(No Model.) 3 Sheets—Sheet 1.

R. FREYGANG.

CLAY CRUSHER AND DRIER.

No. 387,158. Patented July 31, 1888.

FIG. I.

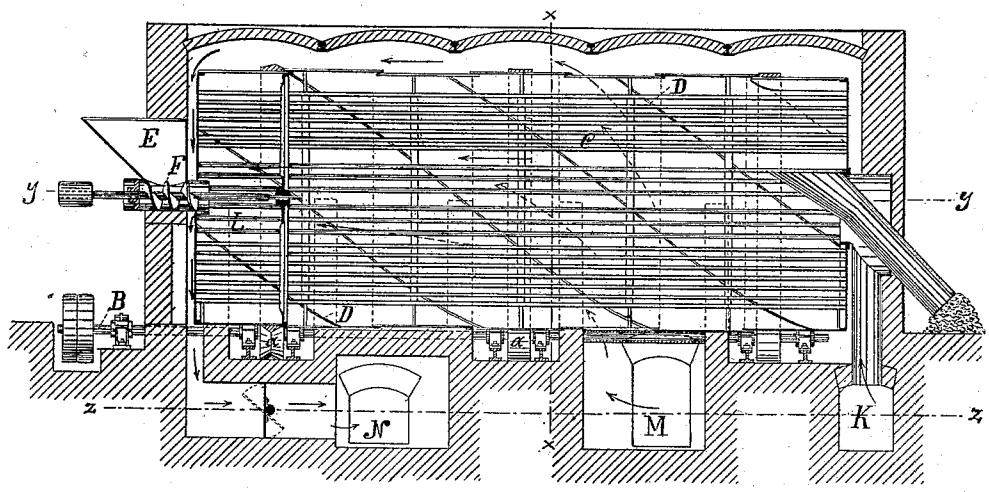


FIG. III.

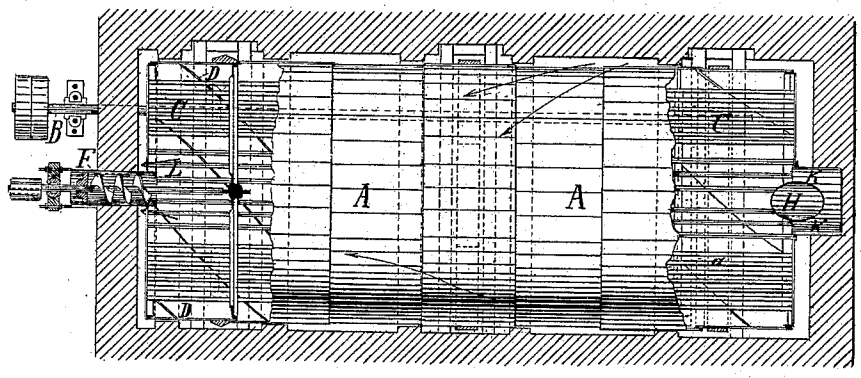
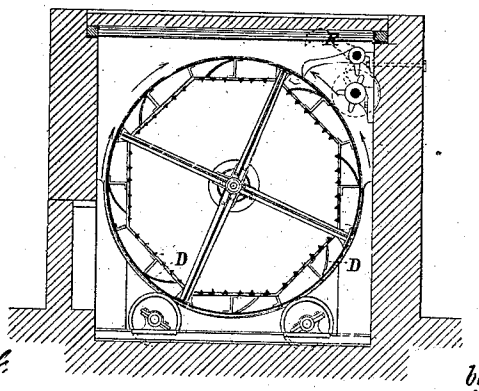


FIG. II.



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Wilhelm Schmidthal.

Inventor:
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Attys.

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(No Model.) 3 Sheets—Sheet 2.

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FIG. IV.

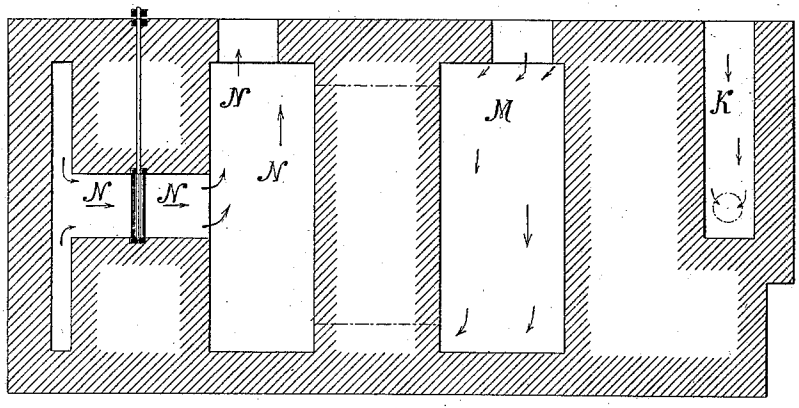


FIG. V.

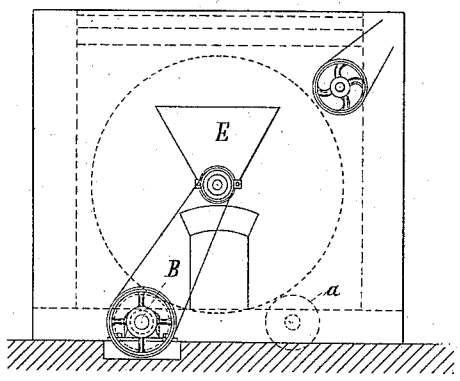


FIG. VI.

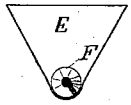


FIG. VII.

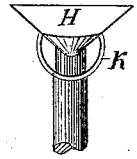
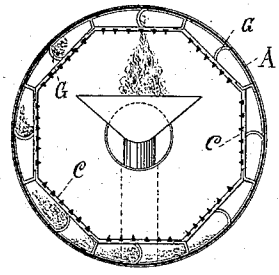


FIG. VI.



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(No Model.) 3 Sheets—Sheet 3.

R. FREYGANG.

CLAY CRUSHER AND DRIER.

No. 387,158. Patented July 31, 1888.

FIG. IX.

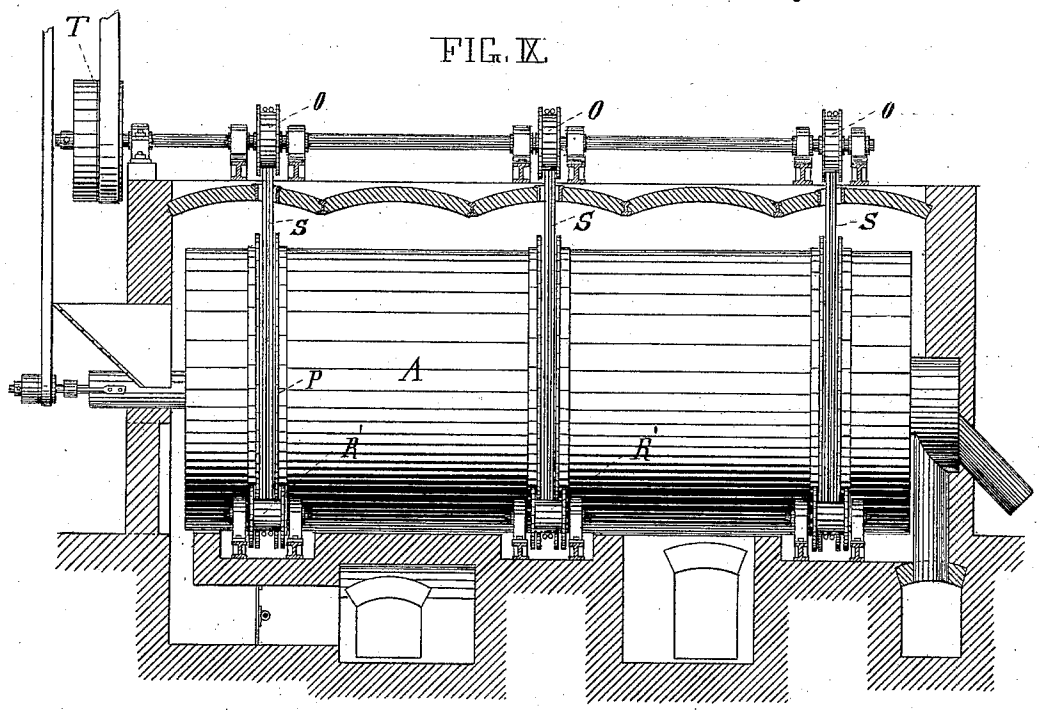
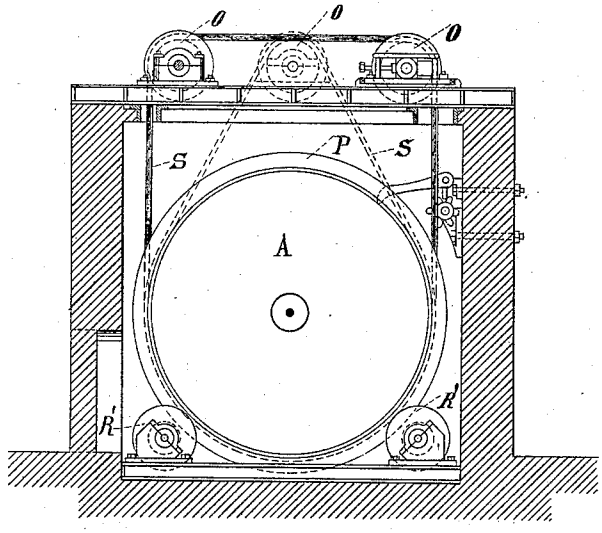


FIG. X.



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UNITED STATES PATENT OFFICE.

ROBERT FREYGANG, OF EUTRITZSCH, NEAR LEIPSIC, SAXONY, GERMANY.

CLAY CRUSHER AND DRIER.

SPECIFICATION forming part of Letters Patent No. 387,158, dated July 31, 1888.

Application filed June 27, 1887. Serial No. 242,683. (No model.) Patented in Germany December 14, 1884, No. 32,025, and August 22, 1885, No. 34,868, and in Austria-Hungary May 5, 1885, No. 4,347 and No. 23,736.

To all whom it may concern:

Be it known that I, ROBERT FREYGANG, of Eutritzsch, near Leipsic, in the Kingdom of Saxony, and German Empire, have invented a new and useful Improvement in Rotating Machines for Drying and Comminuting Clay and Similar Materials, of which the following is a specification, reference being had therein to the accompanying drawings, no patents being obtained by me anywhere for this invention save in Germany, No. 32,025, dated December 14, 1884, and No. 34,868, dated August 22, 1885, and Austria-Hungary, No. 4,347 and No. 23,736, May 5, 1885.

My invention relates to improvements in rotating machines for drying and comminuting clay and similar materials.

In the accompanying drawings, Figure I represents a transverse longitudinal section of the machine. Fig. II is a cross-section on the line *x x*. Fig. III is partly a plan partly a horizontal section on the line *y y* of Fig. I, and shows cross-sectional view of the ends of the cylinder A and a front view of the middle of it. Fig. IV is a section through the flues and the hot-air pipes on the line *z z* of Fig. I. Fig. V represents the machine in front view. Fig. VI is a cross-section. Fig. VII represents a section through the feed-funnel, and Fig. VIII a section through the discharge-funnel. Figs. IX and X show a modification of the machine in which the cylinder A is suspended by ropes. Fig. IX represents a longitudinal section, and Fig. X a transverse vertical section, of this modification.

The construction of the machine is as follows:

A cylinder, A, of a tolerably large diameter and of a corresponding length serves as the receptacle for the material to be dried, (and comminuted,) and is inclosed in masonry or in any suitable kind of shell. The cylinder A rests on the rollers *a*, some of which serve to make it rotate slowly. A driving-shaft is attached for this purpose. The inside of the cylinder is lined with lattice-like comminuting-grates C, onto which the material falls, when the cylinder is made to rotate, from a height of about six feet, and is gradually comminuted thereby. The whole of the material passes through the grates C, and is gradually transported from one end of the cylinder to the other by the shovels or transporters D.

The material is filled in at E by means of a conveyer, F, passes through the cylinder in the way described, and is finally led into the discharge-funnel H by the catch-shovels G, attached to the end of the inside of the cylinder. During this operation the drying process is carried out at the same time. It is performed on the one hand by using hot dry air, which steams through the inside of the cylinder, and on the other hand by gases, which play round the outside of the cylinder A. The hot dry air enters at K, streams through the clay, which is kept constantly in motion, absorbs the moisture, and is sucked up at L by an exhauster, chimney, &c. The fire-gases enter at M, play round the cylinder A, communicate their heat, and are removed by artificial or natural absorption. For this purpose there is an outlet-channel, N. The gear for the feed creeper and the cylinder may be arranged in different ways.

In order to move the clay better and in order to prevent its adhering to the grate C, a knocking or shaking apparatus, R, can be attached.

The machine may be connected in a suitable way with kilns for bricks, &c., so that the latter furnish the necessary hot air and gases for the apparatus. A modification of this arrangement is shown in Figs. IX and X of the accompanying drawings. It consists materially in the following point: The drum A is suspended in the ropes S, which run over pulleys O and are led in the rings P of the drum A. In order to guide the suspended drum in the direction of its longitudinal axis, guide-rollers R′ are attached, which each inclose with their flanges a ring, P. The rollers R′ are not weighted in any way and serve merely as guides for the rings P.

According to the length of the drum, three or more ropes S must be used. These ropes may also be led over only one pulley, O, which is then in the middle, as is indicated by dotted lines in Fig. X, instead of over two.

The bushes in which the drum hangs are placed in this arrangement in an open accessible space.

The machine is driven in a suitable way by means of the strap-pulleys T, or by wheels.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A cylinder provided on its inside with longitudinal grates for comminuting the clay fed thereon, in combination with means for rotating said cylinder and grates, substantially as set forth.

2. In combination with a rotating cylinder and longitudinal grates, arranged as shown, a series of helical transporters, D, arranged in the space between the grates and the wall of the cylinder, as shown, for the purpose set forth.

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

ROBERT FREYGANG.

Witnesses:

HERRMANN SCHMORDE,

CARL BORNGRAEBER.