

UNITED STATES PATENT OFFICE.

HENRY C. PRITHAM, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE UNION METALLIC CARTRIDGE COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

PRIMING MIXTURE.

1,048,207.

Specification of Letters Patent.

Patented Dec. 24, 1912.

No Drawing.

Application filed June 27, 1912. Serial No. 706,262.

To all whom it may concern:

Be it known that I, HENRY C. PRITHAM, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Priming Mixtures, of which the following is a specification.

This invention relates to priming mixtures generally; that is, mixtures adapted to be pressed into primers for center fire ammunition or into the rims of cartridge shell heads for rim fire ammunition for the purpose of igniting powder charges when exploded or detonated by a sharp blow.

Priming mixtures must be composed of at least two compounds, one of which must contain oxygen in a condition for easy liberation, the other must be a compound containing an element or elements that will combine very readily with the oxygen and thus produce combustion. Various substances may be used to produce this result and the mixture may contain a plurality of substances or compounds carrying oxygen and a plurality of elements, substances, or compounds that will combine with the oxygen. All priming mixtures must be absolutely stable at ordinary temperatures and under ordinary conditions, but when heat is generated in them by friction from a sharp blow they must burn exceedingly fast, *i. e.*, explode, detonate. It will be understood of course that different powders require more or less quick burning priming mixtures and more or less flame and the desired results are secured by varying the ingredients and the proportions of the ingredients in the mixture. It is sufficient for the purposes of this specification to mention as well known compounds carrying oxygen and used in the manufacture of priming mixtures, mercuric fulminate, potassium chlorate and barium peroxid, and as elements or compounds that will combine easily with oxygen, carbon, sulfur, sulfids of the metals, sulfocyanids of the metals and carbohydrates. These various mixtures, whether "fulminate" or "non-mercuric", are retained in primers or in the rims of cartridge heads by the use of various gums, as shellac, gum arabic or tragacanth, or by the use of "colledion". As all of these mixtures are in a more or less loose condition and are held by the gum, it follows that they yield more or less when the primer or cartridge head is struck by a

firing pin or hammer. There is a local explosion at the point of impact, the heat of which is of course at once transmitted to the rest of the mixture, but it takes a minute fraction of a second and if the mixture requires a heavy blow; it often happens that a piece of the mixture is knocked away from the primer or head and does not ignite the mixture.

I have discovered by repeated experiments that by combining with the mixture while in a plastic condition any self-hardening mineral cement it will serve as a binder and cause the mixture to set to a hard solid mass, the various mixtures will remain hard when exposed to the air; that the mixture will not shrink and break away from a primer or cartridge head, but will remain firmly in place without the use of gums or varnish of any kind; and that the hardened or stone-like mass is capable of conducting the shock or waves of vibration caused by the blow of a firing pin or hammer completely through the mass in all directions at once and cause an instantaneous and violent explosion of the entire mass.

Any true cement, that is any self-hardening or setting material, so-called, will serve the purpose; for example, ordinary Portland cement, magnesium oxychlorid cement or zinc oxychlorid cement. The amount of cement required will, of course, vary with the conditions of use, as, the kind of cement used or the composition of the priming mixture. I find that with Portland cement, from two to four per cent. of the total weight of the mixture is all that is needed, the variations within these limits depending on the composition of the priming mixture. With an oxychlorid cement, as, magnesium oxychlorid, consisting of two parts oxid of magnesium and one part of a chlorid of the alkaline metals, from one and one-half to four and one-half per cent. of the total weight of the mixture may be used, depending, as stated above, on the various conditions of use. A very satisfactory result with a non-mercuric priming mixture is secured by the use of approximately three per cent. of magnesium oxychlorid cement. The proportion of cement may in all cases be varied within the limits stated to suit the priming mixture.

The cements may be added in component parts to the priming mixture or may be

1,048,435.

Patented Dec. 24, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

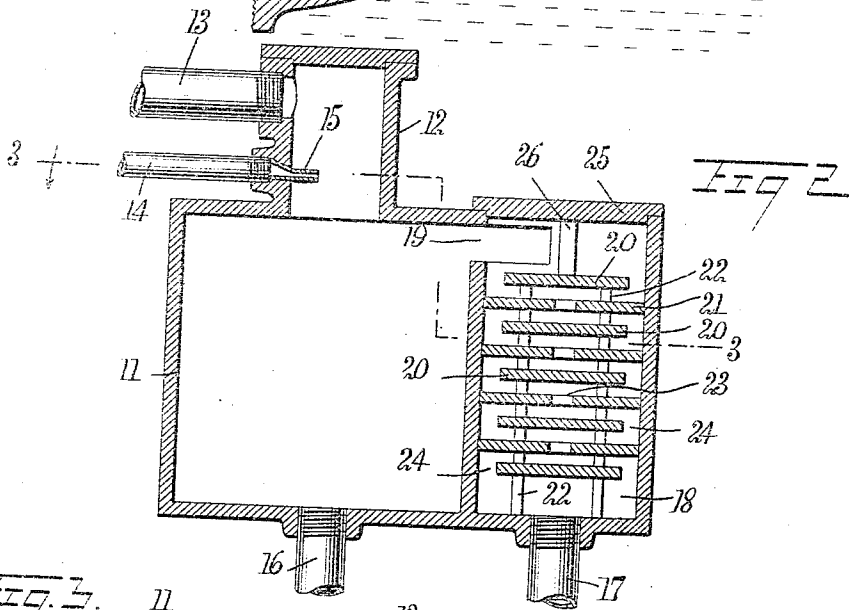
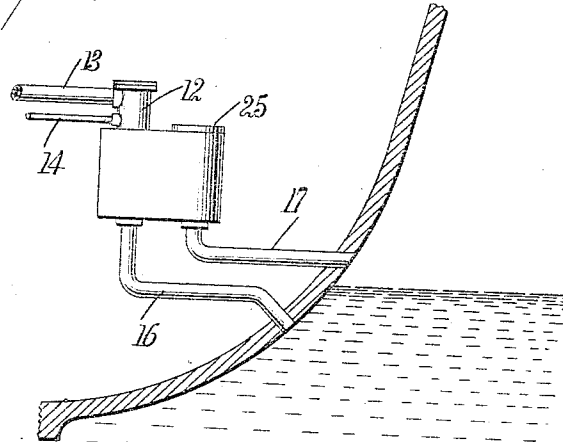
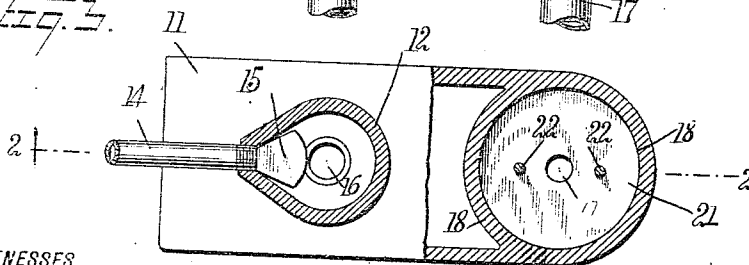


Fig. 3.



WITNESSES
H. J. Walker

E. J. Mendenhall

INVENTOR

Vernon B. Still

BY

M. M. Co.

ATTORNEYS

