

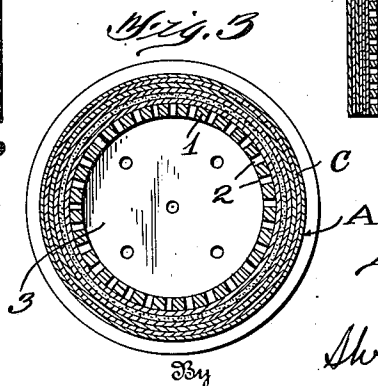
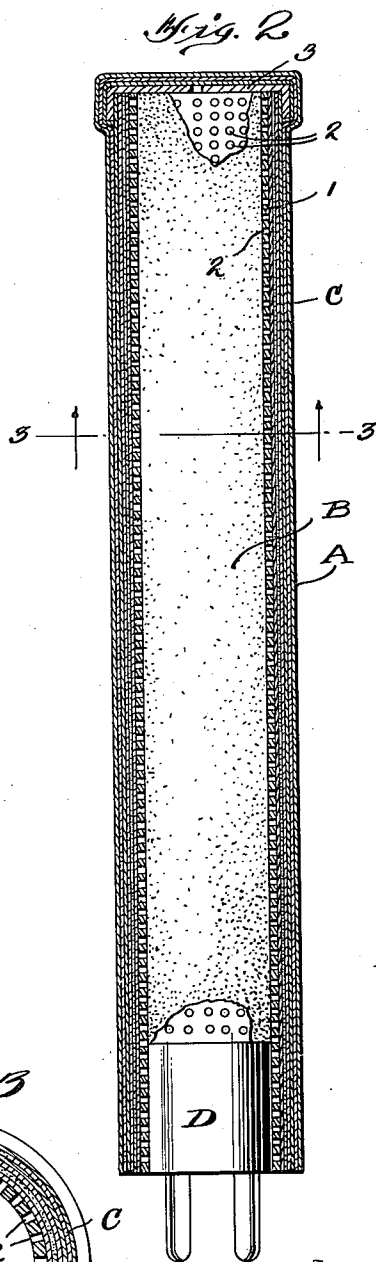
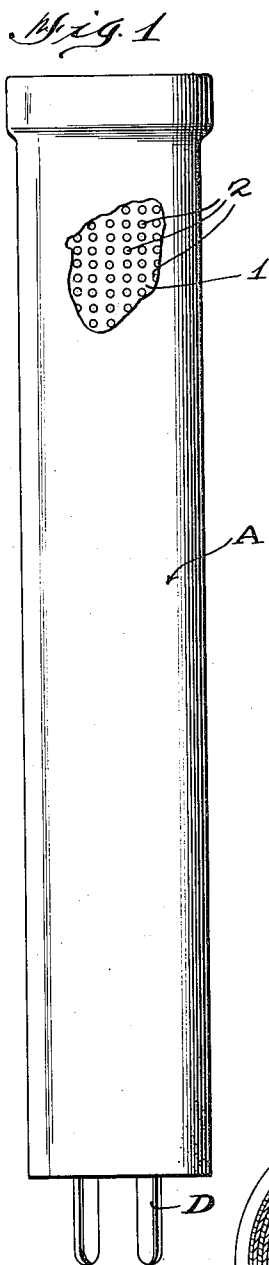
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FOG GAS CARTRIDGE

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UNITED STATES PATENT OFFICE

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FOG GAS CARTRIDGE

Application filed December 21, 1931. Serial No. 592,420.

Generically this invention relates to hand grenades or bombs, but it is more especially directed to a lachrymatory fog or smoke gas and process of making same.

5 One of the principal objects of this invention is the method of producing a material for charging a cartridge of the above nature adapted to emit a lachrymatory fog or smoke gas upon ignition thereof.

10 Another important object of this invention is the method of producing and applying a booster coating to a foraminous cartridge for preventing deterioration of said cartridge and contents and method of producing a smoke or fog gas emitting material and loading said cartridge therewith, where-
15 by an effective cartridge of this character is produced.

20 A further important object of this invention is the production of a smoke or fog gas emitting material for loading cartridges including ammonium chloride, a fuel, and a binder substance, whereby the particles are coated to hold the various ingredients in
25 proper relationship to each other to effect uniformity of discharge and prevent premature explosion when same is ignited.

30 With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawing, in which like characters of reference
35 indicate like parts throughout the several figures, of which:

40 Fig. 1 is a front elevation of my improved cartridge device, having a portion of the coating cut away to show the foraminous casing.

Fig. 2 is a vertical section of the cartridge device showing loading charge, booster coating, and ignition mechanism or squib head.

45 Fig. 3 is a horizontal section taken at line 3—3 of Fig. 2.

50 In producing cartridges of this type it has been found difficult to produce a smoke or fog producing material that could be expeditiously loaded in a cartridge, owing to the tendency of the ingredients to segregate with

a resultant non-uniformity of discharge, and in certain cases detonation or exceedingly quick burning of the fuel after ignition preventing the desired slow uniform burning necessary to produce fog, tending to constitute a further disadvantage, and it was to
55 overcome such deficiencies that I compounded a fog or smoke producing material, including a non-reactant binder substance for preventing the segregation of the ingredi-
60 ents, such mixture admitting of ready loading of the cartridge, preventing premature explosion after ignition and effecting a slow uniform discharge of the smoke gas from the cartridge, a booster coating for said load-
65 ed foraminous cartridge, and means for igniting said booster and fog emitting material that I produced the charge material, booster coating and method of producing
70 same comprising the subject matter of this invention.

In the illustrated embodiment characterizing this invention there is shown a cartridge A, a lachrymatory smoke or fog emitting composition of matter B constituting
75 the charge, a sealing and booster material C, and an electric squib or ignition device D.

The cartridge A preferably comprises a metal tubular casing 1 formed throughout its wall area with a plurality of perforations
80 or foraminae 2, its free end being provided with a closure 3 formed with similar perforations or foraminae 2, or a cork closure may be employed if desired, and the other end of said cartridge is adapted to be closed by said
85 ignition mechanism D, for effecting ignition of said booster coating and smoke or fog emitting composition, as will hereinafter more fully appear.

90 In the production of the material B, I preferably employ the following ingredients: ammonium chloride (40-50 mesh) 20.1 grams; vaseline, 2.2 grams; precipitated chalk 1.1 grams; du Pont No. 1240 I. M. R. smokeless powder, 46.5 grams; Hercules "Lightning"
95 smokeless powder, 2.8 grams; and the above is compounded preferably by first mixing the ammonium chloride and vaseline, then adding the precipitated chalk and the powders, and then loading said mixture in the car-
100

tridge or shell at preferably 10 pounds pressure.

Prior to loading the cartridge with the above mixture, the squib or ignition mechanism D is inserted in one end of the foraminous body or cartridge, a coating of clear lacquer is then applied to said body, then a booster coating of "A" dust suspended in colloidion and acetone 5 grams is applied, then a coating of waterproofing material, and immediately a coating of lead tin foil, the mixture constituting the charge is then loaded in said cartridge, the closure inserted thereover and covered with lead tin foil, the complete body or cartridge is then waterproofed and a coating of lacquer applied thereto.

The cartridge is then in completed form, whereby any suitable means for operating said squib or other form of mechanism D may be employed as desired, and upon ignition of the materials C and B a lachrymous smoke or fog gas is emitted from said shell, as and for the desired purpose, as will be well understood.

Heretofore cartridges of this general type have been protected from deterioration and against the action of the elements by oiled paper coating and the like, which has proven deficient, and I have found such disadvantages overcome by the employment of my improved coating, including a lead tin foil composition or similar substance which composite coating not only is readily shatterable and ignitable, contributing to effect release of the fog gas from the cartridge, but effectually seals and prevents deterioration of the cartridge and contents, thereby prolonging the effective life of the cartridge.

From the foregoing it is apparent that I have produced an efficient smoke or fog gas cartridge including a sealing and booster coating therefor, and a charge material adapted by reason of its ingredients and method of compounding to admit of ready loading and to produce, upon ignition, a fog or smoke gas for purposes as desired.

Although in practice I have found that the form of my invention illustrated in the accompanying drawing and referred to in the above description as the preferred embodiment, is the most efficient and practical; yet realizing that the conditions concurrent with the adoption of my invention will necessarily vary, I desire to emphasize that various minor changes in details of construction, proportion and arrangement of parts, may be resorted to within the scope of the appended claims without departing from or sacrificing any of the principles of this invention.

Having thus described my invention, what I desire protected by Letters Patent is as set forth in the following claims:

1. A cartridge comprising a foraminous container, a solidified mass of ignitable ma-

terial adapted to emit a lachrymatory fog gas upon ignition, and a booster coating for said container, said coating consisting of a lacquer, booster material, tin lead composition foil, and a waterproofing substance, and means for effecting ignition of said booster coating and mass.

2. A solidified mass of ignitable material constituting a charge for a foraminous cartridge consisting of ammonium chloride, vaseline, precipitated chalk, and a fuel such as gunpowder, said ignitable material adapted upon ignition to emit a smoke or fog gas.

3. A solidified mass of ignitable material constituting a charge for a foraminous cartridge consisting of ammonium chloride (40-50 mesh) 20.1 grams; vaseline, 2.2 grams; precipitated chalk, 1.1 grams, du Pont No. 1204 I. M. R. smokeless powder, 46.5 grams; Hercules "Lightning" smokeless powder, 2.8 grams; said mass upon ignition adapted to emit a smoke or fog gas.

4. A method of producing a solidified ignitable material constituting a charge for a cartridge consisting in mixing ammonium chloride, vaseline, precipitated chalk, and a fuel such as gunpowder, and loading same in a cartridge at about 10 pounds pressure, whereby a smoke or fog gas cartridge is produced.

5. A method of producing a fog or smoke gas cartridge consisting in mixing ammonium chloride, vaseline, precipitated chalk, and a fuel such as gunpowder, and loading said mixture in the cartridge at a predetermined pressure.

6. A method of producing a fog or smoke gas cartridge consisting in mixing ammonium chloride, vaseline, precipitated chalk, and a fuel, and loading said mixture in said cartridge at a predetermined pressure, said cartridge having been previously treated with lacquer, a booster substance, a waterproofing material, and a lead tin foil substance, the completed cartridge is then waterproofed and lacquered.

7. A booster coating for a smoke or fog gas cartridge comprising lacquer, a booster substance, a metallic substance, and waterproofing material.

8. A booster coating for a smoke or fog gas cartridge adapted to prevent deterioration thereof, consisting of lacquer, a booster substance, tin lead foil composition, and a waterproofing substance.

This specification signed this 1st day of December, 1931.

ALEXANDER LOWY.