

No. 626,241.

Patented June 6, 1899.

C. E. MASTEN.  
SIGNALING TORCH.

(Application filed Feb. 6, 1899.)

(No Model.)

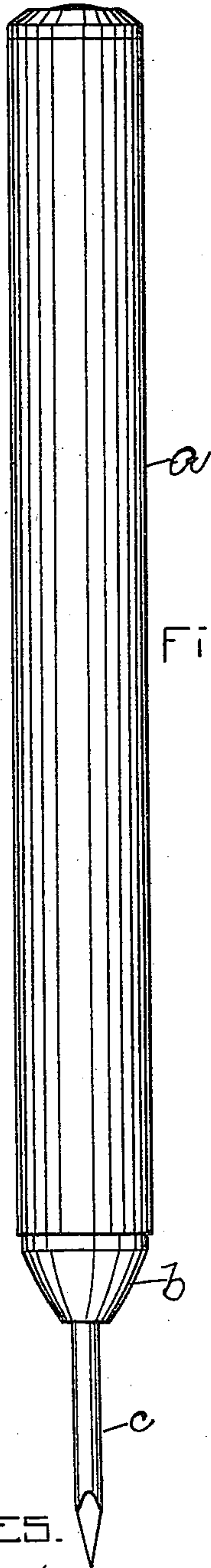


Fig. 1.

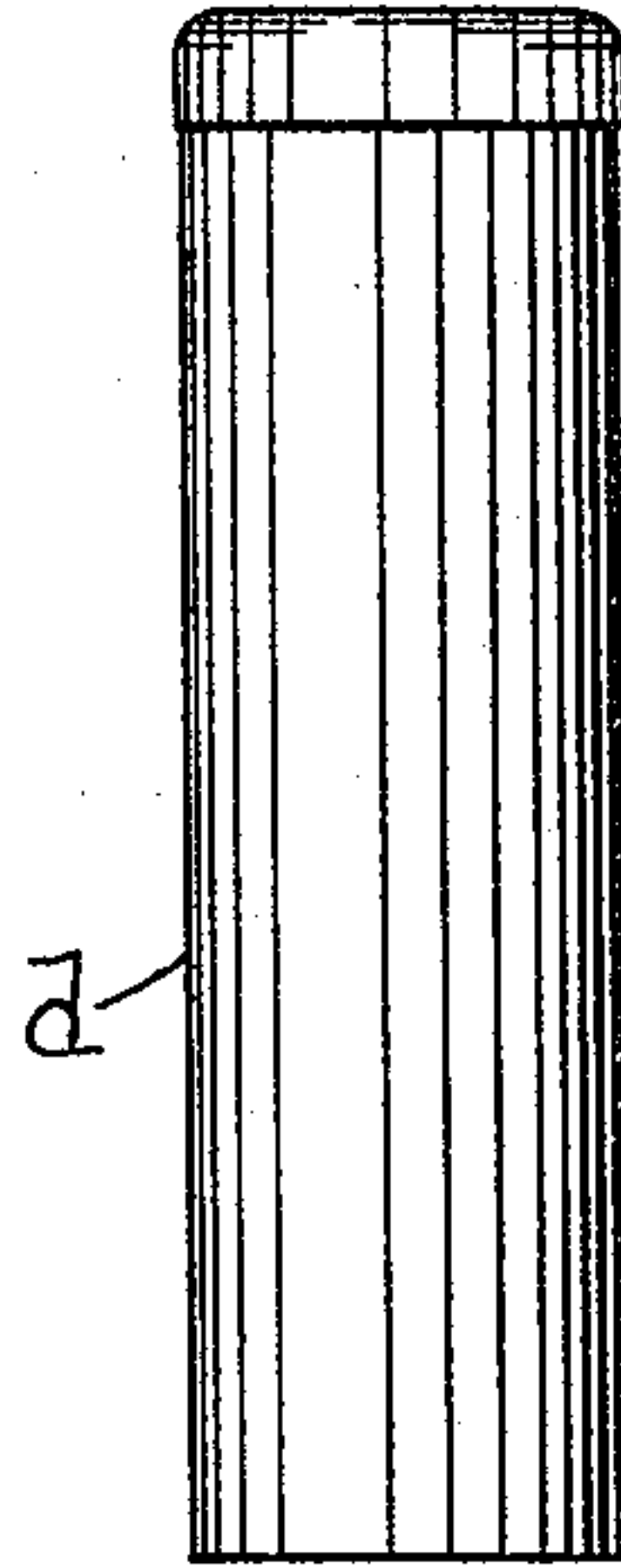


Fig. 2.

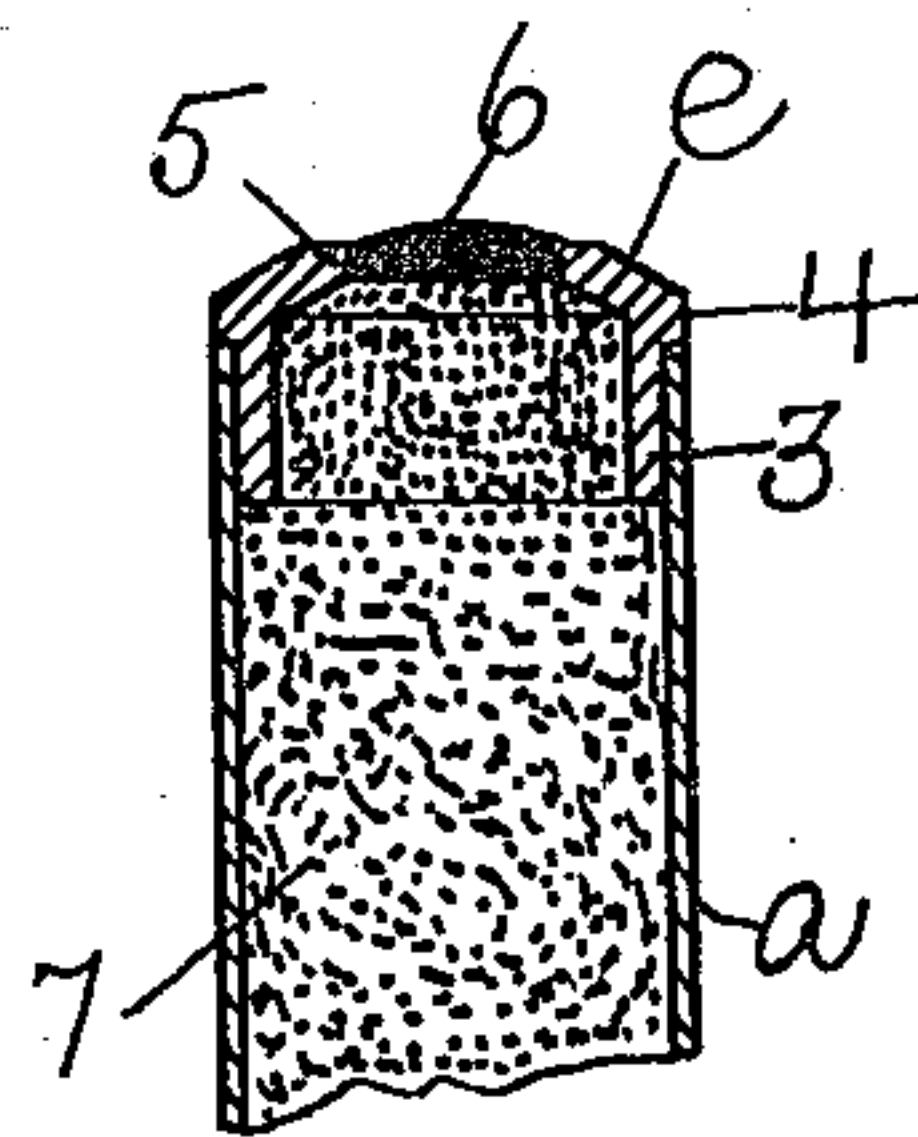


Fig. 3.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## SIGNALING-TORCH.

SPECIFICATION forming part of Letters Patent No. 626,241, dated June 6, 1899.

Application filed February 6, 1899. Serial No. 704,636. (No model.)

*To all whom it may concern.*

Be it known that I, CORNELIUS E. MASTEN, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Signaling-Torches, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to a signaling torch or fusee especially designed and adapted for use on railways. Torches or fusees of the class referred to as now commonly constructed and known to me consist of a cylindrical casing of paper or like combustible material closed at one end by a head usually provided with a spur or projection, which is designed to penetrate the ground or the railroad-ties when the torch or fusee is thrown to the ground, as from a moving train, the said casing being filled with ignitable composition, which is usually retained in the said casing by crimping, bending, or folding over the upper end of said casing to substantially close the same. The end of the casing or tube thus practically closed has applied to it a quickly-ignitable material or primer.

Torches of the class described are defective in that a considerable time must elapse after the primer is ignited before the fire is communicated to the composition within the casing or tube owing to the fact that the crimped or folded end of the casing must be burned through before the fire can reach the composition. This construction of torch therefore requires the operator or brakeman to hold the torch a considerable time before throwing the same to the ground, and as a result the torch when ignited and thrown is frequently not placed at the desired or proper distance in the rear of the train from which it is thrown, and so also it frequently happens in order to obtain this desired distance between train and signal the torch is thrown before the paper casing has burned through, so that when thrown the composition in the casing frequently fails to be ignited owing to the fact of the insecure closing of the upper end of the casing, which when the torch is

thrown is forced open by the composition and the primer is detached from the tube. So, also, the construction of torch referred to is defective in that it frequently happens that the composition which is placed in the casing in a moistened state and the crimped end of the tube or casing carrying the primer, which end is folded over or crimped while damp, shrink away from each other when they are drying, so that a considerable space is left between the primer carried by the crimped end of the tube or casing and the composition within the said tube or casing, which space is sufficient to prevent ignition of the composition by the primer. Furthermore, it sometimes happens that the crimped or folded end of the tube or casing is compressed to such extent as to cause the primer to be below the level of the end of the tube as will prevent its being reached by the striking-cover usually placed over the end of said tube and which is used to ignite the primer.

To render the torch quickly ignitable, some are left with their end open and merely closed by the quickly-ignitable material or primer. With this latter construction of torch a quick ignition of the composition is obtained; but the said construction is defective in that the composition is discharged out of the end of the casing when the latter is thrown to the ground.

This invention has for its object to provide a signaling-torch which is free from the defects above referred to and which is so constructed as to insure quick ignition of the composition in the casing without danger or liability of the composition or the primer being discharged from the said casing when the torch is thrown to the ground. This result is obtained by providing the upper end of the casing or tube with a hollow cap or plug, which is firmly secured to the casing and is provided with a crown having an opening normally closed by the primer or quickly-ignitable material, which latter is thus allowed to make direct contact with the composition to insure quick ignition thereof, and which opening in the crown is of less diameter than the hollow plug or cap, so that when the quickly-ignitable material is consumed the end of the



casing is still practically closed by the cap or plug and the ignited composition is prevented from being discharged out of the casing when the latter is thrown to the ground.

5 Figure 1 is an elevation of a torch embodying this invention; Fig. 2, an elevation of the striking-cover, which is normally placed over the upper end of the torch shown in Fig. 1; and Fig. 3, a sectional detail to be referred to.

10 The casing *a*, of paper or other suitable combustible material, closed at its lower end by the head *b*, provided with the spur or projection *c*, and the cover *d* may be of any suitable or usual material, except that in the  
15 present instance the upper end of the casing is not crimped or folded over, but is closed by a hollow plug or cap *e*. (See Fig. 3.)

The cap *e* is provided, as shown, with a thin body portion 3, adapted to fit tightly  
20 within the casing *a*, and with a lip or rim 4 of substantially the same diameter as the casing *a*, so as to rest upon said casing, as shown in Fig. 3. The cap *e* is provided with an  
25 opening 5 in its top or crown, and this opening is normally closed by a substantially small quantity of quickly-ignitable material or  
primer 6, which, as shown in Fig. 3, makes direct contact with the composition 7 within  
30 the casing. The opening 5 is of less diameter than the body portion 3 of the cap or plug, so that the torch may be thrown immediately  
after the primer 6 is ignited without danger of the composition 7 being discharged out of  
35 the casing to such extent as will extinguish the torch, and thereby render it useless for signaling purposes. The primer or quickly-ignitable material 6 is normally protected by  
the cover *d*, (shown in Fig. 2,) which is fitted over the upper end of said torch and which  
40 in practice is provided at its closed end with a suitable material, usually a thin film or layer of phosphorus, with which the primer 6 may be struck to ignite the same.

The cap or plug *e* is made hollow, so as to  
45 expose as large an area as possible of the composition 7 to the flame created by the ignition of the primer 6, and the said cap in practice

may be secured in the casing by glue or other adhesive material.

The cap or plug *e* is made hollow, as shown 50 in Fig. 3, so that it may be quickly consumed by the burning composition, and thus obtain a torch which retains the composition in the casing when the torch is thrown to the ground  
55 after being ignited, but which is soon consumed, so as to obtain the benefit of a full area of lighted composition.

I claim—

1. A signaling-torch, consisting of a casing of combustible material containing a com- 60 bustible composition, a head attached to one end of said casing and provided with a spur or projection, a hollow cap or plug having a thin body portion inserted into the opposite end of said casing and up into which the said 65 composition extends, the said body portion being provided with a crown having an opening of smaller diameter than the internal diameter of the body portion, and normally closed by a quickly-ignitable material adapt- 70 ed to communicate fire directly to said composition, substantially as described.

2. A signaling-torch, consisting of a casing of combustible material containing a com- 75 bustible composition, a head attached to one end of said casing and provided with a spur or projection, a hollow cap or plug having a thin body portion inserted into the opposite end of the said casing and up into which the 80 said composition extends, the said body portion being provided with a lip or rim to abut against the end of the said casing and having in its crown an opening of smaller diameter than said body portion and normally closed by a quickly-ignitable material adapted to 85 communicate fire directly to the said composition, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CORNELIUS E. MASTEN.

Witnesses:

JAS. H. CHURCHILL,  
J. MURPHY.