

(No Model.)

M. SETTLE.
LIME CARTRIDGE.

No. 532,993.

Patented Jan. 22, 1895.

Fig. 1.

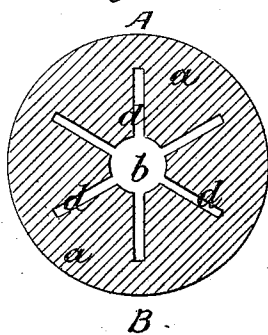


Fig. 2.

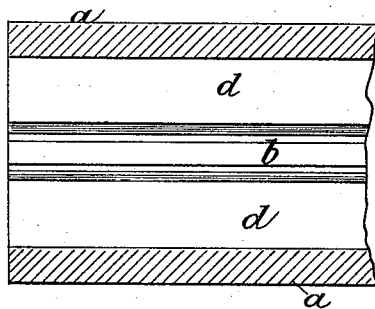


Fig. 3.

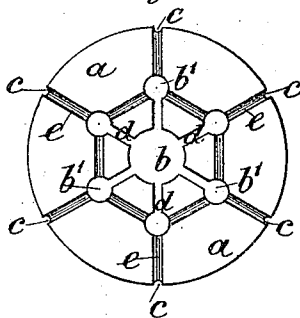
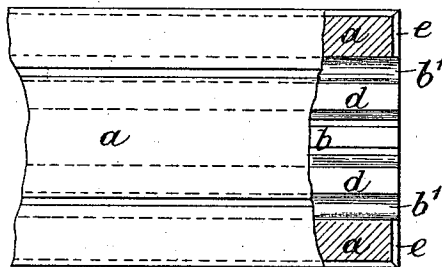


Fig. 4.



WITNESSES.

Albert Popkine.
H. E. Naumann

INVENTOR.

Miles Settle,
By *Honson & Honson,*
Attys.

UNITED STATES PATENT OFFICE.

MILES SETTLE, OF DARCY LEVER, ENGLAND.

LIME CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 532,993, dated January 22, 1895.

Application filed October 8, 1894. Serial No. 525,251. (No model.)

To all whom it may concern:

Be it known that I, MILES SETTLE, a subject of the Queen of Great Britain and Ireland, residing at Darcy Lever, in the county of Lancaster, England, have invented Improvements in Lime Cartridges for Breaking Down Coal, Rock, and other Minerals, of which the following is a specification.

This invention applies to that class of cartridges employed for breaking-down coal, rock, and other minerals, known as "lime cartridges," wherein the rending action of the coal or other mineral is produced by the admission of water to the compressed lime, the latter swelling or increasing rapidly in bulk by the absorption of the water and thus rending asunder the coal or other mineral.

The nature of my said invention and the manner in which the same is to be performed or carried into practical effect will be readily understood on reference to the annexed sheet of drawings and the following explanation thereof.

Figure 1 is a transverse section and Fig. 2 a longitudinal section of my improved lime cartridge in its simplest form. Fig. 3 is an end view, and Fig. 4 a partial sectional elevation of a modification thereof hereinafter more particularly described.

According to my invention I compress the lime into the form of a cylindrical cartridge *a* so as to leave a hole *b* extending down through the center of the lime from one end to the other (or nearly so) whereby the water is introduced at once into about the center of the lime.

In addition to the central hole, I make longitudinal shallow grooves or channels, as shown at *c*, Figs. 3 and 4, on the outside of the lime, in order to facilitate the simultaneous access of the water to the outside of the cylinder.

In the cartridge shown at Figs. 1 and 2, in addition to making the compressed lime cylinder *a* with a central hole *b* I provide the same with longitudinal passages or flattened spaces *d* radiating outward from the central hole *b* and extending from end to end of the cylinder *a* or nearly so. The object of these additional radiating spaces is to facilitate the rapid distribution of the water or acidulated water to the whole mass of the lime when it is forced into the central hole *b* by the pump.

In the modification shown at Figs. 3 and 4, in addition to the central hole *b* I make several auxiliary holes *b'* surrounding the central hole, and I connect them therewith by longitudinal flattened spaces *d* radiating from the central hole *b* to the auxiliary holes *b'*, and at the ends of the cartridge I make shallow channels *e* connecting the holes *b* and *b'* together, and with the longitudinal channels or grooves *c* outside the cylinder *a*.

By these two methods the water or acidulated water is distributed, as regards Figs. 1 and 2, longitudinally through the center of the cartridge and radially into the interior of the mass; and as regards Figs. 3 and 4, it is distributed first centrally into the hole *b* then radially along the passages *d* to the auxiliary holes *b'* and thence at the ends along the shallow connecting channels *e* to the longitudinal grooves *c* outside the cylinder, so that the water or acidulated water acts simultaneously on a great surface of the lime cylinder, the effect of this being to hasten the operation of breaking-down the coal or other mineral.

I claim as my invention—

1. A lime cartridge having a central hole and internal radiating passages, the said hole and passages extending longitudinally through the cartridge, as and for the purpose set forth.

2. A lime cartridge having a central longitudinal hole, auxiliary longitudinal holes *b'* and internal radiating passages also extending longitudinally through the cartridge, as and for the purpose set forth.

3. A lime cartridge having a central hole external grooves *c* and internal radiating passages, the said hole, grooves and passages extending longitudinally through the cartridge and radiating channels *e* at the end of the cartridge leading to the grooves *c*, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MILES SETTLE.

Witnesses:

CHARLES A. DAVIES,
JNO. HUGHES.