Nov. 26, 1963

C. TIEDEMANN

3,111,899

FLARE CARTRIDGE

Filed Sept. 11, 1961

Fig. 1

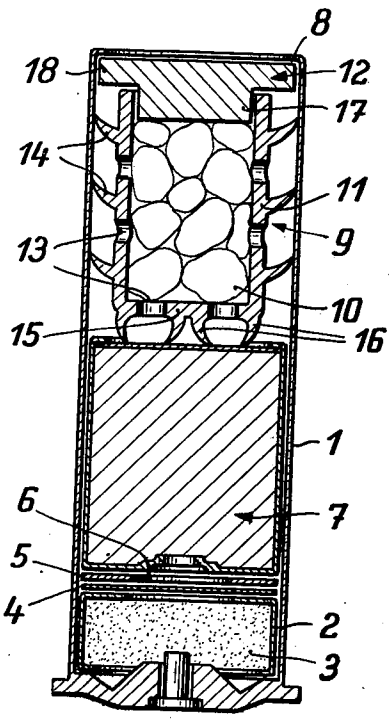
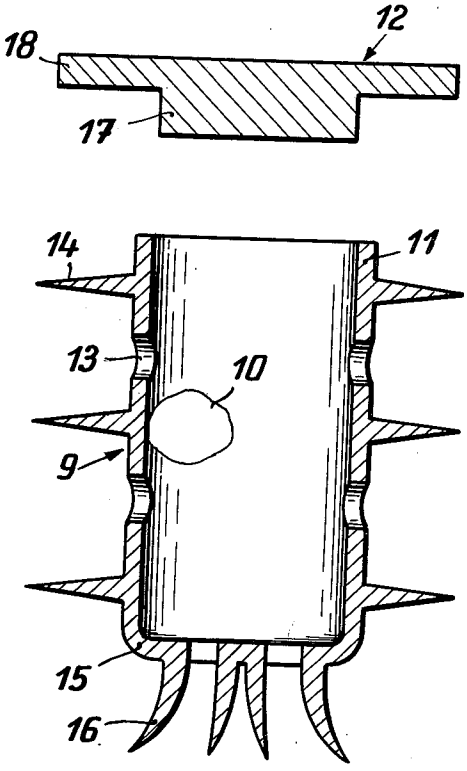


Fig. 2



INVENTOR.

Claus Tiedemann

BY

Beaman & Beaman

attys

United States Patent Office 3,111,899 Patented Nov. 26, 1963

3,111,899

FLARE CARTRIDGE

Claus Tiedemann, Hamburg-Wandsbek, Germany, assignor to WEFO Pyrotechnische Fabrik Wistedt W. Forquignon, Wistedt, Germany

Filed Sept. 11, 1961, Ser. No. 137,192
6 Claims. (Cl. 102—37.6)

The invention relates to a flare cartridge. Flare cartridges containing a flare composition driven by an expelling charge with an elastic wadding means in front thereof are known. Such flare cartridges have the disadvantage that they are functional only for a very limited period of time. For instance, with flare cartridges which are in use at present, the period of guarantee is limited to 2½ years, while the total period of use is only 3 years, that means that stored flared cartridges will have to be used or replaced after a period of 3 years has elapsed. In practice, this very limited period of usability is of great disadvantage and may often cause financial losses.

The above described disadvantage of presently used flare cartridges is to be attributed to the high degree of sensitivity to moisture of the flare charges, in particular the colour producing agents of such flare cartridges. As colour producing agents, mainly the salts of sodium, strontium, and barium are used. These colour producing agents are more or less hygroscopic and are effective to cause corrosions inside the cartridge casing.

For this reason, such flare charges are stored in drying containers prior to assembly.

When manufacturing these flare cartridges in factories it cannot be avoided that moisture affects the flare charges and that moisture is incidently trapped in the cartridge casing. Such moisture which has entered the cartridge casing during manufacture thereof or at a later time, causes the detrimental effect on the flare charge producing the above stated short period of usability for flare cartridges.

The present invention is therefore directed to the task of providing a flare cartridge containing means protecting the flare charge contained in the flare cartridge casing from being influenced by any moisture, thus guaranteeing a substantially longer period of storage and usability than presently available.

In particular, it is an object of the invention to accommodate in a flare cartridge hygroscopic, drying substances without having to increase the size of the cartridge.

The invention solves this problem in that the wadding means disposed within the flare cartridge and necessary to obtain the maximum shooting range, is designed in the form of a hollow member, the inner space of which opens toward the inside of the cartridge casing and is filled with a drying substance.

In flare cartridges used at present, the mentioned wadding material generally provided consists of a piece of felt and a cork of a given length which has peripheral parts thereof abutting the inner wall of the cartridge casing whereby the combustion pressure necessary to obtain a given maximum vertical ceiling is obtained. (Both of these parts may in themselves already contain moisture.)

In accordance with the invention, this wadding material is manufactured out of elastic or semi-elastic plastics, for instance polystyrene, and is designed in the form of a hollow member. The additional free space thus provided without increasing the size of the cartridge serves to receive the drying substance which is to absorb moisture contained in, or entering the cartridge casing. Thus, the flare charge of the cartridge which is sensitive to moisture is effectively protected from moisture which

may intrude, and the period of storage and usability of the cartridge is substantially increased.

Further advantages and features of the invention will become apparent from the specification and the accompanying drawings wherein:

FIG. 1 shows a longitudinal section through a flare cartridge in accordance with the invention, and

FIG. 2 is an enlarged longitudinal sectional view of a hollow member in accordance with the invention serving as a wadding means and having the cover removed.

FIG. 1 shows a cartridge casing 1 containing at its lower end an expelling charge 3, for instance black powder, in a plastic container 2. Above this container 2 a layer of tissue paper 4 is placed with a cardboard ring 5 having a central opening 6 superimposed thereon. The flare charge is located next to ring 5 and is generally designated by numeral 7. The hollow member 9 functions as the wadding means and abuts the flare charge 7 and is located close to the inwardly flanged upper edge of the cartridge casing 1.

The hollow member 9 consists of a cylindrically shaped container portion 11 and a cover 12. The outside diameter of the container portion 11 is smaller than the inside diameter of the cartridge casing 1. Along the outer surface of the container portion 11, there are arranged several radially projecting collar-like tongues 14 extending in a circumferential manner at least over portions of the periphery and having a greater radial length than the clearance between the hollow member 9 and the cartridge casing 1. In a flare cartridge assembled for use they are bent upwardly, tightly engaging the inner wall of the casing 1, as is shown in FIG. 1. The inner space of the hollow member 9 is in communication with the inner space of the cartridge case 1 via bores 13 disposed in the container walls and, if desired or required, in the tongues 14 extending over the periphery. Integral, spirally or otherwise shaped projections 16 extend into the interior of the cartridge from the bottom 15 of the container portion 11, said projections elastically abut the flare charge when the cartridge is assembled, see FIG. 1. The interior of the hollow member 9 is filled with a coarsely grained drying substance 10, for instance silica gel, calcium chloride, or potash pearls. The cover 12 consists of a plug member 17 integral with an outwardly extending flange 18. In a cartridge ready for use, the lateral outer wall of the plug member 17 of the cover 12 tightly engages the inner wall of the containing portion 11, while the circumferential surface and the face of the flange 18 closely engage the inner wall and the inwardly directed flange 8 of the cartridge casing 1. Both surface contacts are rigidly interconnected by welding or glueing. In this manner the previously necessary covering plate and the subsequent airtight color lacquering may be dispensed with and the dyeing usually carried out at the front sides of the flare cartridge may be done without taking special care, or the cover plate may have been dyed already with the color of the flare cartridge.

If desired or required, the peripheral tongues 14 may be provided with recesses in a manner not shown in detail, in order to facilitate and make possible free communication between the interior of the container 11 and the flare charge 7.

The use of the hollow member containing the drying substance and serving as a wadding means in accordance with the invention is, of course, not restricted to the above described embodiment of a flare cartridge. The invention may be equally applied, for instance, in flare cartridges provided with an additional expelling charge.

I claim:

1. A flare cartridge comprising, in combination, a cartridge casing having a closed end and an open end, an expelling charge within said casing adjacent said closed

end, a flare charge within said casing adjacent said expelling charge and spaced from said open end, a hollow wadding member of elastic material having an open end and disposed within said casing between said flare charge and said case open end, said wadding member open end, said wadding member open end being disposed adjacent said casing open end, a cover sealingly enclosing the open ends of said casing and wadding member, desiccating material within said wadding member and openings defined in said wadding member establishing communication between said desiccating material and the interior of said cartridge casing.

2. A flare cartridge comprising, in combination, an open end casing containing an expelling charge, a flare charge, and a wadding member in superimposed arrangement, said wadding member including an open end closed bottom perforated hollow cylindrical container having a wall of lesser outside diameter than the inside diameter of said cartridge casing, openings defined in said container, desiccating material within said container, a cover sealing the open end of said container and sealingly engaging the inner surface of said cartridge, a radially inwardly directed shoulder defined at the open end of said cartridge casing, first resilient, air pervious means radially projecting from the outer surface of the wall of said container and yieldingly engaging the inner surface of said cartridge casing, and second resilient air pervious means projecting from the bottom of said container and yieldingly engaging said flare charge.

3. A flare cartridge according to claim 2, in which said first resilient air pervious means are formed by axially spaced radially projecting ribs formed integrally with said container and extending at least partly around the circumference of said container, said ribs having a larger outside diameter than the inside diameter of said cartridge casing so as to be bent toward the casing open end when said container is inserted into said cartridge casing.

4. A flare cartridge according to claim 2, in which said second air pervious means are formed by ribs extending axially from the bottom of said container resiliently engaging said flare charge.

5. A flare cartridge according to claim 2, in which said container and said first and said second air pervious means are integrally made of plastic, such as polystyrene.

6. A flare cartridge according to claim 2, in which said cover comprises a plug-like portion axially extending into the container open end and a radially outwardly extending flange portion snugly fitting into said cartridge casing and affixed thereto.

References Cited in the file of this patent

UNITED STATES PATENTS

1,947,834	Driggs et al.	Feb. 20, 1934
2,341,310	Calhoun et al.	Feb. 8, 1944

FOREIGN PATENTS

1,082,108	France	June 16, 1954