

UNITED STATES PATENT OFFICE.

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EXPLOSIVE CHARGE AND EXPLOSIVE BODY FOR PROJECTILES, MINES, AND TORPEDOES.

1,036,176.

Specification of Letters Patent.

Patented Aug. 20, 1912.

No Drawing.

Application filed March 27, 1911. Serial No. 617,260.

To all whom it may concern:

Be it known that I, CHRISTIAN EMIL BICHEL, a citizen and resident of the free and Hanseatic town of Hamburg, Germany, have invented new and useful Improvements in and Relating to Explosive Charges and Explosive Bodies for Projectiles, Mines, and Torpedoes; and I do hereby declare that the following is a full, clear, and exact description of the invention.

According to the present practice, the filling of projectiles, mines and torpedoes with high explosive substances is seldom effected by simply inserting such substances in an unaltered, cast, or compressed condition into the projectile or the like; but, to permit of examination of the condition of the said substance or substances at any time, as also to permit of separate storage of the said explosive charges, the latter are inserted into cases corresponding to the form of the charge and made of suitable material such as paper, card-board or metal. This method has the disadvantage that the cases occupy a considerable amount of space, since they must be of sufficient thickness to insure durability. As, however, it is of great importance that the space or chamber which is to receive the charge should be filled with the maximum quantity of explosive substance, the present invention has for its object the production of an explosive charge by which this end may be attained, when suitable explosives, such for example, as trinitrotoluol, trinitrobenzol, hexanitrodiphenylamin, and other aromatic nitro bodies are used. To produce such explosive charges, the same, after having been brought to the desired form by compression or casting, are, as far as necessary, made electrically conductive, by coating them, and are then provided in a galvanic bath by electrolysis with a suitable metallic covering. This covering requires only to be just so thick as is necessary to prevent the breaking away of the edges, and the scaling off of the explosive and to protect it from the influence of the atmosphere and of light. For small explosive charges a covering for instance of copper having a thickness of only 1.1 mm. will suffice. In this way a considerably larger quantity of explosive can be

employed than was hitherto possible with the use of paper, card-board or metal cases. As is evident, the covering may be composed of a number of superimposed layers of different metals, instead of a single metal; for example, copper may be first deposited on the explosive substance, and then nickel may be superimposed on the copper, if it is desired to improve the appearance.

As compared with the employment of paper or card-board cases the present electrically-deposited metallic coating offers the great advantage that alteration of the shape by swelling due to moisture is avoided, while metal cases, as is well known, change their shape with variations in temperature and are exposed to the possibility of being bruised by external mechanical influences (blows, pressure, etc.).

The explosive substance or substances coated in the manner described, are particularly advantageous for explosive bodies to be used by cavalry and engineers.

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

1. Explosive charges and explosive bodies for projectiles, mines and torpedoes provided with a closely fitting covering of one or more electrically-deposited metals applied to the charge of explosive material.

2. Explosive charges and explosive bodies for projectiles, mines and torpedoes provided with a closely fitting covering comprising an electrically-conductive coating directly applied to the charge of explosive material and one or more electrically-deposited metals directly applied to the electrically-conductive coating.

3. A solid explosive charge for projectiles, mines and torpedoes, consisting, principally or wholly, of nitro aromatic compounds, provided with a closely fitting covering of one or more electrically deposited metals applied to the explosive charge.

4. A solid explosive charge for projectiles, mines and torpedoes, consisting, principally or wholly, of nitro aromatic compounds, provided with a closely fitting covering comprising an electrically-conductive coating directly applied to the charge of explosive ma-

terial and one or more electrically-deposited metals directly applied to the electrically-conductive coating.

- 5 5. Explosive charges and explosive bodies for projectiles, mines and torpedoes having electrically-conductive surfaces and provided with a closely-fitting covering of one

or more electrically-deposited metals directly applied to the explosive charge.

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Witnesses:

WILLY KARL DIETRICH KÖNING,
CARL WILHELM HERMANN KENCKEL.