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J. M. OLIN ET AL

DETONATOR PACKAGE

Filed Sept. 16, 1922

Fig. 1.

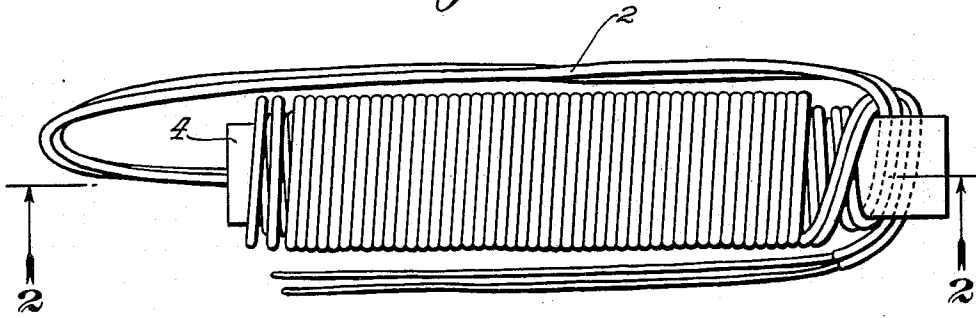
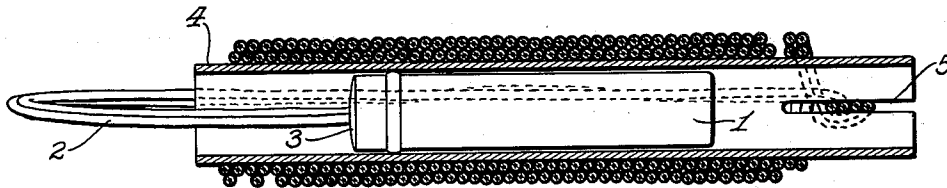


Fig. 2.



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DETONATOR PACKAGE.

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This invention relates to prepared detonator packages utilizing a detonator of the electric ignition type.

In detonators of the type referred to, the 5 detonator cap cartridge or shell is loaded with a high explosive which is electrically ignited; accordingly the cartridge has attached thereto leading in or igniter wires for the purpose of conducting the igniting current thereto in 10 order to effect ignition of the charge. The igniter wire is usually of considerable length and since the cartridges must be furnished with the wire attached thereto, the handling and shipping of the same is rather inconvenient. 15

A detonator cartridge is subjected to shocks during handling and shipment and it frequently happens that explosion takes place during such handling or shipment with liability of injury to life and limbs and damage to property. Accordingly for shipment these 20 detonators must not only be carefully packed, but the accident, express and freight rates are unduly high.

One of the objects of this invention, therefore, is to provide a prepared package in which the detonator cartridge and the igniter wire attached thereto are assembled to provide a compact and convenient package which 30 can not only be readily stored and shipped, but also when required for use is so constructed and arranged as to permit the wire to be readily strung out for the purpose of connection of the wire to the source of current, while 35 the cartridge itself is in detonating position.

Another object of this invention, therefore, is to provide a prepared package in which the detonator cartridge has a protective casing.

Further objects will appear from the detail description taken in connection with the accompanying drawing, in which: 40

Figure 1 is an elevation (somewhat enlarged) showing an embodiment of a prepared detonator package embodying this invention; and 45

Figure 2 is a section on line 2—2, Figure 1.

Referring to the accompanying drawing, 1 designates the detonator cartridge or shell, which as usual is of drawn metal and contains 50 a charge of high explosive, and 2 designates the igniter wire, which leads from and is attached to the cartridge, the wire passing through a seal 3 of suitable material closing the end of the cartridge and terminating in-

side of the shell in a filament adapted to glow 55 when the current is passed through the wire. This cartridge and its connections so far described may be of any usual and suitable construction, and a further detail description thereof is, therefore, unnecessary. 60

The wire is preferably wound upon a tube 4 of paper, card board or any other suitable material, so as to provide a coiled casing which in this case encloses the tube as well as the cartridge. The wire is preferably coiled back and 65 forth as shown, with the outer layer helices crossing those of inner layer and so that the cartridge attached end of the strand and the free end of the strand both terminate at one end of the coil, and these ends of the strand 70 preferably pass through slots 5 in the end of the tube. After the wire has been coiled in the manner shown and described, there is left a cartridge attached end of the strand of some length, so that the cartridge can be inserted 75 into the coil and the tube therein from the end opposite to which the strand is secured. While it is preferable to leave the tube in position, it will be obvious that after the coil has been wound on the tube, the latter can be 80 taken out leaving a coil which forms a casing, even apart from the tube; for since the coils or helices of one layer cross those of the other, the effect will be to cause one to hold the other, and the ends will, therefore, be secured since 85 they double over one another to form bights. Of course, it will be understood that the wire is insulated and is moreover of substantial cross section so as to be comparatively stiff, whereby the package will readily retain its 90 shape.

It will, therefore, be seen that the invention accomplishes its objects. A prepared package is provided which is compact, convenient, simple and inexpensive, while the 95 wires and cartridge will be firmly held in assembled relation; the layers of stiff wire mutually sustaining one another in order to form a self-sustained casing, while the cartridge is retained in the casing by the stiff 100 cartridge-attached strands. When it is desired to use the package, the cartridge can be withdrawn from the casing and placed in detonating position. By then freeing the strand from the slots 5, the wire can be 105 readily uncoiled so as to enable connections to be made to the source of current.

It will be noted that the wire coiled around

the detonator cartridge, either alone or in connection with the tube, provides a very strong protective casing which can withstand an explosion of the cartridge, since
 5 the rupture of the cartridge shell is lateral and usually intermediate its ends where the protective casing covers it. Accordingly injury to life and limb during handling and damage to property during shipment is,
 10 therefore, considerably lessened so that accident, express and freight rates can be considerably reduced.

It is obvious that various changes may be made in details of construction without departing from the spirit of this invention; it
 15 is, therefore, to be understood that this invention is not to be limited to the specific details shown and described.

Having thus described the invention, what
 20 is claimed is:

1. A prepared package comprising, a detonator cartridge, igniter wire attached thereto, and a tube on which the wire is
 25 coiled, the cartridge being inserted endwise into the tube, and the wire being secured on the tube.

2. A prepared package comprising, a detonator cartridge, igniter wire attached thereto, and a tube on which the wire is
 30 coiled, the cartridge being inserted endwise into one end of the tube while the cartridge-attached end of the strand leads from the other end of the tube, and the wire being secured on the tube.

3. A prepared package comprising, a detonator cartridge, igniter wire attached thereto, and a tube on which the wire is
 35 coiled, the cartridge being inserted endwise into one end of the tube while the cartridge-attached end of the strand is secured to and
 40 leads from the other end of the tube.

4. A prepared package comprising, a detonator cartridge, igniter wire attached thereto, and a tube on which the wire is

coiled back and forth, the cartridge-attached
 45 end of the strand being secured to one end of the tube, while the cartridge is inserted into the other end of the tube.

5. A prepared package comprising, a detonator cartridge, igniter wire attached
 50 thereto, and a tube on which the wire is coiled back and forth, the cartridge-attached and free ends of the strand being secured to one end of the tube, while the cartridge is
 55 inserted into the other end of the tube.

6. A prepared package comprising, a detonator cartridge and stiff igniter wire attached thereto, the wire being coiled back
 and forth to form a series of layers which mutually support one another in order to provide
 60 a self-sustained casing, and the cartridge being inserted endwise into the casing so formed and being retained therein by the cartridge-attached end of the strand.

7. A prepared package comprising, a detonator cartridge and stiff igniter wire attached thereto, the wire being coiled back
 and forth to form a series of layers which mutually support one another in order to provide
 70 a self-sustained casing, with the cartridge-attached end of the strand secured at one end of the coil, while the cartridge is inserted endwise into the other end of the coil.

8. A prepared package comprising, a detonator cartridge and stiff igniter wire attached thereto, the wire being coiled back
 and forth to form a series of layers which mutually support one another in order to provide
 75 a self-sustained casing, with the cartridge-attached and free ends of the strand secured at one end of the coil, while the cartridge is inserted endwise into the other end
 80 of the coil.

In testimony whereof we affix our signatures this 29th day of June, 1922.

JOHN M. OLIN.
 JOHN B. SMITH.