

F. DUTCHER.  
RAILWAY SIGNAL FUSEE.  
APPLICATION FILED MAY 1, 1909.

930,163.

Patented Aug. 3, 1909.

Fig. 1.

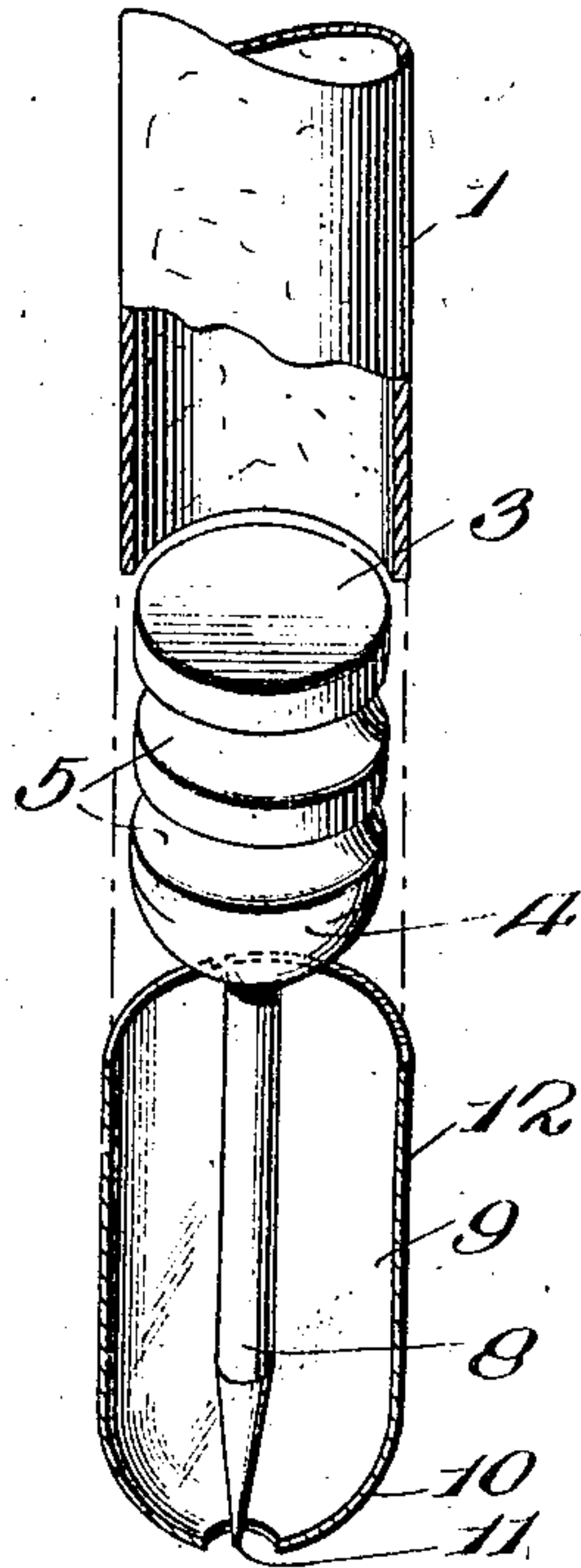


Fig. 3.

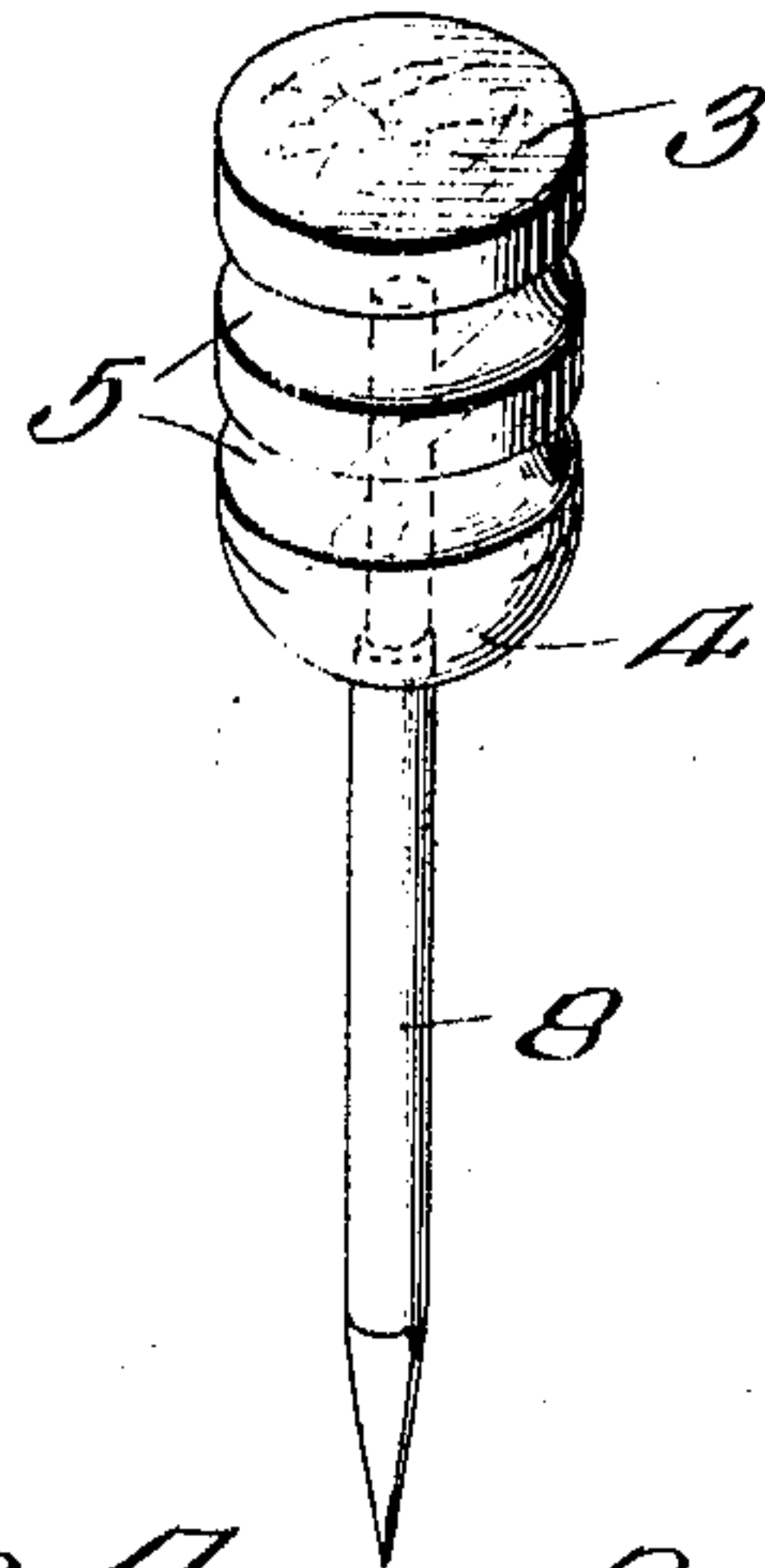


Fig. 2.

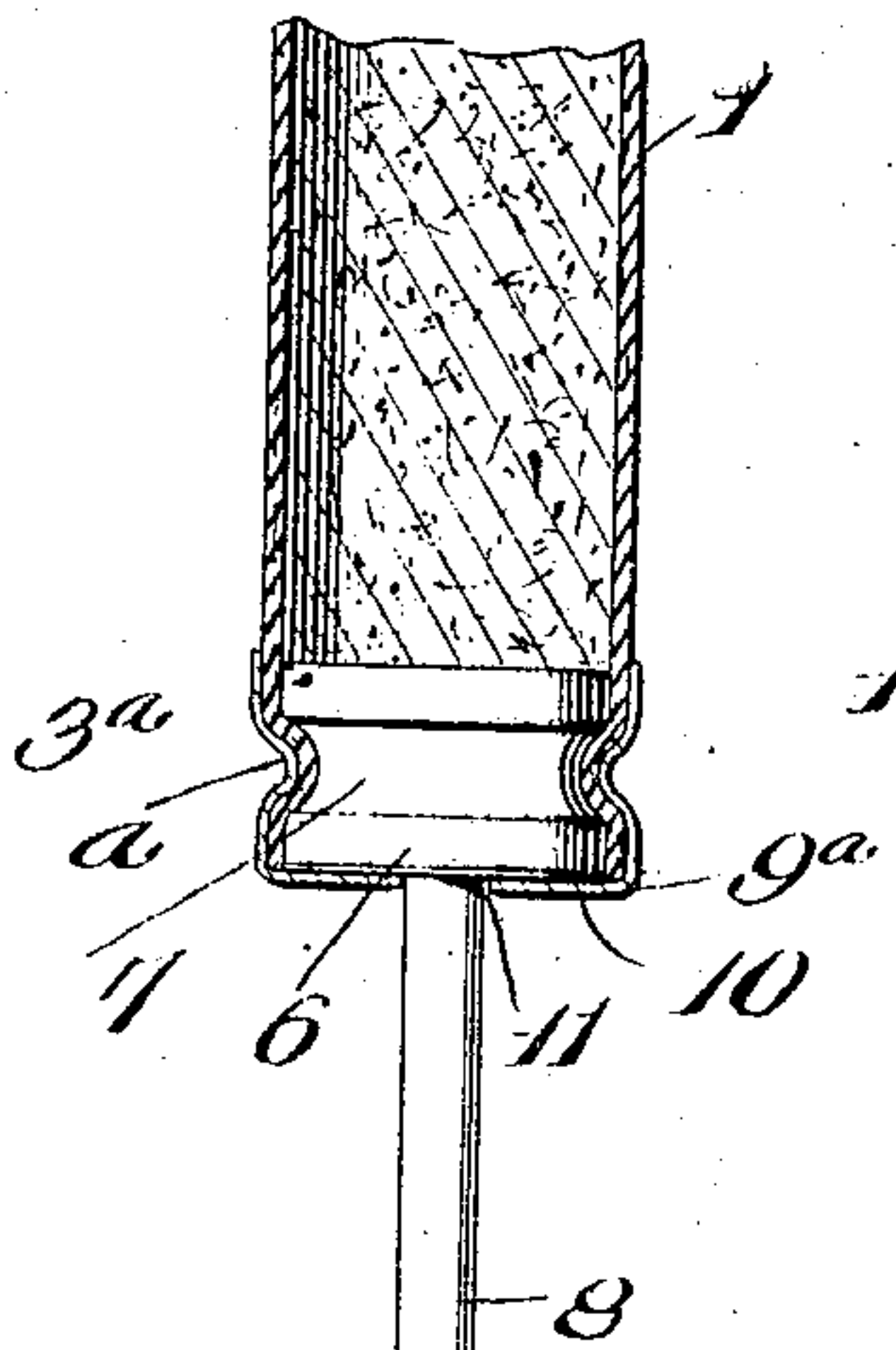


Fig. 4.

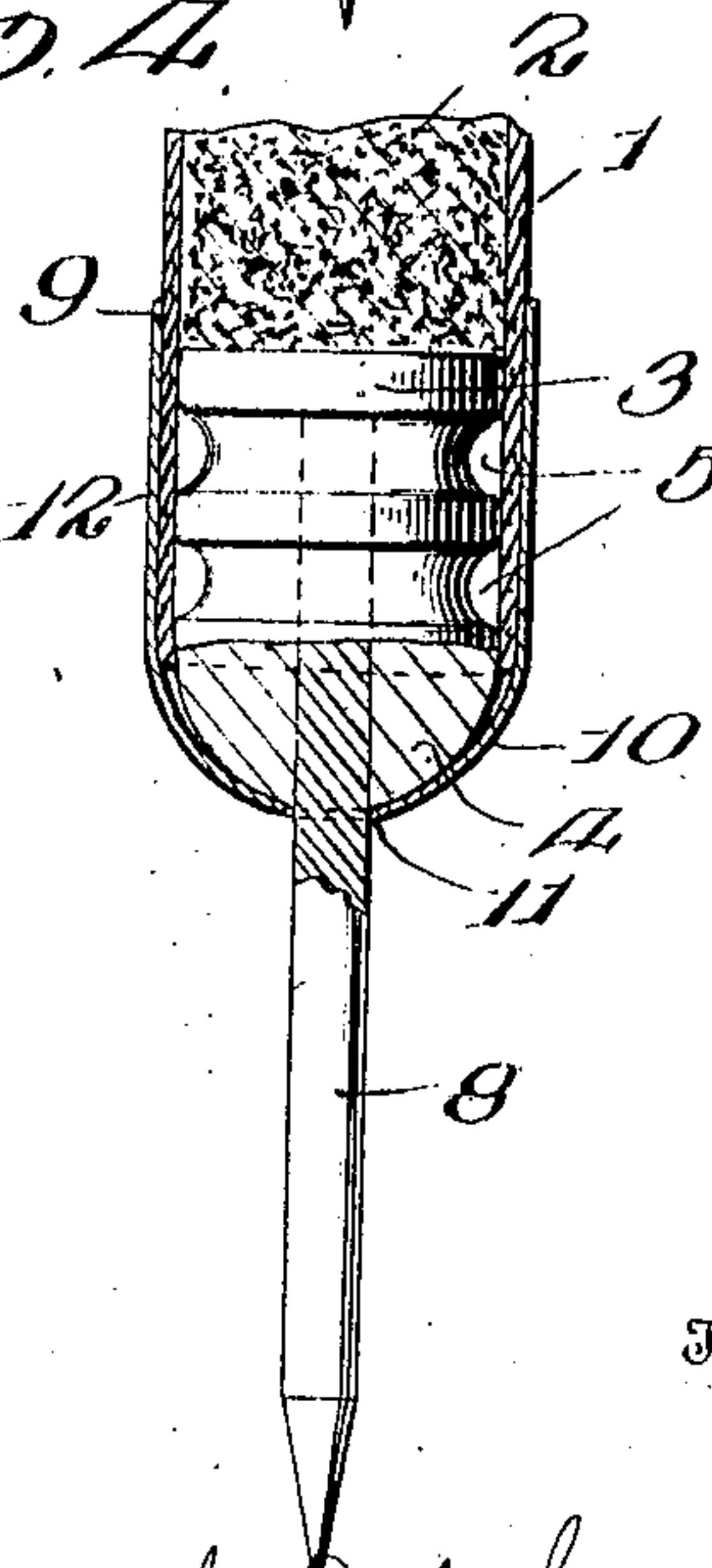
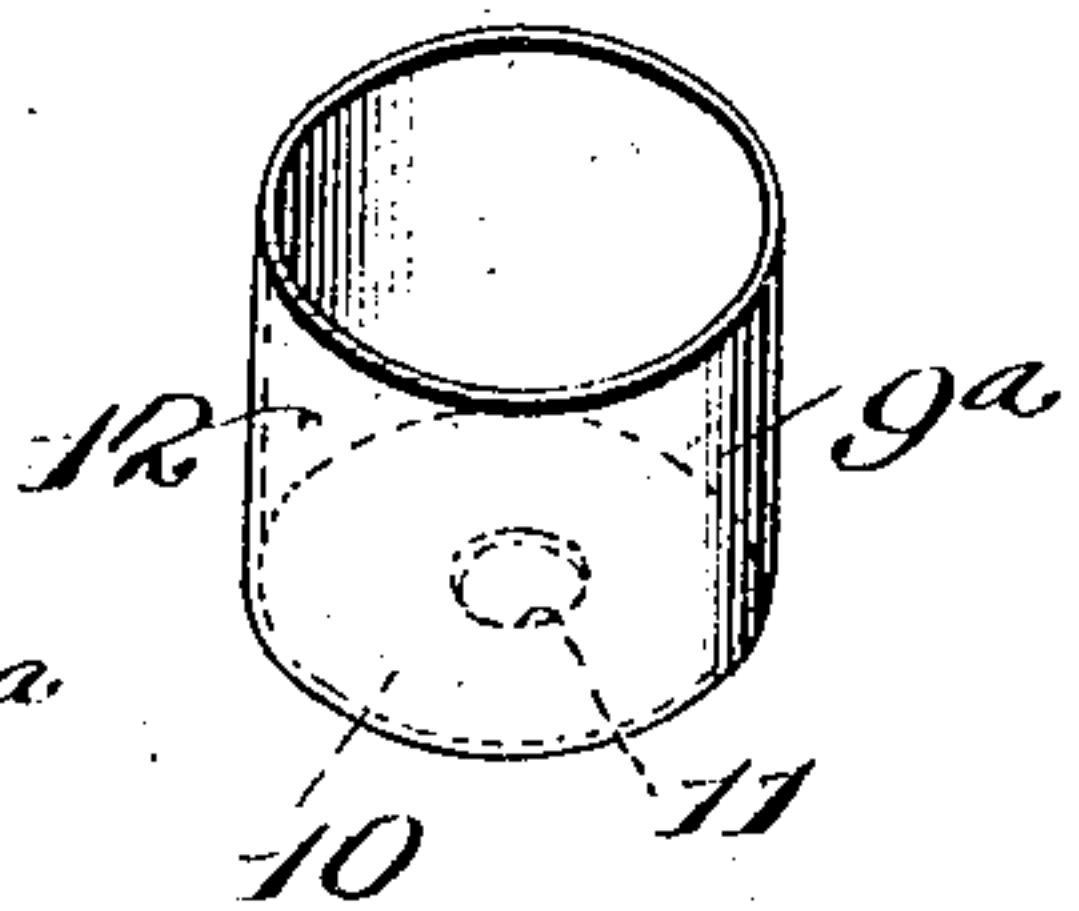


Fig. 5.



Witnesses  
W. A. Williams  
C. P. Wright Jr.

By

Frank Dutcher,  
U. S. Pattison,

Inventor

Attorney



# UNITED STATES PATENT OFFICE.

FRANK DUTCHER, OF VERSAILLES, PENNSYLVANIA.

## RAILWAY SIGNAL-FUSEE.

No. 930,163.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed May 1, 1909. Serial No. 493,330.

*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, and pertains to an improved manner of attaching the spiked plug or closure for the lower end of the fusee case.

Signal fusees contain certain chemicals for producing a colored light for a predetermined period of time, and these fusees are provided with spiked plugs or closures for their lower ends, and the spike is caused to enter either a railroad tie, or the road bed for supporting the fusee in an upright position while burning. It is well known to those skilled in this art, that the chemical composition contains a large percentage of sulfur, and it is also well known, that the spiked plugs or closures are practically universally secured in the ends of the fusee-case by glue which enters circumferential grooves in the plug and adheres to the inner side of the case. The glue contains a certain amount of acid, and if it happens to come in contact with the chemical filling of the case when damp, (as it has been known to do) it acts upon the sulfur, causing the formation of sulfuric acid gas, and by reason of this spontaneous combustion occurs, which has in some instances caused serious and destructive fires in factories, and also when packed in dozens in boxes and in transit to the consignee.

The object of the present invention is to provide means for firmly and cheaply attaching the spiked plugs in the end of the fusee-case without the use of glue or other cement, and to thereby avoid the possibility of fire from the cause herein mentioned, and at the same time make a better fastening for the plug.

Referring now to the drawings: Figure 1 is a detached sectional perspective view of the plug end of a fusee, showing the plug, and the plug-attaching member detached. Fig. 2 is a longitudinal sectional view of the plug end of a fusee, with a single grooved plug attached thereto by the present improvement. Fig. 3 is a detached perspective

view of one form of plug. Fig. 4 is a longitudinal sectional view of the plug end of a fusee, showing a plug and the improved plug attaching member in position ready to be grooved or crimped for holding the parts together. Fig. 5 is a detached perspective view of one of the forms of plug attaching member.

In putting the present invention in practice, the usual paper fusee-case or tube 1 is used, and this case is filled with the usual light producing chemical 2. As shown the tube projects beyond the chemical filling a sufficient distance to receive the spiked plug. In Figs. 1, 3 and 4, the plug 3 is of a form which has a dome or conical shaped outer end 4, and is provided with two circumferential grooves 5. However, the particular shape of the plug is not material, and it will be apparent from an understanding of the invention, that its shape may be varied in many ways without departing from the scope of the invention. For instance, one variation of the shape of the plug 3<sup>a</sup> is shown in Fig. 2, wherein the outer end 6 of the plug is made flat, and is provided with one circumferential groove 7. This plug may be made of any suitable material. The present practice is to make it either of wood or cast iron. When the plug is of wood the inner end of the spike 8 is driven into an opening in the plug, whereas when the plug is of cast iron, the inner end of the spike is cast into the plug. So far I have described the usual construction.

The present improvement comprises an attaching member 9 for the two grooved dome-shaped plug, and an attaching member 9<sup>a</sup> for the flat ended one groove plug. This attaching member is approximately cup-shaped, and has its bottom or end-wall provided with an opening 11, through which the spike 8 passes. The end-wall 10 engages the outer end of the plug, and the side-wall 12 is straight when it is placed around the end of the tube 1, and snugly engages it. To cause the member 9 or 9<sup>a</sup> to attach the tube and plug, the side wall of the cup-shaped member is circumferentially grooved or depressed, or grooved as shown at *a*, which forces the adjacent wall of the tube into the groove or grooves of the plug, and firmly holds the parts together.

The attaching member is constructed of pliable thin sheet metal, so that it is easily



depressed or grooved by rollers, and remains in this depressed or grooved position, clamping the parts firmly together.

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

1. The combination with the end of the tubular case of a fusee, of a spiked plug placed in the end of the tube, of an attaching  
10 member having a side-wall and an end-wall, the latter engaging the outer end of the plug and provided with an opening through which the spike passes, the side wall embracing the end of the tube and clamping  
15 itself, the tube and the plug together.

2. The combination with the end of the tubular case of a fusee, of a plug placed in the end of the tube, the plug having a recess in its outer surface, of an attaching member hav-  
20 ing a wall embracing the end of the tube, the wall of the attaching member forced

inward at a point opposite the said plug recess, thereby forcing the wall of the tube into the plug recess, and attaching the plug, tube and wall of said member together. 25

3. The combination with the end of the tubular case of a fusee, of a plug placed in the end of the tube, the plug having a circumferential groove, and an attaching member having an end-wall engaging the end of  
30 the plug and a side-wall engaging the wall of the tube, the side-wall of the attaching member forced inward opposite the groove in the plug and attaching the said parts together. 35

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

FRANK DUTCHER.

Witnesses:

H. P. PRICE,  
S. I. PRICE.