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N. DEL GRANDE.

FIRE CRACKER.

APPLICATION FILED JAN. 3, 1907.

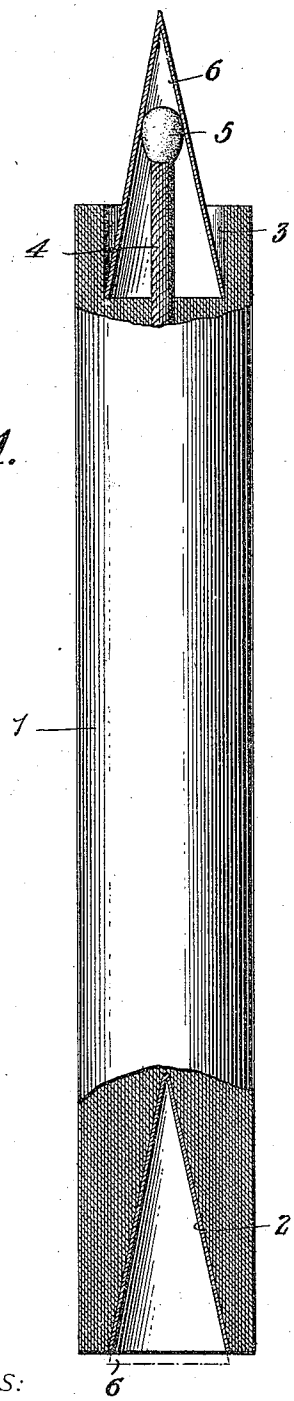


Fig. 1.

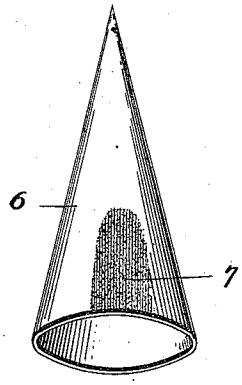


Fig. 2.

WITNESSES:

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FIRE-CRACKER.

No. 863,514. Specification of Letters Patent. Patented Aug. 13, 1907.

Application filed January 3, 1907. Serial No. 350,574.

To all whom it may concern:

Be it known that I, NICHOLAS DEL GRANDE, a citizen of the United States, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented a new and useful Fire-Cracker, of which the following is a specification.

This invention relates to fire crackers and its object is to provide a device of this character having a fuse formed with a head which is adapted to be ignited when drawn over a suitable striker such as ordinary sand paper or a surface of special composition.

A still further object is to provide means for protecting the fuse in transit and to form fire crackers which can nest closely together while said protecting devices are in position.

With the above and other objects in view the invention consists of a fire cracker having a fuse extending from one end and provided with a head adapted to be ignited when drawn over a suitable striker. A conical cap is adapted to be seated within one end of the fire cracker and extend over and protect the fuse and the other end of the fire cracker is recessed so as to receive one of these guards and thereby permit the fire crackers to be nested close together.

The invention also consists of certain other novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a view partly in elevation and partly in section of a fire cracker constructed in accordance with this invention, the manner of nesting a cap within the cracker being shown by dotted lines; and Fig. 2 is a detail view of the cap.

Referring to the figures by characters of reference, 1 is the body of a fire cracker formed in any desired manner and having a conical recess 2 in one end while its other end is recessed as at 3. A fuse 4 is disposed within the recess 3 and extends beyond the end of the body and has a head 5 thereon formed of ingredients which when drawn over a striker will ignite. The fuse 4 is formed in any suitable manner and is sufficiently stiff to remain rigid while the head is being struck. The head 4 may be made of any desired ingredients and can be formed to produce flashes of different colors and can also be formed of ingredients which will ignite when drawn over sand paper or any other rough surface which is not chemically prepared or can be so constituted as to only ignite when rubbed upon a striker made up of certain ingredients adapted to combine with the head to cause ignition.

If it is desired to produce a white flash the head can be made as follows: chlorate of potash 12 ounces, needled black antimony 6 ounces, sugar of milk 2 ounces, gum arabic 4 ounces. The head can be caused to produce a red flash by forming it of the following ingredients: chlorate of potash 12 ounces, red oxid of mercury 6 ounces, sugar of milk 2 ounces, gum arabic 4 ounces.

The heads if formed of the above mentioned ingredients can be ignited if struck upon any rough surface such as ordinary sand paper but it is to be understood that if preferred the heads can be made of compounds which will only ignite when drawn over certain chemically treated surfaces.

In order that the heads and fuses may be protected in transit a conical cap 6 is employed which is adapted to fit snugly within the recess 3 and extend over the head so as to completely close it. This cap is preferably formed on its outer face with a striker 7 by means of which the head may be ignited after the cap has been removed. By providing the fire cracker with the conical recess 2 two or more of them can be placed end to end and the cap of one will nest within the recess 2 of the other thereby greatly facilitating the packing of the fire crackers for transportation.

Obviously the object of extending the rigid fuse beyond the end of the cracker is to facilitate striking the head upon a suitable object to cause ignition, but it is obvious that in transportation it will be necessary to protect this fuse not only from contact with obstacles but also from distortion, and by providing a conical cap which fits at its base snugly within the recess in the end of the cracker with sufficient firmness to hold it in place and at the same time is tapered, so that it will snugly receive the head at that portion in which the head will be located when the cap is in place, all tendency to vibrate and thus come in contact either with the cap itself or with any other object is prevented. Moreover, by arranging the cap so that it fits within the cavity in the end of the cracker, instead of fitting over the end of the cracker, any tendency to force the cap down and thus into too rigid or firm contact with the head of the fuse is prevented. The bottom of the recess in the end of the cracker serves as a positive stop to prevent inward movement of the cap beyond the desired point, and thus still further protects the head of the fuse. Again, when the crackers are boxed or packed end to end, the reduced part of the cap covering the fuse at one end of any one cracker can fit within the cavity 2 in the opposite end of the adjacent cracker, so that the ends of the crackers themselves will come into contact. This provides, therefore, for the conically recessed end of one cracker constituting a still further guard and protection for the fuse end of the adjacent cracker, and at the same time the projection of the fuse does not cause the crackers when packed to take up any more space than they would if the fuse were not thus extended, or were flexible to lie in the cavity, except so far as the terminal

crackers are concerned, or those which are arranged with their fuse ends adjacent to one end wall of the box or other receptacle in which they are arranged, and even this additional space in packing can be avoided by reversing the end crackers so as to cause the fuses of the end row to project into the cavities 3 of the adjacent row, and vice versa. The slight disalinement of the crackers due to this arrangement is not objectionable. It will be noted that the recess 3 is of greater depth than the projection of the fuse beyond the extremity of the cracker.

It will be noted, moreover, that the striker 7 is arranged on the exterior surface of the cap or guard near the base, so that when the cap is arranged in the cylindrical recess 3 in the fuse end of the cracker, that portion of the wall of the cap which is provided with the striker is out of contact with the wall of the recess, but is within the recess, so that its striking surface is protected and preserved until it is desired for use.

The preferred form of the invention has been set forth in the foregoing description but I do not limit myself thereto as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of the claims.

What is claimed is:

1. A fire cracker provided at its fuse end with a recess, and a fuse arranged in the recess, and a cap removably fitted in the recess to protect the fuse.

2. A fire cracker having at its fuse end a recess, a rigid fuse arranged in and projecting beyond the recess, and a cap fitting in the recess and inclosing the fuse.

3. A fire cracker having at its fuse end a recess, and a rigid fuse arranged in and projecting beyond the recess, and a conical cap fitting within the recess with its base in contact with the bottom of the recess.

4. A fire cracker having at its fuse end a recess, a fuse arranged in the recess and having a terminal striking head, and a conical cap fitted at its base within the recess, and in contact with the bottom thereof and tapered to snugly fit the head of the fuse.

5. A fire cracker provided at its fuse end with a recess in which the fuse is arranged and at its opposite end with an unobstructed recess, and a cap fitting at one end within the recess at the fuse end of the cracker, and tapered at its other end to fit within the unobstructed recess at the opposite end of an adjacent cracker.

6. A fire cracker provided at its fuse end with a cylindrical recess in which the fuse is arranged and at its opposite end with an inwardly tapered recess, and a conical cap fitted at its base in said cylindrical recess and adapted at its point to project into the tapered recess at the relatively opposite end of an adjacent cracker.

7. A firecracker provided at its fuse end with a cylindrical recess, a fuse arranged in the recess and having a striking head, and a conical cap fitted at its base in said recess and inclosing the fuse, said cap being provided on its exterior surface near the fuse with a friction surface for igniting the head.

8. A fire cracker having recessed ends, a fuse within and extending from one of the recesses, and a fuse guard detachably mounted within one of the recesses and substantially equal in extent to the other recess.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

NICHOLAS DEL GRANDE.

Witnesses:
E. HUME TALBERT,
C. E. DOYLE.