

(No Model.)

J. J. DETWILLER.
SIGNAL.

No. 419,840.

Patented Jan. 21, 1890.

Fig.1.

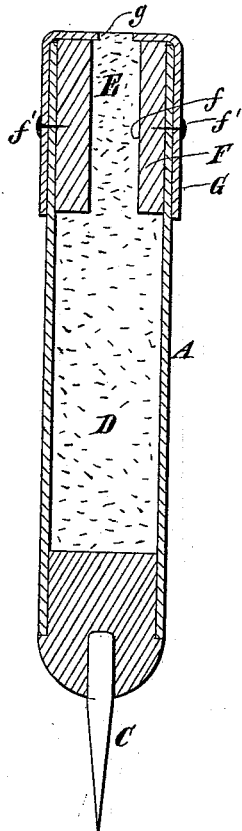


Fig.2.

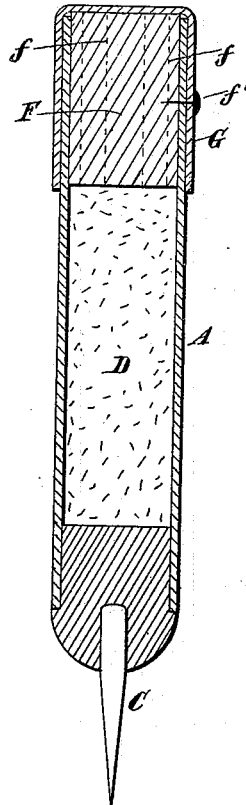


Fig.3.

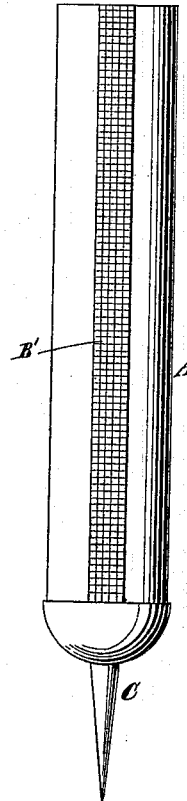


Fig.4.

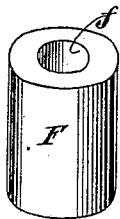


Fig.5.

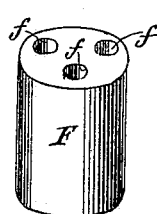


Fig.6.

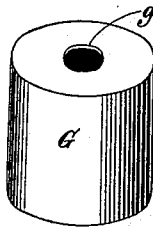
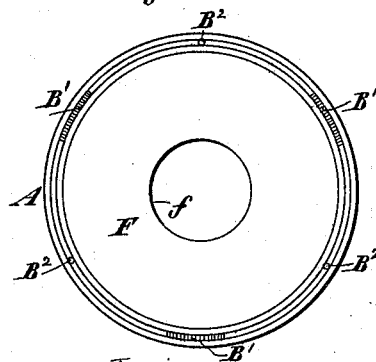


Fig.7.



Witnesses
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UNITED STATES PATENT OFFICE.

JACOB J. DETWILLER, OF JERSEY CITY, NEW JERSEY.

SIGNAL.

SPECIFICATION forming part of Letters Patent No. 419,840, dated January 21, 1890.

Application filed May 25, 1889. Serial No. 312,063. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. DETWILLER, of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Signals, of which the following is a specification.

My improvement relates particularly to signals such as are used at night in railroading. Signals of this class are commonly thrown from the rear ends of trains in motion. They are liable to breakage on striking the road-bed. The cases have been thickened to obviate this difficulty, but have brought about another, in that they have interfered with the free burning of the signals. Metallic cases have not been found practicable, because when the metal melts and runs down the side of the signals it ignites the signals at the side. My improvement is designed to obviate these difficulties.

To this end the improvement consists in the combination, with the folds or laps of paper forming the case of such a signal, of stays, preferably consisting of cotton or linen in the form of tapes. These will strengthen the case without interfering with the burning of the signal.

Another difficulty experienced with signals of the kind referred to arises from the liability of the extinguishment of the signals by knocking or shaking the burning composition out of its place through the concussion of the signal with the road-bed, or by knocking off or smothering the ignited portion where the burning end strikes the road-bed.

Another feature of my improvement consists in the combination, with a signal of the kind referred to, of a shoulder, preferably made of a plug of wood or like material, and having in it a hole or holes charged with the burning composition. A signal furnished with such a plug is not liable to have the burning composition disturbed or injured, or the ignited end crushed in. This plug is also advantageous in the operation of the signal.

The improvement also consists in the combination, with a signal of the kind referred to, of a shoulder made of a cap of paper, metal, or other strong material, extending inwardly over the top and having a hole or holes through the top portion. This is de-

signed to prevent the displacement or injury of the burning composition.

In the accompanying drawings, Figure 1 is a central longitudinal section of a signal embodying my improvement. Fig. 2 is a similar view illustrating a modification. Fig. 3 is a side view thereof with the outer fold or lap of the case removed. Fig. 4 is a perspective view of a plug forming part of the signal. Fig. 5 is a perspective view of a plug of modified construction. Fig. 6 is a perspective view of the cap employed in the signal. Fig. 7 is a transverse section, on a large scale, of a signal-case made according to my improvement.

Similar letters of reference designate corresponding parts in all the figures.

A designates the case of the signal. It is made of paper rolled, folded, or lapped upon itself to the desired thickness. As shown it is of cylindric form, and this is the preferable form. This case is made comparatively thin, so that it will not interfere with the proper burning of the signal.

B' designates a number of stays. Preferably they will be made of cotton or linen in the form of tapes, although they may be made of thin metal. They may extend directly in the length of the case, or they may extend spirally around the case; or, indeed, they may be arranged in any desired manner which will enable them to stay and strengthen the case and hold the parts of the same together, even in the event of breakage of the paper composing it.

B² designates a number of permanent stays, consisting of wires, strings, or cords. These may be permanently arranged in the same way as the stays B'. The stays will most advantageously be introduced in the formation of the case, as then they can conveniently be introduced between adjacent folds or laps of the paper.

At the lower end the case has affixed to it a spike C. This may be secured to a block fitted in the lower part of the signal. This spike is intended to stick in the ground and afford a support to the signal.

D designates the signal composition. It is arranged in the lower part of the case.

E designates the burning composition,

which, it will be seen, is located in the upper part of the case.

To protect the burning composition against injury or displacement or being smothered or put out, I form an inward projection at the upper end of the case. This may be formed of a plug F, of wood or like material, having a hole or a number of holes *f* extending through it; or it may be made of a cap G, having a hole *g*, formed of strong paper, metal, or othersuitable material, fitted to the upper end of the case and projecting inward across the end of the same. Indeed, both the plug and the cap may be used together.

The plug may be secured within the case by tacks *f'*. The cap may be similarly secured. Obviously either the plug or the cap may be secured in other ways.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pyrotechnic signal, the combination, with a case made of comparatively thin paper, of stays permanently connected therewith and arranged in the case, substantially as specified.

2. In a pyrotechnic signal, the combination, with a case made of comparatively thin paper, of stays permanently connected therewith and extending within the case in the direction of the length thereof, substantially as specified.

3. In a pyrotechnic signal, the combination, with a case made of comparatively thin pa-

per, of permanently-connected stays consisting of strips or tapes of cotton or linen arranged within the case, substantially as specified.

4. In a pyrotechnic signal, the combination, with a case made of comparatively thin paper, of stays introduced between the folds or laps in the paper forming the case, substantially as specified.

5. In a pyrotechnic signal, the combination, with a case made of comparatively thin paper, and stays between the folds of said paper, of a shoulder consisting of a perforated cap at the upper end of the signal, substantially as specified.

6. In a pyrotechnic signal, the combination, with a case, of a perforated plug fitted in the upper end of the case and a perforated cap secured to the upper end of the case, and a block in the lower end of the case having a spike, substantially as specified.

7. In a pyrotechnic signal, the combination, with a case having a signal composition in its lower part, of a plug in the case above the signal composition, the said plug having a hole or holes extending through it, and a burning composition in said hole or holes, substantially as specified.

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Witnesses:

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