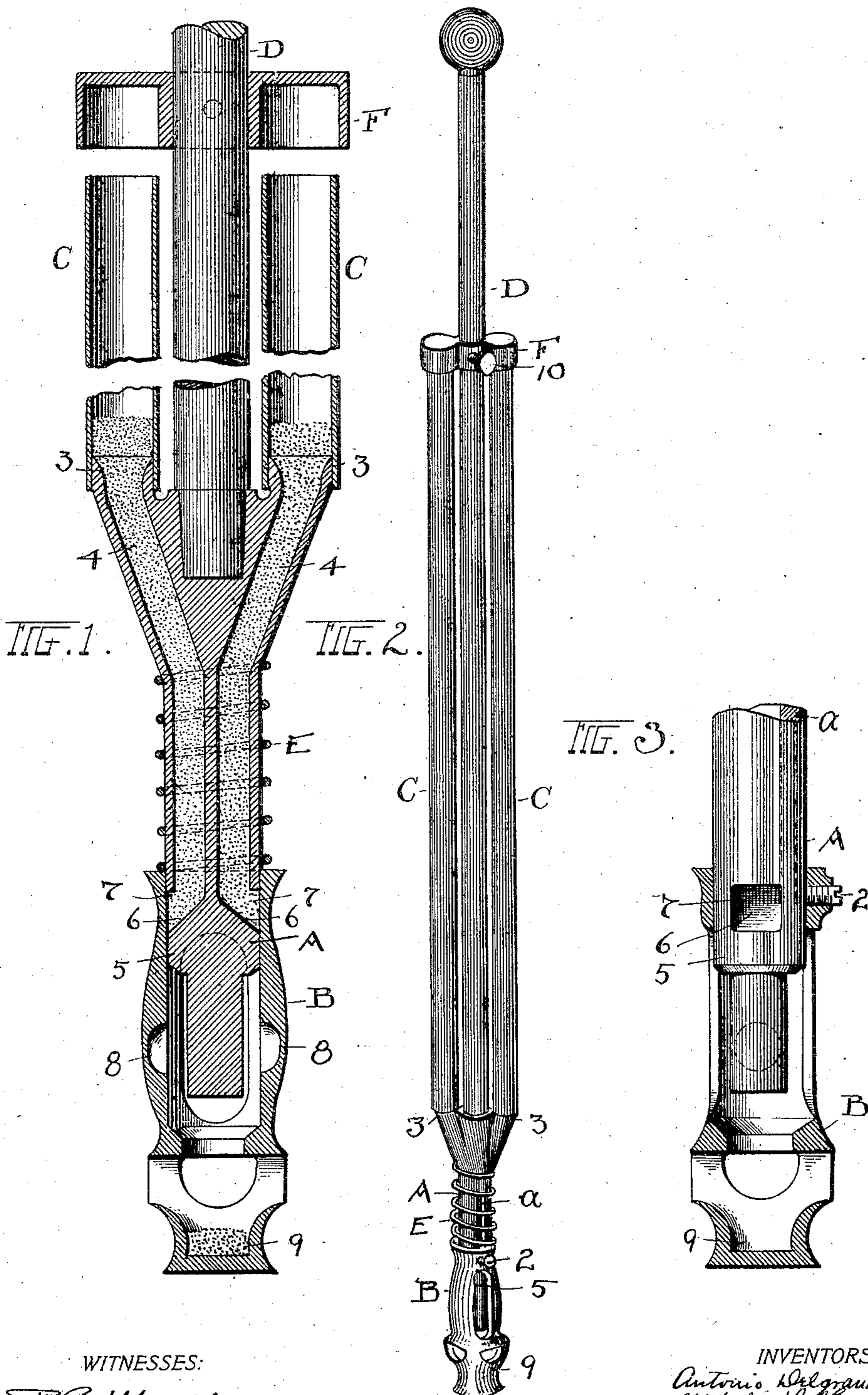


No. 850,354.

PATENTED APR. 16, 1907.

A. DELGRANDE & N. DEL GRANDE.
REPEATING DETONATING CANE.

APPLICATION FILED MAR. 14, 1904.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ANTONIO DELGRANDE AND NICHOLAS DEL GRANDE, OF BEREА, OHIO.

REPEATING DETONATING-CANE.

No. 850,354.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed March 14, 1904. Serial No. 198,110.

To all whom it may concern:

Be it known that we, ANTONIO DELGRANDE and NICHOLAS DEL GRANDE, citizens of the United States, residing at Bereа, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Repeating Detonating-Canes; and we do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to repeating detonating-canes; and the invention consists in an improvement in the style of cane set forth and generically claimed in a concurrent application, Serial No. 198,109.

In the accompanying drawings, Figure 1 is a central vertical sectional elevation of the cane, and Fig. 2 is a plain outside elevation thereof reduced in size as compared with Fig. 1, so as to bring the entire cane within view. Fig. 3 is a sectional elevation of the lower part of the cane at right angles to Fig. 1.

In the cane thus shown we employ a body part A and an explosion-head B, slidably and reciprocally connected with said body and suspended therefrom by means of a screw 2 or its equivalent engaged in a lengthwise slot or channel *a* in said body, so that the head B is detachably connected with the body and is confined in operative position therewith, as shown. In this style of cane, as in the cane upon which it is an improvement, above referred to, we employ two ammunition-tubes C, one on each side of the center of the cane and outside the handle D thereof in this instance and adapted to sleeve over tubular extensions or seats 3 upon the body A and from which there are separate channels 4 running down to the plunger-head 5. This head has oppositely-inclined sides 6 leading to the openings 7, through which the ammunition or powder is fed to the cane. The openings 7 are adapted to register with measuring or quantity cavities 8 in the wall of head B and adapted to receive a definite amount of ammunition or powder through the opening 7, according to their size, when the plunger is down to explode a charge. Then as the plunger is again raised or the explosion-head is permitted to drop the powder contained in these cavities feeds down beneath head 5 and into the bottoms 9 of explosion-head. A spirally-coiled wire spring E is engaged about body A and

bears down upon head B to promote prompt action of the head when the cane is raised.

The tubes or cylinders C are made of paste-board or other light material and filled with loose or unfixed granulated or powdered ammunition at the factory and closed at their end and kept in stock for this particular use, and as the said tubes are exhausted they are cast away and others are put in their place. Only two such tubes are shown in this instance; but obviously there might be a group of three or more placed about the central stem or handle D, and they are engaged at their upper ends by a cap F, slidable up and down upon handle D and secured by a screw 10. When a tube is to be removed, the said cap is simply released and raised and the tube is drawn out and another put in its place.

The charges of ammunition necessarily are uniform, as they all pass through the same measure by cavities 8, and the ammunition discharges into the explosion-chamber the instant head B is dropped.

Obviously the tubes C might be made permanent and filled when they become exhausted, and any equivalent form of receptacle might be used.

In the foregoing description reference has been made particularly to a mixed ammunition in condition to be exploded when it reaches the explosion-chamber by impact; but there is a further advantage in a plurality of tubes in that it enables us to place certain ingredients of the ammunition in one tube and other ingredients in another tube, neither of which can be exploded by fire or otherwise unmixed with the other; but by measuring off a suitable quantity of each by means of the cavities provided for this purpose and dropping the same together into the explosion-chamber the mixing or making of an explosive compound occurs and explosion can be had.

In practice we use different colors for the tubes C, such as red for one and blue for the other, according to the ingredients they contain, in the event that they contain different ingredients or portions of the ammunition.

What we claim is—

1. The combination, with a detonating device having an ammunition-passageway therein, and means to sustain a magazine, of a temporary magazine adapted to be removably secured to said sustaining means, substantially as described.

2. A detonating device comprising a charge-exploding apparatus, a handle therefor, a passage leading thereto, a magazine detachably connected to said passage, and a cap adjustably secured to said handle and adapted to engage the end of said magazine, substantially as described.

3. A detonating device comprising a charge-exploding apparatus, and a handle therefor, a plurality of passages leading to said charge-exploding apparatus, a plurality of magazines connected to said passages, and a cap adjustably secured to said handle and engaging the ends of said magazines, substantially as described.

4. In a detonating device, the combination, with the body portion having an explosion-chamber, of a plunger fitting closely within said body portion and reciprocating therein and having a socket in the upper end thereof, a handle engaging said socket, passages extending through said plunger to said explosion-chamber, magazines secured to the outer ends of said passages and supported by said handle, and means for closing said magazines, substantially as described.

5. In a detonating device, the combination, with the hollow body portion having an explosion-chamber therein, and a plurality of measuring-cavities in the walls thereof, a plunger fitting closely within said body portion and reciprocating therein, a plurality of passages extending through the side walls of said plunger and adapted to register with

said measuring-cavities when said plunger is in its lower position, and magazines secured to the outer ends of said passages, substantially as described.

6. In a detonating device, the combination, with the hollow body portion having an explosion-chamber, and measuring-cavities in the side walls thereof, of a plunger fitting closely within said body portion and reciprocating therein, an enlarged upper end having a cavity therein adapted to receive a handle, passages leading from the opposite sides of said handle-cavity through said plunger and adapted to register with said measuring-cavities, and a coiled spring surrounding said plunger and having one end bearing against said body portion and the opposite end against the enlarged end of said plunger, substantially as described.

7. In a detonating device, the combination, with the charge-exploding apparatus, of receptacles adapted to contain the separate elements of an explosive, and means for feeding fixed quantities of each of said elements to said charge-exploding apparatus, substantially as described.

Witness our hands to the foregoing specification this 27th day of February, 1904.

ANTONIO DELGRANDE.
NICHOLAS DEL GRANDE.

Witnesses:

R. B. MOSER,
C. A. SELL.