

(No Model.)

J. R. FRANCE.

BLASTING CAP.

No. 356,064.

Patented Jan. 11, 1887.

Fig. 1.

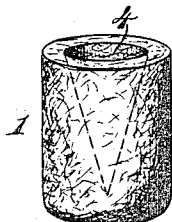


Fig. 2.

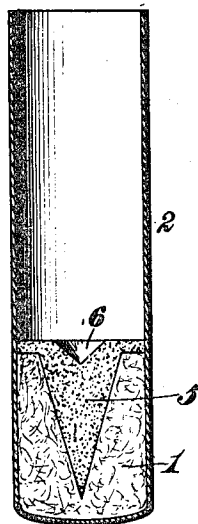
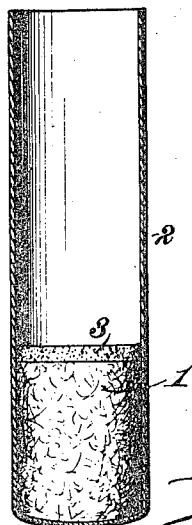


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH R. FRANCE, OF NEW YORK, N. Y., ASSIGNOR TO THE METALLIC CAP MANUFACTURING COMPANY, OF ENFIELD, CONNECTICUT.

BLASTING-CAP.

SPECIFICATION forming part of Letters Patent No. 356,064, dated January 11, 1887.

Application filed November 2, 1886. Serial No. 217,835. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH R. FRANCE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Blasting-Caps, of which the following is a specification.

My invention relates to the manufacture of blasting-caps for exploding powder, dynamite, nitro glycerine, gelatine-powder, and other explosives.

It is the purpose of my invention to provide a cap for blasting purposes of increased power and efficiency, composed of a compressed body of gun-cotton primed with fulminate of mercury, or a mixture of such fulminate with other explosives or chemicals, or other substances which shall be capable of exploding high or low grade powder.

My invention consists in the novel features of construction and combinations of parts hereinafter set forth, and definitely pointed out in the claims following this specification.

In the accompanying drawings, Figure 1 is a perspective view of the compressed body of gun-cotton of which the cap is formed. Fig. 2 is a central vertical section of the compressed body placed in the copper shell and primed to form the cap. Fig. 3 is a vertical section showing the same invention with the priming differently applied.

Hitherto caps of the class to which this invention belongs have been made usually of fulminate of mercury or a mixture of such fulminate with chlorate of potash, in varying proportions, while in other cases gun-cotton of a low grade has been reduced to a fine impalpable powder by chemical means and then nitrated, giving as a result a gun-cotton of low grade, which in some cases has been chlorinated and mixed with chlorate of potash and then with fulminate of mercury in various proportions. In some cases, also, the gun-cotton has been first reduced to a dust by mechanical means, then nitrated and mingled with the chlorate of potash and fulminate. In these cases the gun-cotton was of high grade and much more effective in use. In these forms of cap the gun-cotton does not act fully as a detonator; but its inert power being enhanced by the quick action of the fulminate, it will in some

cases operate as an exploder for certain grades of powder.

It is well known that a high grade of gun-cotton is increased in efficiency by being compressed; but to apply the requisite degree of compression to the compounds mentioned above is an extremely dangerous operation, besides impairing the efficiency of the fulminate of mercury, which is deteriorated by being subjected to a considerable compression.

To avoid these objections and secure the beneficial results proposed by my invention, I take gun-cotton of a high grade and compress it into cylindrical body 1 (see Fig. 3) under a pressure of about four thousand pounds to the square inch. This body is then inserted within a suitable copper shell, 2, of proper caliber, and is primed by pressing upon it fulminate of mercury, or such fulminate mingled with chlorate of potash or other chemical, forming a priming, 3. For a ten-grain cap of this sort I use about seven grains of gun-cotton and two and one-half grains of fulminate of mercury mingled with half a grain of chlorate of potash. Such a cap, made in the manner set forth, will explode low or high grade powder; but the proportions given above may be changed without departing from my invention.

I propose to form the body of compressed gun-cotton with a recess or opening, 4, of conical or other form, as shown in Figs. 1 and 2. This may be effected by any suitable form of plunger-press, in which the compressed body 1 may be simultaneously formed. This body, being placed in the shell 2, is primed by pressing into the recess or chamber 4 the fulminate of mercury, or such fulminate mingled with chlorate of potash or other substances.

The priming 5, Fig 2, is preferably placed into the opening 4 by a plunger having a small central nipple upon its end, by which a central conical depression, 6, is formed in the priming. The form of this depression may, however, be modified and its depth and diameter varied according to circumstances.

The recess 4 may be made of any depth. I have shown it in Figs. 1 and 2 as extending nearly to the bottom of the body; but it may be of any less depth, or it may extend entirely to the bottom of the body.

By forming the opening or recess 4 to receive

the priming the action of the gun-cotton is rendered much more simultaneous or instantaneous, and correspondingly greater and better results are obtained from the dynamite or
5 other explosive employed.

By means of the conical recess the action of the fulminate is extended over a much larger surface, penetrating the body of the compressed body, and giving very nearly simultaneous action to the atoms of gun-cotton.
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Having thus described my invention, what I claim is—

1. A blasting-cap or detonator consisting of a compressed body of gun-cotton inserted within
15 a shell and primed with fulminate of mercury or other substances, or a mixture of such fulminate with other chemicals, substantially as described.

2. A blasting-cap or detonator consisting of a body of compressed gun-cotton inserted in a
20 copper shell, and having a central recess or chamber formed in the end and extending toward the bottom, and a priming of fulminate of mercury and other substances, or its mixture with other chemicals, said priming having a
25 central conical depression in its outer face, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH R. FRANCE.

Witnesses:

JOSEPH B. BRAMAN,

J. CHANDLER BRAMAN.