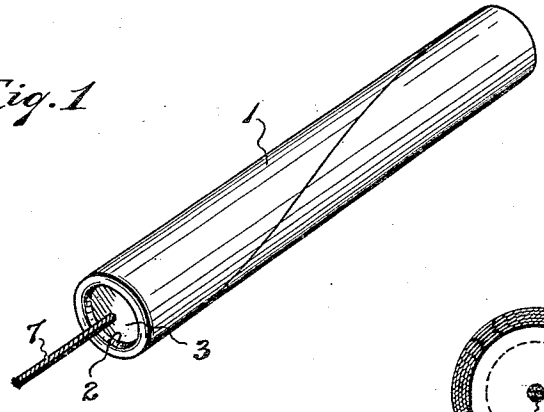
Dec. 14, 1926. 1,610,645

M. M. ADLER

PYROTECHNICAL DEVICE

Filed Feb. 16, 1925

Fig. 1



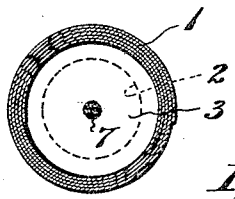
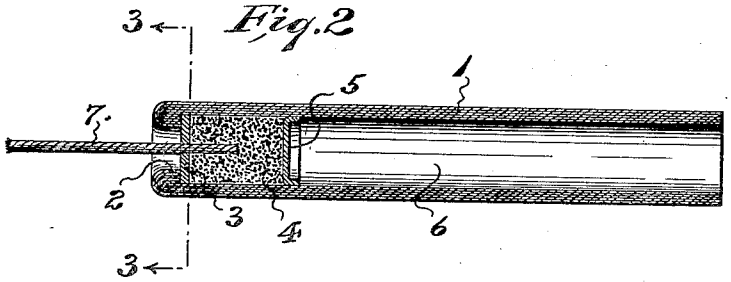


Fig. 3

Fig. 2



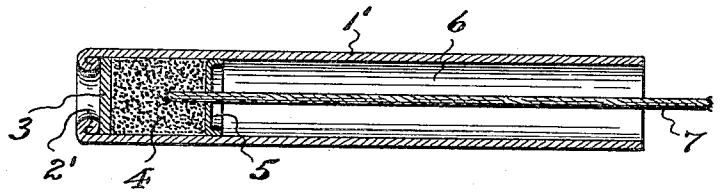


Fig. 4

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UNITED STATES PATENT OFFICE.

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PYROTECHNICAL DEVICE.

Application filed February 16, 1925. Serial No. 9,464.

This invention relates, generally, to improvements in pyrotechnical devices; and the invention has reference, more particularly, to a novel pyrotechnical device in the form of an explosive or detonating fire-cracker.

The invention has for its principal object to provide a novel construction of explosive or detonating fire-cracker, consisting of a novel form of tubular container or casing, one end of which is inwardly crimped or turned to provde an internal stop-shoulder against which is firmly supported a base or end partition, which securely closes one end of said casing. A charge of a suitable explosive is tamped into the closed end of said casing, so as to be firmly backed and supported by said base or end partition; said charge being retained in place by a transverse wad or keeper member made of comparatively soft material, such, e. g., as heavy paper. The remaining open ended body of the casing, beyond the charge of explosive, provides a discharge barrel which offers a path of least resistance to the forces of explosion when the charge is ignited, so that the discharge of the expanding gases, generated by combustion of the charge, is directed through such barrel, not only thereby tending to increase the loudness of the detonation or report, but also tending to prevent the disruption of the body of the casing, with attendant scattering about of burning particles. Futhermore, the novel combination of crimped stop shoulder and base or end partition, in connection with the comparatively stout container or casing, provides a firm and secure closure for the charge in the end of the casing, so that said parts are not likely to be blown apart by the explosion of the charge, to the possible injury of bystanders. The novel fire-cracker thus constructed may be provided with an ignition fuse, suitably entered into the explosive charge from either the closed or open end of the casing as may be desired

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of the novel fire cracker made according to and embodying the principles of this invention; Figure 2 is a longitudinal section through the same; Figure 3 is a transverse section through the same, taken on line 3—3 in Figure 2, and drawn on an enlarged scale; and Figure 4 is a longitudinal section of a slightly modified form of my novel fire-cracker.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to Figures 1 to 3 of the drawings, the reference character 1 indicates the body of a tubular casing or container. This casing or container may be made of sheet paper, which is rolled or wound upon itself, as shown in Figure 3, to form the desired tubular shape having the desired length and diameter. The walls of the casing or container thus formed, are comprised of a plurality of thicknesses or plies of paper, sufficient in number to provide a desired total thickness of material adapted to furnish a strong and tough casing. One end of the casing thus formed is inwardly crimped or turned to provide an internal annular stop-shoulder 2. Inserted within the interior of said casing 1, and then positioned so as to abut the stop-shoulder 2, is a transverse base piece or end partition 3, which is preferably made of heavy card-board or similar material of relatively tough and rigid character. Said base piece or end partition 3, being firmly supported against displacement from the end of the casing 1 by the stop-shoulder 2, not only closes one end of the said casing, but also serves as a base against which to position and back a charge 4 of a suitable explosive, which is entered through the open end of the casing and then tamped firmly into place. The charge 4, thus positioned within the closed end of the casing 1, is kept in such position by means of a transverse wad or keeper member 5, which separates the charge from the comparatively long barrel-like internal space 6 leading to the open end of the casing 1. Said wad or keeper member 5 is preferably made of relatively soft paper or similar material, which will easily disintegrate under the force of the explosion of the charge 4, when the latter is ignited, so that the force of the explosion will be directed through the unobstructed barrel space 6, thereby not only tending to increase the loudness of the resultant report or detonation, but also quickly relieving the walls of the casing from the effects or force of the explosion, so that the latter are not likely to be disrupted. In order to insure against

accidental displacement of the wad or keeper member 5 during transit or commercial handling of the fire-cracker, the same may be secured to the walls of the casing by a suitable adhesive, if it is so desired. As shown in Figures 1 to 3 a suitable ignition fuse 7 is provided, the inner end of which is entered within the mass of the explosive charge 4. Said fuse 7 may be either passed through the base piece or end partition 3, as shown in Figures 1 to 3 inclusive; or the same may be entered through the open end of the casing to extend through the barrel space 6 and thence through the wad or keeper member 5, as shown in Figure 4.

Aside from the above-described modified arrangement of the fuse, which is illustrated by Figure 4, said Figure 4 of the drawings, also shows, as a possible modification of the construction of my novel fire-cracker, the casing or container, formed from an integral tube 1′ of fibrous material, instead of being formed by winding a sheet of fibrous material, such as paper, upon itself. The integral tube 1′ is provided at one end with the inturned or crimped portion to form the stop shoulder 2′. In other respects the construction of the fire-cracker is the same as that first described, as is witnessed by the application to the illustration thereof in Figure 4 of corresponding characters of reference.

From the above description it will be quite apparent that my present invention provides a very simple, cheap and easily manufactured fire-cracker which possesses the advantages and unique features already above specified.

Having thus described my invention, I claim:—

1. A pyrotechnical device, comprising a tubular casing having an internal annular shoulder at one end, a transverse end closing means stopped against said shoulder, a charge of explosive positioned against said end closing means within said casing, a soft paper keeper member for retaining said explosive charge in position, said casing providing an open ended tubular discharge barrel beyond said keeper member, and a fuse having its inner end inserted in said charge of explosive.

2. A pyrotechnical device, comprising a tubular casing having an inturned crimped end, a partition member stopped against said crimped end to thus close one end of said casing, a charge of explosive tamped against the inner side of said partition member, means for retaining said charge against displacement, said tubular casing providing an open ended discharge barrel beyond said charge, and an ignition fuse having its inner end in contact with said charge.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 26th day of January, 1925.

MILTON M. ADLER.