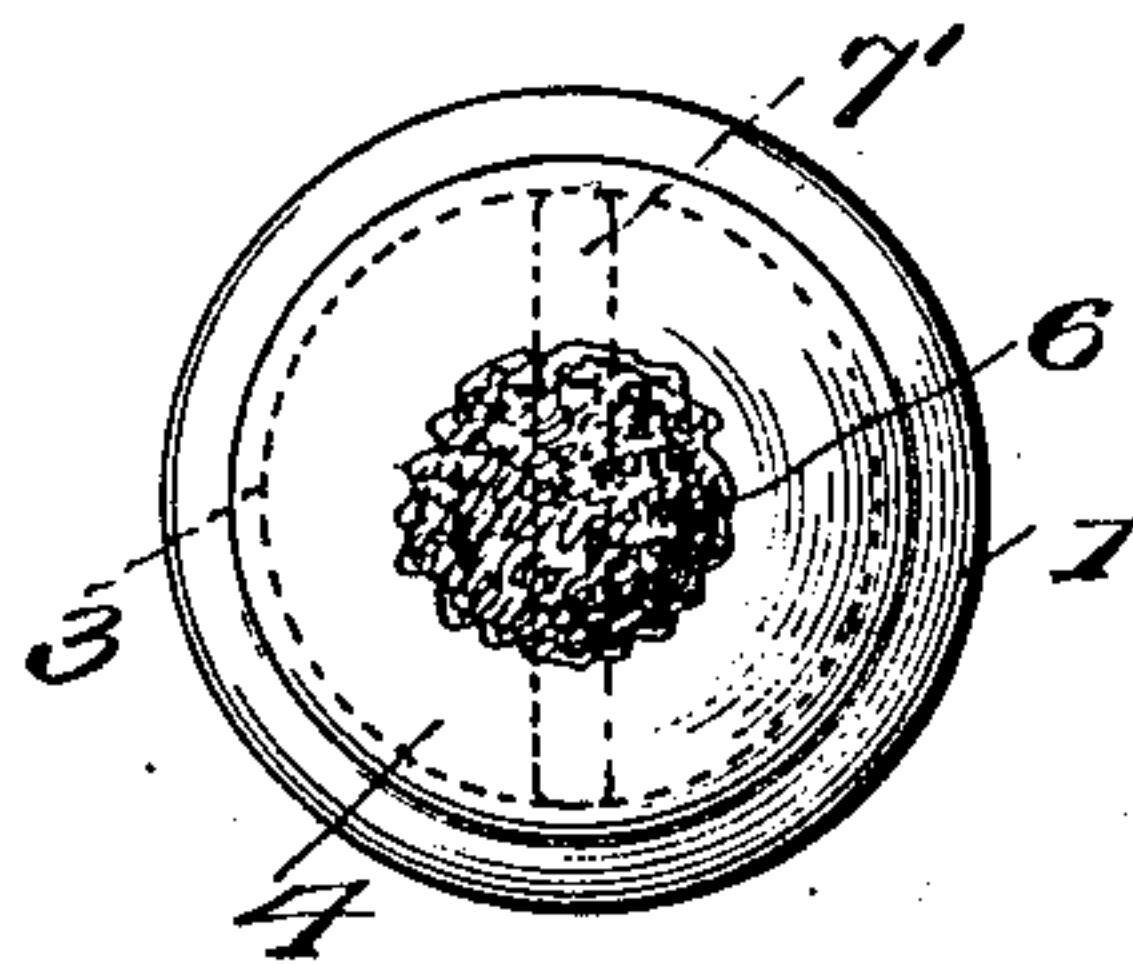
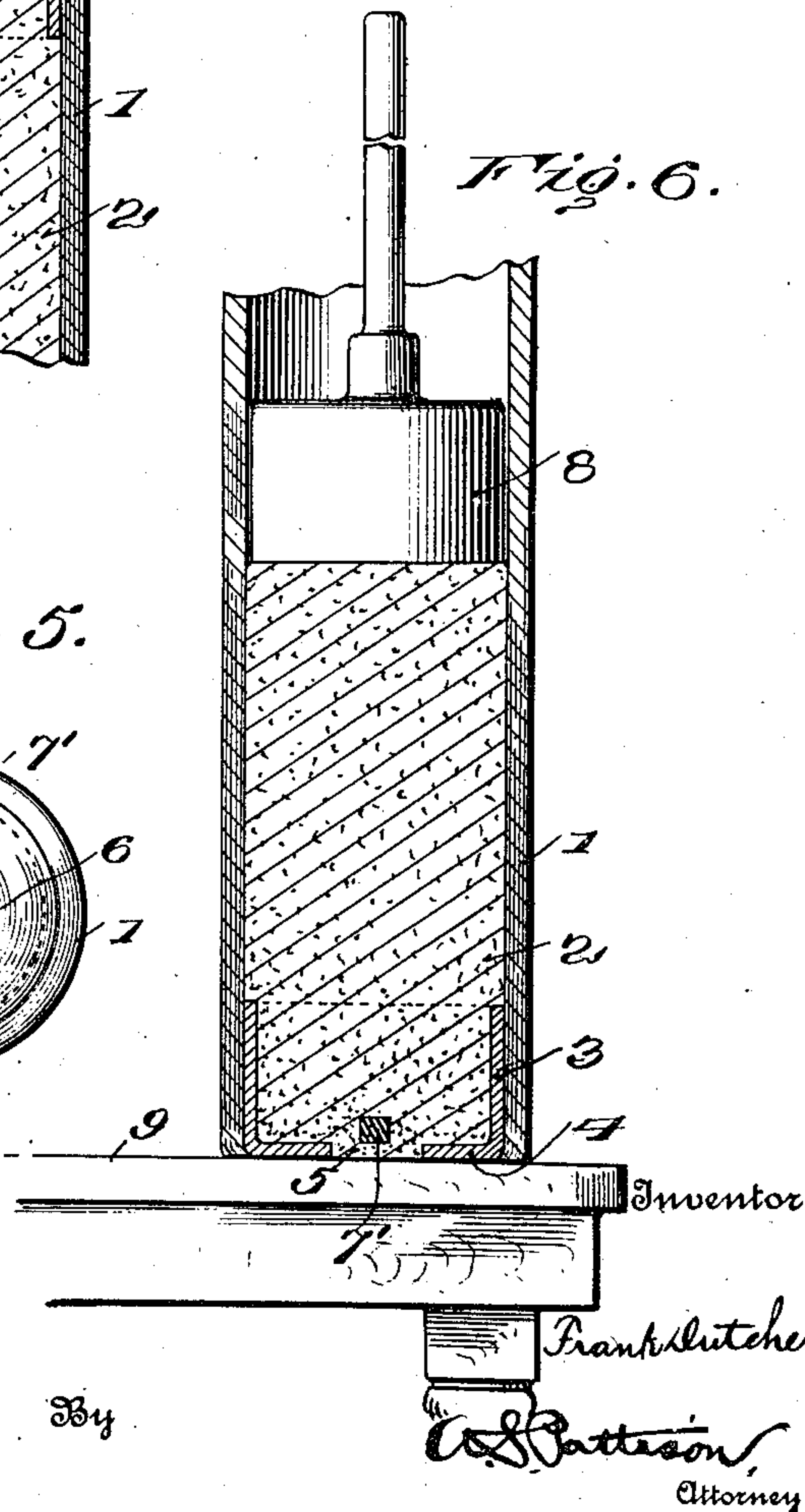


Fig. 6.



Witnesses  
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By

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# UNITED STATES PATENT OFFICE.

FRANK DUTCHER, OF VERSAILLES, PENNSYLVANIA.

RAILWAY SIGNAL-FUSEE.

999,102.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed February 1, 1911. Serial No. 605,951.

*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.

This invention relates to improvements in railway signal fusees.

One object of my present invention is to provide a transverse lighting member extending under the fusee tube closure in combination with the chlorate lighting stratum outside of the closure for the purpose of conveying the fire transversely in opposite directions across and to the signal compound within the fusee tube.

Another object of my present invention is to so construct the transversely arranged lighting member that it serves the function of a separating medium between the chlorate lighting stratum and the sulfur fusee compound within the tube.

In the accompanying drawings—Figure 1 is a sectional view of a railway signal fusee with my improvement applied thereto. Fig. 2 is a top plan view thereof. Fig. 3 is a section of the lighting end of the fusee showing my improved lighting member combined with a signal tube having a crimped closed end. Fig. 4 is a sectional view of a fusee tube, showing my improved closure combined with the transverse lighting member. Fig. 5 is a top plan view of Fig. 4. Fig. 6 is a sectional view of a fusee tube with my improved closure and transverse lighting member, the tube shown in the inverted position when being packed with the signal compound.

Referring now to my improved closure for the signal fusee and referring particularly to Figs. 1, 2, 4, 5 and 6, 1 is the usual paper or fiber tube for receiving the signal compound 2. My improved closure consists of a cup-shaped member 3, which is placed within the end of the tube 1, with its transverse wall 4 flush with the end of the tube. The side wall of the closure 3, is cemented to the wall of the tube 1. This closure 3, which telescopes the end of the tube 1, has its transverse wall provided with an opening 5. The usual form of chlorate light stratum 6, is applied to the outer side of the

closure 3 and extends through the opening 5 to convey its fire when lighted to the signal compound 2 for lighting it. This closure may be used with or without the transverse lighting member 7, though the transverse lighting member is here shown in connection with it.

In Fig. 6 is shown the fusee in the inverted position and in the act of having the signal compound 2 packed therein by any suitable form of plunger or packer 8. As is well known to those skilled in this art, the signal compound is tightly packed within the tube 1. When the tube is being packed, it rests upon a suitable support or table 9, which closes the opening 5 in the closure 3. With the closure as here shown, its transverse wall 4 and the end of the tube 1, are flush and rest upon the table or support 9, and in this position the fusee can be packed tightly without injury to either the end of the tube or to the closure 3. This closure 3 consists of a paper or fiber cup-shaped member, the transverse wall of which would not stand the packing pressure unless supported during packing operation. This form of closure is a cheap and effective one. It effectually closes the end of the tube and adds additional strength to the lighting end thereof, so that it is not liable to burst out or explosion due to the sudden burning of the compound when it is lighted. Therefore, it performs the double function of a closure and a strengthening member for the lighting end of the fusee.

A transverse lighting member 7 is located under the tube closure, extends across the opening 5 in the closure, and as shown has its ends extending under the closure which locks the lighting member in the fusee tube, and prevents the lighting member from being blown out by the sudden burning caused when the fusee is lighted.

In Figs. 1, 2 and 3, the transverse lighting member 7 is wider than the opening 5 in the closure of the tube so that the chlorate lighting stratum 6 is separated from the signal compound 2 thereby. In Figs. 4, 5 and 6, I show a narrow transverse lighting member 7', which does not close the opening 5 of the closure 3, and therefore does not serve as a separating medium between the chlorate lighting stratum and the signal compound 2, but it acts as a transverse lighting member which conveys the fire in opposite direc-



tions to and across the signal compound at the lighting end of the fusee.

In signal fusees there is a tendency to blow out the lighting stratum or head when it is lighted, and various means have been provided to avoid this action. By means of the construction the lighting head cements itself to the transverse lighting member 7, and this lighting member serves to hold the lighting stratum or head in position, and it conveys the fire from the lighting stratum entirely across the compound instead of merely in the center thereof, as heretofore.

When a perchlorate signal composition, such as that described and disclosed in the patent to Isadore Niditch, No. 954,330, April 5th, 1910, is used, some means is necessary to insure the lighting of this compound, because it is more difficult to light than the old signal compound, and usually to effect this a longitudinally lighting core is extended into the signal compound. My transverse lighting member is of particular advantage and utility in connection with a perchlorate signal compound in that it conveys the fire to and across the entire end of the packed compound. By making this transverse member as wide or wider than the opening 5, in the tube closure, as shown in Figs. 1, 2 and 3, it acts as a separating medium between the sulfur in the perchlorate signal compound and the chlorate lighting stratum, thus preventing the spontaneous ignition by having chlorate and sulfur in contact, as described in the aforesaid Niditch patent.

In Fig. 3, I show my improved transverse lighting member in connection with a signal tube which has the well known crimped closure 10, and both the wide and narrow forms of the transverse lighting member here shown, are adapted to be used in con-

nection with a signal fusee having a crimped closure.

The transverse lighting member may consist of any suitable combustible substance, but as here shown, it consists of wood impregnated with a suitable combustible compound, such as saltpeter and lead nitrate.

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

1. An improved railway signal fusee, comprising a fiber tube containing a signal compound, a closure for the lighting end of the tube, the closure having an opening, a combustible lighting member extending across the end of the signal compound and across said opening and its ends under the closure to lock it in the tube, and a lighting stratum outside of the closure and extending through the opening to said lighting member, substantially as shown.

2. An improved railway signal fusee, comprising a fiber tube containing a signal compound, a closure for the lighting end of the tube, the closure having an opening communicating with the tube, a combustible lighting member extending across the end of the signal compound and across said opening and its ends under the closure to lock it in the tube, the lighting member being substantially as wide as said opening to close it for the purpose described, and a lighting stratum outside of the closure and extending through the opening to the lighting member, substantially as shown.

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

FRANK DUTCHER.

Witnesses:

SIMON F. LOEB,  
GERTRUDE DAVIDSON.