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Patented Aug. 25, 1925. 1,550,670

UNITED STATES PATENT OFFICE.

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SHELL FOR DYNAMITE CARTRIDGES AND METHOD OF TREATING THE SAME.

No Drawing. Application filed February 13, 1925. Serial No. 9,042.

To all whom it may concern:

Be it known that MILLARD BRANDT, a citizen of the United States, residing at Tamaqua, in the county of Schuylkill and State of Pennsylvania, has invented certain new and useful Improvements in Shells for Dynamite Cartridges and Methods of Treating the Same, of which the following is a specification.

This invention relates to dynamite cartridges and more particularly to the paper shells or wrappers of such cartridges, and it has for its object to provide a dynamite cartridge having its paper shell or wrapper so treated or manufactured as to materially reduce the formation of carbon monoxide, upon explosion of the cartridge, in comparison with the amount of such gas, created when cartridges having paraffined paper shells are exploded.

Commercial dynamites are, as a rule, put up in paraffin paper cartridges, or shells, of various diameters and lengths. These shells, unless they are removed from the dynamite at the time of use (which is very seldom done, and is not advised), being composed of carbonaceous matter, take part in the explosion of the dynamite as one of its ingredients and thus should be considered a part of the dynamite composition. Dynamites in their, usually, most desirable forms have a little more than enough oxygen in their composition to provide complete combustion to CO_2 of all the carbonaceous matter in the dynamite mixture, exclusive of the shells. Consequently the presence of the paraffined paper shells, in such cases, tends toward the presence of the poisonous carbon monoxide in the gases resulting from the explosion. This is particularly objectionable in underground work, where the ventilation is often insufficient.

In my invention, I assist in overcoming this objection by using shells made from a rubber or latex treated paper. Rubber and latex do not require as much oxygen for complete combustion as does paraffin, and besides, the weight of rubber or latex required to give shells the desired water and nitroglycerine resistant properties is less than the weight of paraffin in paraffined paper shells.

While for purposes of illustration, I have mentioned rubber and latex as the materials I employ, it is to be understood that the invention includes within its purview the use of any water proofing composition requiring less oxygen for combustion than does paraffin. For the purpose stated rubber and latex are considered equivalents of each other.

Further the invention is not limited to any particular manner of application of the water-proofing material. Such material may be applied to the paper of the shell or wrapper, as a coating upon either or both sides thereof, or may be incorporated in the paper stock at the time of manufacture of the latter. In addition I contemplate re-dipping shells in such water-proofing material after the completion of the cartridge. By the re-dipped shell I mean one which is dipped in a water and nitroglycerine proofing material (such as paraffin for example) after the dynamite is packed in it. The re-dipping is the second and usually the last water and nitroglycerine proofing treatment the shell receives. In the case of shells made from treated paper (rubberized and pre-paraffined) the first water and nitroglycerine treatment comes in the preparation of the paper and in the case of shells made from untreated paper the first water and nitroglycerine proofing treatment comes before the powder is packed in them. In the re-dipping process one or both ends may be dipped or the entire cartridges may be dipped.

Having described my invention, what I claim is:

1. An assembled dynamite cartridge comprising dynamite enclosed directly in a rubber treated paper of a nature to be consumed when the cartridge is exploded.

2. Paper dynamite cartridges or shells, of a nature to be consumed when the cartridge is exploded, which contain or carry rubber in any form and which constitute the direct containers of the dynamite.

3. An assembled explosive cartridge containing an explosive enclosed in a shell made of paper, of a nature to be consumed when the cartridge is exploded, one side of which is coated with rubber.

4. A dynamite cartridge comprising a paper shell or wrapper of a nature to be consumed when the cartridge is exploded treated with a water-proofing composition of

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such nature as to require less oxygen for complete combustion than paraffin.

5. A dynamite cartridge comprising a paper shell or wrapper of a nature to be consumed when the shell is exploded and treated with a water-proofing composition of such nature as to render said shell completely combustible in the presence of less oxygen than is required for the combustion of a paraffin treated shell, said wrapper constituting the sole container of the dynamite.

In testimony whereof he affixes his signature.

MILLARD BRANDT.