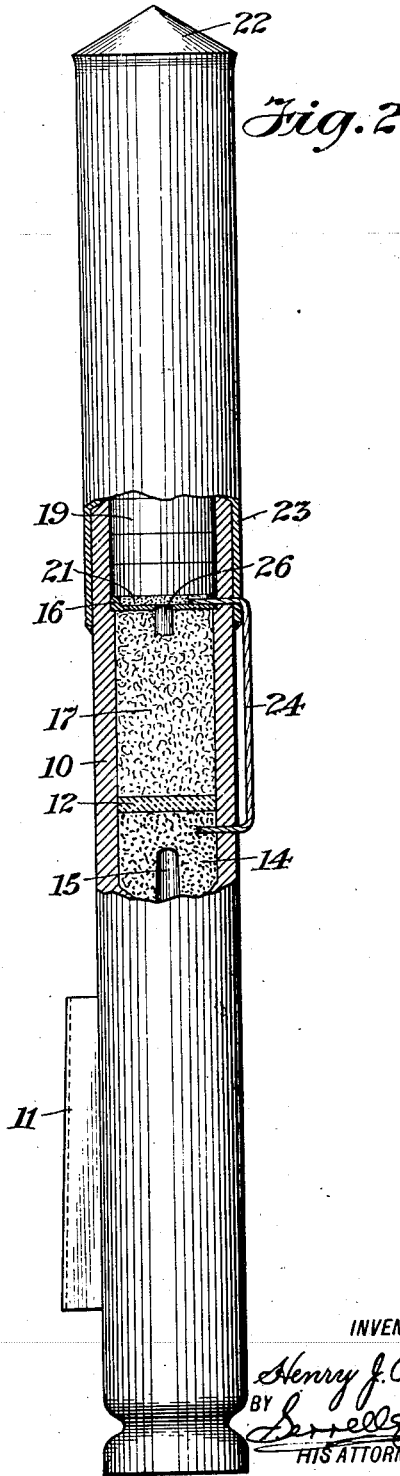
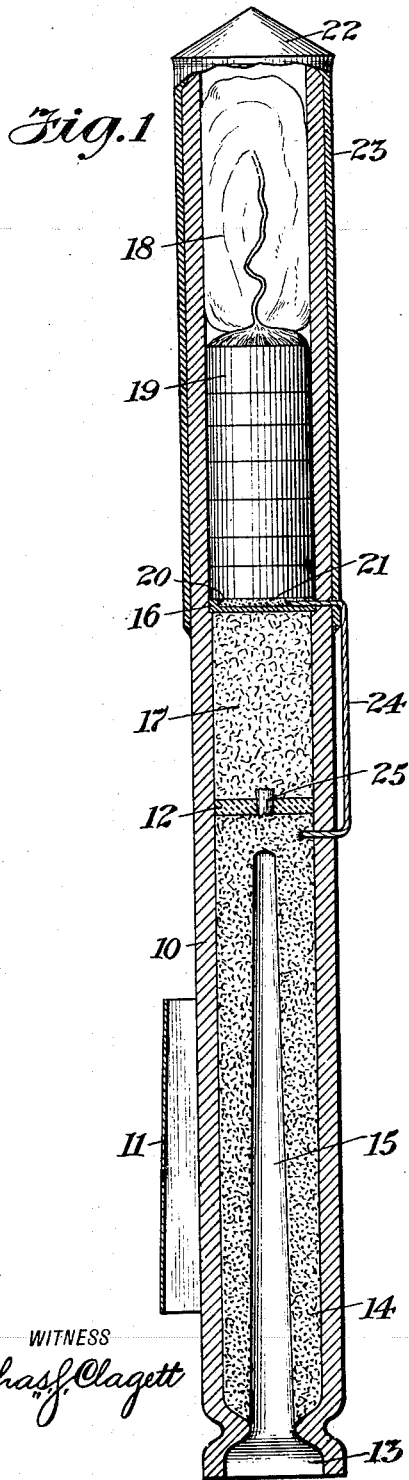


H. J. PAIN.
ROCKET.
APPLICATION FILED NOV. 21, 1916.

1,299,217.

Patented Apr. 1, 1919.



WITNESS
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UNITED STATES PATENT OFFICE.

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ROCKET.

1,299,217.

Specification of Letters Patent.

Patented Apr. 1, 1919.

Application filed November 21, 1916. Serial No. 132,531.

To all whom it may concern:

Be it known that I, HENRY J. PAIN, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented an Improvement in Rockets, of which the following is the specification.

My present invention relates to a rocket, and particularly to a signal rocket, although as will be understood, the pyrotechnic device made in accordance with this invention may be used merely for display purposes. Heretofore rockets have been employed by the armies and navies of practically all countries for signaling purposes at night. The rockets so used have been eminently satisfactory when the signals intended to be given thereby have been observed, but a difficulty has been experienced in the use of such rockets in that when a signal is unexpected, as is the case in most instances, it is oftentimes unobserved, and therefore useless because no attention has been directed to it. The object of my present invention therefore, is to overcome this difficulty and provide in a rocket together with means for creating varied colored lights for signal purposes, a detonating charge which when fired will cause a report sufficiently loud to be heard for several miles, in order that for the intended purposes the signal cannot be very well unobserved, and the rocket made in accordance with my present invention will be hereinafter more particularly described.

In the drawing, Figure 1 is the central longitudinal cross section of a signal rocket made in accordance with this invention. Fig. 2 is an elevation and partial section, illustrating a modified form of the invention.

Referring particularly to Fig. 1 of the drawing, it will be seen that in carrying out my invention, I employ a rocket body or case 10 which may be made of compressed cardboard, paper, or other similar suitable material. As is customary adjacent one end of the rocket the case may be provided with a tube 11 to receive the stick which is ordinarily employed with rockets of the character to which this invention relates. In a suitable position within the case, I employ a head or partition wall 12, made of clay or any other suitable material, and between the head 12 and the open or fuse end 13 of the rocket, the case is provided with the usual fire works material 14 having a central lon-

gitudinal, and preferably tapering space 15 therein, in order that when ignited by a suitable fuse, the gas generated by the fire works material may be ejected through the open end of the rocket with such force that when acting against the air it causes the rocket to rise as is also customary.

Within the case 10, and suitably spaced from the head 12 I employ an additional partition wall or head 16 and between the heads 12 and 16 the case is filled with a detonating charge 17 also composed of any material adapted when fired to make an exceedingly loud report. This material for example may be a composition of aluminum, sulfur, antimony and baryta, in suitable proportions, or may be ordinary gun-cotton, or may be dynamite.

In the opposite end of the case, there is inserted a parachute 18 with disks 19 suitably attached thereto and displaying varied colored lights when ignited, these disks being formed of suitable substances to create this effect. The parachute and associated parts may be made substantially the same as those shown and described in Letters Patent No. 624,530, granted to me May 5, 1899, in which structure they are similar to those illustrated in the present case, or for another example, the signal apparatus may comprise a parachute and a plurality of suitably arranged shells or containers for carrying material to effect the colored lights as shown and described in Letters Patent No. 617,539 granted to me Jan. 10, 1899, it being understood that so far as the display or signaling features of my present invention are concerned, there is nothing new over and above the pyrotechnic devices shown in the patents to which reference has just been made.

In order to eject the parachute and the signaling devices carried by the same, the head or partition wall 16 is provided with a recess 20 in which a firing or ejecting charge 21 is placed, which upon being fired ejects the parachute and associated parts from the end of the rocket breaking the cap 22 and the cover 23 provided for the normal protection of this end of the rocket before the same is used. The firing charge indicated at 21 may be any composition well known in the art and used for this purpose, for example a composition of saltpeter, sulfur and charcoal.

In order that the parachute and associated

parts may be ejected from the rocket in such a manner that the detonating charge will not interfere in any way with the visual effect of the lights carried by the parachute,

5 I employ a relatively quick fuse 24, one end of which is carried into the inner end of the fire works material 14 and is lighted thereby after the fire works material has been burned to a sufficient extent to reach this

10 end of the fuse. This, as will be understood, will occur after the rocket has reached a predetermined height in the air. As shown in Fig. 1, the other end of this fuse 24 is embedded in the ejecting charge 21 so

15 that almost simultaneously with this fuse 24 becoming ignited, the ejecting charge 21 is fired and the parachute and associated parts are ejected from the rocket. Sufficiently long after this occurs, four or five

20 seconds for example, the fire works material burns to its inner end, and ignites a relatively slow fuse 25 placed in and extending through the head 12 and communicating with the detonating charge 17 in order to

25 fire the same, it being understood as hereinbefore stated, when exploded this charge makes a sufficiently loud report to be heard for several miles, thereby directing the attention of those within hearing distance to

30 the signal given by the rocket.

As shown in Fig. 2, the head or partition wall 12 may be a solid structure and a relatively slow fuse 26 placed in the partition wall 16 in such a manner that one end of

35 the same is in communication with the ejecting charge 21 and the opposite end in contact with the detonating charge 17, so that in this structure the fuse firing the detonating charge is lighted by the ejecting charge

40 which in turn is ignited by the fuse 24 in the same manner as that hereinbefore described in connection with the form of the invention shown in Fig. 1.

Furthermore, be it understood that in the

45 event of dynamite for example, being em-

ployed as a detonating charge, it will be necessary to provide a suitable percussion cap in order to explode the charge.

I claim as my invention:

1. A rocket comprising a tubular body, a 50 firing charge in one end thereof which when ignited causes the rocket to rise in the air, a transverse wall at the inner end of the firing charge, a second transverse wall 55 spaced from the aforesaid transverse wall and having a recess in one surface thereof, a detonating charge within the tubular body between the said transverse walls, a signaling device in the opposite end of the tubular body, an ejecting charge beneath the sig- 60 naling device and within the recess in the second aforesaid transverse wall, a fuse making communication between the firing charge and the said ejecting charge for the signaling device, and a fuse extending through 65 one of the said transverse walls for igniting the detonating charge.

2. A rocket comprising a tubular body, a firing charge in one end thereof which when ignited causes the rocket to rise in the air, 70 a transverse wall at the inner end of the firing charge, a second transverse wall spaced from the aforesaid transverse wall and having a recess in one surface thereof, a detonating charge within the tubular body 75 between the said transverse walls, a signaling device in the opposite end of the tubular body, an ejecting charge beneath the signaling device and within the recess in the second aforesaid transverse wall, a quick 80 fuse extending from the inner end of the firing charge to the ejecting charge in the recess in the second aforesaid transverse wall, and a fuse extending through the first aforesaid transverse wall for igniting the 85 detonating charge from the said firing charge.

Signed by me this 18th day of November, 1916.

HENRY J. PAIN.