(No Model.)

H. J. PAIN.

PYROTECHNIC DEVICE.

No. 503,383. Patented Aug. 15, 1893.

Fig. 1.

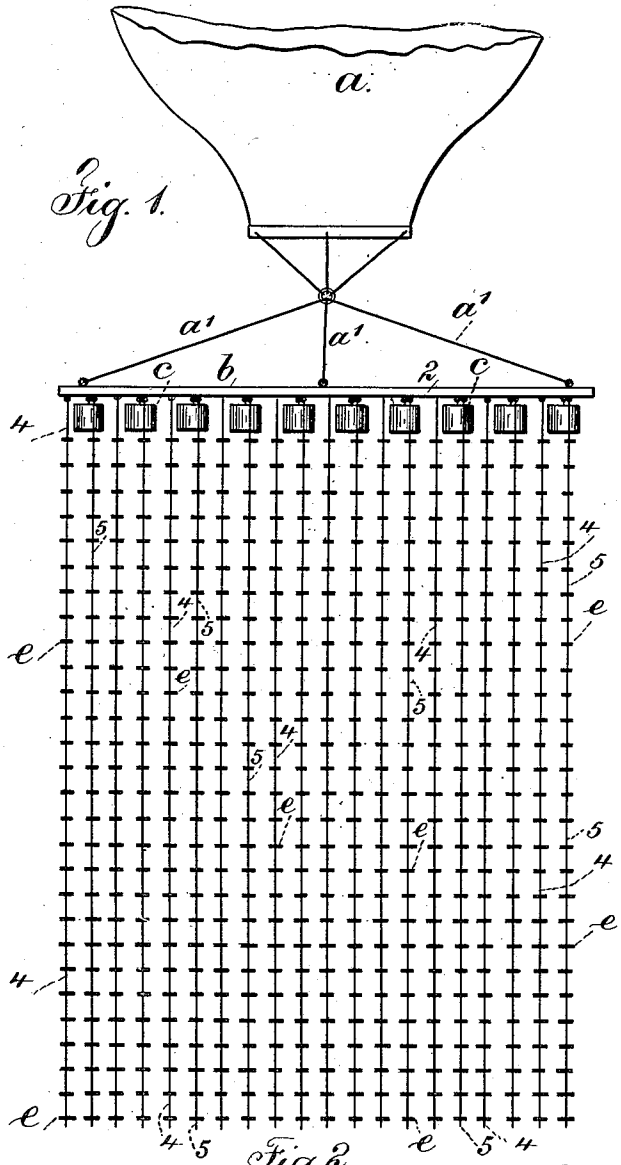


Fig. 2.

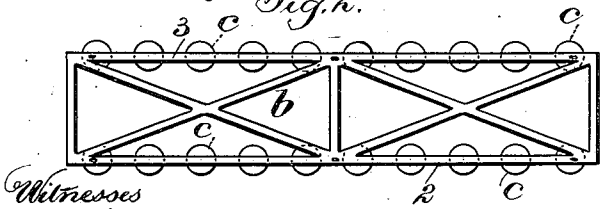


Fig. 3.

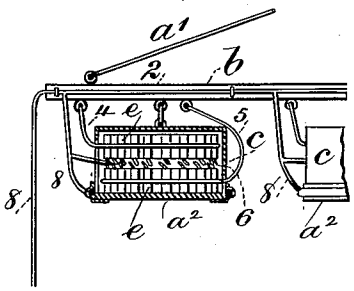
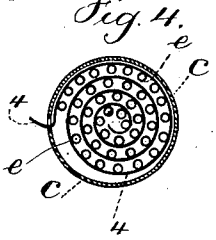


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY J. PAIN, OF NEW YORK, N. Y.

PYROTECHNIC DEVICE.

SPECIFICATION forming part of Letters Patent No. 503,383, dated August 15, 1893.

Application filed November 21, 1892. Serial No. 452,649. (No model.)

To all whom it may concern:

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

My invention relates to that class of pyrotechnic devices where balloons are employed for elevating these devices for aerial displays, the object of my invention being to provide means in connection with the balloon for supporting and carrying and containing the pyrotechnic devices and supporting the time fuse operated in connection therewith, so that the pyrotechnic devices will be discharged simultaneously from their receptacles after being lighted, to produce the desired design or effect.

In carrying out my invention I employ with the balloon an openwork frame connected centrally to and supported by the balloon, the buoyancy of the balloon being sufficient to elevate the frame and the devices connected therewith to any desired height. This frame is rectangular in surface configuration, and along the two longest parallel members I connect at suitable intervals receptacles for the pyrotechnic devices, all of the receptacles being connected by a time fuse so that the igniting spark reaches each one approximately at the same moment.

The devices contained in the receptacles are of flexible or chain-like character with the pyrotechnic devices connected thereto at intervals. These are coiled up into the receptacles and one or both of their respective ends are connected to the suspended frame and the parts are so arranged that the fuse lights all of the pyrotechnic devices and burns off or separates the cap of the receptacles so that the lighted, pyrotechnic devices fall from the receptacles and are suspended from the frame.

As an illustration of the pyrotechnic devices, I might form American or other flags, one each of which is suspended from the longer members of the frame. If American flags are formed, each length of pyrotechnic devices suspended would be either white or red and they would alternate in white and red to correspond to the stripes of the flag, the blue field and the stars being formed at one upper corner by colored lights dotted with white lights, the lower ends of these lengths of pyrotechnic devices below the blue field alternating red and white to complete the stripes. These lengths of pyrotechnic devices might be so arranged as to produce letters or figures or designs of various kinds, and the lengths of pyrotechnic devices may be suspended from one end or both ends and be of any length desirable below the frame.

In the drawings, Figure 1 represents a side elevation of my improvement and Fig. 2 is a plan view of the frame and the receptacles carried by it. Fig. 3 is a sectional elevation, and Fig. 4 a sectional plan representing one of the receptacles on an enlarged scale.

a represents the balloon for elevating the pyrotechnic devices.

b is a light but strong wooden framework of rectangular shape suspended centrally from the balloon *a* by the cords *a'*.

c represents the receptacles arranged at intervals along the two longer members 2, 3, of the frame *b*. These receptacles may be of any shape desired to receive the pyrotechnic devices. They will preferably be made of light sheet metal and provided with a cap a^2 (probably of cardboard) that can be burned off or automatically removed in any desired manner.

As shown in Fig. 3 each receptacle *c* is preferably adapted to contain two lengths 4, 5, of pyrotechnic devices *e*, one end of each being connected to the members 2, 3, of the frame *b* at the opposite sides of the receptacle.

In the receptacles *c* the lengths 4, 5, of pyrotechnic devices *e* are coiled so that the lighting ends 6 of all the pyrotechnic devices in each length point in the same direction so that they can be lighted by the fuses 8 simultaneously. The supporting medium for the pyrotechnic devices *e* in each length 4, 5, will be a rope, a fine chain or wire, or anything of that nature to which the pyrotechnic devices *e* can be secured and which is flexible enough to permit them to be rolled up in the receptacle *c* and which when released and allowed to fall will straighten out and hang perpendicularly, from the frame, as shown in Fig. 1,

so as to present when the pyrotechnic devices are lighted the appearance of a long flexible line or ribbon of light.

As herein stated, various devices or designs such as flags, letters, numbers, &c., can be illustrated in this manner at any desired height above the earth's surface, the pyrotechnic devices being allowed to hang in lengths or looped or otherwise employed to accomplish the desired result.

I do not herein limit myself to the precise method or construction of the receptacles, nor to the precise construction of the aerial pyrotechnic devices.

I claim as my invention—

1. The combination with the balloon *a* and the frame *b*, of receptacles *c* connected to the frame *b*, pyrotechnic devices in lengths connected to the frame *b* and coiled within the receptacle *c*, substantially as specified.

2. The combination with the balloon *a*, the frame *b* and the safety fuse carried by said frame, of the receptacles *c* arranged at intervals along the two parallel and longest members of the frame *b*, pyrotechnic devices in lengths connected at their respective ends to the frame *b* and coiled with their lighting ends in the same plane and received within the receptacles *c* and protected by a cap upon the receptacles, substantially as set forth.

Signed by me this 14th day of November, 1892.

HENRY J. PAIN.

Witnesses:
MARK A. FOOTE,
P. A. HOYNE.