(No Model.)

W. R. CUNNINGHAM.

CLAY WORKING MACHINE.

No. 408,337. Patented Aug. 6, 1889.

Fig. 1.

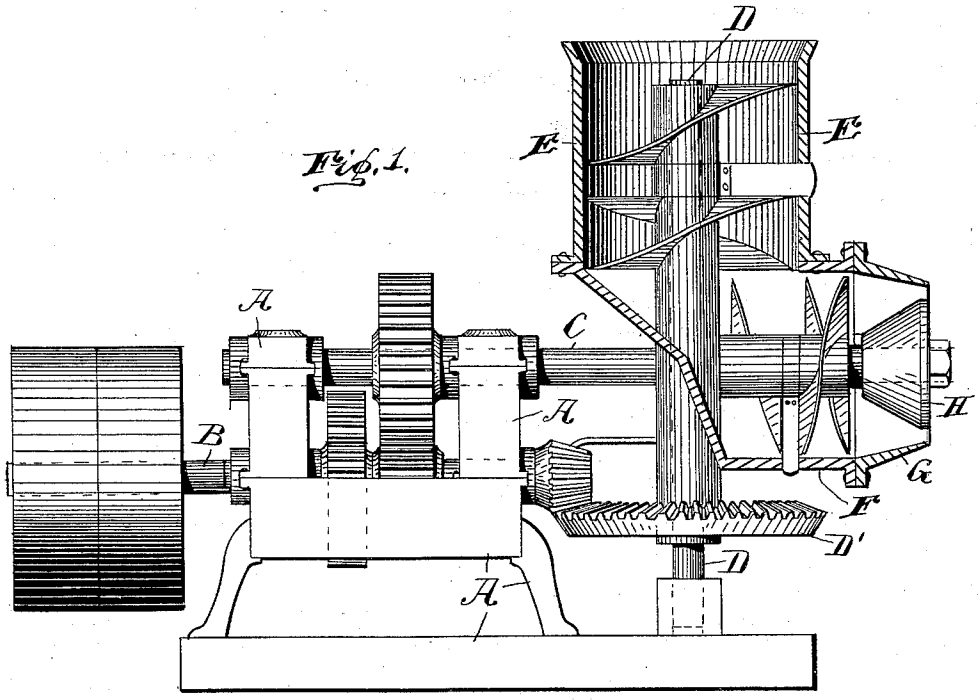
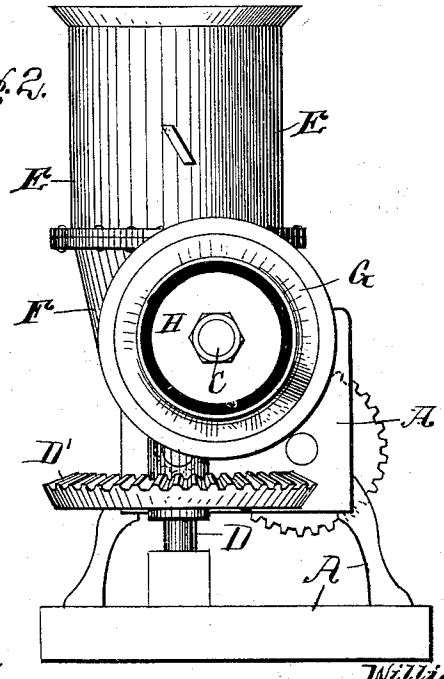


Fig. 2.



Witnesses

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Inventor

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per Chas. E. W. Bradford,

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N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM R. CUNNINGHAM, OF FRANKFORT, INDIANA, ASSIGNOR TO THE WALLACE MANUFACTURING COMPANY, OF SAME PLACE.

CLAY-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 408,337, dated August 6, 1889.

Application filed April 14, 1888. Serial No. 270,617. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. CUNNINGHAM, a citizen of the United States, residing at Frankfort, in the county of Clinton and State of Indiana, have invented certain new and useful Improvements in Clay-Working Machines, of which the following is a specification.

My present invention consists in one feature shown in my application Serial No. 229,499, filed March 3, 1887, it being the arrangement of the casing of the vertical pug-mill and horizontal cylinder in relation to each other, and of the vertical and horizontal shafts carrying the several screws within said casing, and the gearing by which said shafts are driven, whereby a compact, simple, and convenient machine is provided, without any obstruction at the top of the hopper of the pug-mill to interfere with introducing the clay, all of which will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a clay-working machine embodying my said invention, the casing or cylinder to the mill being drawn in section to show the interior mechanism; and Fig. 2 is a front elevation of the same.

In said drawings, the portions marked A represent the frame-work of the machine; B, the main driving-shaft; C, the screw or auger shaft; D, the vertical auger-shaft or shaft to the pug-mill; E, the casing of said hopper and pug-mill; F, the cylinder or casing of the mill proper; G, the external die, and H the internal die.

It is of considerable advantage in clay-working machinery, particularly in mills for producing tile, brick, and terra-cotta lumber, that the hopper into which the clay is first thrown and the pug-mill by which it is pulverized and prepared for the operation of the mill proper should be substantially one and vertical in position, and also that there should be direct communication between the pug-mill and the cylinder of the mill proper, the latter of which should be in horizontal position. It is also obviously of advantage that the upper end (or hopper portion) of the pug-mill should be entirely open, so that the clay may be freely introduced from any position, either from directly overhead or from any of the sides. The screw-blades or augers in this construction also may work close to the top of the hopper, thus insuring that the clay shall not adhere to the hopper. It is also obvious that when the gearing is above this opening it not only is an obstruction, but the clay is likely to be thrown into the teeth of the gearing unless great care is used, or means of protecting it (which is of course an extra expense) is provided, which, if permitted, would impair the operation and be a source of considerable wear on the machinery.

In my invention the casing of the vertical pug-mill and the horizontal cylinder is substantially a single casing, the vertical portion being entirely open at the bottom and mounted directly above an opening in the top of said horizontal cylinder, which is formed to correspond therewith, thus providing a free discharge from the vertical to the horizontal chamber, and rendering the same practically a single chamber, with screws arranged to force the clay in two directions, the vertical shaft of the pug-mill and the horizontal auger-shaft of the horizontal cylinder being arranged to pass each other at substantially right angles within the casing.

The vertical pug-mill shaft D is journaled in a suitable bearing directly under the horizontal cylinder, and extends up through the rear end thereof into the pug-mill, where it is provided with suitable gathering and forcing or mixing screws or blades. It is driven from the driving-shaft B by means of a gear-wheel D′ on its lower end, arranged under the casing of the machine, which meshes with a suitable gear-wheel on the end of said driving-shaft. The horizontal shaft C is journaled in two bearings arranged a considerable distance apart on the outside of the casing, and extends into the horizontal chamber a little to one side of the vertical shaft, and has suitable forcing-screws on its end, as shown. It is provided with a suitable gear-wheel on its outer end, between the bearings in which it

is supported, arranged to mesh with another gear-wheel provided on the driving-shaft B, by which it is driven.

The dies and mixing-bars or screw-blades form no part of my present invention, which relates wholly to the arrangement and relative location of the pug-mill, the cylinder, and gears for driving the mechanism within the same, but are shown in the drawings for purposes of illustration only.

I am aware of the construction shown in Patent No. 288,894 to W. W. Wallace, and I am also aware that brick-machines have been arranged so that the opening between the casings was entirely free and open; but I do not regard these constructions as the equivalent of mine herein shown and claimed, for the reason that neither would be practical or successful in operation if operated in the same manner and for the same purpose as herein described.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, in a clay-working machine, of a casing consisting of the vertical part E and the horizontal part F, said part E being formed open at the bottom and secured to said part F over a corresponding opening formed therein, the horizontal shaft C, extending into said horizontal casing, carrying the forcing-screw and geared to suitable driving mechanism, the vertical shaft D, extending up into the part E, through the horizontal part F of said casing, at right angles with said horizontal shaft, and provided with a gear-wheel beneath said casing, which is geared to the same driving mechanism that drives said horizontal shaft, all substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 7th day of April, A. D. 1888.

WILLIAM R. CUNNINGHAM. [L. S.]

Witnesses:
DAVID A. COULTER,
WILLIAM H. HOOT.