

G. C. BUNSEN.
Blasting Rocks.

No. 47,925.

Patented May 30, 1865.

Fig. 1

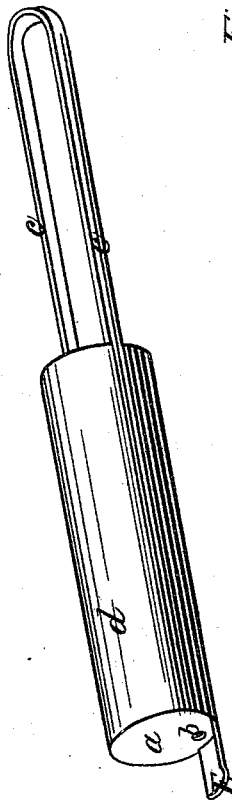
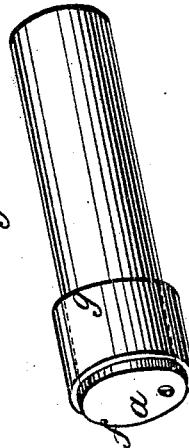


Fig. 2.



Fig. 3



Witnesses:
J. A. McKean
W. A. Walton

Inventor:
G. C. Bunsen
by his attys
Intymur & Co. Inc.

UNITED STATES PATENT OFFICE.

GEORGE C. BUNSEN, OF BELLEVILLE, ILLINOIS.

IMPROVEMENT IN BLASTING ROCK.

Specification forming part of Letters Patent No. 47,925, dated May 30, 1865.

To all whom it may concern:

Be it known that I, GEORGE C. BUNSEN, of Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Blasting Rock; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of the device I employ in blasting. Figs. 2 and 3 represent modified constructions of said device.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

It is a well-known fact that in firing a charge of powder which is contained in a closed space—such as the barrel of a fire-arm or the cavity of a blast-drill—the explosive power of the powder is vastly increased if an air-space is left between the powder and the projectile or rock to be acted upon, owing to the greater heat produced by the oxygen of the air when the powder is burned. This is the case to such an extent that when in an ordinary powder charge an air-space is left between the charge and the projectile—or, in other words, when the projectile is not firmly rammed down on the powder—the charge, when fired, is sure to burst the fire-arm, from the fact that the expansive power of the burning powder, when mixed with air, becomes so great and its action is so instantaneous that the projectile has no time to escape from the gun-barrel, and therefore the latter bursts. By the application of this principle I have succeeded in inventing an extremely simple device, by which I am enabled not only to use a smaller quantity of powder than has been used heretofore for producing a certain effect in blasting, but by which also the labor of plugging the drill-hole is materially lessened.

I employ a hollow cylinder, *d*, whose front end is closed by a plate, *a*, with the exception of a small hole, *b*, for entering the fuse or miner's pin. To the rear of the cylinder I secure a rod or support, *c*, whose end extends to the bottom of the drill. The cylinder *d* is filled with blasting-powder, and, when inserted into the blast-drill, an air-space is left therein, equal to the length of the support

c, between the powder and the bottom of the drill.

The device, when inserted into the drill, may either be secured therein by a small plug, or, if it fits the hole tightly, such a plug even may be dispensed with, and, when the charge is fired, the explosive power of the powder acts directly to the rear, and, owing to the admixture of atmospheric air, is so instantaneous as to blast the rock without discharging the cylinder or capsule from the blast-drill.

I provide the cylinder *d*, in front of the hole *b*, with a small scoop, *E*, which is filled with powder, and is in connection with the train by which the charge is fired.

This device may be modified in its construction, and the cylinder *d* may be entirely dispensed with, leaving only a disk or plate, *a*, which fills the drill, and to which a support, *c*, is secured, which extends to the bottom of the drill, and the powder is held in its place by a plate, *a*, as represented at Fig. 2.

My device may further be modified by dispensing with the support *c* and by using a cylinder only. In the latter case the disk *a* of the cylinder should be provided with a rim or flange, *f*, on which a yielding material—such as lead, india-rubber, or other packing, *g*—can be fastened, and the disk *a* should be of sufficient strength that it can be driven into the drill-hole a certain distance and leave an air-space behind the cylinder and between it and the rock. This latter modification also renders the employment of a plug superfluous, as the disk *a* and its packing can be driven into the hole perfectly air and powder tight. The latter operation may be more perfectly effected if a short space of the hole is made slightly conical. The device in its last-named modification is represented at Fig. 3.

Having thus fully described the nature of my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

The application for blasting purposes of a disk, *a*, when used either with a cylinder, *d*, or support *c*, or in combination with both cylinder and support, substantially in the manner and for the purposes specified.

GEO. C. BUNSEN.

Witnesses:

G. ABERER,
JAMES H. WEAVER.