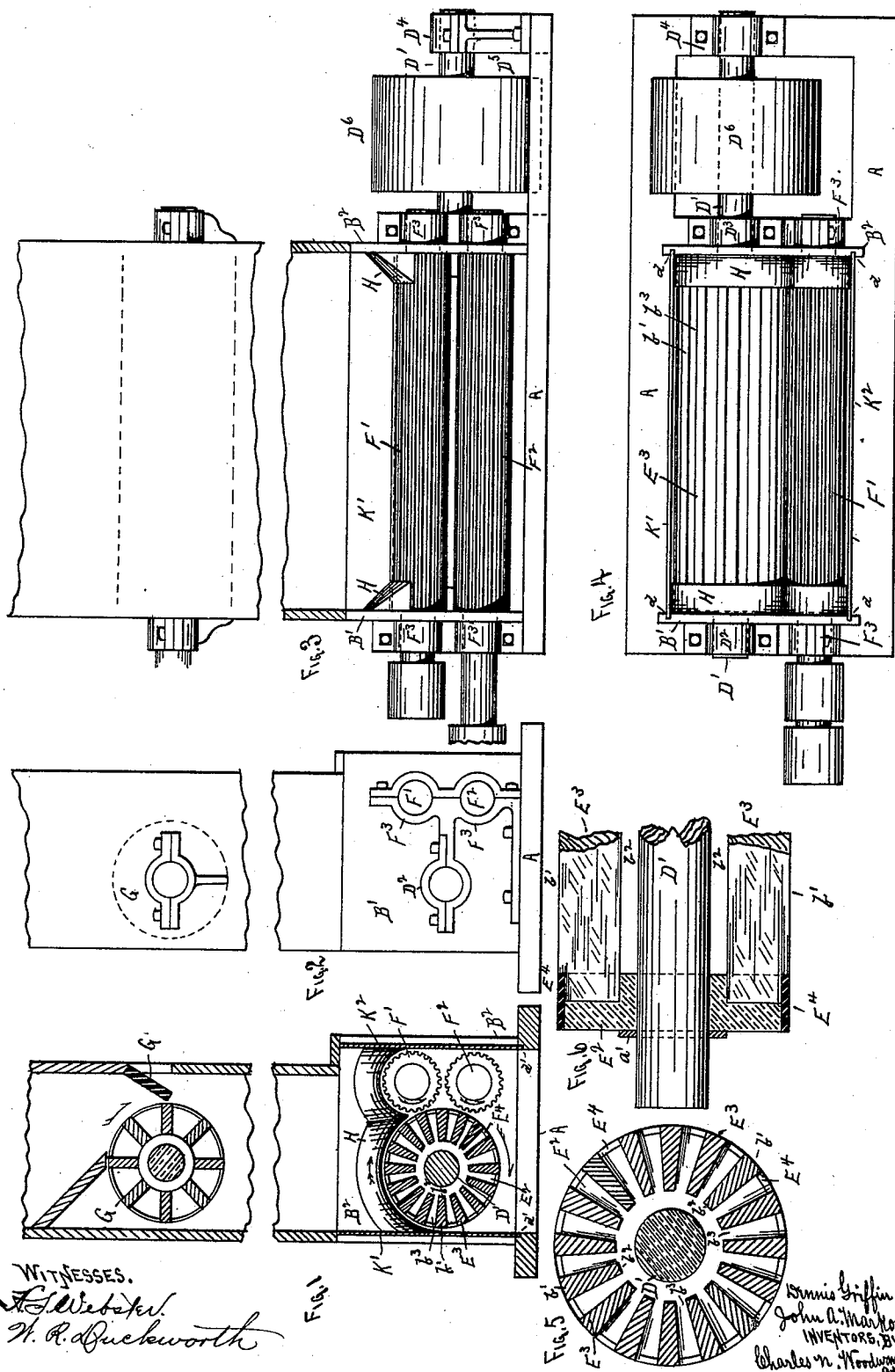


(No Model.)

D. GRIFFIN & J. A. MARKOE.
CLAY PULVERIZER.

No. 466,034.

Patented Dec. 29, 1891.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DENNIS GRIFFIN AND JOHN A. MARKOE, OF ST. PAUL, MINNESOTA.

CLAY-PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 466,034, dated December 29, 1891.

Application filed March 9, 1891. Serial No. 384,219. (No model.)

To all whom it may concern:

Be it known that we, DENNIS GRIFFIN and JOHN A. MARKOE, citizens of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have jointly invented certain new and useful Improvements in Disintegrators and Pulverizers for Clay and Similar Substances, of which the following is a specification.

This invention relates to apparatus for disintegrating and pulverizing clay and similar substances employed in the manufacture of brick, terra-cotta, and for analogous purposes; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a cross-sectional elevation, and Fig. 2 is an end elevation. Fig. 3 is a longitudinal sectional elevation. Fig. 4 is a plan view. Figs. 5 and 6 are enlarged sectional details of a portion of one of the beater-drums, illustrating its construction more fully.

A is the base-frame, upon which two upright end frames B' B² are mounted and in which the main beater-shaft D' is journaled by boxes D³ D³ on the end frames and by an outer box D⁴ on a standard D⁵, rising from the base-frame A, the function of the latter being to support the outer end of the shaft D', which also carries the driving-pulley D⁶. Fast upon the shaft D' between the end frames are two disks E' E², with small collars a' a² between them and the inner faces of the end frames, and each disk having radiating cavities in their rims into which the ends of steel blades E³ fit, the blades being held in place by metal bands E⁴, shrunk upon the peripheries of the disks after the blades are in place, the whole thus forming a cylindrical slatted drum, as shown more clearly in Figs. 5 and 6.

The outer edges b' of the blades E³ are of uniform thickness, (usually about one inch,) while the inner edges b² are likewise of uniform thickness, but of less thickness than the outer edges, so that the spaces b³ between the blades will not be contracted to so great an extent as they would be if the blades were left of the same thickness throughout. By this means spaces of considerable extent are

left between the blades for more effective action of the beaters, as hereinafter explained.

F' F² represent two rollers with their surfaces preferably grooved or fluted lengthwise and journaled by their ends in bearings F³ on the end frames B' B² and with their faces close to the bladed cylinder, as shown.

The shaft of the drum E' E² E³ will be provided with a belt-pulley or other means for driving it, and the shafts of the rollers F' F² will likewise be provided with pulleys by which they may be driven. The drum will be run at a much greater speed than the rollers, so that a cutting effect will be imparted to the material passing through the machine. This differential motion may be varied to suit different qualities or conditions of the material; but for ordinary clay the drum will be run at about eleven hundred revolutions per minute, while the rolls will run at about six hundred revolutions per minute. This is a very important feature of our invention and insures the more perfect pulverization and separation of the particles of the material, which is the result desired, the finer and more complete the pulverization of the material the better the results obtained from its use. The cylinder being thus made to revolve rapidly toward the rollers, as indicated by the arrows in Fig. 1, and the dry clay fed thereto, it will be caught by the sharp corners of the blades E³ and quickly pulverized between the rapidly-moving blades and first roller F' and thrown downward between the blades E³ and the second roller F², where it is still further pulverized, and is finally thrown downward through the bed-plate A in that condition.

A preliminary breaker may be employed, as shown in Figs. 1, 2, and 3, consisting of a bladed drum G like the one above described, except that a fewer number of the blades will be required, and the rolls F' F² will be replaced by an inclined steel breaker-plate G', against which the lumps of clay are broken by the rapidly-revolving bladed drum and fall from there down to the pulverizer beneath. The operation may be repeated as often as required to secure the required degree of fineness to the clay.

In the event of the breakage of one or more

of the blades they can be readily replaced, and the machine will be as good as new.

Any suitable means may be employed to actuate the drums and rolls.

- 5 The preliminary partial reduction by the drum G and plate G' is an important feature of my invention when used in some kinds of clay, but will not be required in other kinds.

10 Clay guards or caps H will be formed upon the interiors of the end frames B' B² to protect the ends of the drums and rollers and prevent the clay getting in between them and the end frames.

The sides of the machine are shown formed 15 of sheet-metal plates K' K² set down by their ends *d* into grooves in the end frames and with their lower edges fitting into cavities in the inner corners of the sides of the base-frame A, as at *d'*. The sides K' K² are thus 20 readily removed to permit access to the interior of the machine for inspection or repairs.

The large spaces *b*³ between the blades E³ are an important feature, as they serve as escapes for the air which is driven outward 25 through the spaces by the centrifugal force generated by the rapid revolution, and thus effectually prevents any clogging of the drum by the clay on which it is operating.

Having thus described our invention, what 30 we claim as new is—

1. A disintegrator or pulverizer consisting of a rapidly-revolving drum formed of radi-

ating blades with outwardly-flaring interstices between them opening into the interior of the drum, and one or more rollers adjacent to the 35 drum and revolving at a less speed than the drum, whereby a cutting effect is imparted to the material, substantially as and for the purpose set forth.

2. A disintegrator or pulverizer consisting 40 of a rotating drum armed with beater-blades and one or more rollers in close proximity thereto and between which the clay is pulverized, in combination with a preliminary beater G, consisting of a rotating drum armed with 45 blades and a breaker-plate G', against which the clay is broken, substantially as and for the purpose set forth.

3. In a clay-pulverizer, a beater-drum consisting of a shaft D', having disks E' E² there- 50 on and with cavities in the rims of said disks adapted to support the ends of blades E³, and binding-hoops E⁴, whereby the blades are held in place, substantially as and for the purpose set forth. 55

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

DENNIS GRIFFIN.
JOHN A. MARKOE.

Witnesses:

STILES W. BURR,
C. N. WOODWARD.