

(No Model.)

P. CUNNINGHAM.
LINE CARRYING ROCKET.

No. 395,881.

Patented Jan. 8, 1889.

FIG. 1.

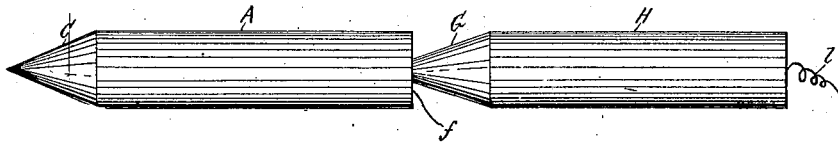


FIG. 2.

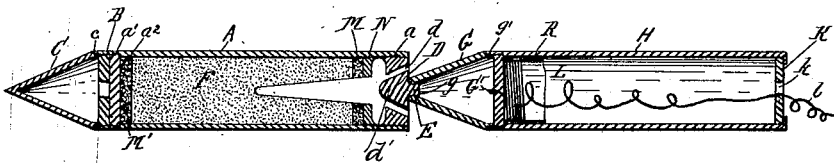
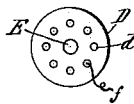


FIG. 3.



Witnesses:
John Buckler,
Edwin Snyder

Inventor:
Patrick Cunningham,
By A. M. Pierce,
Atty.

UNITED STATES PATENT OFFICE.

PATRICK CUNNINGHAM, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR TO
THE AMERICAN CARRIER ROCKET COMPANY, OF SAME PLACE.

LINE-CARRYING ROCKET.

SPECIFICATION forming part of Letters Patent No. 395,881, dated January 8, 1889.

Application filed November 30, 1887. Serial No. 256,502. (No model.)

To all whom it may concern:

Be it known that I, PATRICK CUNNINGHAM, a citizen of the United States, and a resident of New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Rockets, of which the following is a specification.

My invention relates especially to devices employed for carrying lines, &c., from a fixed point through the air to a distance, and has for its object the provision of a self-propelling projectile, in combination with a tube adapted and arranged to carry a coiled line therein, simple to place in position, easy to fire, which may be directed with great accuracy, shall be strong and durable, and of great power.

To attain the desired end my invention consists, essentially, in a head carrying the projectile charge, in combination with a tube adapted and arranged to contain a coiled line, and in certain novel and useful combinations or arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my improved self-propelling projectile or rocket; and Fig. 2 is a longitudinal sectional view thereof, showing the location and arrangement of all the parts. Fig. 3 is a bottom view of the firing-head with the line-carrying tube removed.

Like letters of reference wherever they occur indicate corresponding parts in all the figures.

A is the body of the firing-head, strongly made of metal and screw-threaded at a a' .

B is a metal plug screwed into body A at a' against a plate, a^2 .

C is a pointed cap screwed into the extremity of body A, the edge c thereof being threaded for the purpose.

D is a screw-threaded plug having a series of perforations, d , therein, said perforations being at an angle to the axis of the plug, thereby forming the conical deflector d' between said perforations, as plainly shown in Fig. 2.

E is a screw-threaded projection in the cen-

ter of plug D for the reception of the connection with the carrying-tube.

N is a perforated disk or plate, the under side whereof is concave, screwed within body A, above plug D, thus leaving a chamber between plug D and the firing compound, the object of this construction being to form a chamber for the distribution of the propelling-gases.

In loading my projectile for use the disk N is placed in position and a spindle is passed into the body A in the usual manner. A layer of clay, M, or equivalent non-conducting material is then packed upon disk N, and the firing compound F is packed thereabove. Plug D is screwed home below the disk N.

f is a fuse protruding from one of the perforations d in plug D.

G is a cone-shaped cap, screw-threaded at g for engaging with the projection E upon plug D and at g' for engaging with a tube, H.

G' is a bar across the interior of cap G, to which the line is attached, as hereinafter described.

K is a plug, preferably made of wood, said plug being perforated at k and secured in the extremity of tube H, opposite to cap G.

L is a line coiled in tube H, to be carried by the projectile, the end l being secured at the spot from which the projectile is fired.

In assembling the parts for use, the firing composition is compressed within the body of the projectile above the plate upon which rests the clay or other non-conductor of heat.

A layer of clay, M', or equivalent non-conductor of heat, is also placed above the firing compound. Plate a^2 and plug B are placed in position and the cap C secured thereabove. Plug D is screwed home against disk N and the fuse f inserted. In coiling the line it is wound upon a suitable mandrel, and the coil is then covered with a layer of material, R,

which is a non-conductor of heat—such as asbestos—and placed in the tube H. The object in so incasing the coiled line is to prevent action thereon by the metal of which the tube is formed and prevent burning when the projectile is fired. After the line is put into the tube H the plug K is secured in place and the mandrel withdrawn, the extremity of the

last coil of the line is secured to the bar G', and the other end of said line projects from the plug K, as at *l*. The tube II is connected to the projectile A by the cone-shaped portion G. The device, consisting of two parts—viz., the firing-head and the carrying-tube—being united, is now ready for use; and the end *l* of the line being secured, the projectile may be fired in any direction, paying out the line as it passes through the air to the objective point. The tube II serves as a tail, enabling me to carry the line with great accuracy; and by coiling the line within said tube in the manner specified, so as to pay the same out as the projectile progresses in its flight, I am enabled to carry a line a greater distance than would be possible by dragging it after the projectile. The tube also serves to protect the line from injury by the heat generated by the burning compound or escaping gas. The connection G, being conical in shape and attached to the plug D at the center thereof, prevents the interference of the tube II with the action of the escaping gas so as to retard the flight of the projectile.

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

1. The combination, with the charge-carrying tube of a rocket, of a line-carrying tube attached to and supported by the base of the same, said line-carrying tube tapering at its forward end toward the point of connection, as set forth.
2. The combination of a metal rocket-case, a metal choke, a metal fuse-piece having a central conical deflector formed integral with said fuse-piece, and a surrounding series of diverging vents opening on the rear surface of the fuse-piece.
3. The combination, with the explosive-carrying tube provided with a perforated disk, D, at its rear end, of a line-carrying tube attached to said disk and entirely in the rear of the same, substantially as set forth.
4. A line-carrying rocket consisting of a head containing the rocket-charge, the base

of the head being provided with an external screw-threaded projection, in combination with a carrying-tube having a tapering head engaging with said screw-threaded projection, as set forth, and containing a coiled line to be paid out as the rocket passes through the air, substantially as shown and described.

5. The combination, with the firing-head, of a hollow line-carrying tube, said tube being substantially the same diameter as the head, and being connected with said head at the center of the base thereof, the extremity of the carrying-tube next to the firing-head tapering at an angle nearly coincident with the vents for the propelling-gases in the base of said head, substantially as shown and described.

6. In a rocket of the character herein specified, a hollow line-carrying tube forming the tail of the rocket, said tube consisting of a body, II, screw-threaded at *g* for engaging with a tapering cap, G, cap G provided with internal cross-bar, G', said cap having a screw-threaded perforation therein for engaging with the projection from the base of the head carrying the firing-charge, substantially as shown and described.

7. The combination, with the body A, carrying the firing-charge, of the plug D, having perforations *d* passing therethrough at an angle to its axis, external screw-threaded projection, E, and the line-carrying tube engaging with said projection, substantially as shown and described.

8. The combination of an explosive-carrying tube, a line-carrying tube attached thereto, a line located within said latter tube, and a non-conducting jacket or casing between said line-carrying tube and said line, for the purpose set forth.

Signed at New Bedford, in the county of Bristol and State of Massachusetts, this 19th day of November, A. D. 1887.

PATRICK CUNNINGHAM.

Witnesses:

H. J. BROWNELL,
R. F. RAYMOND.