G. BLOEM.
Blasting-Fuse.

No. 216,137. Patented June 3, 1879.

Fig.1.

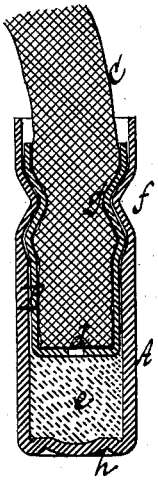

Fig.2.

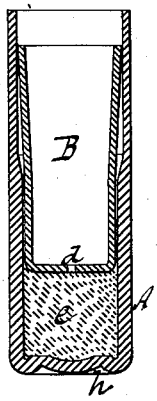

Fig.3.

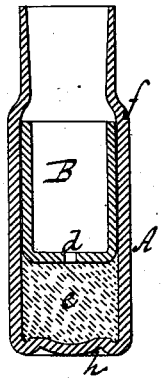

Fig.4.

Fig.5.

Fig.6.

Witnesses.
Otto Hufeland
William Miller.

Inventor
Gustav Bloem
by Van Santvoord & Hauff
his attorneys.

UNITED STATES PATENT OFFICE.

GUSTAV BLOEM, OF DÜSSELDORF, PRUSSIA, GERMANY.

IMPROVEMENT IN BLASTING-FUSES.

Specification forming part of Letters Patent No. **216,137**, dated June 3, 1879; application filed April 30, 1879.

To all whom it may concern:

Be it known that I, GUSTAV BLOEM, of Düsseldorf, in the Kingdom of Prussia and Empire of Germany, have invented a new and useful Improvement in Detonating-Primers, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal central section of a primer embodying my invention. Fig. 2 is a detail view thereof without the fuse. Fig. 3 is a longitudinal section of the same, showing a modification in the union of the shells. Fig. 4 is a side view of the inner shell detached. Fig. 5 is an end view thereof. Fig. 6 is a like view of the outer shell.

Similar letters indicate corresponding parts.

My invention relates to detonating-primers for exploding dynamite and other similar substances, as in blasting operations; and it consists in combining, with an outer cap or shell charged with a fulminating compound, an inner cap having a hole in its inner or closed end, and a fuse fitted into the inner cap, so that the outer cap is firmly closed, and the fulminating compound is confined therein by means of the inner cap, while, when the fuse is ignited, the fulminating compound is fired through the hole of the inner cap. The inner cap and the fuse are both held in their respective places by means of a contraction which is formed in the outer cap after the parts have been put into place, and to facilitate the formation of this contraction the outer cap is made of reduced thickness at or near its outer or open end, where the contraction is situated, while for the purpose of weakening the outer cap on its closed end the same is provided with a groove or depression at that point.

In the drawings, the letter A designates the outer cap or shell, and B the inner cap, of my primer, and C is the fuse. Both of these caps A B are preferably made of copper and have a cylindrical shape, the inner cap being of such diameter as to fit within the outer cap, and of such length as to leave a space within or beneath it in the outer cap for the reception of a fulminating compound. In the inner or closed end of the inner cap, B, is formed a hole, *d*.

I place a suitable quantity of some fulminating compound in the outer cap, A, as at *e*, and place the inner cap, B, into the same, so as to rest on the fulminate, as indicated. I then insert in the inner cap, B, the end of the fuse C, which is made of a thickness to fit the cap, and finally contract or crimp the side of the outer cap, as at *f*, Figs. 1 or 3. The contraction thus formed engages both the inner cap, B, and the fuse C, and hence the same are thereon firmly held in position. Said contraction *f* may be formed at a point within the outer or open end of the inner cap, B, as represented in Fig. 1, so that a corresponding portion of the inner cap becomes contracted, as at *g*, and this contraction of the inner cap is pressed into the fuse C; or the contraction *f* may be formed in that part of the outer cap which is beyond said end of the inner cap, as represented in Fig. 3, in which case said contraction of the outer cap forms a stop to the inner cap, and at the same time engages the fuse in a similar manner to the contraction *g*.

It will be seen that the inner cap, B, forms a very effective means of closing the outer cap, while its hole *d* opens a communication between the fuse C and the fulminate.

The contraction *f* is situated near the open end of the outer cap, A, where the thickness of the cap is reduced, so that the contraction may be readily formed therein. This arrangement allows of making the body part of the outer cap, A, of such thickness as to give the same the required strength without making it impracticable to crimp or contract the cap at *f*. In order to adapt the inner cap, B, to said reduction in the thickness of the outer cap, A, the inner cap is tapered, as shown in Fig. 2.

It is desirable to weaken the outer cap, A, on its closed end or head, and to effect this object I form in said end of the cap a groove, *h*, which in this example is ring-shaped, but which may be shaped like a cross or have any other conceivable shape.

What I claim as new, and desire to secure by Letters Patent, is—

1. A detonating-primer in which are combined an outer cap or shell charged with a fulminating compound, an inner cap having a hole in its inner or closed end, and a fuse fitted

into the inner cap, all constructed and adapted for use substantially as described.

2. The combination of an inner cap, having a hole in its inner or closed end and a fuse fitted into said inner cap, with an outer cap charged with a fulminating compound, and having the contraction *f*, for the purpose of confining both the inner cap and the fuse, substantially as shown and described.

3. The combination, with an outer cap charged with a fulminating compound, and made of reduced thickness near its outer or open end, of an inner cap having a hole in its inner or closed end, and a fuse fitted into said inner cap, both held in their places by means of contractions formed in the reduced portion of the outer cap, substantially as shown.

4. The combination of an outer cap charged with a fulminating compound, and weakened on its closed end by means of the groove *h*, an inner cap, B, having a hole in its inner or closed end, and a fuse fitted into said inner cap, all constructed and adapted for use substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of January, 1879.

GUSTAV BLOEM.

Witnesses:
E. DITTLINGER,
E. BUBE.