

BLASTING.

A METHOD OF AND APPARATUS FOR BLASTING.

I, Abraham Wilhelm Schwarz, manufacturer, in Leipzig-Plagwitz, in the Kingdom of Saxony and German Empire, do hereby declare the nature of my invention for "A Method of and Apparatus for Blasting," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the method of and apparatus for blasting by means of the explosive combination of either chlorine, iodine, or bromine with nitrogen or a source of nitrogen, such, for instance, as ammonia. By the use of the apparatus employed all danger of premature explosion is averted, and the gases are contained in separate receptacles, which are only opened at the moment of explosion.

The accompanied drawings, reference to which is hereinafter made, illustrate in what manner this invention may be carried into effect. Fig. 1 illustrates the apparatus in section as arranged to be exploded electrically; Fig. 2 illustrates a mechanical exploding device; Fig. 3 is a plan of the powder-chamber employed in combination with the electrical device.

In both the arrangements illustrated, the chlorine, iodine, or bromine is contained in one, and the nitrogen or ammonia in the other of two separate receptacles *c* and *e*. The gases are under pressure, and force the internal valves *f* firmly upon their seats.

In the modification shown by Fig. 1, the apparatus is illustrated in position for blasting. Connected to or resting against the valves *f* are rods or pins *g*, the other ends of which terminate against or in the sides of a powder-chamber *h*. Suitable wires and an electrical fuse or other device are introduced into the powder-chamber, and the explosion may be effected in the usual manner. The effect of the explosion of the powder is to drive the rods *g* apart, and force inwards the valves *f*, which are then held by the springs *i*, thus allowing the gases contained within the receptacles *c* and *e* to combine and explode. The whole of the apparatus is preferably contained within an outer case or cylinder *k*. The hole may be tamped in any usual way, or be closed by means of the plug *l*.

In the device illustrated by Fig. 2, the powder-chamber is inoperative or may be dispensed with altogether, a single rod *g* connecting the two valves *f*. Another rod *b* passes through the plug *l*, and terminates upon the upper end of the upper case *c*. A hammer or weight pivotted at *a* is adapted to fall upon the end of the rod *b* and drive it downwards. The effect of this downward movement is to drive the valve of the upper case against the rod *g*, and at the same time drive the lower end of the rod against the valve of the chamber *e*, both valves are thus forced behind the springs *i*, which prevent their return and the gases combine explosively.

It is preferred to use chlorine in one of the chambers owing to the greater expense of either iodine or bromine.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is,—

1. The herebefore described method of blasting by the explosive combination of chlorine, bromine, or iodine with nitrogen or a source of nitrogen.

2. Apparatus for blasting by the explosive combination of chlorine, bromine, or iodine with nitrogen or a source of nitrogen.

ABRAHAM WILHELM SCHWARZ.

IRONSAND SMELTING.

THE MAKING OF BRIQUETTES FROM TARANAKI IRONSAND.

I, Edward Purser, of High Street, Blenheim, rate collector, do hereby declare the nature of my invention for "The making of Briquettes from Taranaki Ironsand," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The sand is first purified of all foreign matter by passing it in conjunction with magnetized drums; it is then mixed in a pasty form by adding a binding solution, for which I find ordinary glue the best; it is then spread on sheets of iron to the thickness of $\frac{1}{2}$ in., and blocked out in briquettes about 5 in. by 3 in. The sheets of iron are then placed over a slow fire, and in a short time they become perfectly hard, and are ready to put in the furnace for smelting.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is: "The making of Briquettes from Taranaki Ironsand," as herein described.

Dated this 20th day of December, 1894.

E. PURSER.

AN IMPROVEMENT IN BERDAN-DRAGS, MULLERS, AND OTHER SOLID GRINDERS USED IN AMALGAMATING- OR GRINDING-PANS FOR THE REDUCTION OF QUARTZ-TAILINGS AND THE SAVING OF AMALGAM.

I, Joseph Kilgour, of Greymouth, in the Provincial District of Westland, ironfounder, do hereby declare the nature of my invention for an "Improvement in Berdan-drags, Mullers, and other Solid Grinders used in Amalgamating- or Grinding-pans for the Reduction of Quartz-tailings and the Saving of Amalgam," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention consists of making the drag, muller, or whatever the grinder may be, in segments (1, Fig. A, in plan), attached hereto, bolted together, between the segments, 1, a copper plate, 2, may be inserted, a washer (3, Fig. B, in plan), keeping the segments, 1, and the copper plates, 2, apart, leaving a space between each segment for the reception of amalgam. Copper plates may also be fitted to the sides of the drag. My invention is for the saving of amalgam between the segments, 1, and on the copper plates, 2, as it is produced in the pan, before it is ground into float gold; this drag acts on the principle of a sponge taking up the amalgam as it is produced.