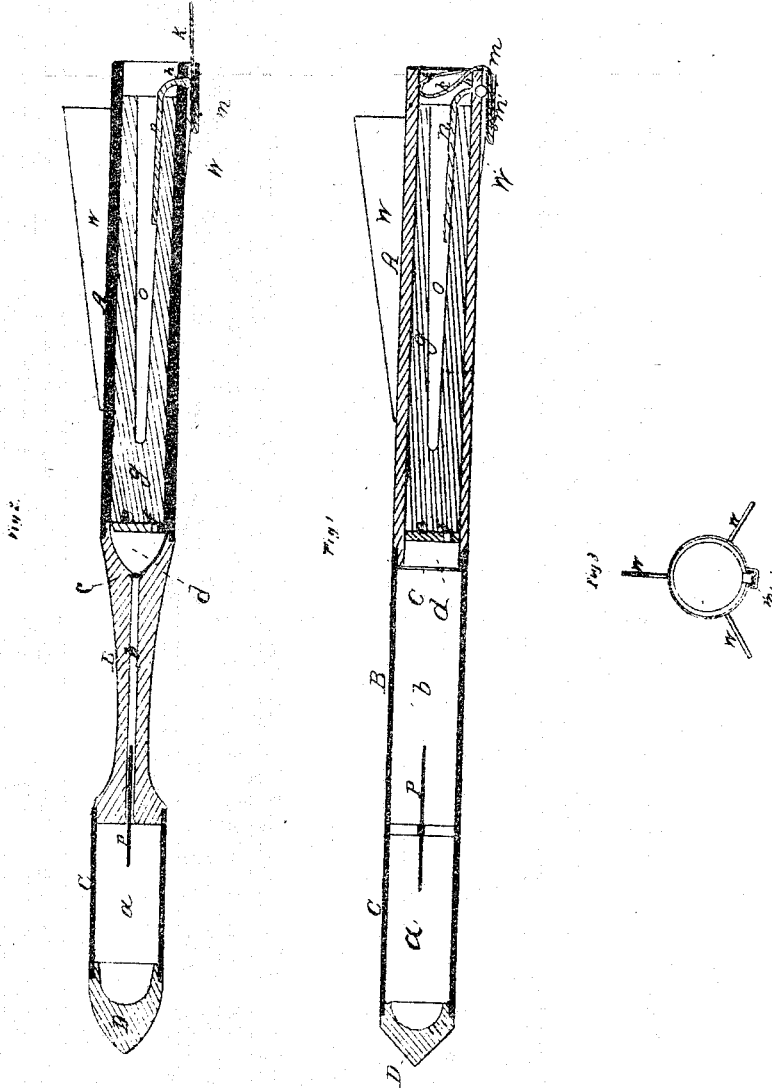


*E. S. Hunt,  
Rocket.*

*No 58646.*

*Patented Oct. 9. 1860.*



*Witness  
Samuel K. Peppin  
George Andrews*

*Edmund S. Hunt  
by his attorney  
R. S. Hunt*

# UNITED STATES PATENT OFFICE.

E. S. HUNT, OF WEYMOUTH, MASSACHUSETTS

## IMPROVEMENT IN ROCKETS.

Specification forming part of Letters Patent No. 58,649, dated October 9, 1898.

*To all whom it may concern:*

Be it known that I, EDMUND-S. HUNT, of Weymouth, in the county of Norfolk and State of Massachusetts, have invented a new and useful or Improved Rocket, and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figures 1 and 2 denote it in longitudinal section, the latter of the said figures exhibiting, under a somewhat different form, the same principle of construction as is shown in Fig. 1. Fig. 3 is a rear-end view of the rocket.

The main object I have had in view in the invention of the said article of pyrotechny has been to dispense with the stick which is usually appended to or makes part of an ordinary rocket, and which, after flight and explosion of the rocket, falls through the air to the ground. Persons are not infrequently killed, maimed, or severely injured by rocket-sticks so falling upon them, and so common are these accidents that I have sought to obtain a safety-rocket, one requiring no stick as a means of insuring its flight in any desired direction. I have admirably succeeded in my efforts, and will now proceed to describe this new rocket and the principle of its invention or construction.

It is made very much like and on the principle of an arrow—that is to say, it has a head, a shaft or shank, and a series of wings, the latter being to impart to it a revolving motion while in flight, or to direct it in other respects, as hereinafter explained. Besides these, it has a raising-charge chamber within the tail of the shaft, and it may also have a garniture-chamber in the head. The head should have sufficient weight to keep in advance of the tail during the flight of the rocket. On firing the raising-charge composition the rocket will be forcibly ejected by it into the air, and as this composition burns away the tail of the rocket becomes lighter, thus increasing the power of the head to keep in the advance. In this rocket I have also provided for the separation of the tail, or part for containing the raising composition, from the rest of the shank or body, such separation to take place at or about the termination of the upward course of the rocket, and being for the purpose of preventing the spent rocket-case from falling

whole. By causing it to fall in separate pieces the liability of it to do injury to persons or things or buildings is greatly lessened.

In the drawings, A denotes the tail, B the shank, and C the head, of the rocket. I make the shank B a cylindrical tube of the same diameter with the head and tail, the whole being as shown in Fig. 1; or the shank may be made as exhibited in Fig. 2. In either of these cases the shank may be made of paper or wood, and with a bore or passage, b, through it, by which the shank is rendered tubular. This insures both strength and lightness to it, as well as other advantages. The head I construct with a load or garniture chamber, a, within it, and I provide such head with a conical plug or cap, D, which may be of wood or paper or papier-maché. In this chamber a, I place, in case no garniture is used therein, the requisite quantity of loading or weight, which may be clay or some other material capable of being easily blown or broken in pieces; but when a garniture is used in the head it may serve, either in whole or in part, as the loading of the head. When the garniture is used a small quick fuse, g, should lead from it into the bore or passage b.

The tail part A is to have a series of wings, w w w, applied to it, such being formed so as to either prevent the rocket from revolving on its longitudinal axis while in flight, or to cause it to so revolve by the motion of the air against such wings.

The shank B is tubular, and is to contain the raising composition or charge g, which is to be formed with a choke, c.

A thin partition, e, of paper, I place across the upper end of the tail part A, and at a short distance from this partition I arrange within the said tail part another partition, e, formed of clay or other suitable material, and having a priming-hole, f, leading through it. The space d between the two partitions constitutes a chamber for holding a charge of powder sufficient, on explosion, to burst or break the tail A from the shank B, and to inflame the fuse g.

The priming-fuse of the rocket is shown at z as proceeding from the choke c into a passage or vent, h, leading laterally through the rocket, and terminating in a semi-spherical socket, in which is placed a small priming-ball made of a composition to be fired by the

friction of a strip or tape, *l*, when drawn against it. This strip is borne against the priming-ball by a spring, *m*, held by a metallic case, *m'*, which is fixed to the rocket, is open at its rear end, and covers the ball and the spring, and has the igniting-strip arranged in and projecting from it, in manner as represented in Figs. 1 and 2.

To insure perfect safety, or to obviate all danger of accidental ignition of the priming-ball, I employ in making it a composition which will not ignite by a blow or the friction of any common substance or matter, but which will only ignite by the friction and contact with a peculiar substance placed on the strip *l* and somewhat in advance of the ball.

It is well known that there are certain friction-matches in the market which are termed "safety-matches," for the reason that the composition used on their splints cannot be ignited unless brought into contact with and rubbed against a particular composition or material, usually placed on a card affixed to the outside of a box or case for containing the match-splints. The composition placed on the splints, and as well as that spread on the surface on which they are to be rubbed for being ignited, are well known and understood by many match-makers and chemists, and therefore it will be unnecessary for me to describe them here. I employ them for safety in preference to the usual friction composition capable of ignition by friction against an ordinary rough surface, or a piece of common sand-paper, or a tape or strip having sand applied or affixed to it by glue or cement.

I make no claim to the rocket as represent-

ed in Patent No. 39,856, granted to George H. Felt. My rocket differs from that, inasmuch as the parts A and B of my rocket are in separate pieces jointed together, and provided with a bursting-charge at their junction for separating them there; and the part B is arranged between the said bursting-charge, or the part A and the loaded head C, the part B acting the part of a light shaft to separate the head part C from the tail part A, as the head of an arrow is separated from that part of the shank which is feathered. By my construction of the rocket—viz., with the loaded head and light shaft and charge-case A—it is sure to keep head foremost during its flight upward, and when the raising-charge is burned out the parts A and B will be separated or blown apart at their joint. In the said Felt's rocket there is a charge for blowing out of the rocket-case a Roman candle. It is not intended to break asunder the case at the place of deposit of the said charge, the case being so made as to prevent it from being there separated. My object is to separate the case into two parts, in order that when they may fall to the earth they may not be likely to do the damage that might result from falling together head foremost.

I claim—

The arrangement of the spring *m* and its case *m'* with the rocket charge-tube A and its priming-vent *l*.

EDMD. S. HUNT.

Witnesses:

G. H. WASHBURN,  
R. H. EDDY.