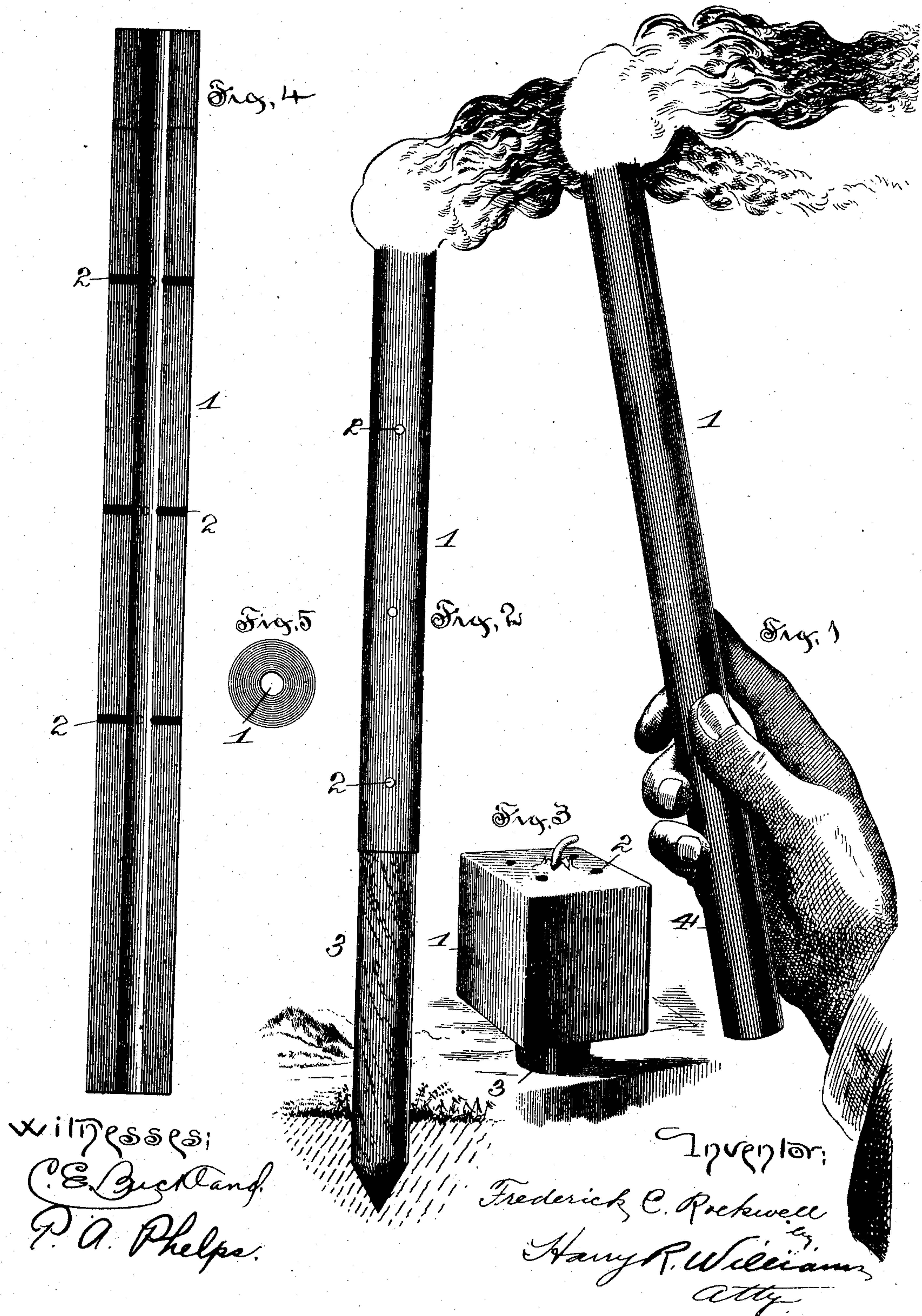


(No Model.)

F. C. ROCKWELL.  
TORCH.

No. 506,548.

Patented Oct. 10, 1893.





# UNITED STATES PATENT OFFICE.

FREDERICK C. ROCKWELL, OF HARTFORD, CONNECTICUT.

## TORCH.

SPECIFICATION forming part of Letters Patent No. 506,548, dated October 10, 1893.

Application filed June 3, 1892. Serial No. 435,429. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK C. ROCKWELL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Torches, of which the following is a full, clear, and exact specification.

The invention relates to the class of destructible pyrotechnic illuminating torches, used for celebrations, display effects, or for signaling purposes, the object being to produce a cheap torch of this class that will burn with great brilliancy and intensity, possessing the elements of safety, lightness, strength, durability and life, thereby obviating the liability of disastrous explosions and damaging accidents, reducing the cost of handling, transportation and the price of manufacture, and preventing atmospheric action which deleteriously affects the brilliancy, intensity and life of the torch.

To this end the invention resides in a torch consisting of a body of pressed, matted, felted or woven fibrous material treated and thoroughly impregnated with a combustible compound mixed with a flame coloring ingredient, as more particularly hereinafter described and pointed out in the claims.

Referring to the accompanying drawings:— Figure 1 is a side view of one form of torch embodying the invention. Fig. 2 is a side view of a modified form. Fig. 3 is a side view of still another shape. Fig. 4 is a longitudinal section of one form of torch; and Fig. 5 is a transverse section of the same.

In the views 1 indicates the body of the torch, which is rolled, folded or pressed into the shape of a tube, cylinder or package, of a woven, pressed, felted or matted fibrous substance, as cloth, paper, pulp or a similar consumable material capable of absorbing liquid. It is preferred that this body be formed of uncalendered paper of the nature of blotting paper, which can be easily rolled, folded or pressed to shape, and which has a large capacity for absorbing the liquid with which it is treated. The body, after it is formed or the material before forming, is treated by dipping and soaking, by coating, or by injecting into its pores under pressure a liquid containing in solution a combustible material

which burns with great intensity, as chlorate of potash, and a flame coloring ingredient, as nitrate of strontia, which burns with a red flame, and which being salts, are soluble in water. After the body is thoroughly permeated and impregnated with the solution, which of course may be varied for producing different effects, it is dried by natural evaporation or an artificial draft, and is then capable of burning with an intense brilliancy; and in this state it is usually dipped in some air excluding varnish or lacquer to preserve it from moisture. If it is desired to retard the combustion of the material when burning, an earth, gum or paste may be added to the solution, or such a substance may if necessary be applied to the surface by immersing the torch in a liquid gum, as shellac, or vegetable paste, as flour. The body is usually formed into a tube so that a draft of air will pass through the interior to aid in the combustion, and if desired perforations 2 may be made from the exterior to the interior through the sides, to increase the draft and produce better combustion.

If desired, to increase the amount of combustible compound, the surface of the material from which the body is formed may be pricked, perforated, crinkled or cupped in any common manner so as to hold a larger quantity of combustible compound, which may be forced into the pores or against the surface of the body.

The body is usually fixed to a handle, leg or support 3, by which it may be held in the hand, planted in the earth, or supported on a curb, as shown in the drawings, or if this is not desired, one end of the body, as at 4, may be dipped into or coated with a fireproof material before the combustible compound is applied, to form a handle to which the torch will burn and then go out.

A torch formed in this manner is safe from explosions, as the combustible compound is thoroughly incorporated with the fibrous material of the body, and it does not require as large a quantity of the compound to produce the desired lighting effect, as when the compound is used in the form of a powder, which is not only slow and expensive to handle, but rapidly absorbs moisture and so deteriorates and in a short time becomes valueless for pro-



ducing a brilliant light. The body burns without leaving any amount of hot ash or residuum, as the body is also consumable and does not require any quantity of retarding gum as  
5 does a powder, and should the body break in two there is no powder to spill and become a source of danger as well as waste.

A torch constructed as above described is strong, has not a tendency to break in two, is  
10 light in weight and is cheap in construction, making a saving in handling and transportation as well as in cost of manufacture.

I claim as my invention—

1. A torch, consisting of a homogeneous  
15 body of bibulous material, with a combustible compound incorporated between the particles of the bibulous body, substantially as specified.

2. A torch, consisting of a homogeneous body of bibulous material, with a combustible  
20 compound and a flame coloring ingredient incorporated between the particles of the bibulous body, substantially as specified.

3. A torch, consisting of a destructible homogeneous body, permeated with a combustible  
25 compound and a flame coloring ingredient, substantially as specified.

4. A torch, consisting of a destructible homogeneous body provided with ventilating  
interstices or openings, permeated with a com-  
30 bustible compound and a flame coloring ingredient.

FREDERICK C. ROCKWELL.

Witnesses:

H. R. WILLIAMS,

JOHN P. HEALY.