

No. 630,477.

Patented Aug. 8, 1899.

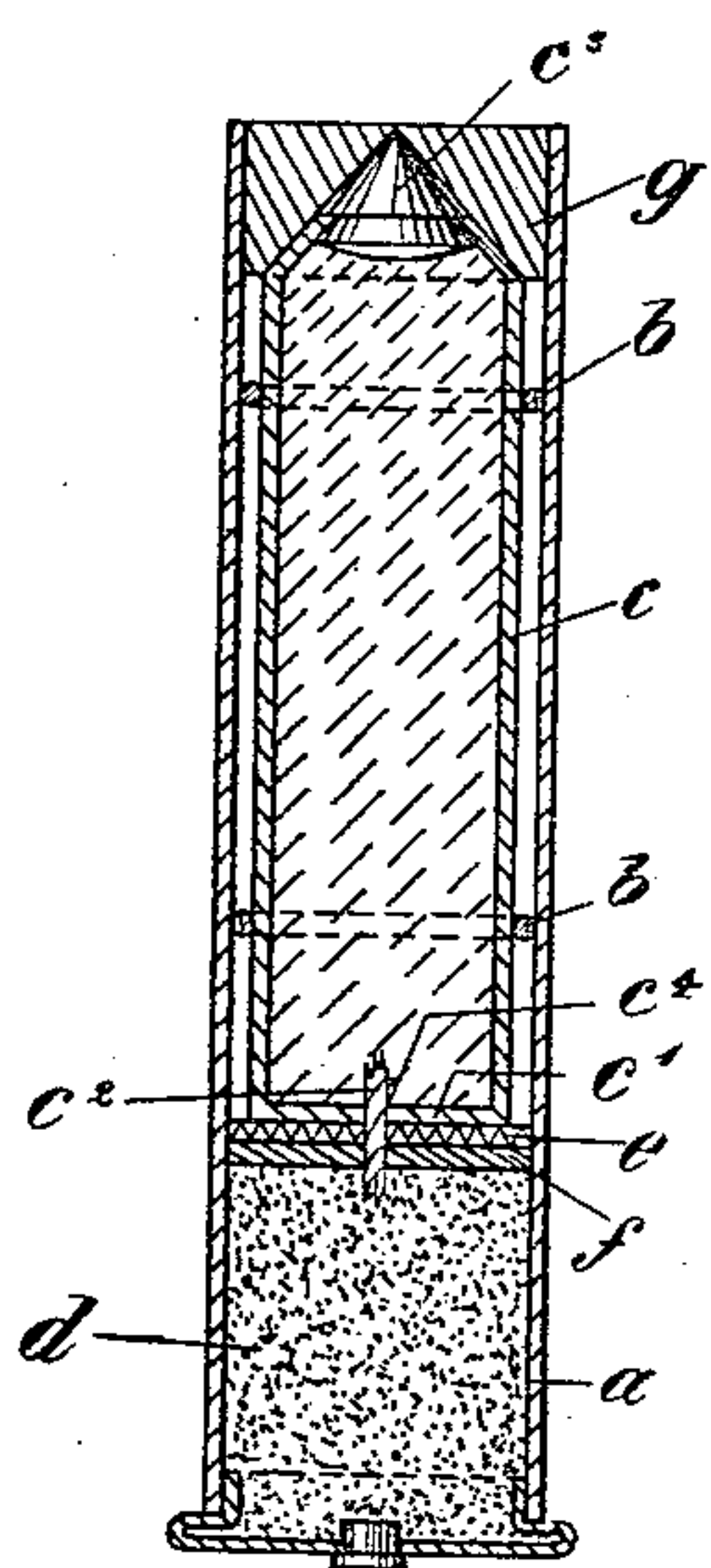
B. BEHR.

SIGNALING DEVICE.

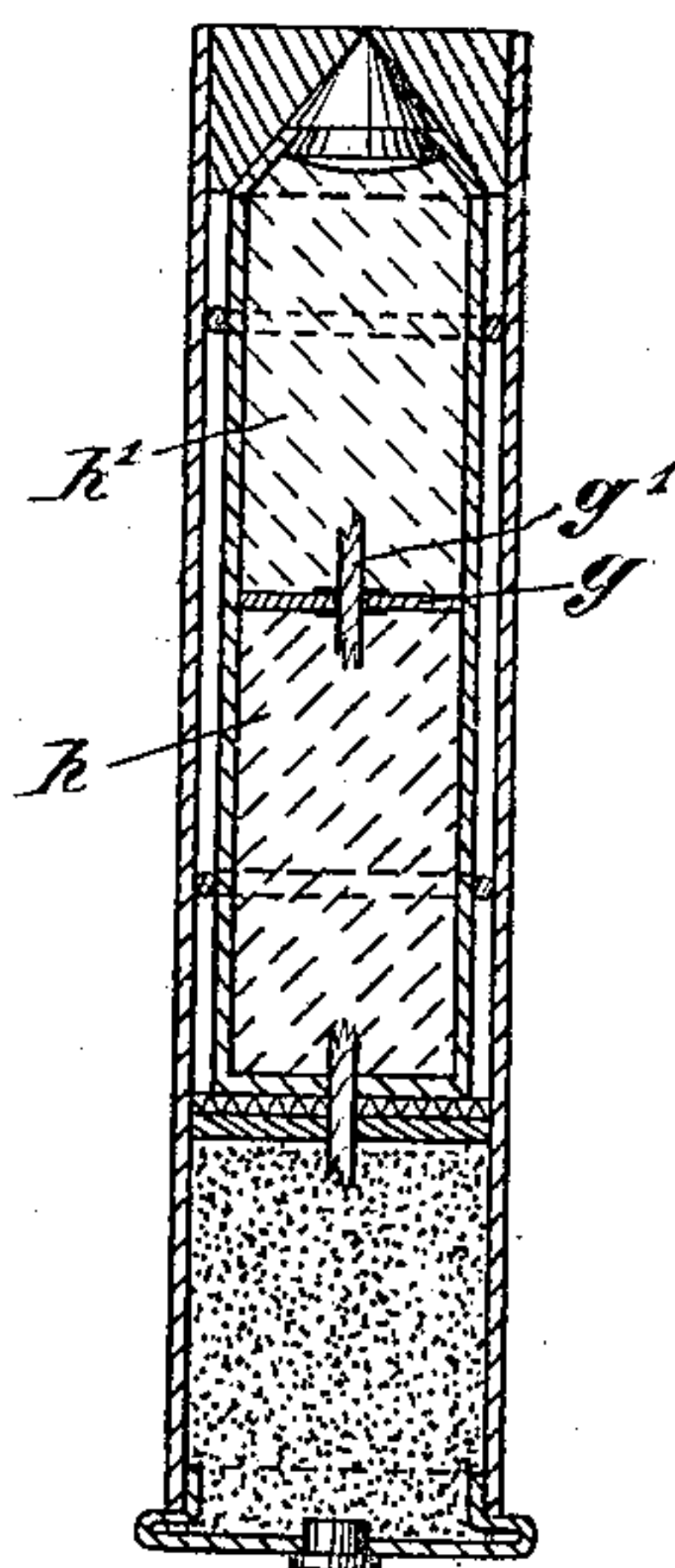
(Application filed Feb. 8, 1899.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

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## SIGNALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 630,477, dated August 8, 1899.

Application filed February 8, 1899. Serial No. 704,966. (No model.)

*To all whom it may concern:*

Be it known that I, BURKARD BEHR, a citizen of the Russian Empire, residing at Haldenbachstrasse 22, Zurich, Switzerland, have invented an Improved Signaling Device; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to signaling; and it consists, substantially, in such features of improvement as will hereinafter be more particularly described.

My invention has reference more particularly to aerial pyrotechnic signaling in accordance with a given adopted code—such, for instance, as is employed between ships passing each other in the night, or between ships and shore stations, and under other similar conditions.

The object of the invention is to provide means by which the same code of signals ordinarily carried out by means of flags during the day can be operated with the same understanding and precision at night by aerial pyrotechnic devices which take the place of the flags. As distinguished from a system of aerial pyrotechnic signaling carried out merely by the projection into the air of different-colored pyrotechnics, I employ different colors of pyrotechnic or illuminating material—such as green, red, white, and blue magnesium powders, which are employed either separately or in different combinations and which give out light of corresponding colors when the magnesium is ignited. It is well known that magnesium powder burns somewhat slowly, and the length of time which it will burn is proportional to the quantity of the substance ignited, and I therefore combine this quality, aided by any one color of the four mentioned colors or by a combination of any two or more of such colors, in producing what I term “flash” and “flare” lights at night accordingly as the quantity of substance employed is sufficient to produce a light lasting for a short or a long period of time. Combinations may also be formed, such as double flash, double flare, flash and flare, or vice versa.

50 A simple system of signaling may thus be composed, based on these different light col-

ors and duration of the light, which system may be carried out to exactly correspond to the requirements of the international signal-book and to each person intrusted with the signal-book is easily comprehensible and capable of being learned.

As an example, the following several signals of the signal-book are replaced by signal-rockets with the prescribed properties: First, signal-book rocket and answer-rocket, red flare and white flash; second, B, green flare; third, C, white flare; fourth, D, red flare; fifth, F, blue flare; sixth, G, green flash; seventh, H, white flash; eighth, J, red flash; ninth, K, blue flash; tenth, L, green flare and green flash; eleventh, M, white flare and white flash; twelfth, N, red flare and red flash; thirteenth, P, blue flare and blue flash; fourteenth, Q, green double flash; fifteenth, R, white double flash; sixteenth, S, red double flash; seventeenth, T, blue double flash; eighteenth, V, white and green double flash; nineteenth, W, red and green double flash; twentieth, Yes, white and red double flash; twenty-first, No, white and blue double flash.

It is of course evident that the combination of the rockets for the separate signals may also be otherwise arranged or selected.

In the accompanying drawings cartridges provided with single and compound or combined rockets for carrying out my improvements in signaling hereinbefore indicated are shown in longitudinal section in Figures 1 and 2.

The cartridge *a*, Fig. 1, is of the ordinary form and adapted for discharging a magnesium rocket *c*, which is tight-washed in the case *a* by means of tallowed wool threads or fibers *b* and filled with a suitable quantity of powder *d*, making little smoke. Between the bottom *c'* of the rocket *c* and the powder charge *d* an elastic wad *e* and a metal plate *f* are inserted in order to protect the rocket when it is discharged, both of which are perforated to allow of the insertion of the fuse *c<sup>2</sup>* into the powder charge *d* for lighting the rocket. The rocket *c* is weighted at its front end by a lead cap *c<sup>3</sup>*, which is conical in shape, in order to diminish the resistance of the air. The cartridge is closed by a tallowed ring *g* cast into it. When the cartridge is discharged



from a suitable single or multiple firearm, which may be arranged to receive four cartridges, the fuse  $c^2$  of the rocket  $c$  is ignited by the powder charge  $d$ , by which means  
5 after a period of time corresponding to the length of the said fuse  $c^2$  the rocket  $c$  is ignited and according to the form and according to the magnesium mixture emerges in the form of a flash or flare of a certain color from  
10 the inlet-hole  $c^4$  of the fuse  $c^2$ .

The signaling-cartridge shown in Fig. 2 is essentially arranged like the one shown in Fig. 1. As, however, the inserted rocket is intended to give a compound signal (double  
15 flash, double flare, or the like) it is divided into two chambers  $h$   $h'$  by means of a partition  $g$ .

On the cartridge being fired the charge contained in the lower chamber  $h$  is first fired,  
20 and then it ignites the fuse  $g'$ , passing through the partition  $g$  into the chamber  $h'$ , so that after a short time the chamber  $h'$  is also discharged.

The cartridges hereinbefore described and  
25 shown in the accompanying drawings are of course only to be regarded as examples.

I declare that what I claim is—

1. An aerial pyrotechnic signal device adapted to be ignited by the aid of a gun, and which is elevated in the air by the explosion of gun- 30 powder or similar explosive, said device comprising a case containing the elevating explosive substance, and also colored substances adapted to burn with a light for longer or shorter periods of time, whereby the said de- 35 vice is made available for code-signaling.

2. An aerial pyrotechnic signal device adapted to be ignited by the aid of a gun, and which is elevated in the air by the explosion of gun- powder or similar explosive, said device com- 40 prising a case containing the elevating explosive substance, and also different-colored substances, as magnesium powders, each powder being in different quantity to burn with a light for varying durations of time. 45

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

BURKARD BEHR.

Witnesses:

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