# PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

## Improvements in or relating to Blasting Detonators.

We, HERCULES POWDER COMPANY, a corporation organized under the laws of the State of Delaware, of 900, Market Street, in the city of Wilmington, State of Delaware, United States of America, Manufacturers, Assignees of ERNEST MONTGOMERY SYMMES, a citizen of the United States of America, of Wilmington, State of Delaware, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an improvement in blasting detonators and more particularly to the provision of an improved primer charge for blasting detonators which will be readily loaded and retained in the detonator and which will have a low ignition point and will detonate readily.

It is the object of this invention to provide a primer charge for detonators which will include and retain the advantages of lead azide and at the same time eliminate the disadvantages thereof without presenting further disadvantages, as in the case of the use of trinitroresorcinate.

In the specification of our co-pending application No. 14,921, of 1929 (Serial No. 333,539) an alternative form of blasting detonator has been described.

Heretofore it has been known to utilize lead azide in blasting detonators and such has proved to be an excellent detonating agent but is open to serious disadvantage due to the fact that it is so granular and incompressible that it cannot be compressed within a detonator sufficiently to avoid dusting out, at any pressure which the detonator shell will withstand; and further, it is open to the disadvantage that its ignition point is so high that the spark from the usual type of fuse will fail to detonate it.

When lead azide has been used heretofore in connection with charges for detonators it has been necessary, in order to overcome its disadvantages, to mix it with another substance which would act to overcome its tendency to dust out and at the same time overcome its poor ignition quality.

As a result of the disadvantages of lead azide it has heretofore been used as a priming charge in admixture with trinitroresorcinate. For example, 0.2 grams of a mixture of lead azide and lead trinitroresorcinate, in suitable proportions, has been used as a primer charge on top of 0.8 grams of tetryl as a base charge. The use of trinitroresorcinate to a degree overcomes the disadvantages of the lead azide but the trinitroresorcinate itself possesses certain disadvantages more particularly in that it is of a gummy nature which renders its compression difficult in that it adheres to the press pins of the detonator press and causes serious trouble in the pressing operation.

Now in accordance with this invention, it has been found that an excellent primer charge for detonators is provided by a mixture of lead azide and diazodinitrophenol.

Diazodinitrophenol has the special advantages of resistance to moisture, low ignition point and easy detonation, which insures its ignition and detonation under conditions of atmospheric moisture by the spark of the ordinary type of fuse, and further, it is relatively free flowing and at the same time readily compressible, thus insuring retention of the lead azide in the detonator with moderate compression and entirely avoiding any adherence to the press pins.

The diazodinitrophenol may be used in admixture with lead azide as a primer on top of the usual base charges and may be used, for example, in amount of from about 20% to about 40% in admixture with lead azide in amount from about 80% to about 60%. The admixed diazodinitrophenol and lead azide may, for example, be used as a primer charge on top of, for example, tetryl, trinitrotoluene, picric acid, and the like as a base charge.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A charge for blasting detonators which includes a mixture of diazodinitro-

[*Price* 1/-]

phenol and lead azide.

2. A charge for blasting detonators in accordance with claim 1 characterised by the fact that the mixture of diazodinitrophenol is used in amount from about 20% to about 80% and the lead azide is used in amount from about 80% to about 20%.

3. A charge for blasting detonators in accordance with claim 1 characterised by the fact that the mixture of diazodinitrophenol and lead azide is superimposed on a base charge.

4. A charge for blasting detonators substantially as herein described.

Dated this 13th day of May, 1929.

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