(No Model.) 2 Sheets—Sheet 1.

J. J. DETWILLER.

POCKET SIGNAL DEVICE.

No. 79,963. Patented July 14, 1868.

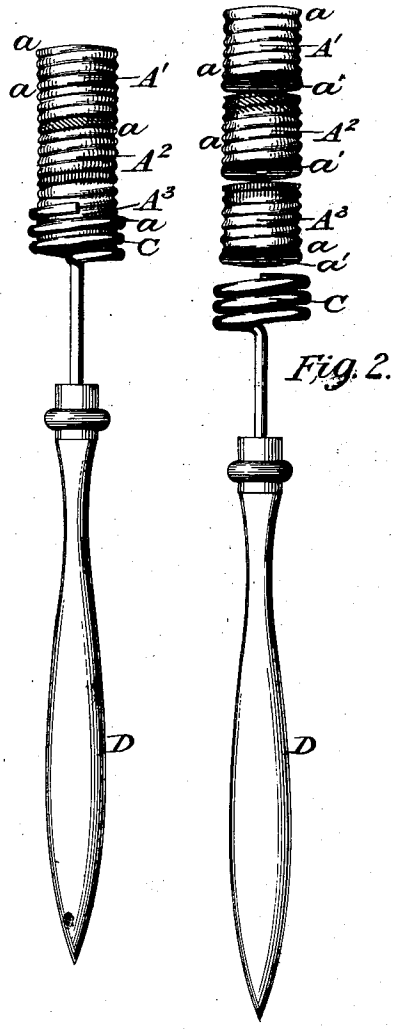


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 5.

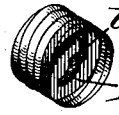


Fig. 6.

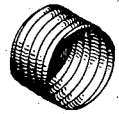


Fig. 4.

Witnesses.

Jas L. Ewin

J. L. M. Bowlin

Inventor.

J. J. Detwiller

By Knight Bros.

Attorneys.

(No Model.) 2 Sheets—Sheet 2.

J. J. DETWILLER.

POCKET SIGNAL DEVICE.

No. 79,963. Patented July 14, 1868.

Fig. 7.

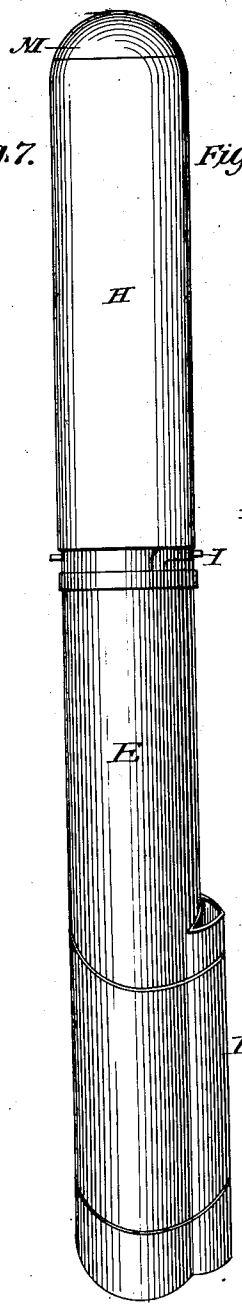


Fig. 8.

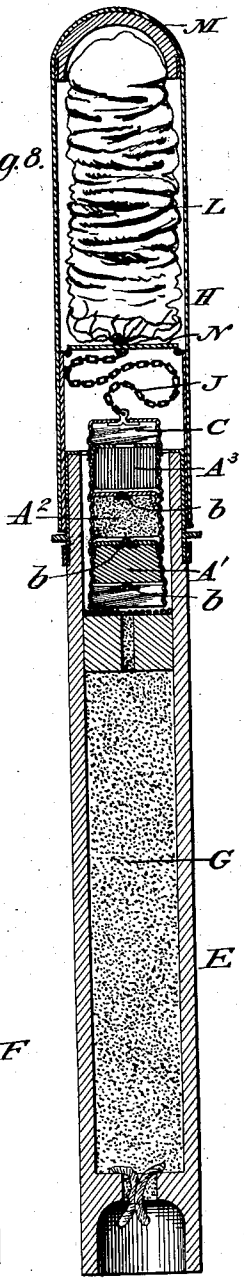
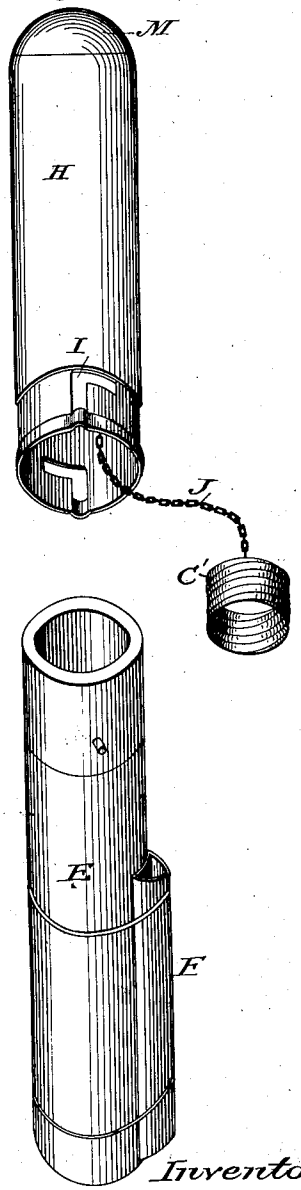


Fig. 9.



Witnesses.
Jas. L. Lavin
J. E. M. Bowles.

Inventor.
J. J. Detwiller
By Knight Bros
Attorneys.

United States Patent Office.

JACOB J. DETWILLER, OF GREENVILLE, NEW JERSEY.

Letters Patent No. 79,968, *dated July* 14, 1868.

IMPROVEMENT IN ROCKET-SIGNAL DEVICE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JACOB J. DETWILLER, of Greenville, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Telegraphic Night-Signals; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents an elevation of an apparatus illustrating my invention as applied to signalling by hand.

Figure 2 is a perspective view of the same, with the parts detached.

Figures 3 and 4 are respectively a sectional and a perspective view of an empty cup adapted for the reception of a pyrotechnic compound to produce light of any desired color.

Figures 5 and 6 are sectional and perspective views of the same charged.

Figure 7 represents a side elevation of a rocket.

Figure 8 represents an axial section thereof fully charged.

Figure 9 is a perspective view of the same, with the parts separated in readiness for charging.

Similar letters of reference in the several figures refer to corresponding parts.

My invention consists—

First, in the construction and use of metallic cups adapted for the reception and burning of pyrotechnic compounds, and formed with spiral grooves for attaching them to a staff or to a suspending-chain, or other object.

Second, in the combination of a number of such metallic cups, constructed and arranged to be interchangeable at will for exhibiting various-colored lights in any consecutive order desired.

Third, in a peculiar construction of staff or handle for holding and exhibiting the signal-cups.

Fourth, in a peculiar construction of rocket-case, adapted to be readily opened and closed, for the reception of the pyrotechnic cups.

Fifth, in a suspended screw-cup for the reception of a single or combined signal, as hereinafter described.

Sixth, in the employment or use of a parachute introduced in a compressed state within the head of a rocket, in such a way as to avoid danger of displacement or entanglement during storage or transportation, and lessen resistance in flight, and adapt it to be brought into effective action instantaneously on the exploding of the rocket.

The following description will enable any one skilled in the art to which my invention appertains to construct and use it.

A^1 A^2 A^3 represent metallic cups formed on the periphery, with a continuous spiral groove, *a*, and tapering towards the bottom or closed end, in the centre of which is an aperture, *a'*.

B represents pyrotechnic composition placed within the cups, and adapted to burn with light of any desired colors. The color of the light which the charge of any cup will produce may be indicated by that of the paper, wad, or cap by which it is confined within the cup, or by colored paper or paint applied to the outside of the cup.

b represents the fuse, by means of which the charge of the first cup is ignited, either by hand or by the explosive charge of the rocket, and the charge of each succeeding cup from the preceding one through the aperture *a'*.

By the tapering form of the cups and the spiral grooves on their peripheries, they are adapted to be readily screwed together, in the manner represented in fig. 1, in any consecutive order, and the last one may be screwed into a spiral-wire socket, C, mounted in a staff or handle, D.

The fuse *b* of the first cup being ignited, the contents of this cup will burn until it is consumed, and then communicate fire through the aperture *a'* to the fuse of the second, and so on till all have burned out.

The cups may be made of fusible metal, so that each will be dropped as soon as done with, and thus offer no impediment to the burning of the contents of the rest.

In figs. 7, 8, and 9, E represents the body of a rocket, F, the customary stick-socket, and G the elevating-charge.

The head H of the rocket is made separately, and attached to the body E by a bayonet-joint, I, or other suitable fastening, which will serve to secure it while in use, but permit its ready detachment and attachment when desired, for the purpose of introducing the connected signal-cups A^1 A^2 A^3 in any desired number, the last of which is secured to screw socket C′, attached by a chain, J, to the cords K of a parachute, L, which is compressed into the head of the rocket, as shown in fig. 8.

M represents a movable cap closing the top of the rocket, and N a diaphragm separating the parachute-chamber from those in which the explosive and pyrotechnic compounds are ignited.

The operation of my invention, as applied to rockets, may be described as follows.

As the rocket approaches the upward limit of its flight, the explosive charge ignites the fuse *b* of the first cup A^1, and either shatters the head entirely, or blows the signal-cups A^1 A^1 A^2, diaphragm N, and parachute L, and their connections, bodily out through the upper end of the rocket, carrying off the cap M. The weight of the attached signal-cups A A^1 A^2, and the resistance of the atmosphere, cause the parachute to expand instantaneously, and to suspend the cups for a sufficient length of time for the combustion of their contents.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A metallic signal-cup, A^1, grooved spirally for attachment to a staff or suspension-cup, as and for the purpose set forth.

2. The combination of two or more cups, A^1 A^2 A^3, tapered and grooved, as herein described, to make them relatively interchangeable, for the purposes specified.

3. The spiral socket C′, constructed and adapted to receive and hold the cups A^1, as and for the purposes described.

Witnesses:

GEO. FRED LATHROP,

F. C. HERBERT.

JACOB J. DETWILLER.