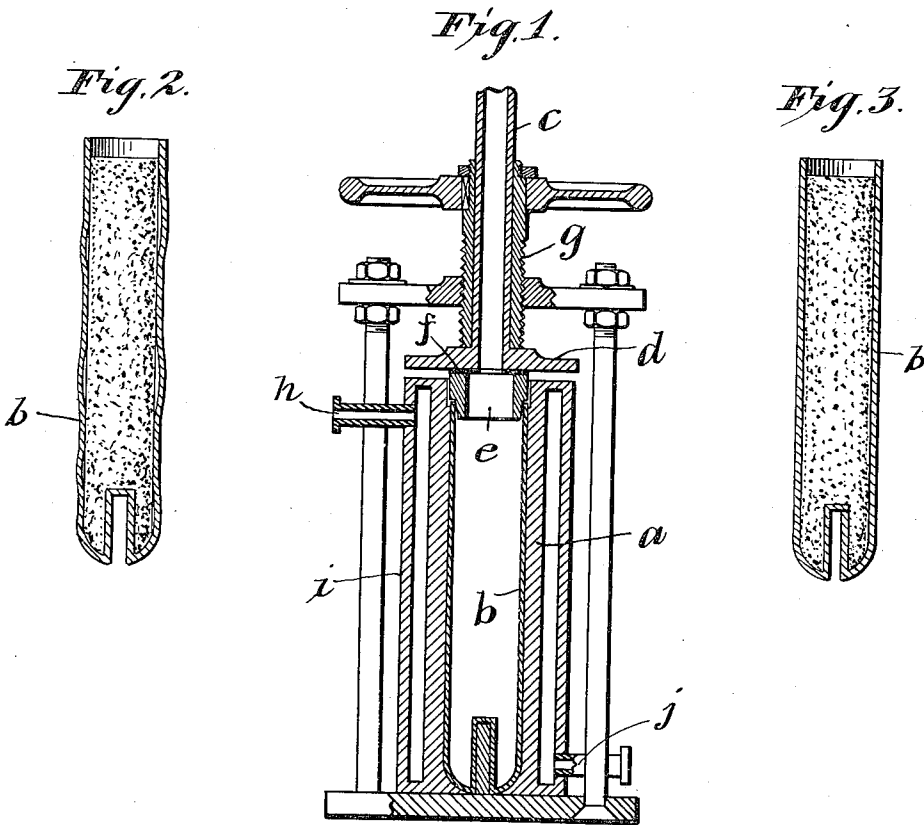


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METHOD OF TREATING NITRO BODIES IN SHELLS.
APPLICATION FILED JULY 30, 1910.

1,000,663.

Patented Aug. 15, 1911.



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1,000,663.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed July 30, 1910. Serial No. 574,688.

To all whom it may concern:

Be it known that I, CHRISTIAN EMIL BICHEL, a subject of the Emperor of Germany, residing at Hamburg, Germany, have invented a new and useful Improvement in Methods of Treating Nitro Bodies in Shells, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of explosives formed of fusible nitro bodies and in which a higher degree of density is imparted by means of compressed air. When using such an explosive as a charge for bursting shells for guns it is of importance that the formation of dust between the explosive charge and the paste board shell or paste board cover, caused by the breaking off of small particles of the nitro bodies, be prevented. It is therefore desired that the paste board shell tightly surrounds the explosive in such a manner that on knocking against the finished explosive in the shell a hollow sound is not produced. Under ordinary circumstances, when pouring, even under pressure, the explosive into the shell which is thoroughly dry, the dampness of the atmosphere, *i. e.*, the absorption of a small amount of moisture off the paste board shell, is sufficient to expand the shell to such an extent that at some places the explosive does not adhere to the shell in which the explosive is contained.

The object of my invention is to overcome this and also prevent the possibility of the formation of dust between the paste board shell and the explosive, for instance, during transportation. I accomplish this by a novel method of filling the shell with the explosive and a novel apparatus for carrying out the same. This method consists in slightly expanding the shell by the compressed air used in loading the shell. As the explosive is chilled, the elasticity of the expanded shell causes it to contract so that when the explosive is entirely chilled the shell still maintains close and tight contact with its inclosed explosive.

My method may be carried out by the apparatus disclosed in the accompanying drawing and in the following manner.

In the drawings: Figure 1 represents a vertical section of the apparatus. Fig. 2 is an exaggerated view showing the shell con-

taining explosive showing non-adherence of explosive. Fig. 3 is a similar view showing the shell treated by my process.

a is the mold, *b* the shell which in its normal condition is slightly smaller than the mold cavity in which it is placed. The air for providing pressure to the charge passes through the passage *c* which ends through the mold cover *d* and an orifice in the shell-shaped washer *e*. Between this washer *e* and the inside of the upper border of the paste board shell *b* may be placed the elastic seal *f*.

The mold *a* is provided with the jacket *i* having the inlet *h* and outlet *j*. Through this inlet *h* is passed a chilling medium which circulates in the jacket *i* and passes out through the outlet *j*.

The operation is as follows: With the shell in the mold and the cover *d* moved downward by the screw or threaded portion *g*, air pressure is prevented from entering except into the interior of the shell. The action of the air pressure causes the shell to expand, and the chilling medium sets the explosive under pressure in such close contact with the shell that no space is left between the explosive and the shell. The shell thus being under tension, will counteract any tendency of the shell to expand.

In Fig. 2 is shown, in an exaggerated condition, a shell as ordinarily filled with the explosive showing the non-adherence of the explosive to the shell.

In Fig. 3 I have illustrated a shell filled with an explosive subjected to air pressure and chilling.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:—

1. The hereinbefore described method of treating nitro bodies in shells, which consists in subjecting the interior of the shell containing nitro bodies to pressure sufficient to expand the shell body.

2. The hereinbefore described method of treating nitro bodies in shells, which consists in subjecting the interior of the shell containing nitro bodies to pressure sufficient to expand the shell body, and setting the explosive when under pressure.

3. The hereinbefore described method of treating nitro bodies in shells, which consists in subjecting the interior of the shell

containing nitro bodies to air pressure sufficient to expand the shell body.

4. The hereinbefore described method of treating nitro bodies in shells, which consists in subjecting the interior of the shell containing nitro bodies to air pressure sufficient to expand the shell body, and setting the explosive when under pressure.

5. The hereinbefore described method of treating nitro bodies in shells, which consists in subjecting the interior of the shell containing nitro bodies to pressure sufficient to expand the shell body and setting said shell body when under said pressure.

6. The hereinbefore described method of treating nitro bodies in shells, which consists in causing air pressure to act upon the inside of the shell surrounding the same, said air pressure being sufficient to cause the shell body to expand, and setting said explosive when under pressure.

7. The hereinbefore described method of treating nitro bodies in shells, which consists in causing air pressure to act upon the inside of the shell surrounding the same, said air pressure being sufficient to cause the shell body to expand, and setting said shell body when under pressure.

8. The hereinbefore described method of treating nitro bodies in shells, which consists in causing air pressure to act upon the inside of the shell surrounding the same, said air pressure being sufficient to cause the shell body to expand, and chilling said explosive when under pressure.

In testimony of which invention, I have hereunto set my hand at Hamburg, on this 11th day of July, 1910.

CHRISTIAN EMIL BICHEL.

Witnesses:

MAX WEBER,

ERNEST H. L. MUMMENHOFF.