

C. EITLE.
 APPARATUS FOR CHARGING RETORTS.
 APPLICATION FILED MAR. 28, 1906.

944,959.

Patented Dec. 28, 1909.

Fig. 1.

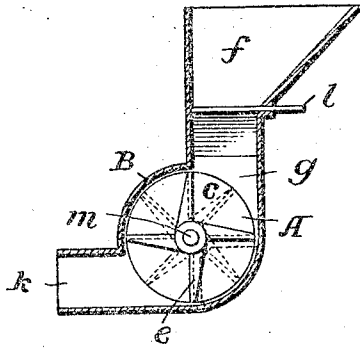


Fig. 2.

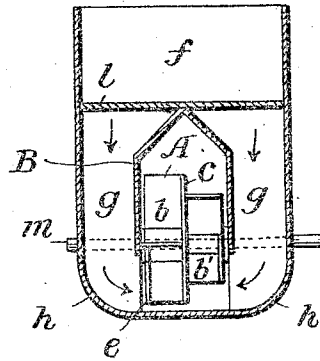


Fig. 4.

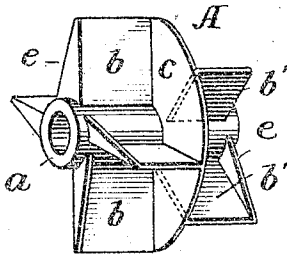


Fig. 5.



Fig. 6.

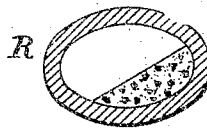


Fig. 7.

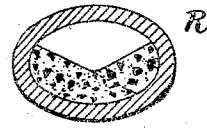
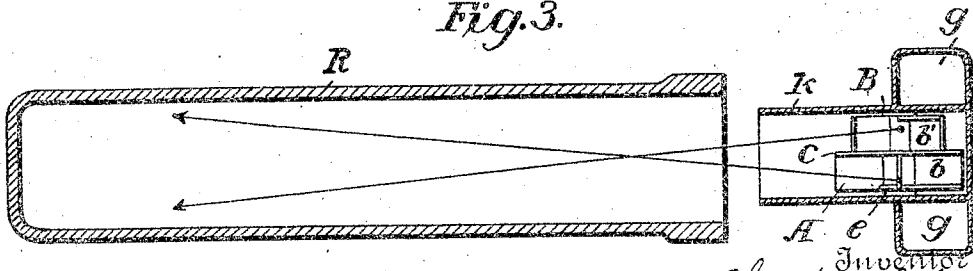


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CHRISTIAN EITTE, OF STUTTGART, GERMANY.

APPARATUS FOR CHARGING RETORTS.

944,959.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed March 26, 1906. Serial No. 303,012.

To all whom it may concern:

Be it known that I, CHRISTIAN EITTE, a subject of the King of Württemberg, residing at Stuttgart, Württemberg, German Empire, have invented certain new and useful Improvements in Apparatus for Charging Retorts, of which the following is a specification.

This invention relates to apparatus for charging gas retorts, or similar retorts, with coal or similar material and the object of the invention is to insure a uniform and even charging of the retort.

In such apparatus the stream of coal or like material usually enters the retort in such manner that more of it is piled in the center of the retort than at the sides so that the coal cannot be utilized in as perfect a manner as when the top of the charge is level or concave at the middle portion.

According to my invention I throw into the retort charging material which traverses two separate paths which cross each other and deliver the material on opposite sides of the retort, the material traversing each path being directed diagonally across the axis of the retort. The apparatus for producing this result may vary in form and details of construction, but the best way now known to me of carrying out my invention is illustrated in the accompanying drawings in which,

Figure 1 shows a vertical section viewed from the side, of a centrifugal apparatus for charging a retort in the manner above described. Fig. 2 shows a vertical section looking from rear to front of the apparatus. Fig. 3 shows a horizontal section of the apparatus and illustrates also its relation with a retort, the arrows indicating the direction taken by the charging material as it passes from the charging apparatus to the retort. Fig. 4 is a perspective view of the double centrifugal fan forming part of the apparatus. Fig. 5 is a detail view in section illustrating how the material is fed to the left hand side of a retort by the fan on the right hand side of the charging apparatus. Fig. 6 is a similar view showing how the material is fed to the retort from the fan on the left hand side of the apparatus. Fig. 7 is a like view illustrating how the material appears when the retort is fed by both fans.

According to this invention the material is fed into the retort in two paths, the axes

of which cross one another so that more material is fed to the retort adjacent to the sides than at the center or middle portion of the retort whereby when the retort is fully charged, the material will be more or less concave, as indicated in Fig. 7. This effect is produced by two forces which result in giving to the charging material the diagonal directions, above referred to. These two forces are, the force produced by the fan which is parallel with the axis of the retort and the force produced by the flow of the material into the field of action of the fan which flow is transverse to the direction of movement of the fan, *i. e.*, parallel with the axis thereof.

Referring more particularly to the drawings, I have shown an apparatus for carrying out by invention in which a fan A, comprising a hub *a*, a centrally arranged diaphragm *c*, and radial vanes *b, b'* having side flanges *e* higher near the hub than at the periphery of the fan, is located within a suitable casing B. The flanges *e* serve the double purpose of stiffening the fan blades and of regulating the feed of material to the field of action of the blades. The fan is mounted on a shaft *m* which may be rotated in any suitable way.

The blades *b, b'* are separated by the diaphragm *c* and they are staggered or alternated, the blades *b'* being arranged preferably midway between the blades *b* so that the material is first thrown into the retort by a blade *b* and then by a blade *b'* and so on. This operation prevents interference of the material traversing one path with the material traversing the other path.

The fan A is located centrally of the main casing B and the feed hopper *f* delivers over the fan casing B to channels *g* on opposite sides of the fan casing from which the material enters opposite sides of the fan casing in the manner indicated by the arrows in Fig. 2. The lower or bottom walls of the channel *g* are curved or inclined at *h* for the purpose of directing the material sidewise into the fan chamber and of insuring the proper speed of flow to co-act with the direction of flow caused by the fans to throw the material diagonally into the retort in the manner above described. The material is projected into the retort R through the mouth *k* of the casing B in the manner indicated in Fig. 4.

L indicates a slide valve which may be

used to govern the flow of the charging material from the hopper *f* to the fans.

It will be understood that the relative sizes of the different parts of the apparatus, the speed of rotation of the fan, and the speed at which the charging material is fed, is such as to produce the results above specified. These all vary with the size of the apparatus but in machines of the usual size the speed of rotation of the fan varies between 200 and 600 revolutions per minute. The diameter of the fan is usually about 600 millimeters and the width of the fan case is usually 300 millimeters, the width of the side chambers *g* being about 200 millimeters. The hopper *f* is where the charging material is stored. When ready to operate and the fan has acquired the proper speed, the valve or slide *l* is opened and the charging material descends through the passages *g* to the fan chamber. The cross sectional area of the passages *g* is such that less material is supplied to the fan chamber than the fan blades can take from the passages *g* so that there is no banking up of the material in the passages and a constant flow of the material through said passages is effected and a uniform velocity is obtained by giving a proper inclination to said passages taking into account, of course, the friction produced by the passage of the material over the walls of said passages.

I claim as my invention:

1. A machine for charging retorts, comprising means for throwing into the retort charging material in two separate paths which cross each other and deliver the material on opposite sides of the retort.

2. In a machine for charging retorts, the combination of a feed hopper for the charging material, and means for projecting the charging material in two separate paths diagonally and crosswise of each other into the retort.

3. In a machine for charging retorts, the combination of a casing, means within the casing for projecting the charging material in two separate paths cross-wise of each

other and diagonally outward into a retort, and means for supplying charging material to the projecting means.

4. In a machine for charging retorts, the combination of a centrifugal fan having two sets of blades which alternate in arrangement with each other, a partition separating one set of blades from the other, a feed hopper, channels conducting the charging material to the fan blades on opposite sides of the partition which are curved or inclined to feed the charging material at a certain speed, and means for revolving the fan at a proper relative speed to throw the charging material in two separate paths cross-wise of each other and diagonally into the retort.

5. In a machine for charging retorts, the combination of a fan chamber, a fan located therein having two sets of blades alternately arranged, a partition separating one set of blades from the other, a hopper for the charging material, channels extending downward from the hopper and delivering the charging material transversely to the direction of rotation of the fan blades, and means for rotating the fan at a proper speed relatively to the velocity at which the charging material enters the fan chamber to cause the charging material to be projected in two separate paths which cross each other and enter the retort diagonally.

6. In a machine for charging retorts, the combination of a fan chamber, a fan located therein having radially arranged blades flanged at their outer edges, a hopper for the charging material, and channels extending from the hopper to the fan chamber which are curved to deliver the charging material at a proper speed to the fan chamber transversely to the direction in which the fan rotates.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHRISTIAN EITLE.

Witnesses:

ERNST ENTENMAN,
WM. HAHN.