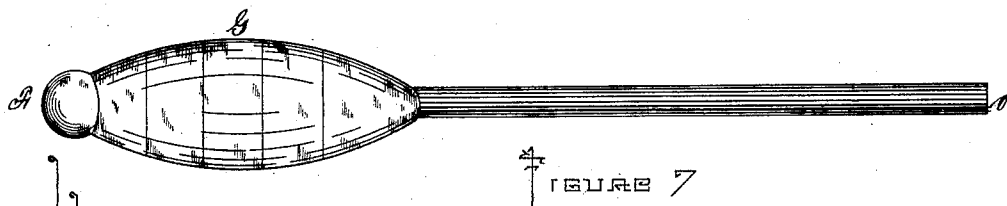
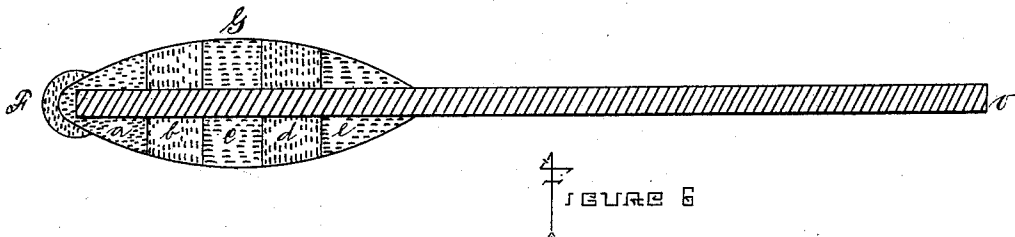
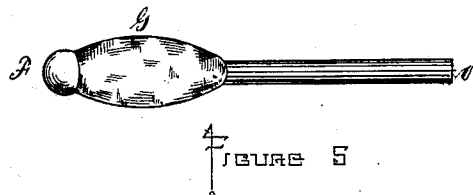
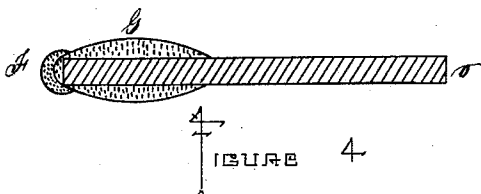
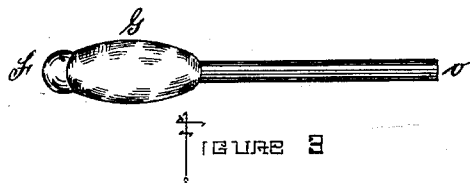
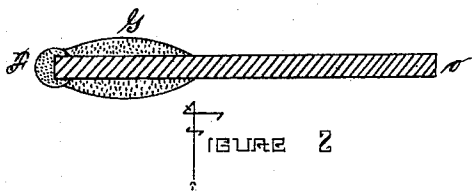
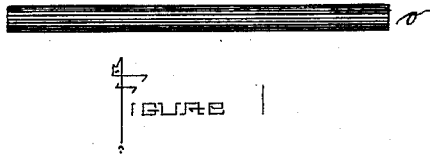


(Specimens.)

C. WEIBACH.
PYROTECHNIC MATCH.

No. 340,747.

Patented Apr. 27, 1886.



WITNESSES.

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PYROTECHNIC MATCH.

SPECIFICATION forming part of Letters Patent No. 340,747, dated April 27, 1886.

Application filed November 21, 1885. Serial No. 183,495. (Specimens.)

To all whom it may concern:

Be it known that I, CARL WEIBACH, late a citizen of Germany, and now a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Pyrotechnic Matches; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the drawings forming a part of same, in which—

Figure 1 is a view of the match-stick. Fig. 2 is a sectional view of my pyrotechnic match as first coated with the frictional ignition compound and then coated with the pyrotechnic compound. Fig. 3 is a view of the same as finished. Fig. 4 is a view of the match-stick, Fig. 1, when first coated with the pyrotechnic compound and then coated with the frictional ignition matter. Fig. 5 is a full view of same as finished. Fig. 6 is a sectional view of my improved friction pyrotechnic torch for producing different-colored lights. Fig. 7 is a finished view of same.

This invention consists in the production of friction pyrotechnic matches.

It also consists in the production of friction pyrotechnic matches or torches capable of producing a series of different-colored lights.

In the manufacture of my friction pyrotechnic matches I prepare a wooden stick, such as shown in Fig. 1 of drawings. The head of this stick is then coated with friction ignition matter, such as chrome-yellow, chlorate of potash, and gum, or chlorate of potash, phosphorus, and gum. The stick is then coated with pyrotechnic matter, such as the following: alcohol, nitrate of strontium, nitrate of baryta, and shellac. The latter three elements are dissolved in the alcohol and applied while in a pasty state. The position of these two compounds on the stem is shown in the sectional Fig. 2, and Fig. 3.

These friction pyrotechnic matches may also be made by first applying the pyrotechnic compound G and then coating the head F with the friction ignition matter, as shown in Figs. 4 and 5.

When the matches are to be ignited by rubbing on any ordinary rough surface, then the friction ignition matter F should preferably contain phosphorus, such as phosphorus, chlorate of potash, and glue; but when par-

lor-matches are desired aniline, chlorate of potash, and gum, or chrome-yellow, chlorate of potash, and gum, may be used. One great advantage of using aniline is that it may be obtained so as to produce almost all colored flames.

When phosphorus is absent from the ignition matter—such as the composition described for parlor-matches—then a coating of amorphous phosphorus should be placed on the box or on some instrument for rubbing the matches against.

An excellent red light may be made by using the following mixture: five pounds shellac, twenty-two pounds nitrate of strontium, one pound soft coal, one and one-half pound of pulverized glass, one-fifth pound of rosin, one-fifth pound of black chalk, five pounds of chlorate of potash, dissolved in ten pounds of alcohol.

A good green light may be had from the following mixture: five pounds shellac, twenty-two pounds nitrate of baryta, one pound soft coal, one and one-half pound pulverized glass, one-fifth pound clear sand, one-fifth pound black chalk, five pounds chlorate of potash, dissolved in ten pounds of alcohol.

A yellow light may be had by using the following mixture: five pounds shellac, twenty-five pounds nitrate of soda, one pound soft coal, one and one-half pound glass, one-fifth pound rosin, one-fifth pound clean sand, one-fifth pound black chalk, five pounds chlorate of potash, dissolved in ten pounds of alcohol.

A blue light may be made by using the following: five pounds shellac, twenty-five pounds basic carbonate of copper, ($\text{CO} + \text{CO}_2$), one pound lamp-black, one and one-half pound pulverized glass, one-fifth pound rosin, one-fifth pound sand, five pounds chlorate of potash, dissolved in ten pounds of alcohol.

In making matches or torches with either or all of these pyrotechnic compounds the head should be coated with an ignition compound, as before stated.

In making my pyrotechnic match or torch capable of giving different-colored flames, as shown in Figs. 6 and 7 of drawings, I coat the section *e* with red, *d* with green, *c* with blue, *b* with yellow, and *a* with red pyrotechnic compound, and the head F with ignition matter.

I do not wish to limit my invention to the

specific elements nor the preparations of same herein named, as the elements and compounds may be changed in character, quality, and compositions. I claim, broadly, friction-matches 5 having a pyrotechnic compound, in combination with a stick and frictional ignition matter.

These matches and torches when once light-
ed may be blown out; but they will flame up
10 instantly from the incandescent heat, so that the torches may be waved until the flame disappears, but they will immediately flame up again. The wind cannot put the light out but for an instant, when it will flame up again
15 spontaneously.

My improved pyrotechnic torches are thus specially adapted for campaign purposes, as they will burn in all kinds of weather and will display different-colored lights, thus produc-
20 ing the most magnificent pyrotechnic illumination ever seen. The relative position of the different lights in the pyrotechnic torches 6 and 7 may be changed at will, or the matter may be arranged vertically, so that all the dif-
25 ferent lights may burn at the same time from each torch.

I am aware that previous to my invention matches have been provided with an inflam-
mable composition adjoining their heads, so
30 that when the head of the match is struck and ignited the match-stick will be lighted. My invention differs materially from the matches before referred to in that I coat the match with

a composition or a series of compositions which when lighted give forth lights of dif- 35
ferent colors.

I am also aware that a pastel for fumigating purposes has been provided, consisting of a stick having an ignitable end and coated with an inflammable fumigating composition adja- 40
cent to said end; but this device is not intended nor is it adapted for the uses to which my invention may be put.

Having described my invention, what I claim, and desire to secure by Letters Patent, 45
is—

1. As a new article of manufacture, a match consisting of a stick having its head coated with a friction igniting compound and a por-
tion of the body adjoining the head coated 50
with a pyrotechnic compound, substantially as described.

2. In a match, the combination, with the stick O and the head F, of the pyrotechnic compound G, adapted to be ignited by the 55
combustion of said head, in the manner set forth.

3. In a match, the combination, with a stick having an ignitable head, of a coating or cov-
ering adjacent to said head of compounds of 60
different ingredients adapted when lighted to produce lights of different colors, as set forth.

C. WEIBACH.

Witnesses:

C. C. LEE,
ROBERT T. REINEMAN.