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FIRING MECHANISM FOR PYROTECHNICS AND THE LIKE

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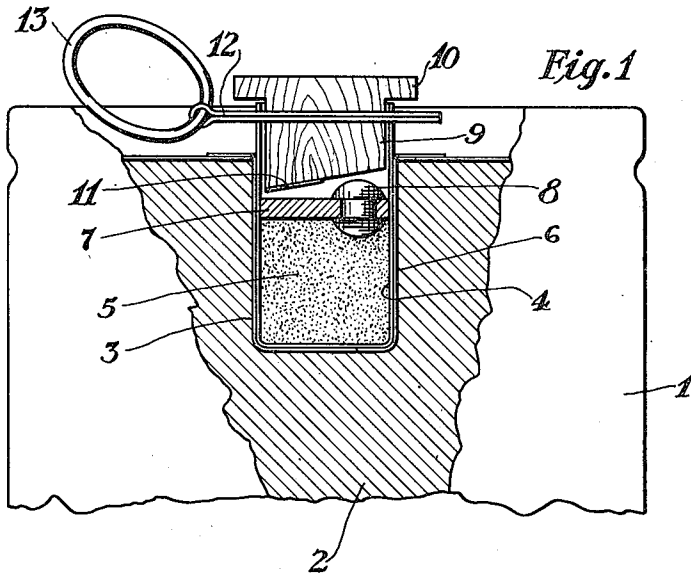


Fig. 1

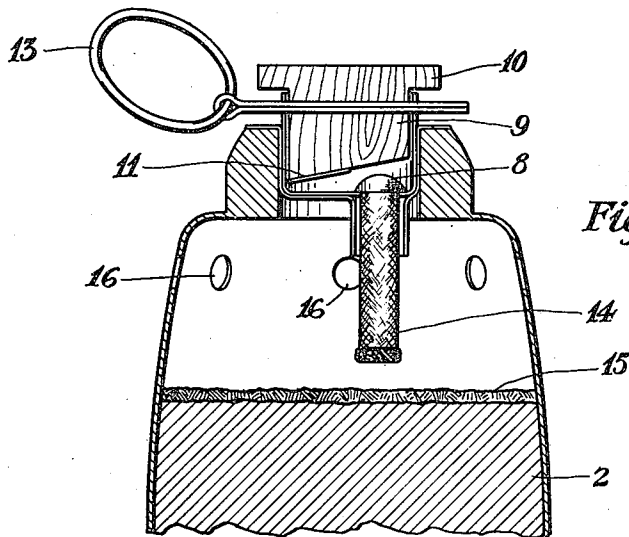


Fig. 2

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FIRING MECHANISM FOR PYROTECHNICS AND THE LIKE

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To all whom it may concern:

Be it known that I, FLEMING R. WEAVER, a citizen of the United States, residing at Edgewood, in the county of Harford and State of Maryland, have invented certain new and useful Improvements in Firing Mechanism for Pyrotechnics and the like, of which the following is a specification.

This invention relates to a mechanism for firing pyrotechnics and the like and has specific reference to a construction for use with devices for setting off pyrotechnic mixtures, explosives, fuels, etc.

Among the objects of this invention is to provide a firing mechanism for pyrotechnics, which is efficient, reliable, easy to operate and which can be made to function when desired and prevented from functioning at other times.

A further object of this invention is to provide a firing mechanism for pyrotechnics employed with grenades, bombs, rockets, signals, candles, etc.

Other, further and more specific objects of the invention will become readily apparent to persons skilled in the art from a consideration of the following description when taken in conjunction with the drawings, wherein:—

Fig. 1 is an elevation, partly in section, showing the preferred form of my device for use with a candle, for example, a smoke generating candle.

Fig. 2 is an elevation, partly in section, showing the same device in use with a grenade, for example, a toxic or irritant smoke generating grenade.

Referring to Fig. 1, a portion of the candle (1) is shown, the candle being provided with the smoke mixture (2). This smoke mixture (2) is usually cast or molded in the form of cakes and has a recess (3) adapted to receive a tube or receptacle (4) containing the pyrotechnic mixture (5). This receptacle (4) may rest directly in the smoke mixture (2). I prefer however to provide a thimble (6) which is securely embedded in the smoke mixture (2) and by properly regulating the sizes of the thimbles (6) and receptacle (4), the receptacle may be made to remain tightly in the thimble, so that it will not fall out from the candle.

Above the pyrotechnic mixture (5), there is provided a cap or disc (7) secured to the receptacle (4) and this disc supports a match

composition (8) which is in contact with the pyrotechnic (5). Extending into the receptacle (4) is the plug (9) provided with a head (10). This plug (9) may be rotated within the tube or receptacle (4). The inner surface of this plug (9) is preferably obliquely inclined to the axis of the receptacle and partially covered with an abrasive or scratcher composition (11). In the construction shown the scratcher composition (11) is out of contact with the match composition (8) and this is the "safe" position of the device. The device is maintained in this "safe" position by means of the pin (12) passing through the plug (9) and the receptacle (4).

When it is desired to operate the firing mechanism, the pin (12) is withdrawn by pulling the ring (13) and on turning the plug (9), the scratcher is brought in frictional contact with the match composition, causing the latter to fire. The fire is communicated to the pyrotechnic (5), and as this burns, the receptacle (4) and thimble (6), which are preferably made of a low fusible metal, such as zinc, melt and the burning pyrotechnic ignites the smoke mixture (2), causing smoke to be evolved therefrom and issue from the candle.

In the grenade shown in Fig. 2, as the plug (9) is rotated, the scratcher (11) will frictionally engage and fire the match composition (8) and set off the fuse (14). This will ignite the starter (15) upon the smoke mixture (2) causing the latter to volatilize and issue from the grenade through the openings (16).

A suitable match composition may be made from potassium chlorate (6 parts) and black antimony sulphide (3 parts), mixed intimately and bound into a solid mass with dextrine (2 parts). These materials should be acid-free as much as possible.

A suitable scratcher composition consists of red phosphorus (5 parts) and ground glass of 150 mesh (3 parts), bound together by dextrine (2 parts).

Although I have for purposes of illustration shown my device in use with smoke candles and grenades, my device is not limited in this respect and may be employed in other pyrotechnic uses, for example, rockets, signals, etc. My device may also be employed in connection with delayed or time action fuses for setting off detonating and fulminating mixtures. It may also be

adapted to other mixtures sensitive to the frictional action of the scratcher composition.

The present invention is not limited to the specific details set forth in the foregoing examples which should be construed as illustrative and not by way of limitation, and in view of the numerous modifications which may be effected therein without departing from the spirit and scope of this invention, it is desired that only such limitations be imposed as are indicated in the appended claims.

I claim as my invention:

15 1. A firing mechanism for pyrotechnics and the like comprising a receptacle having a pyrotechnic adjacent to a match composition supported in said receptacle and a rotatable member provided with a scratcher composition to which said match composition is sensitive, said scratcher composition being in the vicinity and out of contact with said match composition when the device is in the "safe" position and said scratcher composition being disposed to frictionally engage said match composition when said rotatable member revolves, and means for preventing frictional movement between the adjacent match and scratcher compositions when the device is in the "safe" position.

2. A firing mechanism for pyrotechnics and the like comprising a receptacle having a pyrotechnic at one end adjacent to a match composition supported in said receptacle, a rotatable member projecting into the other end of said receptacle, the inner end of said rotatable member being provided with a scratcher composition to which said match composition is sensitive, said scratcher composition being in the vicinity of and out of contact with said match composition when the device is in the "safe" position and said scratcher composition being disposed to frictionally engage said match composition when said rotatable member revolves in the receptacle, and means for preventing frictional movement between the adjacent match and scratcher compositions when the device is in the "safe" position.

3. A firing mechanism for pyrotechnics comprising a tube having a pyrotechnic at one end in contact with a match composition supported in said tube and a rotatable plug projecting into the other end of said tube, said plug having the base within said tube partly surfaced with a scratcher composition to which said match composition is sensitive, said scratcher composition being in the vicinity of and out of contact with said match composition when the device is

in the "safe" position and said match composition being disposed in the path of said scratcher composition when the plug is rotated in the tube, and means for preventing rotation of the plug in the tube and frictional movement between the adjacent match and scratcher compositions when the device is in the "safe" position.

4. A firing mechanism for pyrotechnics comprising a receptacle having a pyrotechnic in contact with a match composition supported in said receptacle and a rotatable member adjacent to said match composition and having the surface near said match composition obliquely inclined to the axis of said receptacle and partly surfaced with a scratcher composition to which said match composition is sensitive, said scratcher composition being out of contact with said match composition when the device is in the "safe" position and said match composition being disposed in the path of the said scratcher composition when the rotatable member revolves.

5. A firing mechanism for pyrotechnics comprising a tube having a pyrotechnic at one end in contact with a match composition supported in said tube and a closely-fitting, rotatable plug projecting into the other end of said tube, said plug having the base within said tube obliquely inclined to the axis of said tube and partly surfaced with a scratcher composition to which said match composition is sensitive, said scratcher composition being out of contact with said match composition when the device is in the "safe" position and said match composition being disposed in the path of the said scratcher composition when the plug is rotated in the tube.

6. A firing mechanism for pyrotechnics comprising a tube having a pyrotechnic reaction mixture at one end, a match composition in close proximity to said pyrotechnic mixture, a rotatable member supporting a scratcher composition to which said match composition is sensitive extending into the other end of said tube, said scratcher composition being in the vicinity of and out of contact with said match composition when the device is in the "safe" position and said scratcher composition being disposed to frictionally engage said match composition when said member is rotated within the tube, and means for preventing frictional movement between the adjacent match and scratcher compositions when the device is in the "safe" position.

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