

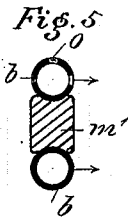
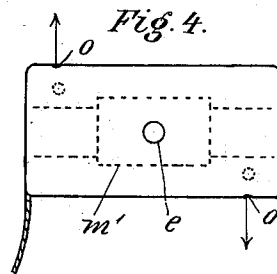
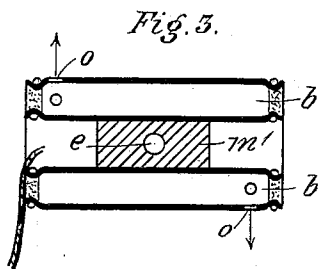
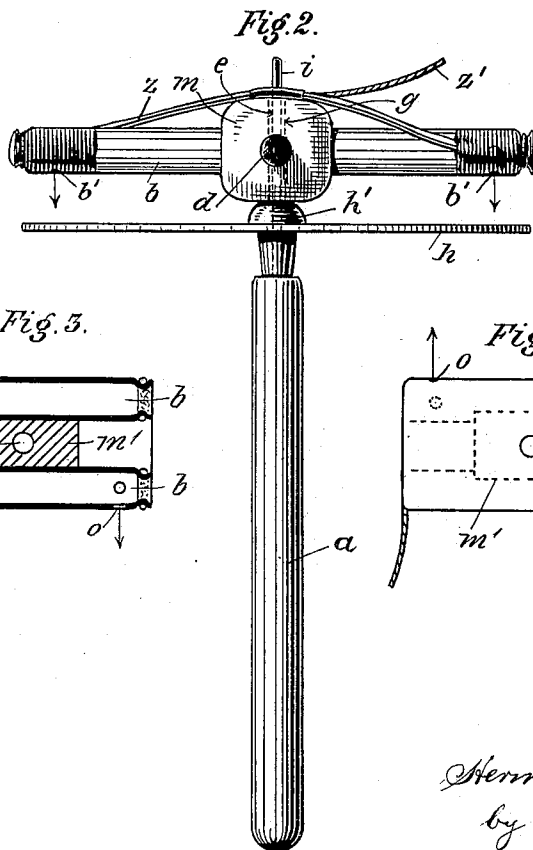
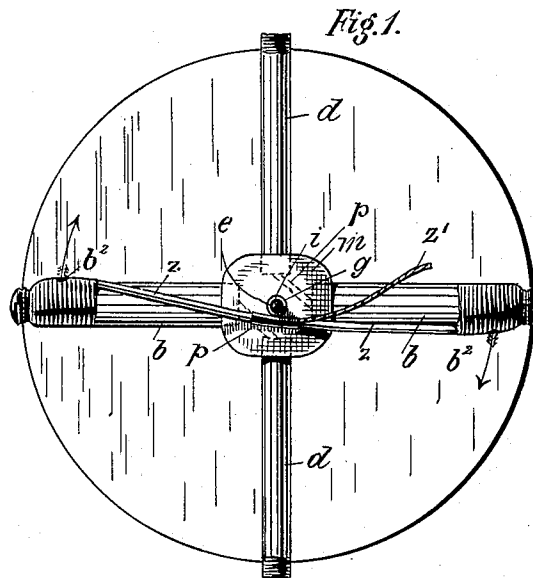
No. 609,063.

Patented Aug. 16, 1898.

H. WEIFFENBACH.
PYROTECHNIC DEVICE.

(Application filed Dec. 6, 1897.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

HERMANN WEIFFENBACH, OF MUNICH-SCHWABING, GERMANY.

PYROTECHNIC DEVICE.

SPECIFICATION forming part of Letters Patent No. 609,063, dated August 16, 1898.

Application filed December 6, 1897. Serial No. 860,880. (No model.)

To all whom it may concern:

Be it known that I, HERMANN WEIFFENBACH, a citizen of the German Empire, residing at Munich-Schwabing, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Fireworks Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a new pyrotechnic device.

The object of my invention is to provide an article of fireworks for aerial exhibition which will produce a novel effect not hitherto produced, so far as I am aware.

With this object in view my invention consists in the features, details of construction, and combination of parts, which will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of a device embodying my invention, and Fig. 2 a side elevation of the same. Fig. 3 is a horizontal section of a modified form of my invention; Fig. 4, a plan view, and Fig. 5 a transverse section of the same.

Referring to Figs. 1 and 2 of the drawings, *a* is a handle provided with a shield *h* at one end, above which shield is a collar or button *h'* and a pin or pivot device *i*. Upon this pin is rotatably and removably mounted a hub *m*, having a plurality of arms connected thereto, these arms in the present instance comprising four tubes, two of which, *b*, are made somewhat larger than the others, *d*, and arranged to contain the motive charge, these two arms *b* being arranged on opposite sides of the hub *m* and in a diametrical line. The hub *m* has a hole which is adapted to receive the pivot *i*, the interior of this hole being provided with a bushing *e*.

Each of the tubes *b* contains a downward opening or hole near its outer end, as indicated at *b'*, and also a lateral opening or hole *b''*, the latter being on opposite sides of the respective tubes *b*. The said tubes *b* are filled with a suitable pyrotechnic powder or composition and have their outer ends covered

with paper or other suitable material, serving to protect the charge and to hold in place the two ends of a quick-match *z*, which is in communication with each charge through the openings *b'*, the said quick-match extending from the outer end of one tube to the outer end of the corresponding tube across the hub *m* and being provided at its center with an ignition-fuse *z'*. When the ignition-fuse is lighted, it sets fire to the center of the quick-match *z*, and the latter thereby burns equally in both directions and ignites the pyrotechnic charges in the two tubes *b* through the openings *b'* simultaneously, or substantially so. Upon the ignition of the said pyrotechnic charge sparks and gas are emitted from both pairs of openings *b'* and *b''*, the tubes and attached parts being rotated about the axis of the hub *m* and at the same time forced up into the air, leaving the pivot *i*. The shield *h* prevents the sparks emitted through the openings *b'* from burning the hands of the person firing the device. As the device is rotated and lifted into the air it moves in a spiral and displays a shower of sparks of much interest.

To add to the effect of the device I add a pair of tubes *d*, above referred to, at right angles to the tubes *b* and preferably smaller than the latter. These tubes *d* contain detonating charges, which are fired substantially simultaneously when the motive charges in the tubes *b* have burned down to the lower ends of the said tubes *b*, passages *p* being formed in the hub *m* in order to permit the passage of fire from the inner ends of the tubes *b* to the inner ends of the corresponding tubes *d*. By this construction after the pyrotechnic device has been lifted into the air and the pyrotechnic charges in the tubes *b* have burned down to the inner ends of said tubes the explosive charges in the tubes *d* are fired off.

In Figs. 3, 4, and 5 I have illustrated a modified form of my device in which the tubes *b*, containing the motive charges, are placed parallel, resting in grooves formed on opposite sides of the hub *m'*. In this construction the explosive charges and their tubes, which were mentioned in connection with the first form of my invention, are omitted.

It is obvious that by means of the handle, from which the revolving device is fired, the latter may be aimed in any direction.

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

1. In a pyrotechnic device, the combination with a hub, of a pair of tubes containing motive charges, connected to the hub and provided with downward-opening holes, and with lateral holes facing in opposite directions, and means for igniting the motive charges, substantially simultaneously.

2. In a pyrotechnic device, the combination with a handle and a hub removably located and arranged to rotate freely on said handle, of means provided with a pyrotechnic charge for rotating the hub and lifting the same from the handle upon the ignition of said charge, substantially as described.

3. In a pyrotechnic device, the combination, with a handle, a shield connected to the handle and a hub removably located on said handle and arranged to rotate freely thereon, of means, provided with a pyrotechnic charge, for rotating said hub and lifting the same from the handle, substantially as described.

4. In a pyrotechnic device, the combination, with a hub, and means containing a pyrotechnic charge for rotating and lifting said hub, of means for holding a detonating charge secured to said hub, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HERMANN WEIFFENBACH.

Witnesses:

JOHANN STURM,
EMIL HENZEL.