

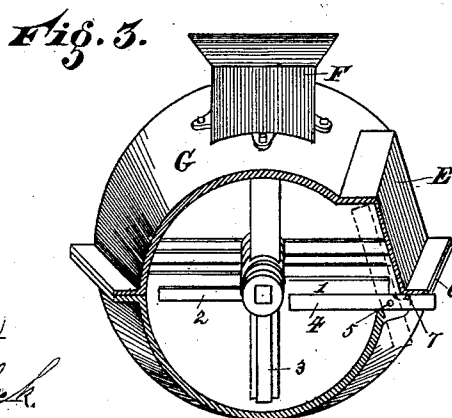
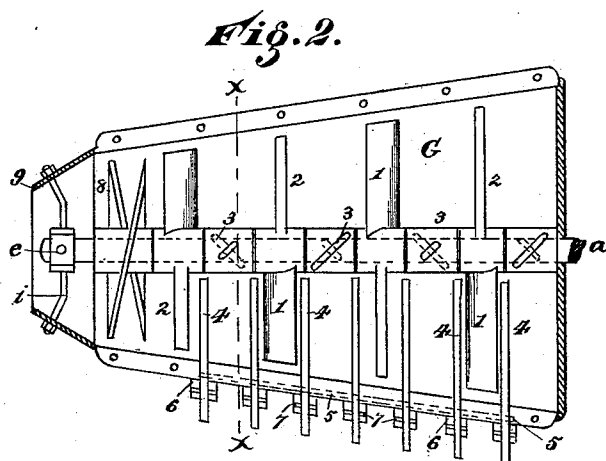
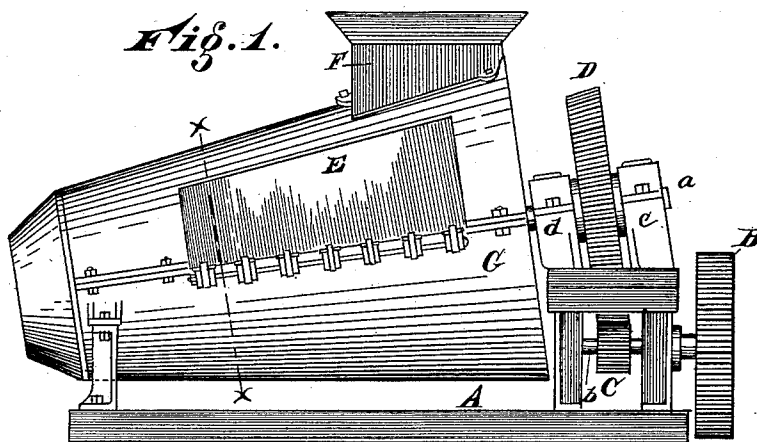
(No Model.)

W. W. WALLACE.

PUG MILL.

No. 338,121.

Patented Mar. 16, 1886.



Attest

J. Watson Sims
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Inventor
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UNITED STATES PATENT OFFICE.

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

PUG-MILL.

SPECIFICATION forming part of Letters Patent No. 338,121, dated March 16, 1886.

Application filed October 31, 1885. Serial No. 181,598. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. WALLACE, a resident of Frankfort, in the county of Clinton and State of Indiana, have invented certain new and useful Improvements in Pug-Mills, of which the following is a specification.

My invention relates to an improved pug-mill for grinding and mixing clay.

My invention relates to the method of constructing the mill.

It has, first, for its object the employment of a cone-shaped cylinder, in which the tempering-blades are worked, so as to get an increased compression upon the clay toward the discharge end of the cylinder as it is worked forward.

Another object of my invention is to set the bottom cone of the cylinder at or near the horizontal plane, so that the water and clay will work forward easily by the pitch of the cone.

Another object of my invention is to provide break-pins for the stationary blades, to prevent damage being occasioned by the introduction of hard foreign substances—such as stones, wood, &c.—all of which will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my improvement; Fig. 2, a horizontal central section of the cylinder; Fig. 3, a section on line *x x*, Fig. 1.

A represents the bed-plate of the frame on which the pug-mill is mounted.

B represents the driving-wheel mounted on shaft D.

C represents a spur-gear meshing and driving the bevel-gear D, which is mounted on pug-mill shaft *a*. This shaft is journaled in boxing *c d e*. The journal-box *e* is suspended within the cone-cylinder G at its smaller end on spider-arms *i*.

1 represents wiper-blades set flatwise in shaft *a*, as shown in Fig. 2.

2 2 represent mixing-blades set edgewise.

3 represents another set of wide blades placed beveling, so as to force the clay forward to the discharge end of the cylinder.

The blades 1 and 2 may be set at any desired angle for wiping or forcing the clay forward.

By the use of the cone-cylinder G a less angle or pitch of the blades will be required to move the clay forward in the cylinder.

The wide and narrow blades are set alternately.

4 represents cleaner-teeth, through which the mixing-blades 1 2 3 pass to break and mix the clay.

Great difficulty has been experienced in the use of cleaner-teeth, owing to their being broken by the presence of stones or other hard foreign substances in the clay.

In order to avoid the necessity of taking the machine apart, caused by the breakage of the cleaner-teeth and mixing-blades, I have devised the following means:

E represents a recess or enlargement of the cylinder above the point where the cleaner-fingers 4 are hung. These fingers are hung on a pivot-rod, 5. (Shown in Fig. 2.)

6 represents projections or ears attached to the cylinder, and extending downward from the cylinder.

7 represents a break-pin inserted in the end of the cleaner-fingers outside of the cylinder and resting on the ears 6. This pin holds the fingers 4 from turning and normally in working position; but when hard substances are forced against the cleaner-teeth the pin 7 will break, being the weakest, and allow the teeth 4 to turn on their pivot 5 and pass up into the space E, as shown in Fig. 3, out of the way of foreign substances. As soon as the foreign substance has passed through, the cleaner-fingers are brought back into position and a new break-pin inserted. This avoids taking the mill apart to remove such substances, as they will be carried out the discharge end without breaking the cleaner-fingers and wipers.

F represents the hopper, through which the clay is fed into the cylinder.

The mill is shown with a round orifice, such as is usually employed with tile-mills; but it is obvious that the die or discharge end may be square or any other desired form or shape, and it is adapted to pug clay for tile or brick.

8 represents the usual auger on the discharge end of the shaft for forcing the clay out of the orifice 9.

The mill is constructed, preferably, by mak-

ing the shaft a square and having the wiper-arms 1 2, &c. They may be bolted, riveted, or cast on a hub, as shown in section, Fig. 3.

The cylinder G of the mill is set on a frame so that the bottom line or plane is at or near the horizontal, as shown in elevation, Fig. 1, and the axis of the shaft inclines to the horizon. This is done to avoid the tendency of the clay and water to work backward, which would occur if the shaft were on a horizontal plane. It also assists in forcing the clay forward, and requires less driving-power.

I have found by experience this mill to be very efficient and more durable than the ordinary pug-mill hitherto employed.

It is obvious that the recess E and cleaner-fingers 4 could be used with a plane as well as with a conical-shaped cylinder. It is also obvious that the cleaner-fingers 4 could be used with a less degree of efficiency without the recess E, and I desire to claim them in all forms herein expressed.

I claim—

1. A pug-mill composed of a cone-shaped cylinder, with its bottom line or plane placed at or near the horizontal, as shown, in combination with a tempering-shaft and blades, with the axis of the shaft inclined to the horizon, and receiving the clay at the larger end of the

cylinder and discharging it through the smaller end, substantially as specified. 3c

2. In combination with the cylinder of a pug-mill, the cleaner-fingers 4, projecting through said cylinder and hinged on a pivot, with break-pins arranged outside of the cylinder to hold them normally in working position, substantially as specified. 35

3. In combination with the cylinder of a pug-mill, the recess E and cleaner-fingers 4, pivoted at the underside of said recess, projecting through the cylinder, and held normally in working position by a break-pin which will yield to foreign substances and allow the fingers to pass in the recess out of the way of the tempering-blades, substantially as specified. 40

4. In combination with a cone-cylinder provided with a recess, E, tempering-fingers 4, pivoted to the cylinder and projecting through said cylinder, and provided with break-pins for holding them normally in working position, substantially as specified. 45

In testimony whereof I have hereunto set my hand.

WILLIAM W. WALLACE.

Witnesses:

S. C. BOOKER,
ELI MARVIN.